21-51 Queen Street North
Proposed Mixed-Use Development

Urban Transportation Considerations Update
Zoning By-law Amendment Application
City of Mississauga

Prepared For: Miss BJL Corporation

July 2023

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1.0 INTRODUCTION

BA Group has been retained by Miss BJL Corporation to provide transportation consulting services in relation to the proposed mixed-use development at the property municipally addressed as 21-51 Queen Street North (referred to herein as “the Site”).

The Site is located north from the Britannia Road West and Queen Street North intersection. The Site is bounded by the Portuguese Cultural Centre of Mississauga to the north, a commercial plaza to the south, a row of residential homes of one to two-storeys in height along Swanhurst Boulevard to the east and Queen Street North to the west.

A Zoning By-law Amendment (ZBA) and Official Plan Amendment (OPA) application is being made to permit the proposed development of a 9-storey mixed-used building consisting of 444 residential units and retail / commercial space with a GFA of 1,584 m^2 located at-grade by the west frontage of the building. A total of 358 parking spaces and six (6) tandem parking spaces are proposed to be located within a two-level underground parking garage.

The existing sidewalk along Queen Street north will be retained to provide connections to the Site for pedestrian access. The following report provides a review of the transportation-related impacts of the proposed development, a parking justification for the reduced parking supply, and outlines the proposed strategies to facilitate movement by all transportation modes to and from the Site.

The following sections of the report detail the findings of BA Group’s review.

1.1 BACKGROUND

BA Group previously prepared a transport study entitled “*21-51 Queen Street North Proposed Mixed-Use Development, Urban Transportation Considerations, Zoning By-law Amendment Application, City of Mississauga*”, dated December 2021 (herein referred to as “December 2021 Report”), which was submitted to the City of Mississauga as part of the initial ZBA and OPA application for the Site.

Following the December 2021 Report, comments have been received from the City of Mississauga and Region of Peel in relation to the Project’s transportation related items, through a consolidated matrix dated August 25, 2022.

A resubmission is now being made to the City of Mississauga providing refined development plans, and supplementary materials that respond to the City of Mississauga and Region of Peel’s staff comments that are in relation to the transportation related items.

We note that the development programme has slightly changed since the initial submission. The proposed development now consists of a 9-storey mixed-use building with approximately 444 residential units and a retail component with a GFA of 1,423 m^2 at grade, whereas the initial submission contained 390 residential units and a retail component with a GFA of 1,198 m^2 at grade.

1.2 SCOPE OF REVIEW

BA Group has undertaken an updated review of the key transportation related aspects (i.e. traffic, parking, loading and bicycles) of the proposed ZBA and OPA application being submitted to the City of Mississauga to permit the proposed development. Key transportation related aspects reviewed include:

Transportation Context

- A description of the existing transportation context of the Site considering the area road network, transit system and other non-automobile dependent travel options;
- A description of any future transportation related changes / improvements to the area context (i.e. transit improvements, other non-automobile dependent travel options, etc.);

Development Plan

- An overview of the integrated on-Site and area physical and operational transportation elements and strategies that enable the minimization of automobile-dependent travel for prospective residents, and visitors while meeting the practical and operational needs of mixed-use development;
- A review of the transportation elements of the proposed development plan including vehicular access and circulation, loading, and parking facilities;

Site Planning

- A review of the adequacy of the vehicular parking supply provisions of the proposed development plans;
- A review of the adequacy of the loading space provisions for the proposed development plans;
- A review of the bicycle parking supply provisions for the proposed development plans;
- A review of the functionality and appropriateness of the proposed vehicular facilities incorporated into the Site Plan including access, pick-up/drop-off and loading / garbage collection facility arrangements;

Travel Demand Forecasting

- Assessment of the existing traffic activity patterns and volumes in the study area during the key weekday morning and afternoon peak periods;
- A comprehensive review of traffic changes that may occur in the area in the future with the development of a number of other area development projects;
- An assessment of the traffic and other trip generation characteristics of the proposed development;

Traffic Operations Review

- A review of traffic operations at intersections in the area under existing and future conditions including an assessment of the operational impacts of the proposed development; and
- A review of community related traffic impacts of the proposed redevelopment.

Responses to public agency transportation related comments on the application are also provided in **Section 4.0**.

2.0 EXISTING SITE CONTEXT

The Site is currently known as the “Streetsville Plaza”. The Streetsville Plaza contains the following stores and services: Qasimul Uloom (Islamic Culture) Centre, Erum’s Creations, Evan’s Variety store, Streetsville Martial Arts Karate, Belmonte Unisex Salon Hairstylists, Tulipz Spa, Queen Street Burger and Taters, Mediterranean Meats & Deli, Smart Vacuum Plus, Baghad Pastries & Catering, Offside Sports Bar and Roti Vybz. In addition to the stores and services located within the commercial plaza, there is an existing parking lot in front of the retail frontage that can be accessed from Queen Street North.

There is currently one driveway onto Queen Street North today. Internal vehicular connections are also provided to the properties to the north and south. Currently, there are sidewalks provided along both sides of Queen Street North in front of the parking lot.

The Site location and context are illustrated in **Figure 1** and **Figure 2**.

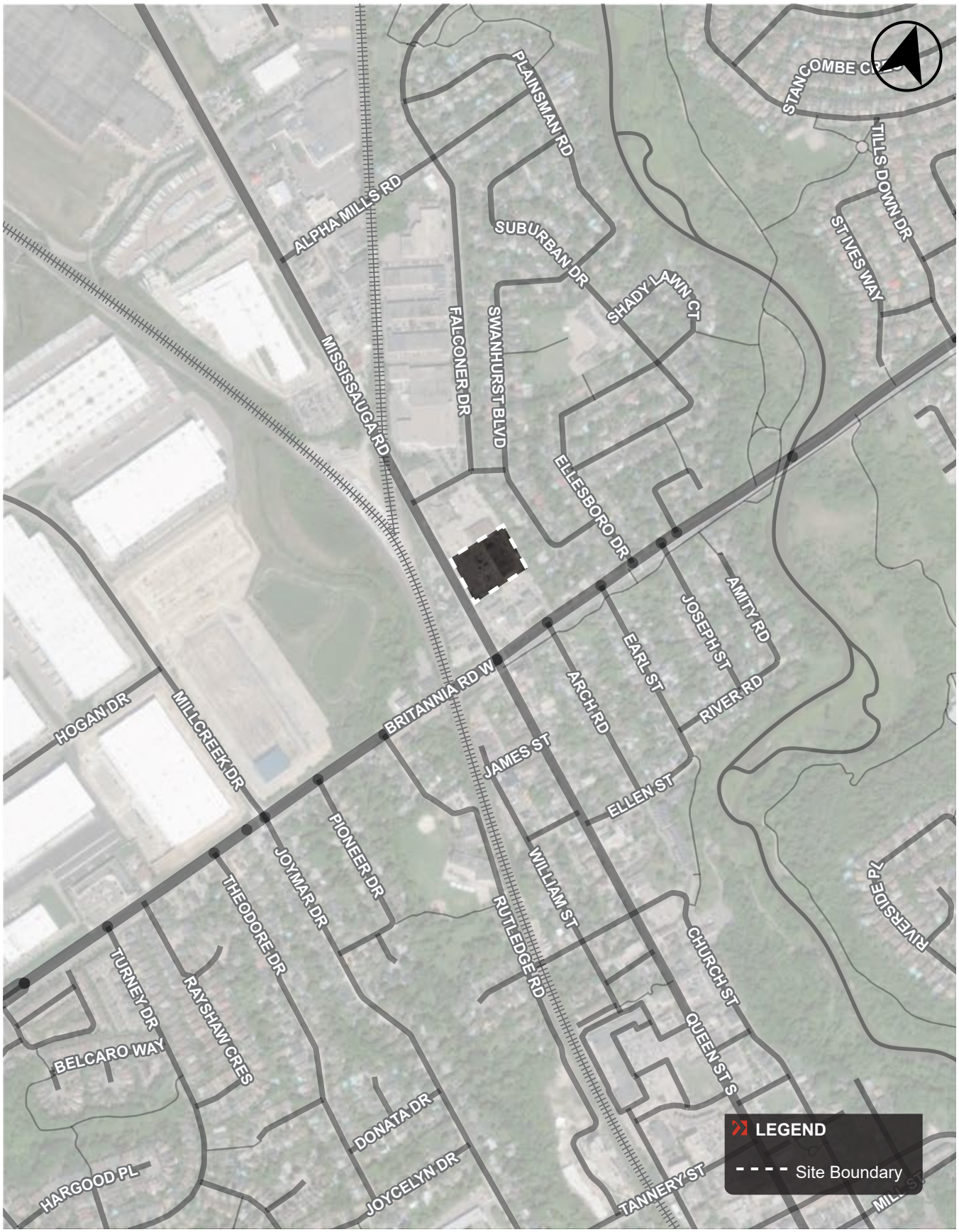

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FIGURE 1 SITE LOCATION

BA GROUP 7869-10 21-51 QUEEN STREET NORTH

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FIGURE 2 SITE CONTEXT

3.0 PROPOSED DEVELOPMENT

3.1 DEVELOPMENT OVERVIEW

The proposed development is a 9-storey mixed-use building with approximately 444 residential units and a retail component with a GFA of 1,423 m^2 at grade. The Site Plan is illustrated in **Figure 3,** and reduced scale architectural plans are included in **Appendix A**.

The following section provides an overview of the development programme that is currently being proposed for the Site.

3.2 PARKING PROVISIONS

3.2.1 Vehicular Parking

The applicant is proposing to provide a total parking supply of 359 parking spaces, including 311 residential parking spaces, 22 residential visitor parking spaces, 26 retail parking spaces. In addition to the overall parking supply, six (6) tandem parking spaces are proposed. Parking is provided in an underground two-level parking garage.

A total of 170 parking spaces, including 26 retail spaces, 22 residential visitors and 122 residential spaces are located in the P1 level. A total of 189 residential spaces are located in the P2 level. In addition, the six (6) tandem spaces are located in the P2 level of the garage.

In addition to the total parking supply, a pick-up / drop-off loop is proposed which can accommodate approximately 3-4 vehicles. The PUDO area is provided at-grade adjacent to the residential lobby and the northern retail store of the Site.

3.2.2 Bicycle Parking

A total of 386 bicycle parking spaces, including 330 long-term residential bicycle parking spaces and 56 short-term bicycle parking spaces are proposed for the Site. From the long-term bicycle parking supply, 326 are residential long-term spaces and four (4) are for retail long term spaces. From the short-term bicycle parking supply, 48 are residential short-term spaces, and eight (8) are short-term spaces.

All bicycle parking is provided on the ground floor. The total residential long-term bicycle parking spaces are located in a secure bicycle parking room located at-grade. The total residential short-term bicycle parking spaces are located in another separate bicycle parking room located at-grade. Access to the residential long-term and short-term bicycle storage rooms are provided from the path provided south of the site. The pathway connects east of Queen Street North.

The 12 retail bicycle parking spaces including the four (4) long-term and eight (8) short-term bicycle parking spaces are located outdoors at-grade in front of one of the southern retail spaces along the site frontage of Queen Street North.

3.3 LOADING AND GARBAGE COLLECTIONS FACILITIES

Two loading spaces are proposed to be located at-grade adjacent to the planned northeast driveway. A garbage room is proposed to be located in front of the loading space closest to the driveway.

3.4 SITE ACCESS

3.4.1 Vehicular Access

Vehicular access is currently provided via a driveway onto Queen Street North roughly mid-block. The proposed access would shift the access to the north end of the property. This is opposite to an existing driveway to the Petro Canada Gas Station located on the west side of Queen Street North. The proposed driveway would extend into the Site providing connections to the consolidated loading area and the ramp to the underground parking garage.

3.4.2 Bicycle Access

Access to the residential long-term and short-term bicycle storage rooms are provided from the path provided south of the site. The pathway connects east of Queen Street North.

Access to the six (6) retail bicycle parking spaces is provided from the sidewalks along Queen Street North.

3.4.3 Pedestrian Access

Pedestrian access to retail entrances and the residential lobby is provided through sidewalk connections along Queen Street North. and the perimeter of the building such as the pathway provided south of the Building.

3.5 CHANGES TO THE DEVELOPMENT PROPOSAL

Since the initial submission presented in the December 2021 Report, the development proposal has slightly changed. Key differences from the initial submission to the current development proposal presented in this Report herein is listed below:

- **Unit Change:** Increase of 54 units
- **Retail GFA:** Increase of 227 m^2
- **Vehicle Parking Supply:** Decrease of 216 parking spaces (not including tandem spaces)
- **Bicycle Parking Supply:** Increase of 86 bicycle parking spaces

A comparison of the initial development proposal is summarized in **Table 1**.

TABLE 1 DEVELOPMENT PROPOSAL SUMMARY

Use		December 2021 Proposal[1]	Current Development Proposal[2]	Differences
	Residential Units	390 units	444 units	+ 54 units
	Retail	1,196 m^2	1,423 m^2	+ 227 m^2
	Vehicular Parking	453 residential spaces 79 visitor spaces 43 retail spaces 26 tandem spaces **Total:575 spaces (not including tandem spaces)**	311 residential spaces 22 visitor spaces 26 retail spaces 6 tandem spaces **Total: 359 spaces (not including tandem spaces)**	-142 residential spaces -57 visitor spaces -17 retail spaces -20 spaces **Total: -216 spaces (not including tandem spaces)**
	Bicycle Parking	236 long-term spaces 64 short-term spaces **Total: 300 spaces**	330 long-term spaces 56 short-term spaces **Total: 386 spaces**	+94 long-term spaces -8 short-term spaces **Total: +86 spaces**
	Loading	1 retail space 1 residential space **Total: 2 loading spaces**	1 retail space 1 residential space **Total: 2 loading spaces**	No difference
	Vehicular Access	Vehicular access is provided from the driveway extending from Queen Street North.	Vehicular access is provided from the driveway extending from Queen Street North.	No difference
	Pedestrian Access	Pedestrian access is provided along the existing sidewalks on Queen Street North.	Pedestrian access is provided along the existing sidewalks on Queen Street North.	No difference

Notes:
1. Based on Site statistics provided by A&Architects Inc. dated December 1, 2021.
2. Based on Site statistics provided by A&Architects Inc. dated June 19, 2023.

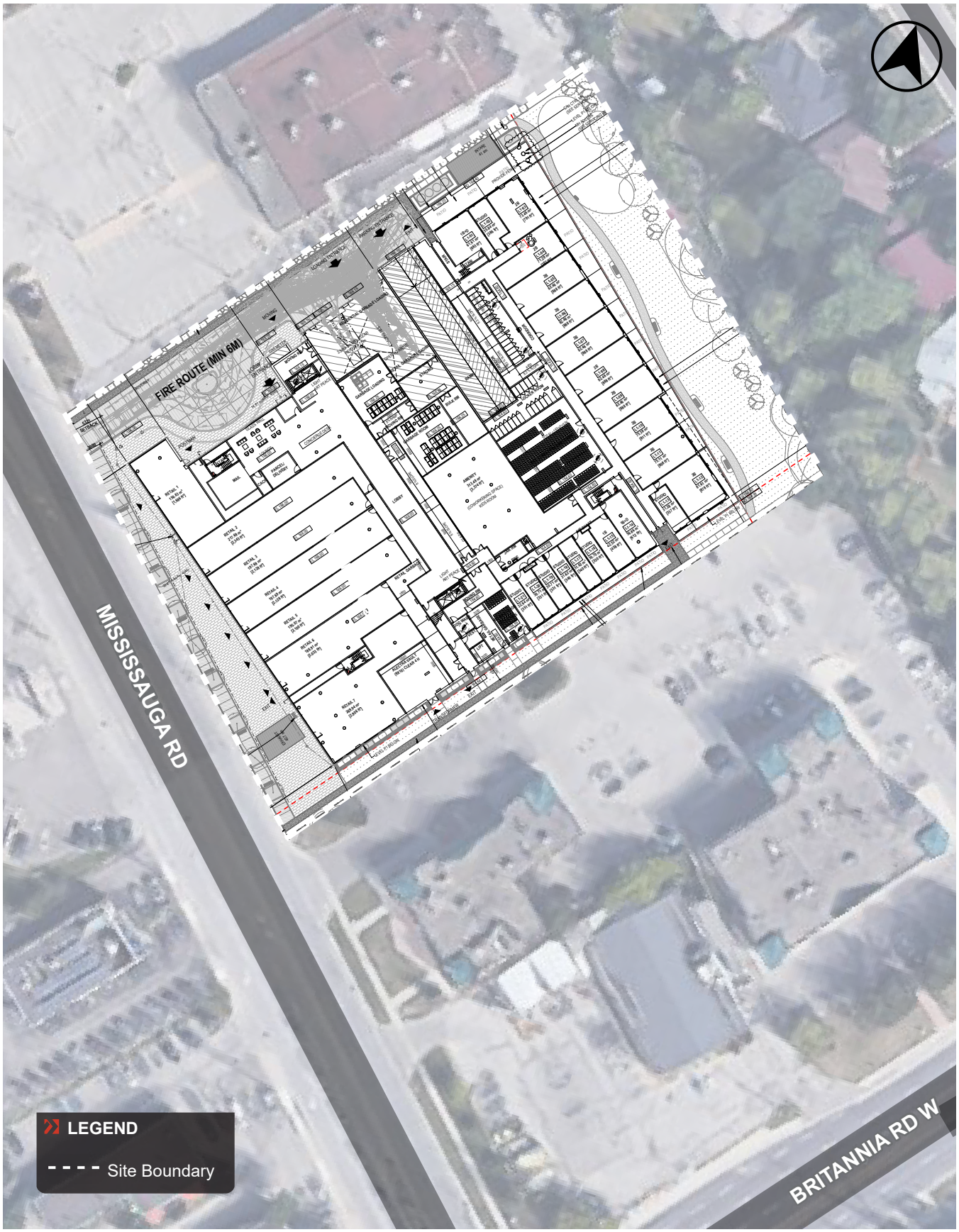

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FIGURE 3 PROPOSED SITE PLAN

4.0 RESPONSE TO COMMENTS

A consolidated comment matrix was received with a compilation of comments received from the City of Mississauga and the Region of Peel in regards to the OPA and ZBA application for the Site, dated August 25, 2022. Within the comment matrix, it's been noted that different departments of the City of Mississauga and the Region of Peel have provided comments on different dates.

The following section provides a response to the OPA / ZBA comments in relation to the transportation related elements of the application. These comments are addressed in the following sections, and responses have been organized by comment with a summary discussion provided in each case which refers, as appropriate, to technical materials provided within this report.

4.1 CITY OF MISSISSAUGA

City of Mississauga staff have provided comments on the following dates identified in the consolidated comment matrix:

- Fire Prevention Plan Examination – May 4, 2022
- Parking – May 26, 2022
- Planner, Development Design – June 27, 2022
- Traffic – December 23, 2021

4.1.1 Fire Prevention Plan Examination

Comment 9:
Please show the roadway and curbs on the site plan (to confirm 15m distance to primary entrance).

BA Group Response:
The Site Plan has been revised to indicate curb locations. Refer to the ground floor plan in the architectural plans attached in **Appendix A**.

4.1.2 Parking

Comment 46:
Subject to the Applicant addressing the comments provided above, staff see merit in the reduced parking standards and staff can support the proposed rates of:

- *1.16 residential parking spaces per condominium apartment unit*
- *0.20 visitor parking spaces per condominium apartment unit*
- *3.67 commercial parking spaces per 100m^2 non-residential GFA for retail use.*

BA Group Response:
Noted. The proposed development is seeking a reduced parking supply less than those noted by City Staff and Zoning By-law 0225-2207 (amended) considering the Site's transit context, TDM measures, survey data and other approvals. This is further discussed in **Section 7.2** of the report.

Comment 47:
Staff request the Applicant provide clarification, specific details, and the use of the tandem parking spaces proposed.

BA Group Response:
In the development programme, six (6) tandem parking spaces are proposed. Spaces in tandem would be owned by a single unit. This allows for cars to be 'jockeyed' to exit and enter the spaces.

Comment 48:
Staff note that the Parking Regulations Study and the associated new parking rates have been approved by PDC and endorsed by City Council but are not currently in effect. The updated by-law is expected to come into effect in mid-July 2022.

BA Group Response:
Noted. Refer to **Section 7.1.1** which contains the application of the newly amended parking requirements outlined by Zoning By-law 0225-2007 (amended by Zoning By-law 0118-2022) to the Site.

Comment 49:
Staff note that per the Council endorsed Parking Regulations Study, May 2022, that a minimum required number of Electric Vehicle Ready parking spaces will need to be provided. The associated rates for these are noted in Table 3.1.1.12, Minimum Required Number of Electric Vehicle Ready Parking Spaces, of the draft Zoning By-law Amendment included as part of the Parking Regulations Study.

BA Group Response:
Noted. Electric vehicle (EV) ready parking spaces have been provided in accordance with the requirements outlined in Zoning By-law 0225-2007 (amended by Zoning By-law 0118-2022). Refer to **Section 7.2.2** that speaks upon the proposed EV ready parking spaces with relation to the proposed parking supply. The Site's EV ready parking supply exceeds the minimum requirement.

Comment 50:
Staff commend the Applicant for considering the provision of TDM measures on site; however, staff request further details. Staff request the Applicant provide clarification, specific details and commitments as to how these measures will be provided and implemented on site.

BA Group Response:
Noted. TDM Measures will be used to support mobility on Site through various travel modes and reduce auto dependency and the necessity for parking. These include: good pedestrian connections, bicycle parking, bicycle repair stations, a transit screen, transit passes, travel brochure, lowered parking rates, access to ride-sharing programs, and smart lockers. Further details regarding the TDM strategy are included in **Section 6.0** of the report.

4.1.3 Planner – Development Design

Comment 118:
Proximity to entrance underground ramp and garbage collection area is such that conflicts could arise with vehicles exiting the underground while waste collection is occurring. The applicant is encourage to revisit the proximity of these features to alleviate that conflict.

BA Group Response:
A warning system is proposed to alert motorists exiting the parking garage of loading activity as discussed in **Section 9.2**. Please refer to the pavement marking and signage plan in **Appendix B** for more information.

Comment 126:
MTSA: The Streetsville GO Station is a Planned Major Transit Station Area (MTSA) and the boundaries have not yet been delineated. Further study is required to determine the boundaries of the MTSA. Regardless of the ultimate delineation these lands are outside of the 800m radius of the Streetsville GO Station.

BA Group Response:
Noted. The Region of Peel's Official Plan (2022) indicates that an 800-metre radius around stations is used as the initial area to be assessed when MTSAs are identified and to guide delineation. The Site is located within a 2-kilometre radius of the Streetsville GO Station, and thus falls outside the typical 800-metre radius of a MTSA.

4.1.4 Traffic

Comment 92 A - General:
(i) The report must be stamped, dated, and signed by a Professional Engineer Licensed in the Province of Ontario (P. Eng).

(ii) All traffic volume figures are to be revised to illustrate northbound left volumes at the intersection of Britannia Rd & Earl St.

BA Group Response:
(i) The revised report has been stamped by a Professional Engineer.

(ii) All traffic volume figures have been revised to illustrate northbound left-turn volumes at the intersection of Britannia Road/ Earl Street.

Comment 92 B - Site Access:
(i) As per the Terms of Reference, the report is required to review proposed site access and ensure that it conforms to all TAC standards (e.g. corner clearances, clear throat lengths, vehicular & pedestrian sight line distances, proximity/alignment to other driveways/roads, ensuring appropriate driveway/intersection offsets to avoid interlocking left-turns, etc.). Provide confirmation within the report on whether the site access will operate safely.

BA Group Response:
The site access was reviewed against design parameters provided in the Geometric Design Guide for Canadian roads produced by TAC. Corner clearances, sight lines, and alignment with opposing driveways are

appropriate. The minimum clear throat length to the pick-up/ drop-off facility is below the TAC guidelines values. We believe this is reasonable in this context given the low volumes associated with the pick-up / drop-off area and its queuing capacity. This is further discussed in **Section 10.0**.

Comment 92 C – Existing Conditions:
(i) Area Road Network Some of the information within Table 1 is incorrect. For example, Queen Street North and Queen Street South should be noted as Major Collector and Major Collector (Scenic Route) roads, respectively. Matlock Avenue and Swanhurst Boulevard should be noted as Local roads. Queen Street North becomes Mississauga Road north of the OQ railway tracks and becomes Queen Street South, south of Britannia Road. Queen Street South becomes Mississauga Road at the CP railway tracks. The posted speed limit for Matlock Avenue and Swanhurst Boulevard should be noted as 40km/h. Please review all information contained in Table 1 and revise accordingly. Likewise, please update Figure 4 such that the road classifications are consistent with the Official Plan.

BA Group Response:
Noted. **Table 2** has been revised in accordance with Comment 92 C. **Figure 4** has also been updated to match **Table 2**. Its noteworthy to mention that in the City of Mississauga's Official Plan's Schedule 5: Long-Term Road Network Plan, Matlock Avenue and Swanhurst Boulevard are illustrated as minor collector roads.

Comment 92 D – Future Background Conditions:
(i) Background Developments 6, 10 and 12 Queen Street South, 16 James Street, 2 William Street and 0 William Street (OZ/OPA 21 14) must be considered as a background development.

BA Group Response:
Noted. the background developments located at 6, 10 and 12 Queen Street South, 16 James Street, 2 William Street and 0 William Street (OZ/OPA 21 14) have been considered as part of the background development traffic in the revised traffic analysis. Refer to **Section 11.2.2** in the report for more details.

Comment 92 E – Site Traffic:
(i) Trip Distribution The report notes that existing traffic survey patterns were considered. However, its unclear why such a small percentage of trips are assigned to/from Britannia Road, particularly for the retail traffic component.

(ii) Existing site traffic - Existing site trips should be removed from the background traffic volumes, rather than the proposed development trip generation / site traffic volumes. Please revise the report accordingly.

(iii) Retail Trip Generation Please justify the appropriateness of using LUC 822 to calculate the projected retail component of the site traffic.

(iv) Modal Split %s Did the TTS mode split query only include Apartment dwelling types? If not, why?

(v) Modal Split Reduction Why was a non-auto modal split reduction not applied to the vehicular trip generation?

BA Group Response:
(i) The retail trip distribution has been revised as part of the updated analysis and is based on afternoon existing traffic patterns as there are more retail-based trips occurring than in the morning peak hour.

(ii) The future background scenario represents the 'do nothing' case for the Site. Existing site trips, where were captured in traffic counts prepared on behalf of BA Group, are removed for the future total scenario only.
(iii) Land use code 822 (Strip Retail Plaza <40k sqft) was chosen as the land use that could most closely represent the retail provided on Site. Given the gross floor area of the on-Site retail is well below 40,000 sqft, other land use codes such as 820 (Shopping Center) and 821 (Strip Retail >40k sqft) are not appropriate. Other land use codes, including 814 (Variety Store) and 851 (Convenience Store) were considered for this, however the distribution of rates (R^2 value) was very low or not available – indicating insufficient trends in the data to provide an accurate projection. Land use code 231 (Mid-Rise Residential with Ground-Floor Commercial) was also considered, however, no data was available for vehicular trips (walk + bike + transit only). Therefore, land use code 822 was considered the closest match for this site and is generally considered to be conservative.

(iv) The modal split TTS query included all home-based trips and was not apartment specific. This was due to only 20 data points being available for apartment specific trips in this area. Generally, 100 datapoints is considered a good minimum to obtain accurate results.

(v) The revised traffic analysis includes updated trip generation in accordance with the method outlined in the ITE Trip Generation Handbook (3rd Edition). Accordingly, a mode split reduction was applied to the baseline selected ITE trip generation calculations, to adjust the baseline vehicle trip generation for the local area. Updated trip generation projections are included in **Section 11.3.3**.

Comment 92 F – TDM:
(i) Section 4 includes a list of Potential and Recommended Site TDM Measures. However, the report needs to specify which TDM measures are proposed as part of the development. The TDM measures need to be specific and included in the Conclusion/Recommendation Section. All TDM measures shall be the responsibility of the Owner. (Refer to Traffic Comment #93 for additional TIS comments)

BA Group Response:
Noted. **Section 6.0** of the report discusses the recommended TDM measures proposed for the Site, and implementation details per measure. All proposed TDM measures shall be the responsibility of the Developer / Applicant.

Comment 93 G – Truck Access & Circulation:
(i) As per the Terms of Reference, it must be ensured that truck traffic (garbage/loading) can enter and exit the site in a forward motion and access to the garbage and loading areas are functional. Truck turning movements are to be illustrated with one continuous path with AutoTURN and right-turns in and out of the proposed site access shall be analyzed.

(ii) The site must be able to accommodate the largest design vehicles which will be accessing the property. It appears that there are multiple instances of the design vehicles mounting/striking curbs. Please revise the site design accordingly.

(iii) An evaluation of the parking areas and ramps using a PTAC design vehicle should also be included.

(iv) As revisions to the site design/layout is required, please update the turning movement diagrams in the TIS accordingly.

(v) Please replace the TAC SU analysis with a TAC MSU design vehicle.

(vi) Include a section in the report which details the results of the truck access & circulation analysis.

BA Group Response:
(i) Noted. BA Group has prepared vehicle manoeuvring diagrams (VMDs) that confirm the truck traffic can enter and exit the site in a forward motion, and that the access to the loading facilities are functional. Please refer to **Section 9.0**. Associated vehicle manoeuvring diagrams attached in **Appendix C.**

(ii) The largest design vehicle accessing the property is a TAC Heavy Single Unit Truck (HSU). Please refer to the vehicle manoeuvring diagrams attached in **Appendix C** for more information.

(iii) PTAC design vehicle have been tested travelling through the pick-up/drop-off loop and accessing the parking ramp. Please refer to the vehicle manoeuvring diagrams attached in **Appendix C** for more information.

(iv) Noted.

(v) Noted. The TAC SU vehicle was replaced with a TAC MSU. Please refer to the vehicle manoeuvring diagrams attached in **Appendix C** for more information.

(vi) The design vehicles tested within the site are further discussed in **Section 9.0**.

Comment 93 H – Additional Comments:
(i) Community Impacts The TIS shall include a section in the report to address Community Impacts. This section shall include summary statements outlining the resulting traffic increases to the critical streets, movements and intersections. Comments or concerns from the community through future public meetings and engagements that are related to traffic shall also be addressed in this section.

(ii) Please submit a revised TIS report addressing all of the TIS comments in PDF format.

(iii) Due to the number and significance of the comments, further comments may be provided in the subsequent submission(s).

BA Group Response:
(i) A community impact review has been included in **Section 13.0**. As the Site driveway is onto Queen Street North, there are anticipated to be minimal impacts to local streets. It is further noted that the existing Site contains a retail plaza which generates traffic.

(ii) Noted.

(iii)Noted.

Comment 94 – Site Access:
(a) The proposed access shall be relocated to align centreline to centreline with the opposing access at 40 Queen Street North. The opposing access shall be illustrated on the plans to demonstrate proper alignment.

(b) The Owner shall ensure the proposed access provides sufficient sight lines such that views are not obstructed at the intersection (street trees, retaining walls, fences, building structures, etc.). This shall be analysed within the revised TIS.

(c) The Owner shall provide for a sufficient clear throat length within the driveway access to ensure the roadway and internal driveway can operate efficiently. The TAC Manual indicates a minimum clear throat length requirement of 25m for this scenario, whereas a 20m clear throat length is proposed. No intersecting drive aisles or parking spaces are permitted within the clear throat length. At a minimum, please remove the parking space located closest to the site access.

(d) The site access design shall be revised to ensure that the curb radius does not extend beyond the projection of the property line. Curb radii dimensions must conform to OPSD 350.010 standards.

(e) The site access width shall be revised to be a minimum of 7.0m.

BA Group Response:
(a) The proposed site access has been relocated along the north property line and aligns approximately centreline to centreline with the opposing access at 40 Queen Street North.

(b) Compliance with sight lines is further discussed in **Section 10.0**.

(c) Compliance with the clear throat length is further discussed in **Section 10.0**.

(d) The site access has been relocated along the north property line so that it aligns approximately centreline to centreline with the opposing access at 40 Queen Street N. The driveway has been designed to conform with the specifications noted in OPSD 350.010. Please refer to the reduced scale architectural plans in **Appendix A** for more information.

(e) A minimum 7.0m width is proposed for the site access. Please refer to the reduced scale architectural plans in **Appendix A** for more information.

Comment 95 – Internal Site Circulation:
(a) Revised turning movement diagrams will be required within the updated TIS to depict the internal site circulation.

(b) Additional provisions to aid in the safety and operation of these features may be required.

(c) Detailed turning movements are to be provided for ingress and egress through the access point for the site.

(d) Confirmation from Fire and Emergency Services that the internal road is acceptable from an emergency response perspective.

(e) Confirmation from the Region of Peel that the internal road is acceptable from a waste collection perspective.

BA Group Response:
(a) Revised vehicle manoeuvring diagrams are attached in **Appendix C**.

(b) A warning system that alerts motorists exiting the parking garage to watch for large trucks is provided. Please refer to the pavement marking and signage plan in **Appendix B** for more information.

(c) Vehicle manoeuvring diagrams entering and exiting the site have been provided. Please refer to the vehicle manoeuvring diagrams attached in **Appendix C** for more information.

(d) Noted.

(e) Noted.

Comment 98-Cycling Facilities:
The Owner will be required to provide accessible and secure short term (outdoor) and long term (indoor) bicycle storage facilities on site. The Site Plan shall be revised to identify the cycling facility locations and to specify the facility detail(s), including quantity of spaces proposed for each. The following rates are to be used:(a) Apartment Mississauga - A minimum of 0.60 long term spaces and 0.05 (6 spaces min.) short term spaces per residential unit. (b) Retail (Per 100 sq.m. GFA of retail area) Mississauga A minimum of 0.10 long term spaces and 0.20 short term spaces.

BA Group Response:
Noted. A total of 386 bicycle parking spaces are proposed to serve the development, including 326 resident long-term spaces, 48 resident short-term spaces, four (4) retail long-term spaces and eight (8) short-term spaces. The proposed bicycle parking supply meets and exceeds the requirements outlined by Zoning By-law 0225-2007 (amended by Zoning By-law 0118-2022). Refer to **Section 8.2** of the report for more details about the proposed bicycle parking supply.

4.2 REGION OF PEEL

Region of Peel staff provided comments in a consolidated comment matrix dated May 12, 2022 in relation to the proposed ZBA / OPA application. ZBA/OPA comments are addressed in the following sections, and responses have been organized by the comment number identified in the matrix, with a summary discussion provided in each case which refers, as appropriate, to technical materials provided within this updated report.

Comment 63:
For the Residential Units - The Region of Peel will provide front-end collection of garbage and recyclable materials subject to Sections 2.0, 4.0, and 5.0 of the WCDSM - Waste Collection Design Standards Manual and the following conditions being met and labeled on the Waste Management Plan Prior to OZ approval: Waste Collection Vehicle Access and Egress Route 1.The turning radius from the centre line must be a minimum of 13 metres and must be shown and labelled on all turns on the revised submission. This includes the turning radii to the entrance and exit of the site, and into and out of the Collection Point. Collection Point Requirements2.The Collection Point should not require the jockeying of front-end bins (i.e. manually positioning one front-end bin at a time for the waste collection vehicle to pick up) by property management staff. Please see Appendix 4 of the WCDSM Waste Collection Design Standards Manual for suggested positioning of bins.3.Bins must be shown staged for collection, only the maximum number of front-end bins to be collected at a time (either garbage or recycling) will need to be shown in the collection area. Please refer to WCDSM Appendix 4 Indoor Waste Collection Point Specifications and recalculate the required area for staging with the specified bin arrangement. For 3 cubic yard front-end bin, the minimum width required is 3 metres for every front-end bin present, with a minimum depth of 2 metres. For 4 cubic yard front-end bins, a minimum depth of 3 metres is required. Indoor Storage Requirements4. Please show and label the Bin type (garbage/recycling) and size in the indoor waste storage room on Waste management plan drawing. The bin calculation must be shown and labelled on subsequent submissions. Please refer to WCDSM Appendix 7 Waste bin calculation or refer to Table 1. Maximum Number of Dwelling Units per Front-End Bin for Garbage by Bin Size and Table 2. Maximum Number of Dwelling Units per Front-End Bin for Recyclable Materials by Bin Size in the Peel Region Waste Collection Design Standards Manual.

BA Group Response:
Details regarding the waste collection areas are provided in the architectural plans. Supporting truck manoeuvring diagrams are provided in **Appendix C**.

Comment 65:
The site design is on its way to contributing to a healthy built form. For further opportunities to enhance the site, we recommend the following for consideration on the future site plan:

- *A well designed streetscape improves the safety, the comfort and the convenience of travelling by foot or bike and makes the public space more inviting. We support the design of the entrance's points from the proposed buildings to face the streetscape. A recommendation within our health assessment suggests that this built form design will promote walkability for pedestrians within the neighbourhood. Similarly, the locations and design of sidewalks and pathways should be strategically located to connect to community amenities and surrounding sidewalks.*
- *We recommend the inclusion of secure long and short-term bicycle parking on site for residents and visitors.*
- *Please consider reduced parking in favour of car share and carpool spots.*

BA Group Response:
Noted. The proposed development contains a well-designed streetscape along Queen Street North and provides a pedestrian pathway south of the building that connects to Queen Street North for cyclists to access the bicycle storage room conveniently located at-grade and pedestrians can access the building's interior corridor. This pathway will be well-lit for cyclists and pedestrians to promote safety and visibility. The retail frontage contains entry points from Queen Street North. The residential lobby is located in front to the PUDO area and contains a connection to the existing sidewalk along the Site's frontages.

Bicycle parking including long-term and short-term spaces that meets and exceeds the bicycle parking requirements outlined in the Zoning By-law is also being proposed as part of this updated submission. Refer to **Section 8.2** that speaks upon the proposed bicycle parking for the Site.

As part of this proposed development programme, a reduced parking supply from the Zoning By-law 0225-2007 is being proposed, which is supported by the TDM plan in place and existing area transportation context.

Comment 66:
The Sustainable Transportation Strategy recognizes and identifies Peels role in increasing the proportion of trips made by walking, cycling, transit, carpooling Please refer to the Regions Healthy Development Assessment and the City of Mississauga Bicycle Parking Zoning By-Law for recommended short term and long-term bike parking for retail and residential purposes Provide sidewalk and cycling route connections (curbs are cut) through the property and suggest confirming lighting conditions meet current standards for pedestrian/cycling ways and walkways to make walkers/cyclists visible to vehicle users and provides a safer environment. Suggest the installation of EV charging stations for micro-mobility devices (e-scooter, e-bike, e-car) in public spaces and designate micro-mobility parking area so devices do not impede the pedestrian clearway.

BA Group Response:
Noted. A strong, robust TDM plan is in place to support the proposed development, which includes the provision of long-term and short-term bicycle parking for both residential and retail uses, safe pedestrian connections, and more. Refer to **Section 7.2.2**of this Report for further details outlined in the proposed TDM plan.

In addition, EV parking has been provided to meet the EV ready parking standards outlined in the by-law. The location of the EV ready parking spaces are annotated in the underground parking plans in the architectural plans, which are attached in **Appendix A** for reference.

5.0 TRANSPORTATION CONTEXT

The existing area street network, transit and cycling context, and planned cycling context are provided in the following sections.

5.1 AREA ROAD NETWORK

5.1.1 Existing Area Road Network

A description of the existing roads within the local area road network is provided in **Table 2**.

Figure 4 illustrates the existing road network, and **Figure 5** shows the existing lane configuration and traffic control.

TABLE 2 AREA ROAD NETWORK

Street Name		Road Cross Section	Parking Regulations	Posted Speed	Description
Major Collector	Queen Street North	5 lanes (including the centre two-way left turn lanes)	No parking at any time.	60 km/h	Queen Street North is a north-south major collector road which runs from the CP railway tracks in the north to Britannia Road in the south. Queen Street North becomes Mississauga Road in the north at the CP railway tracks.
Major Collector (Scenic Route)	Queen Street South	2 lanes (with the addition of turn lanes)	No parking at any time.	40 km/h	Queen Street South is a north-south major collector road that extends from Queen Street North to the north and Reid Drive to the south. Queen Street South becomes Mississauga Road in the south at the CP railway tracks. Generally, Queen Street South is a 2-lane road. At the Britannia Road West / Queen Street South and North intersection, the road cross section for Queen Street South is a five-lane road with the addition of a left turn lane, and a shared through and right turn lane.
Local	Matlock Avenue	2 lanes	On-street parking is permitted.	40 km/h	Matlock Avenue is an east-west local road that runs from Queen Street north to the west and Swanhurst Boulevard to the east.
	Swanhurst Blvd	2 lanes	On-street parking is permitted.	40 km/h	Swanhurst Boulevard is a north-south local road that runs from Ellesboro Drive to the south and Suburban Drive to the north.
Regional Arterial	Britannia Road West	4 lanes (with the addition of turn lanes)	No parking at any time.	50 km/h	Britannia Road West is an east-west regional arterial road that runs from Milburough Line to the west and Kennedy Road to the east. Generally, Britannia Road West is a 4-lane road. At the Britannia Road West / Queen Street South and North intersection, the road cross section for Britannia Road West is a six-lane road with the addition of a left turn lane, and a right turn lane.

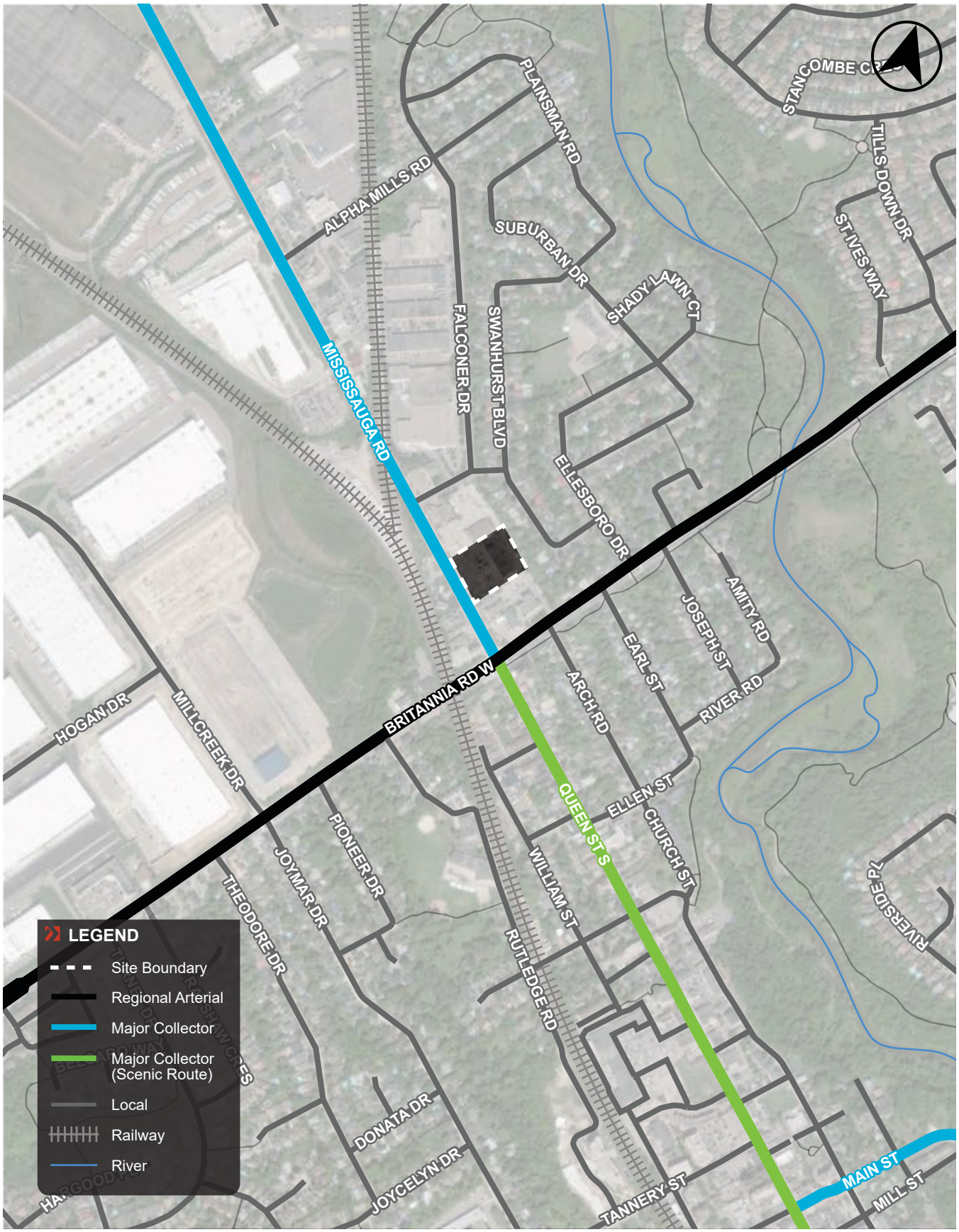

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FIGURE 4 EXISTING AREA ROAD NETWORK

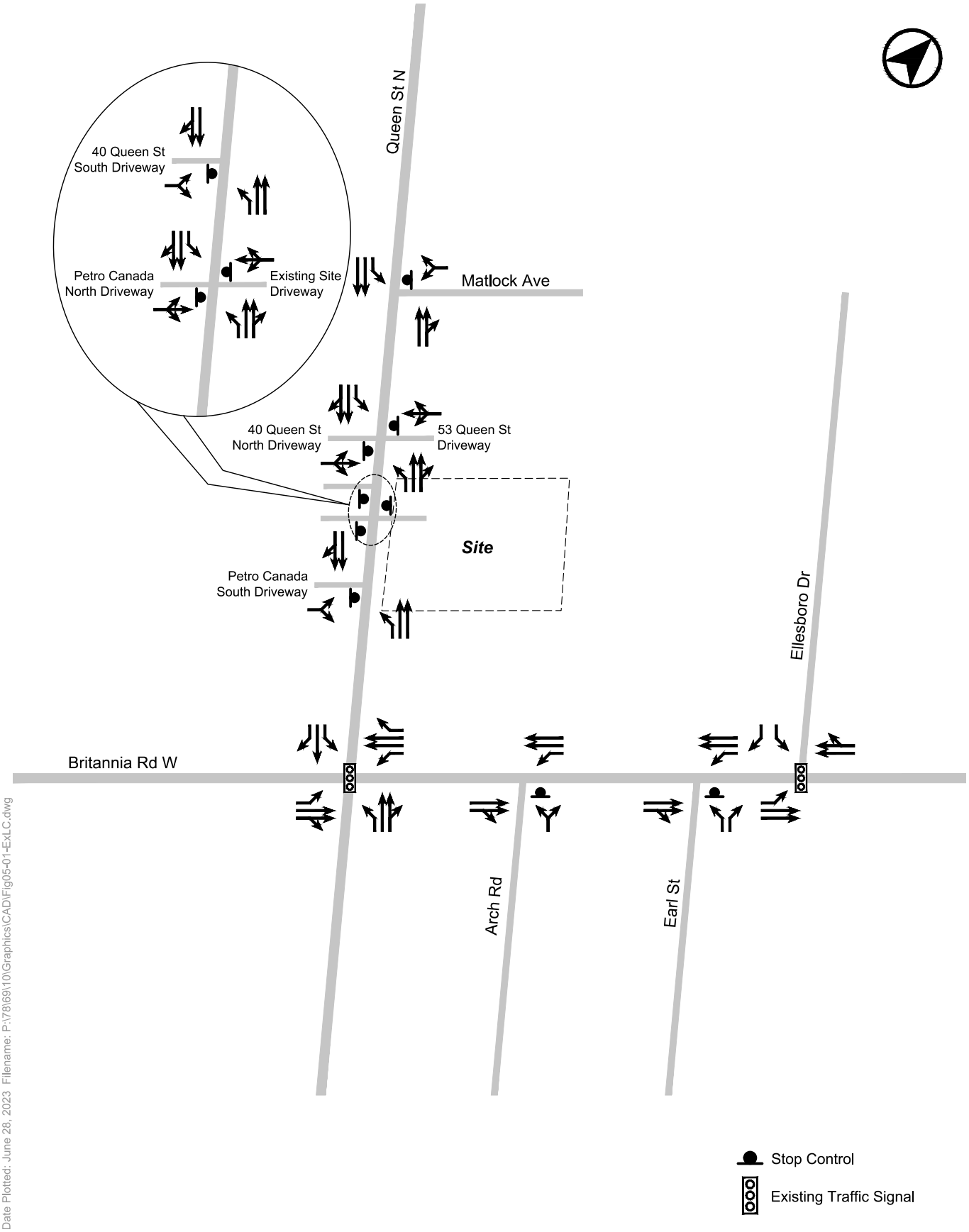

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FIGURE 5 EXISTING LANE CONFIGURATION AND TRAFFIC CONTROL

5.2 AREA TRANSIT NETWORK

5.2.1 Existing Transit Network

The City of Mississauga municipal transit provider is MiWay. The Site is currently well served by various MiWay bus routes. In addition, the Streetsville GO station is located approximately 2 kilometres from the Site and can be easily reached within approximately 14 minutes by taking the 44 bus. The Site is located approximately:

- 180 metres from Queen Street North at Matlock Avenue bus stop for the 43 and 44 bus route;
- 210 metres from Britannia Road at Queen Street North bus stop for the 10, 39 and 87 bus route; and
- 240 metres from Queen Street South at Britannia Road bus stop for the 306 bus route.

A summary of the transit services operating in the area is provided in **Table 3**. The area transit services are illustrated in **Figure 6.**

TABLE 3 AREA TRANSIT NETWORK

Route	Nearby Stops	Headways	Route Description
Mi-Way			
43	Queen Street North at Matlock Avenue (~180 m / 2 minute walking distance)	Approximately 45 minutes during all periods	The 43 bus route begins from Commerce Boulevard at Renforth Station and ends in Meadowvale Town Centre Drop Off. The bus route operates from Monday – Friday and does not operates on weekends. For the northbound route, the operational time periods are from 5:15 AM – 10:12 AM and for the southbound route the operational routes are from 2:42 PM – 7:34 PM.
44	Queen Street North at Matlock Avenue (~180 m / 2 minute walking distance)	Approximately 22 minutes during all periods	The 44 bus route begins from University of Toronto at Mississauga Campus and ends in Meadowvale Town Centre Drop Off. Operates every day of the week.
10	Britannia Road at Queen Street North (~210 m / 3 minute walking distance)	Peak Hours: 18 minutes Off-Peak: 25 minutes	The 10 bus route begins from City Centre Transit Terminal Platform J ending in Meadowvale Town Centre Drop Off. Operates every day of the week.
39	Britannia Road at Queen Street North (~210 m / 3 minute walking distance)	Peak Hours: 23-25 minutes Off Peak: 25-30 minutes	The 39 bus route begins from Meadowvale Town Centre Bus Terminal Platform E and F, and ends in Renforth Station East Platform 7. Operates every day of the week.
87	Britannia Road at Queen Street North (~210 m / 3 minute walking distance)	Approximately 42 minutes during all periods	The 87 bus route begins from Skymark Hub and ends in Meadowvale Town Centre Drop Off. Operates Monday – Friday from 3:46 PM – 8:01 PM and does not operates on weekends.
306	Queen Street South at Britannia Road (~240 m / 3 minute walking distance)	No headways available as there is only one bus per day.	The 306 bus route begins from Winterton Way at Mavis Road and ends at Joymar Drive at Tannery Street. Operates Monday – Friday only at 7:27 am.
GO Transit			
21 Route / Milton Line	Streetsville GO Station (~2 km / 27 minute walking distance)	Peak Hours : 30 minutes Off-Peak: 1 hour	The 21 GO bus Route begins at Milton GO and ends at Union Station in Toronto and operates during off-peak periods. During peak periods, the Milton train runs a similar route with a stop at Streetsville GO station. The train operates on weekdays and the bus route operates both on weekdays and weekends.

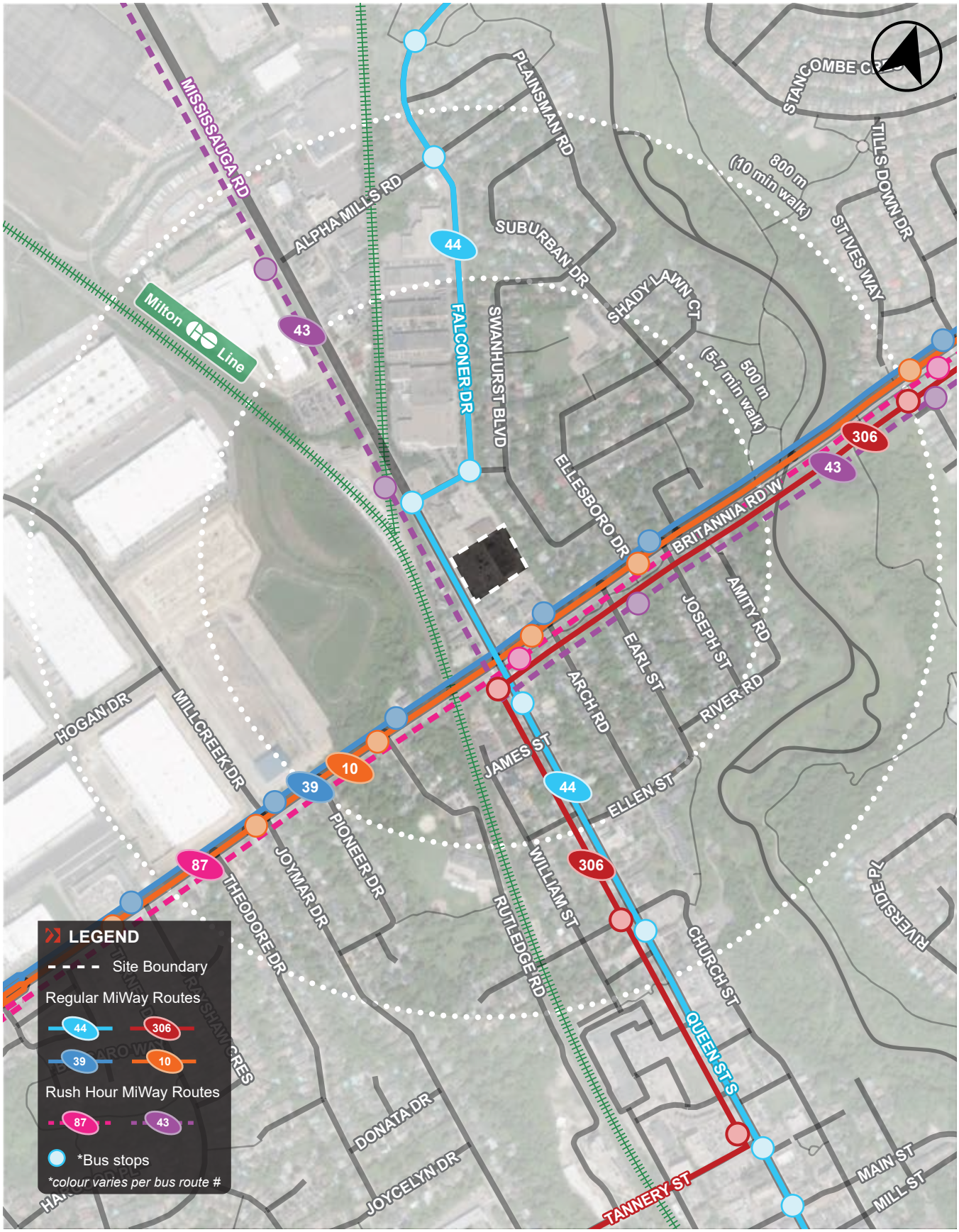

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FIGURE 6 EXISTING TRANSIT CONTEXT

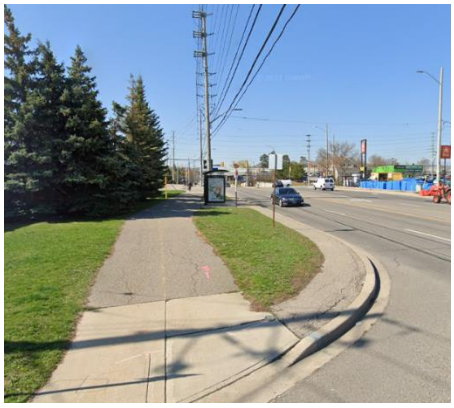
5.3 AREA CYCLING NETWORK

5.3.1 Existing Cycling Infrastructure

The Site is well-connected from a cycling perspective as multiple cycling routes exist within an 800 metre radius of the Site. Cycling facilities include bike lanes, signed routes and multi-use trails. **Table 4** lists the characteristics of cycling routes within the local area of the proposed development.

TABLE 4 AREA CYCLING NETWORK

Route	Cycling Infrastructure	Description	Image[1]
North-South Bicycle Connections			
Queen Street South From Queen Street South / Britiannia Road West to Plaza's Driveway / Queen Street South	Buffered Bike Lane with a painted buffer to separate cyclists and vehicular traffic	A bike lane is provided along both sides of Queen Street South. Bike lanes travelling southbound and northbound are extended from Britannia Road West to a plaza's driveway right before the Tannery Street / Queen Street South intersection.	 Bike lane along Queen Street South facing South
Joymar Drive From Britannia Road West / Joymar Drive to Joymar Drive / Thomas Street	Signed Route	The signed route is provided along both sides of Joymar Drive from Britannia Road West / Joymar Drive to Joymar Drive / Thomas Street.	 Signed route along Joymar Drive facing South
Riverview Park Trail From Britannia Road West to Pine Cliff Drive	Multi-use Trail	This multi-use trail provided in Riverview Park connects from Britannia Road West to Pine Cliff Drive. Within this trail, there are bicycle friendly roads that connect the trail to Shady Lawn Court and Sir Monty's Drive.	 Multi-use Trail's entrance from Britannia Road West

Route	Cycling Infrastructure	Description	Image[1]
East - West Bicycle Connections			
Britannia Road West From Britannia Road West / Queen Street South to Britannia Road West / Hurontario Street	Multi-use Trail	A multi-use trail is provided along the south side of Britannia Road West and extends to Hurontario Street. The multi-use trail is shared with pedestrians.	 Multi-use trail along Britannia Road West facing East

Notes:
1. Images obtained from Google Maps Street View, 2021.

5.3.2 Planned Cycling Infrastructure

In 2018, the City of Mississauga has approved the update to the Cycling Master Plan from 2010. This updated Master Plan provides a recommended bicycle route network of shared roadways (signed bicycle routes and sharrows), conventional bicycle lanes, boulevard multi-use trails, and off-road trails. In addition, this updated plan recommends policies and programs that will support cycling by all types of cyclists. This Cycling Master Plan is also aligned with the approved Vision Zero plan in which aids in designing a comfortable cycling network that is suitable for cyclists of all ages.

Within an 800 metre radius, the existing cycling network is further connected through the proposed cycling infrastructure as recommended in the City of Mississauga Cycling Master Plan (2018). The existing multi-use trail along Britannia Road West which begins from Britannia Road West / Queen Street South is planned to be extended to the existing multi-use Trail along Britannia Road West beginning from Britannia Road West / Erin Mills Pkwy. Cycle tracks are proposed to be extended north from Queen Street South / Britannia Road West along Queen Street North and Mississauga Road. A new bicycle lane is proposed along Falconer Drive connecting from the new cycle track along Queen Street North. Another cycle track is proposed along Mill Creek Drive connecting from the signed bike route along Joymar Dr. The proposed cycling infrastructure mentioned above will improve connectivity for cyclists in the area.

The existing and planned area cycling network is shown in **Figure 7**.

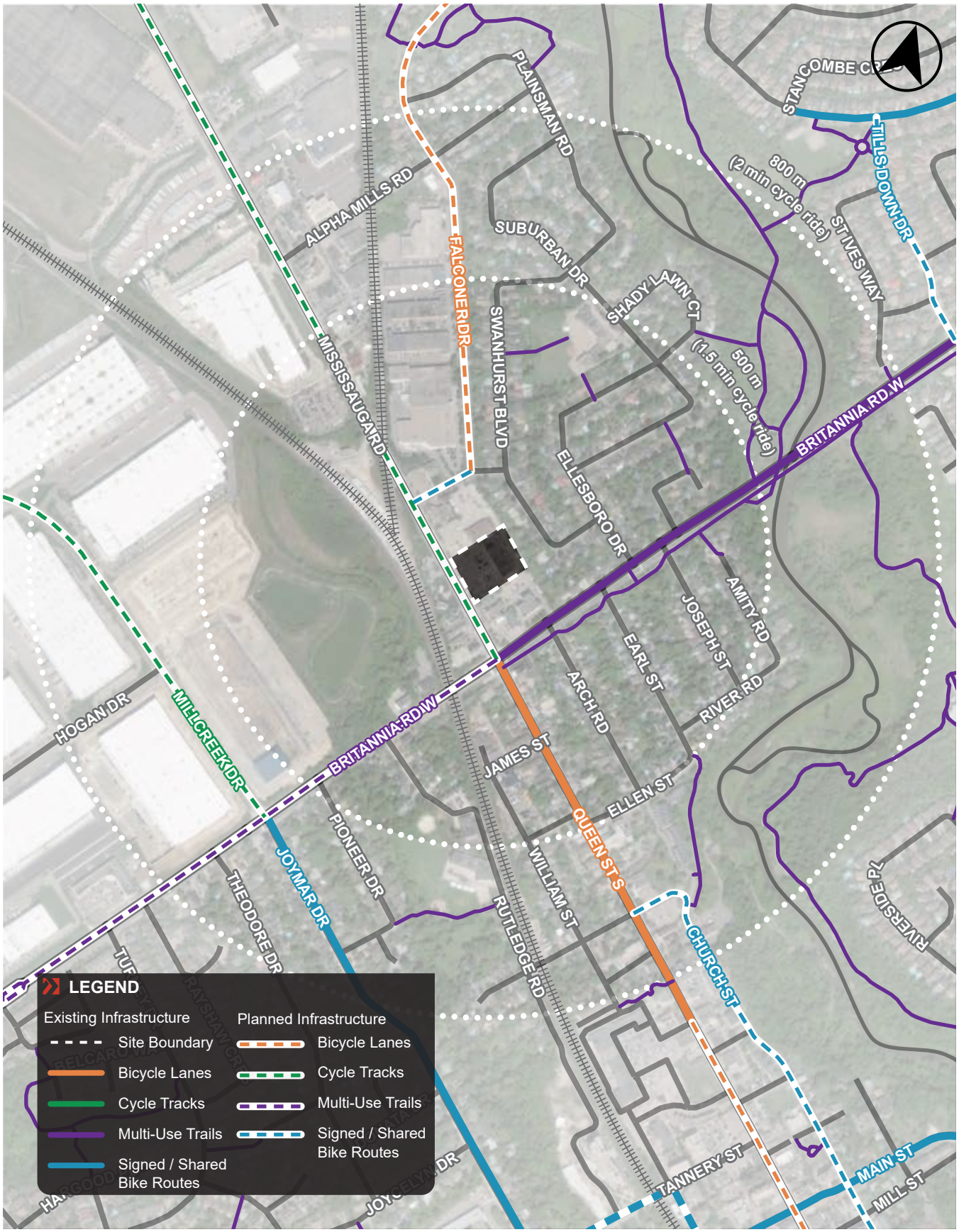


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FIGURE 7 EXISTING AND PROPOSED CYCLING CONTEXT

5.4 AREA PEDESTRIAN CONSIDERATIONS

Surrounding Area

The Site is surrounded by various commercial stores, services, restaurants, schools and parks. The Site is located along Queen Street North which offers a strip of various pedestrian destinations such as commercial stores, restaurants and services. In addition, the Site is surrounded by residential homes to the northeast and southeast. The following is a list of the pedestrian destinations located within 500 metres of the Site:

- Streetsville Square (Prestige Pools, Big Slick Bar & Billards, AAA Teen Drivers, Carolyn's model & talent agency, Matthew Oberc Accounting and Taxation, UK Insurance, Hot Hounds Outfitters & Spa, RR Supermarket, Randhawa Law Office and Asian & Indian Groceries)
- Streetsville Home Hardware;
- Several Restaurants (Latin Super Chicken, Chinese Restaurant Wings, Shawarma Hut, Traditional Fish & Chips, Bobby's Hideaway, and Dairy Queen Grill & Chill);
- Portuguese Cultural Centre of Mississauga;
- Streetsville Denture Clinic;
- The Beer Store;
- The Church in Mississauga;
- Schools (Ray Underhill Public School and Dolphin Senior Public School) and
- Parks (Riverview Park and Frank Dowling Park).

Pedestrian Crossings

Adjacent to the Site, there is a signalized intersection at Queen Street North / Britannia Road West with marked pedestrian crossings adequately facilitating pedestrian movement in a safe manner. Within 500 metres of the Site, there are several signalized intersections with pedestrian movement at all four approaches. Other intersections surrounding the Site are unsignalized with crossings in most situations provided in the north-south direction; such intersections include Matlock Avenue / Queen Street North.

Sidewalks

Most roads within the Site vicinity have sidewalks along both sides of the road, except along the plaza's driveway. The sidewalks on Queen Street North within the immediate Site vicinity have a buffer of vegetation between traffic and the sidewalk, providing a degree of safety for pedestrians.

The area pedestrian context is illustrated in **Figure 8**.

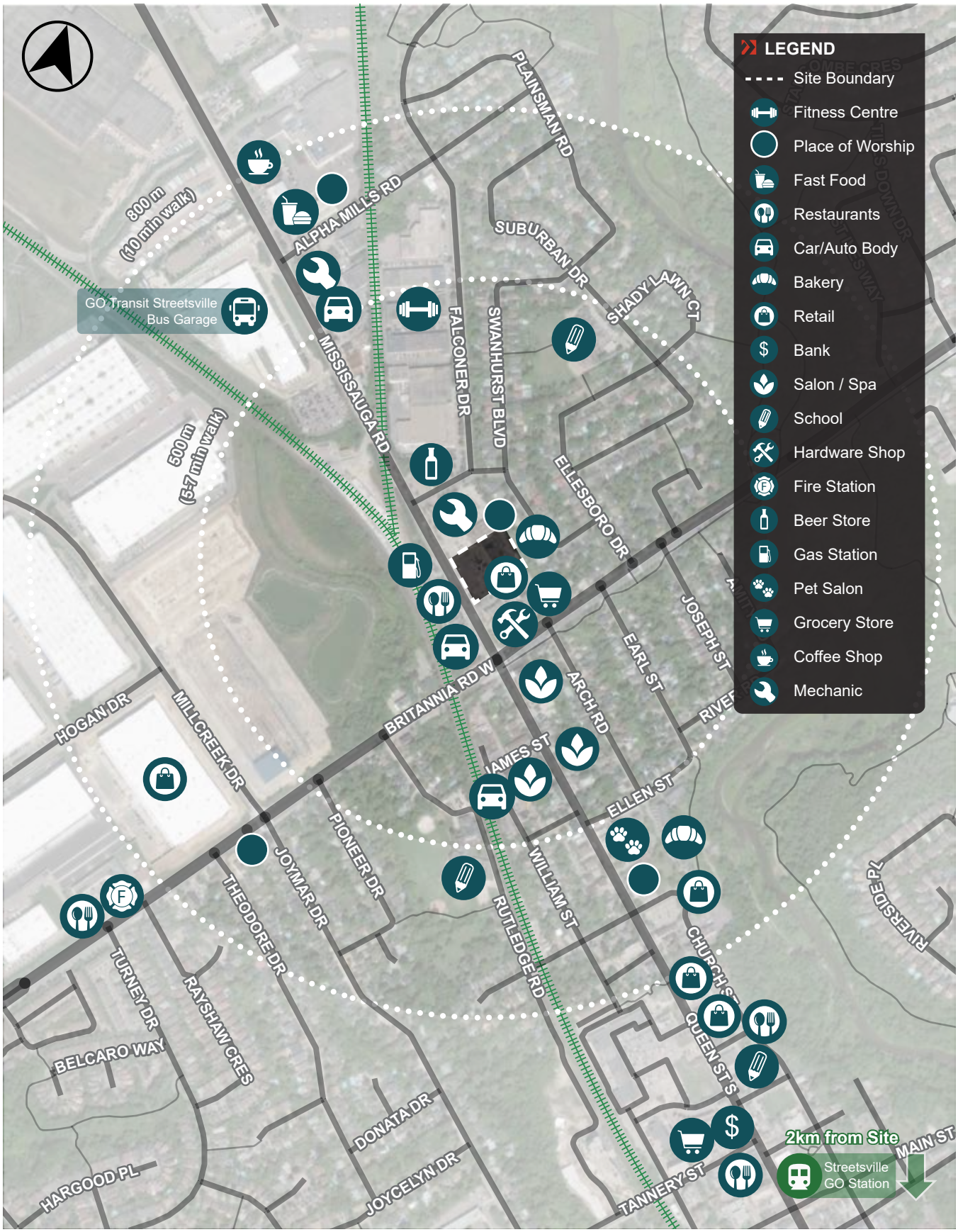

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FIGURE 8 AREA PEDESTRIAN DESTINATIONS

5.5 CAR SHARE AVAILABILITY

There are two primary car sharing companies operating in the City of Mississauga (Zip Car and Enterprise CarShare) which each offer their members access to vehicles. Both of these programs have acquired parking spaces for their vehicles either in private garages or public parking lots. Vehicles rented from either of these programs must be picked up and returned from the same parking space.

There are no Zipcar nor Enterprise vehicles available within a close walking distance to the Site. However, within 2 km of the Site, there is an Enterprise location with 19 vehicles available.

5.6 AREA TRAVEL BEHAVIOUR – MODE SHARE

To understand existing travel characteristics and patterns of the Site surrounding area, Transportation Tomorrow Survey data has been reviewed for the general Site area. The Transportation Tomorrow Survey (TTS) is a comprehensive travel survey that is conducted in the Greater Toronto and Hamilton Area (GTHA) once every five years. The data set used for analysis is based upon information from the 2016 survey year.

A review of the travel characteristics of residential trips being made to / from the area during weekday peak periods is provided in the following sections. Travel behaviour characteristics for resident (home-based) travel during peak periods are summarized in **Table 5**.

TABLE 5 AREA RESIDENTIAL MODE SPLIT (2016 TTS ZONES - 3715, 3717, 3718 AND 3836)

Mode	Morning Peak Period Outbound	Afternoon Peak Period Inbound
Auto Driver	64%	67%
Auto Passenger	17%	19%
Transit	13%	10%
Cycle	0%	0%
Walk	6%	4%

Notes:
1. Based on 2016 TTS results for morning (6:00 - 8:59) and afternoon (15:00 - 17:59) peak traffic periods for TTS 2006 GTA Zones 3715, 3717, 3718 and 3836.
2. Auto passenger trips (includes auto passengers, school bus passengers and taxi passengers).

The 2016 TTS survey confirms a substantial proportion of travel is undertaken by using an automobile during the weekday morning and afternoon peak periods with approximately 81% and 86% residential trips being undertaken by an automobile. The existing travel mode characteristics present an opportunity to shift travel patterns away from auto dependency towards active and sustainable modes of travel. This shift can be supported through a Travel Demand Strategy for the Site as discussed in **Section 6.0** as well as the continuing improvement of cycling and transit services and infrastructure in the area.

Detailed TTS queries for travel characteristics are attached in **Appendix D**.

6.0 TRANSPORTATION DEMAND MANAGEMENT

A central element of the transportation strategy for the proposed development will be the adoption of a sustainable transportation demand management (TDM) Plan for the project that will attempt to influence the way people travel to and from the site through a comprehensive suite of TDM strategies.

These measures will include the application of various Site design elements, alternative transportation offerings, property management, and operational policies, each of which have the goal of redistributing and reducing the travel demand of the project. Specifically, the primary goal is to reduce the overall reliance on single-occupant vehicles (SOV) while promoting the use of more active and sustainable modes of transportation.

Generally, this TDM Plan has three primary objectives:

1. Reduce car dependence and the need for everyday SOV travel;
2. Improve pedestrian / cycling convenience to encourage non-automobile modes of transportation; and
3. Promote low-carbon modes of transportation, such as car-sharing and transit.

The Site has the potential to set a sustainable precedent of urban development in Mississauga. The City of Mississauga's strategic plan – *Our Future Mississauga* – states the aspiration for the City to be one where people can travel without an automobile, where transit is promoted as a preferred, affordable, and accessible choice, and to provide all people with the choice to walk, cycle, or use transit because these options will be desirable and convenient. The TDM Plan aims to leverage the advantages imbedded within the design of the proposed development (i.e. it will be a compact, mixed-use development) to achieve its objectives.

6.1 TDM PLAN STRATEGIES AND INITIATIVES

The TDM Plan will serve as an initial guide for the design, development and implementation of the Site, as well as the ultimate operation of the facilities over time to maximize the travel demand sustainability of the project and allow the development to fully leverage its location relative to the growing range of employment, retail, recreation and residential uses in the vicinity of the Site. Strategies have been developed to support the use of non-auto modes of travel, and to encourage a change in travel behaviour that reduces automobile travel.

The proposed TDM strategies and its implementation are outlined in **Table 6**.

TABLE 6 RECOMMENDED SITE TDM MEASURES

TDM Measure	Overview	Impact	Implementation
Pedestrian and Cycling Related			
Pedestrian Connections	Provide public pedestrian sidewalks on all new public streets within the Project's boundaries. A pedestrian / cyclist pathway is provided south of the building to provide pedestrians with a safe access to the bicycle parking facilities on-site. The pathway will contain adequate lighting.	Improve pedestrian and cycling convenience to encourage non-automobile modes of transportation.	Integrated into the building.
Provision of Bicycle Parking	As outlined in **Section 8.2**, a total of 386 bicycle parking spaces, including 330 long-term bicycle parking spaces and 56 short-term bicycle parking spaces are proposed for the Site. The proposed bicycle parking supply meets and exceeds the applicable bicycle parking standards as per the amended Zoning By-law 0225-2007.	Improve pedestrian and cycling convenience to encourage non-automobile modes of transportation.	Integrated into the building.
Bicycle Repair Stations	Two bicycle repair/ maintenance stations will be provided on-site. This allows residents to change tires, inflate tires, adjust seat, etc.	Improve pedestrian and cycling convenience to encourage non-automobile modes of transportation.	Integrated into the building.
Transit Related			
Transit Screen	The implementation of a transit information screen which will be displayed in the building's residential lobby. It provides real-time information on transit schedules, walking and cycling routes amongst other items.	Promote car-sharing and transit.	To be purchased by the Developer and be placed strategically in the lobbies.
Provision of Transit Pass	Provide pre-loaded Presto Cards with a value of $50 to each first-time unit owner.	Promote car-sharing and transit.	To be purchased by the Developer and be distributed to the first-time owners at the time of occupancy.
Travel Information Brochures	Provide a travel information brochure to residents providing an overview of transportation (walk, cycle, car-share, transit, and car-pool opportunities) in the area.	Reduce car dependence and the need for everyday travel. Improve pedestrian and cycling convenience to encourage non-automobile modes of transportation. Promote car-sharing and transit.	To be prepared by the Developer and be distributed to the first-time owners at the time of occupancy.
Automobile Infrastructure			
Lower Parking Rates	A reduced parking rate on-site is proposed.	Reduce car dependence and the need for everyday travel.	Secured through rezoning process.

Ride-Sharing Program	Explore opportunities to offer ride-sharing programs such as Smart Commute on Site. Online services are freely available and can be promoted on the site to facilitate carpooling activity.	Reduce car dependence and the need for everyday travel. Promote car-sharing and transit.	Developer to enroll in a ride-sharing program and provide information to the owners at the time of occupancy.
Services			
Smart Lockers	Provide smart lockers to facilitate convenient deliveries such as groceries and personal packages.	Reduce car dependence and the need for everyday SOV travel.	Integrated into the building.

7.0 VEHICULAR PARKING

7.1 MINIMUM VEHICLE PARKING REQUIREMENTS

7.1.1 Zoning By-law 0225-2007 (Amended by Zoning By-law 0118-2022)

In accordance with the recommendations of the newly amended Zoning By-law 0225-2007 by Zoning By-law 0118-2022, the site is located within Precinct 4. As outlined in **Table 7** application of this Zoning By-law results a total requirement of 576 parking spaces, inclusive of 488 resident spaces and 88 non-resident spaces to be shared between resident visitors and retail visitors.

TABLE 7 ZONING BY-LAW 0225-2007 (AMENDED BY ZONING BY-LAW 0118-2022) MINIMUM PARKING REQUIREMENTS - PRECINCT 4

Use	Units / GFA	Zoning By-law 0117-2022 Minimum Rate	Minimum Requirement (spaces)
Resident Rates			
Resident – Condominium Apartment	444 units	1.1 spaces / unit	488
Resident Subtotal			**488**
Non-resident Rates			
Visitor – Condominium Apartment	444 units	0.2 spaces / unit	88
Retail Store	1,423 m^2 GFA	5 spaces / 100 m^2 GFA	71
Non-resident Subtotal (before sharing)			**159**
Non-resident Shared Parking Arrangement[3]			**88**
Non-resident Subtotal (after sharing)			**88**
SITE TOTAL (with sharing)			**576**

Notes:
1. Based on site statistics provided by A&Architects Inc dated June 19, 2023.
2. For the calculation of the required residential parking, the appropriate resident and / or visitor rate or ratio shall be calculated for each component and then rounded. Fractions of less than 0.5 shall be rounded down to the nearest whole number. Fractions equal to or greater than 0.5 shall be rounded up to the nearest whole number.
3. As per Zoning By-law 0118-2022, for the purpose of Article 3.1.2.1, a shared parking arrangement may be used for the calculation of required visitor/non-residential parking in accordance with the greater of 0.2 visitor spaces per unit or required retail parking rate of 5 spaces/100m^2 of GFA.

7.2 PROPOSED PARKING SUPPLY

It is proposed to provide slightly less parking than is required by the Zoning By-law 0118-2022 in accordance with the following parking supply standards:

- 311 parking spaces for the use of residents (0.70 spaces / unit)
- 22 parking spaces for the use of residential visitors (0.05 spaces / unit)
- 26 parking spaces to serve the retail component (1.80 spaces / 100 m^2 GFA)
- 6 tandem parking spaces

  Total: 359 parking spaces (not including tandem parking spaces)

The appropriateness of the proposed parking supply is discussed in **Section 7.3**.

A total parking supply of 359 parking spaces and six (6) tandem parking spaces are proposed for the Site. The total parking supply (including the 6 tandem parking spaces) is proposed to be located within the two-level underground parking garage. Access to the parking garage and the parking located at-grade is provided from the Site driveway off Queen Street North.

In addition to the total parking supply, a pick-up / drop-off loop is proposed which can accommodate approximately 3-4 vehicles. The PUDO area is provided at-grade adjacent to the residential lobby and the northern retail store of the Site.

Based on the foregoing, the proposed residential, residential visitor and retail parking supply is slightly lower than the requirements of the prevailing and applicable City of Mississauga Zoning By-law 0118-2022.

7.2.1 Accessible Parking

The City's Zoning By-law 0225-2007 requires that accessible spaces be provided for non-residential / visitor uses at a minimum rate of 4% for a supply within the range of 13-100 parking spaces.

Furthermore, the By-law states that for lots with an even number of total accessible parking spaces, an equal number of Type 'A' (non-residential uses) and Type 'B' (residential uses) spaces must be provided. The two types of spaces must adhere to the following dimensions:

- Type A space: 5.2 metres (length) x 3.4 metres (width)
- Type B space: 5.2 metres (length) x 2.4 metres (width)

Both types must include a 1.5-metre pedestrian aisle adjacent to the accessible space.

The minimum accessible parking requirements are summarized in **Table 8**.

TABLE 8 ZONING BY-LAW 0225-2007 ACCESSIBLE PARKING REQUIREMENTS

Non-residential Parking Supply[1]	Category	Minimum Rate	Minimum Requirement	Type Allocation
26 spaces	13-100 spaces	4% of total parking supply	2 spaces	1 Type A 1 Type B

Notes:
1. As per Section 3.1.3.1.3 of the Zoning By-Law 0225-2017, it's stated that "Where a shared parking arrangement is used for the calculation of required visitor/ non-residential parking, the required accessible parking space requirement will be calculated on either the visitor component or non-residential component". Therefore, the non-residential parking supply was based on the retail parking supply of 26 spaces.
2. As per Section 3.1.1.1.4 of Zoning By-law 0225-2017, it's stated that "for accessible parking spaces, all numeric fractions shall be rounded up to the nearest whole number".

Application of the Zoning By-law accessible parking space standards to the proposed non-residential parking supply would require a minimum of two (2) accessible parking spaces.

A total of six (6) accessible parking spaces are provided, including one (1) retail space and five (5) resident spaces, which meets and exceeds the minimum requirements. The proposed accessible parking supply complies with the Zoning By-law dimensional requirements. Furthermore, three (3) accessible parking spaces are proposed to be provided in the P1 level and the remaining three (3) accessible parking spaces are proposed to be provided in the P2 level of the underground parking facility.

Based on the above, the proposed accessible parking supply meets the requirements of Zoning By-law 0225-2007 requirements and will meet the practical needs of the Site.

7.2.2 Electric Vehicle (EV) Parking

City of Mississauga Zoning By-law 0225-2007 (amended by Zoning By-law 0118-2022) requires a minimum number of electric vehicle ready parking spaces for new condominiums. A summary of the minimum EV ready parking spaces requirement applied to the proposed parking supply is provided in **Table 9**.

TABLE 9 ZONING BY-LAW 0225-2007 (AMENDED BY ZONING BY-LAW 0118-2022) EV PARKING REQUIREMENTS

Type of Use	Proposed Parking Supply	Minimum EV Parking Requirement Rate	Minimum EV Parking Requirement Supply	Proposed EV Parking Supply
Condominium – resident parking	310 parking spaces	20% of the total required parking spaces	62 EV ready parking spaces	98 ready parking spaces
Condominium -- visitor parking	22 parking spaces	10% of the total required parking spaces	2 EV ready parking spaces	9 ready parking spaces
Non-residential uses with 10 or parking spaces	26 parking spaces	10% of the total required parking spaces	3 EV ready parking spaces	7 ready parking spaces
TOTAL	**358 parking spaces**		**67 EV ready parking spaces**	**114 ready parking spaces**

Application of this minimum rate to the proposed parking supply of 358 parking spaces results is a total minimum requirement of 67 EV ready parking spaces including 62 spaces for residents, two (2) for visitors and two (2) for retail users.

A total of 114 parking spaces located in the P1 level of the underground parking garage are equipped to be EV ready, including 98 resident parking spaces, nine (9) residential visitor parking spaces, and seven (7) retail parking spaces. The proposed EV parking supply meets and exceeds the minimum requirements outlined in Zoning By-law 0225-2007.

The surplus of EV-ready parking spaces, when compared to the requirements set by the By-law, can be attributed to the intentional design aimed at accommodating the future demand for electric vehicles. Specifically, the P1 level of the underground parking garage has been designed to offer flexibility in embracing the growing popularity of electric vehicles over time.

7.3 APPROPRIATENESS OF THE REDUCED PARKING SUPPLY

It is proposed to adopt a reduced parking supply standard for both residents and non-residential (including residential visitors and retail) in comparison to the minimum requirements of Zoning By-law 0225-2007 (amended by Zoning By-law 0118-2022).

A discussion and rationale are provided within the following sections regarding the appropriateness of the reduced parking supply for each use.

7.3.1 Resident Parking Rationale

In our opinion, the resident parking standards outlined in the Zoning By-law 0225-2007 (amended by Zoning By-law 0118-2022) continue to overstate the parking needs of contemporary residential buildings located within an urban context in close proximity to transit routes, pedestrian destinations and cycling facilities in the City of Mississauga. This section provides an overview of the contextual factors influencing parking demand in the area and the appropriateness of the proposed resident parking supply in this instance.

Adoption of a reduced series of parking standards are considered appropriate based upon the following considerations:

- The subject Site is in close proximity to existing transit services including the MiWay bus routes (i.e. 43, 44, 10, 39, 87, and 306 bus routes), the Streetsville GO station, and bicycle route facilities that provide non-automobile dependent travel connections across the City;
- A series of Transportation Demand Management (TDM) measures proposed to be incorporated in the development to support the use of non-automobile travel modes;
- A review of parking demands observed / recorded by BA Group at another residential condominium in the City of Mississauga with similar transit context; and
- Range of approvals for reductions in resident parking supply ratios for developments with less proximate access to a GO Station.

The following provides an overview of the contextual factors influencing parking demand at residential buildings in the City of Mississauga and the appropriateness of the proposed parking supply in this instance.

7.3.1.1 Existing Transportation Services

The location of the Site will provide future residents with options for transportation that will reduce the reliance on an automobile. The complete transportation context is provided in **Section 4.0**.

The Site is well-located relative to transit routes bus routes. The following transit options listed below are all attainable within less than a 3-minute walk from the Site:

- 180 metres from Queen Street North at Matlock Avenue bus stop for the 43 and 44 bus route;
- 210 metres from Britannia Road at Queen Street North bus stop for the 10, 39 and 87 bus route; and
- 240 metres from Queen Street South at Britannia Road bus stop for the 306 bus route.

In addition to the available MiWay bus routes surrounding the Site, Streetsville GO is approximately 2 km walking distance (27-minute walk) from the Site. Alternatively, if the future resident does not desire to walk from/to the Streetsville GO station, the user can take the 44-bus route and reach the station/the Site within 14 minutes.

The Site is currently well served by cycling infrastructure including cycle tracks, bike lanes and multi-use trails. The Site is in close proximity to multiple north-south bicycle connections such as the Queen Street South bike lane, Joymar Drive signed route and Riverview Park Trail multi-use trail. An east-west bicycle connection in close proximity to the Site is the Britannia Road West multi-use trail.

In addition, the existing cycling network is further connected through the proposed cycling infrastructure as recommended in the City of Mississauga Cycling Master Plan (2018). The existing multi-use trail along Britannia Road West which begins from Britannia Road West / Queen Street South is planned to be extended to the existing multi-use Trail along Britannia Road West beginning from Britannia Road West / Erin Mills Pkwy. Cycle tracks are proposed to be extended north from Queen Street South / Britannia Road West along Queen Street North and Mississauga Road. A new bicycle lane is proposed along Falconer Drive connecting from the new cycle track along Queen Street North. Another cycle track is proposed along Mill Creek Drive connecting from the signed bike route along Joymar Drive The existing and proposed cycling infrastructure mentioned above will improve connectivity from the Site to the rest of the City.

7.3.1.2 Transportation Demand Management

As outlined in **Section 6.0**, a proposed transportation demand management (TDM) plan is proposed for the Site, both as a method to reduce vehicular traffic but also to reduce parking demand.

Highlights of the Plan, in addition to the proposed parking supply reductions, are provided below:

- Provision of public pedestrian sidewalks on all new public streets within the Project's boundaries including a new pedestrian / cyclist pathway south of the building with adequate lighting;
- Provision of 386 bicycle parking spaces including 330 long-term bicycle parking spaces and 56 short-term spaces;
- Implementation of two bicycle repair/maintenance stations to be provided on-site;
- Implementation of a transit screen in the lobby;
- Provision of a pre-loaded PRESTO card with a value of $50 to each first-time unit owner;
- Implementation of travel information brochures;
- A reduced parking rate is proposed on-site to reduce car dependence;
- Opportunities will be explored to offer ride-sharing programs on-site such as participation in the Smart Commute program; and
- Smart lockers will be provided to facilitate convenient deliveries for residents.

7.3.1.3 Proxy Site Observed Resident Parking Demand

In order to assess the residential parking demand at another similar building with a similar context in Mississauga. BA Group conducted an overnight resident parking survey at 4011 Brickstone Mews & 510 Curran Place, which is located approximately 2.6 kilometres walking distance (33-minute walk) from Cooksville GO station and/or a bus away from Cooksvile GO Station, which is similar to the Site's context in relation to Streetsville GO station. The proxy location was surveyed during the following dates:

- Wednesday, February 26, 2020;
- Thursday, February 27, 2020;
- Friday, February 28, 2020; and
- Monday, March 2, 2020.

The surveys were completed at a time when most residents are likely to be home (i.e. at night). The results of this study are summarized in **Table 10**.

TABLE 10 EXISTING RESIDENTIAL PARKING DEMAND STUDIES

Address	Major Intersection	Study Date	Peak Hour	Occupied Units	Resident Parking	
					Demand (spaces)	Ratio (spaces / unit)
4011 Brickstone Mews & 510 Curran Place	Confederation Pkwy/ Burnhamthorpe Road W	Wed, Feb 26, 2020	1:30 am	1008 units	786	0.78
		Thurs, Feb 27, 2020	1:30 am		784	0.78
		Fri, Feb 28, 2020	1:30 am		784	0.78
		Mon, March 2, 2020	3:00 am		786	0.78

The observed overall resident parking demand at the proxy site is 0.78 spaces per unit. The proposed residential parking rate of 0.70 spaces per unit is sightly less than the observed 0.78 spaces per unit, however the Site is situated in a more urban context with more transit routes available in the immediate area in comparison to the proxy site.

7.3.1.4 Resident Parking Reduction Precedents

Within the site vicinity, there are no recent approved parking reductions, however BA Group reviewed areas such as Port Credit, and other comparable area within the cities of Pickering and Hamilton. Although the Site is not situated in the Port Credit area, it's similar in context to the Site's Location as there is a GO station in the area vicinity and it's not located in the City Centre of Mississauga.

In the Port Credit area, a reduced parking supply of 0.86 spaces per unit was approved for 70 Mississauga Road South. This decision was signed by committee on July 1, 2021, prior to the new parking standards in place as per Zoning By-law 0118-2022. 70 Mississauga Road South is situated approximately 1.2 kilometres from Port Credit GO Station. Other examples of recent approvals have also been included for sites with more limited access to higher order transit to demonstrate the willingness of multiple municipalities (Pickering and

Hamilton) to significantly reduce residential parking standards compared to the enforce Zoning By-law, recognizing a shift in travel behaviour and bigger emphasis placed on existing and future transit access. These approvals range from 0.47 to 0.86 spaces per unit for sites that are significantly further from a GO Station (between 575 metres to 2.2 km).

Table 11 outlines a selection of reduced parking approvals for proxy sites with similar or less transit supportive contexts as the proposed development.

TABLE 11 RESIDENTIAL DEVELOPMENTS WITH APPROVED RESIDENT PARKING REDUCTIONS

Address	Proximity to Transit	Municipality	Resident Standard Applied	Permission Through
Approvals with less proximate access to High Order Transit				
1496 Bayly Street	- 575m from Pickering GO Station	Pickering	0.71 spaces per unit	Site Specific Zoning By-law 7810/21
600 James Street North	~900 m from West Harbour GO Station	Hamilton	0.58 spaces / unit	LPAT Case No. PL190517 Site Specific Zoning By-law 21-053-LPAT
70 Mississauga Road South	~1.2km from Port Credit GO Station	Mississauga	0.86 spaces / unit	CoA Decision – A226.21
98 James Street South	~1.5 m from West Harbour GO Station	Hamilton	0.47 spaces / unit	City of Hamilton Zoning By-law 15-024
175 Catharine Street South and 117 Forest Avenue	~2.2 km from West Harbour GO Station	Hamilton	0.65 spaces / unit	City of Hamilton Zoning By-law 20-216

The cities of Mississauga, Pickering and Hamilton have shown flexibility and pragmatism in adapting to the evolving transportation landscape as options become available to residents that were not available at the time when the Zoning By-law was enacted. In this context, the proposed resident parking supply ratio of 0.70 spaces / unit is conservatively within the range of documented parking supply reduction approvals that are appropriate proxies for the site.

7.3.1.5 Residential Parking Assessment Summary

In summary, the proposed resident parking supply rate (0.70 spaces per unit) is considered to be appropriate based upon the following:

- The subject Site is in close proximity to existing transit services including the MiWay bus routes (i.e. 43, 44, 10, 39, 87, and 306 bus routes), the Streetsville GO station, and bicycle route facilities that provide non-automobile dependent travel connections across the City;
- A series of Transportation Demand Management measures proposed to be incorporated in the development to support the use of non-automobile travel modes;
- A review of parking demands observed / recorded by BA Group at another residential condominium in the City of Mississauga with similar transit context; and
- Range of approvals for reductions in resident parking supply ratios for developments with less proximate access to a GO Station; and

Based on the above, an adoption of the proposed resident parking supply rate of 0.70 spaces / unit is considered to be appropriate and will enable the essential resident parking demands of Site to be met.

7.3.2 Resident Visitor Parking Rationale

As part of the proposed development, 48 non-residential parking spaces are proposed to serve the residential visitor and retail needs of the Site. The following non-residential provisions are being sought as part of this application:

- 22 parking spaces for the use of residential visitors (0.05 spaces / unit)
- 26 parking spaces to serve the retail component (1.80 spaces / 100 m^2 GFA)

The proposed parking supply for the non-residential component of the Site is slightly less than the required Zoning By-law 0225-2007. Zoning By-law 0225-2007 requires 88 visitor parking spaces to be shared with both residential visitors and retail users. The total non-residential parking supply proposed for the Site is a total of 48 parking spaces (22 parking spaces for residential visitors and 26 parking spaces for retail users), which is less than the required 88 parking spaces.

It's been observed that the non-residential supply standards outlined in Zoning By-law 0225-2007 overstate the parking demands of a new building located in an urban setting in the City of Mississauga. Generally, parking demands across the GTA have been declining over recent years in response to the changing demographics, economic factors, policy and planning emphasis on transit and active modes of travel, and mobility choices of residents within newer buildings, in particular.

Given the above, a reduced non-residential parking supply (48 parking spaces) is being proposed for the Site. The following provides an overview of the residential visitor parking demand observed in proxy locations that is supportive of the resident visitor rate of 0.05 spaces per unit, and provides a rationale for the retail parking.

7.3.2.1 Observed Residential Visitor Parking Demand

BA Group conducted more recent proxy parking studies at residential developments in the Port Credit area in September 2022. Although the Site is not located in the Port Credit area, the subject site has a similar transit context being in close proximity to a GO station with surface MiWay bus routes available within the immediate area, and not being located in the City Centre of the City of Mississauga. These include 28 Park Street E, 28 Elizabeth Street, and 70 Park Street East.

In addition to the Port Credit proxy locations, BA Group has conducted a parking study at 1575 Lakeshore Road West, which is located in the Clarkson area, and is situated approximately 2 kilometers walking distance to Clarkson GO station, which is relatively similar to the Site's transit context.

Survey results are summarized in **Table 12**.

TABLE 12 BA GROUP DIRECTED VISITOR PARKING PROXY SURVEY RESULTS

Proxy Sites	Port Credit Area Locations			Clarkson Area Location
	28 Park Street E	28 Elizabeth Street N	70 Park Street East	1575 Lakeshore Road West
Tuesday, October 26, 2021	--	--	--	0.04
Thursday, October 28, 2021	--	--	--	0.04
Tuesday, November 2, 2021	--	--	--	0.04
Thursday, November 4, 2021	--	--	--	0.04
Friday, September 23, 2022	0.04	0.01	--	--
Saturday, September 24, 2022	0.10	0.01	--	--
Friday, September 30, 2022	0.06	0.02	--	--
Saturday October 1, 2022	0.08	0.02	--	--
Friday, October 14, 2022	--	--	0.05	--
Saturday, October 15, 2022	--	--	0.04	--

Notes:
1. Parking surveys were conducted on Fridays from 6:00 PM to 11:00 PM, and on Saturdays from 12:00 PM to 8:00 PM. Table values represent absolute maximum observed parking rates over survey periods.
2. At 70 Park Street East, visitor parking demand surveys were conducted from 2:00pm to 11:00pm on a Friday and a Saturday. Based upon 204 leased units at the time of study.

The reviewed proxy sites are observed to have a residential visitor parking demand range of 0.01-0.08 spaces per unit. The proposed parking supply of 0.05 spaces per unit is well within this range, and is considered appropriate on this basis.

7.3.2.2 Ancillary Non-Residential Parking

As per the By-law, 88 parking spaces can be shared between the retail use and resident visitors. However, 26 parking spaces are proposed for retail uses. The proposed retail use for the Site is intended to serve the majority of the residents in the building and the surrounding community. Thus, the retail use is not anticipated to generate significant parking demand.

From this perspective, in the event that the retail uses generate a nominal vehicle need, these uses can be accommodated within the proposed 26 retail spaces which is more than appropriate for a mixed-use urban area.

7.3.2.3 Non-Residential Assessment Summary

In summary, the provision of a reduced non-residential parking standard for the proposed development is considered appropriate based upon the following considerations:

- The subject Site is in close proximity to existing transit services including the MiWay bus routes (i.e. 43, 44, 10, 39, 87, and 306 bus routes), the Streetsville GO station, and bicycle route facilities that provide non-automobile dependent travel connections across the City;
- Consistent with the observed visitor parking rates for proxy sites with a similar transit context
- Retail employees can participate in the car-pool program such as Smart Commute which will reduce the single occupant vehicle trips
- The nature and size of the retail use will not generate a significant amount of parking demand and thus the 26 retail parking spaces will be appropriate to support the retail needs.

8.0 BICYCLE PARKING CONSIDERATIONS

8.1 BICYCLE PARKING REQUIREMENTS

8.1.1 The City of Mississauga Zoning By-law 0225-2007 (Amended by Zoning By-law 0118-2022)

Bicycle parking standards have been introduced in the newly amended Zoning By-law 0225-2007 by the bicycle parking requirements outlined in Zoning By-law 0118-2022. The applicable bicycle parking requirements outlined in Zoning By-law 0118-2022, now introduced in Zoning By-law 0225-2007, to the Site are summarized in **Table 13**.

Application of the bicycle parking standards to the Site will result in a total provision of 293 bicycle parking spaces, including five (5) spaces for retail and 288 spaces for residential.

TABLE 13 ZONING BY-LAW 0225-2007 (AMENDED BY ZONING BY-LAW 0118-2022) BICYCLE PARKING REQUIREMENTS

Land Use	Class Type[2]	Number of Units / GFA	Minimum Bicycle Parking Standard	Spaces Required[3]
Residential	Class A	444 units	0.60 spaces / unit	266 spaces
	Class B		The greater of 0.05 spaces per unit or 6.0 spaces	22 spaces
Retail	Class A	1,423 m^2	0.15 spaces / 100 m^2	2 spaces
	Class B		0.2 spaces / 100 m^2	3 spaces
	Total			**293 spaces**

Notes
1. Based on site statistics provided by A&Architects Inc dated June 19, 2023.
2. Class A means a bicycle parking space designed to provide long-term parking for employees or residents of the building. Bicycle Parking Space, Class B means a bicycle parking space designed to provide short-term transient parking for persons who are not residents or employees of the building.
3. In Article 3.1.1.1 of the By-law, it states the following: *"Where the number of non-residential parking spaces and/or loading spaces and/or bicycle parking spaces is calculated on the basis of a rate or ratio and results in a numeric fraction, fractions of less than 0.5 shall be rounded clown to the nearest whole number and fractions equal to or greater than 0.5 shall be rounded up to the nearest whole number" and for residential parking and bicycle parking spaces, "if the calculation results in a fraction less than 0.5, it shall be rounded down to the nearest whole number, and fractions equal to or greater than 0.5 shall be rounded up to the nearest whole number."*

8.2 PROPOSED BICYCLE PARKING SUPPLY AND FACILITIES

A total of 386 bicycle parking spaces, including 330 long-term residential bicycle parking spaces and 56 short-term bicycle parking spaces are proposed for the Site. From the long-term bicycle parking supply, 326 are residential long-term spaces and four (4) are for retail long term spaces. From the short-term bicycle parking supply, 48 are residential short-term spaces, and eight (8) are short-term spaces.

All bicycle parking is provided on the ground floor. The total residential long-term bicycle parking spaces are located in a secure bicycle parking room located at-grade. The total residential short-term bicycle parking spaces are located in another separate bicycle parking room located at-grade. Access to the residential long-

term and short-term bicycle storage rooms are provided from the path provided south of the site. The pathway connects east of Queen Street North.

The 12 retail bicycle parking spaces including the four (4) long-term and eight (8) short-term bicycle parking spaces are located outdoors at-grade in front of one of the southern retail spaces along the site frontage of Queen Street North.

Access to the residential long-term and short-term bicycle storage rooms are provided from the path provided south of the site. The pathway connects east of Queen Street North.

Access to the 12 retail bicycle parking spaces is provided from the sidewalks along Queen Street North.

The proposed bicycle parking supply meets and exceeds the requirements outlined in Zoning By-law 0225-2007, and is therefore an appropriate supply to serve the cycling needs of the proposed development. By providing a bicycle parking supply (386 bicycle parking spaces) that exceeds the By-law's requirement of 293 bicycle parking spaces, the applicant is not only ensuring compliance but also strategically supporting the reduced parking approach adopted for the development.

9.0 LOADING CONSIDERATIONS

9.1 MINIMUM LOADING REQUIREMENTS

Application of the prevailing City of Mississauga Zoning By-Law 0225-2007 to the proposed development results in a requirement of two loading spaces with minimum dimensions of 3.5 metres by 9.0 metres. The loading space requirements are summarized in **Table 14**.

TABLE 14 CITY OF MISSISSAUGA ZONING BY-LAW 0225-2007 LOADING SPACE REQUIREMENTS

Use	Units / GFA[1]	Minimum Zoning By-law Requirement	Number of Required Spaces
Residential	444 units	1 loading space for apartment containing a minimum of 30 dwelling units	1 space
Retail	1,423 m^2	Greater than 250 m^2 but less than or equal to 2 350 m^2	1 space
Total			**2 spaces**

Notes
1. Based on site statistics provided by A&Architects Inc dated June 19, 2023.

9.2 PROPOSED LOADING SUPPLY

Two (2) loading spaces are proposed at-grade with a dimension of 3.5 metres by 9.0 metres. The two (2) loading spaces are located adjacent to the proposed northeast driveway. A garbage loading room is proposed to be located in front of the loading space closest to the driveway. The loading area and adjacent parking ramp includes a warning system to advise motorists of loading activity. Associated signage and pavement markings are provided in **Appendix B.**

The Site plan can appropriately accommodate the needs of the design vehicles. Vehicle Maneuvering Diagrams (VMD's) illustrating the inbound and outbound manoeuvres of a Peel Region garbage collection vehicle, TAC Heavy Single Unit Truck (HSU) and TAC Medium Single Unit Truck Unit (MSU) truck are attached in **Appendix C.** These diagrams confirm that the proposed loading arrangements are appropriate and will facilitate the manoeuvring needs of the vehicles that will make deliveries to the proposed development.

10.0 SITE ACCESS

The new east-west Site driveway will operate as a full-movement access. No lane improvements are recommended on Queen Street North at the Site driveway.

The proposed Site driveway is located approximately 170 metres from the signalized intersection at Queen Street North and Britannia Road intersection (measured edge of driveway to edge of roadway).

The proposed spacing between the Site driveway and the signalized intersection at Queen Street North and Britannia Road is greater than the suggested minimum corner clearance requirements for a driveway as identified in The Transportation Association of Canada Design Guide for Canadian Roads 2017 (TAC Guidelines) Figure 8.8.2 (Suggested Minimum Corner Clearances to Accesses or Public Lanes at Major Intersections) - 70 metre from the signalized condition.

10.1 CLEAR THROAT LENGTH

The clear throat length requirement within the Site driveway is less than the suggested minimum clear throat length requirements as identified in The Transportation Association of Canada Design Guide for Canadian Roads 2017 (TAC Guidelines) Table 8.9.3 (Suggested Minimum Clear Throat Lengths for Major Driveways) - 25m.

The clear throat length allotted for the site driveway is approximately 15 metres, measured from the end of the driveway curb return radii at the roadway to the edge of the inbound PUDO loop. It is not anticipated for the inbound vehicles to be obstructed by vehicles entering the PUDO loop since the PUDO loop has been sized appropriately and can accommodate a range of 1-4 vehicles. It is noteworthy that a clear throat length of more than 25 metres is provided between the end of the driveway curb return radii at the roadway to parking ramp and loading facility.

10.2 SIGHT DISTANCE REVIEW

A review of the available sight distance for the proposed Site driveway on Queen Street North was completed as part of this analysis and is attached in **Appendix E**.

The sight distance north and south of the Site driveway on Queen Street North meets the minimum intersection sight distance requirements as identified in the TAC Guidelines for a design speed of 70km/h (150 metres and 130 metres, respectively).

Therefore, there are no issues with the sight distance for the proposed Site driveway.

10.3 DRIVEWAY SPACING CONSIDERATIONS

The proposed Site driveway is aligned with the 40 Queen Street North driveway located directly opposite each other. This will help reduce conflicting movements within the centre two-way left-turn lane that currently exists on Queen Street North.

In addition, the proposed Site driveway is located approximately 25 metres south of the existing 53 Queen Street North driveway (measured edge of driveway to edge of driveway).

This driveway spacing is greater than the suggested minimum spacing as identified in the Transportation Association of Canada Design Guide for Canadian Roads 2017 (TAC Guidelines) Figure 8.9.2 (Driveway Spacing Guidelines – Locals and Collectors) - 3 metres for commercial land use.

11.0 TRAVEL DEMAND FORECAST

11.1 BASELINE EXISTING TRAFFIC VOLUMES

Undertaking accurate traffic field counts is not possible at the time of this study, given the unprecedented circumstances surrounding the COVID-19 pandemic (March 2020 onwards). The most current available traffic data (a combination of traffic surveys undertaken in 2019 and 2021), as described below, are used to develop existing baseline conditions for the traffic analysis.

Table 15 summarizes the range of survey data used for this analysis. **Appendix F** contains the raw survey data.

TABLE 15 EXISTING TRAFFIC COUNT SUMMARY

Intersection	Control Type	Date of Count
Britannia Road West / Queen Street[1]	Signalized	Wednesday, October 2, 2019
Britannia Road West / Arch Road	STOP Control	Wednesday, September 25, 2019
Britannia Road West / Earl Street	STOP Control	Thursday, September 26, 2019
Britannia Road West / Ellesboro Drive	Signalized	Thursday, May 30, 2019
Queen Street North / Petro Canada South Driveway	STOP Control	Thursday, September 9, 2021
Queen Street North / Petro Canada North Driveway	STOP Control	Thursday, September 9, 2021
Queen Street North / Site Driveway (39 Queen Street North)	STOP Control	Thursday, September 9, 2021
Queen Street North / 53 Queen Street North Driveway	STOP Control	Thursday, September 9, 2021
Queen Street North / Matlock Avenue	STOP Control	Tuesday, February 9, 2021

Notes:
1. Primary intersection.

Volumes were balanced to the ‘primary’ intersection at Britannia Road West / Queen Street, as this intersection was surveyed in 2019 before the onset of the Covid-19 pandemic. Volumes were balanced in all four cardinal directions along each corridor, to ensure matching to the 2019 survey at the primary intersection.

Baseline existing traffic volumes are summarized in **Figure 9**.

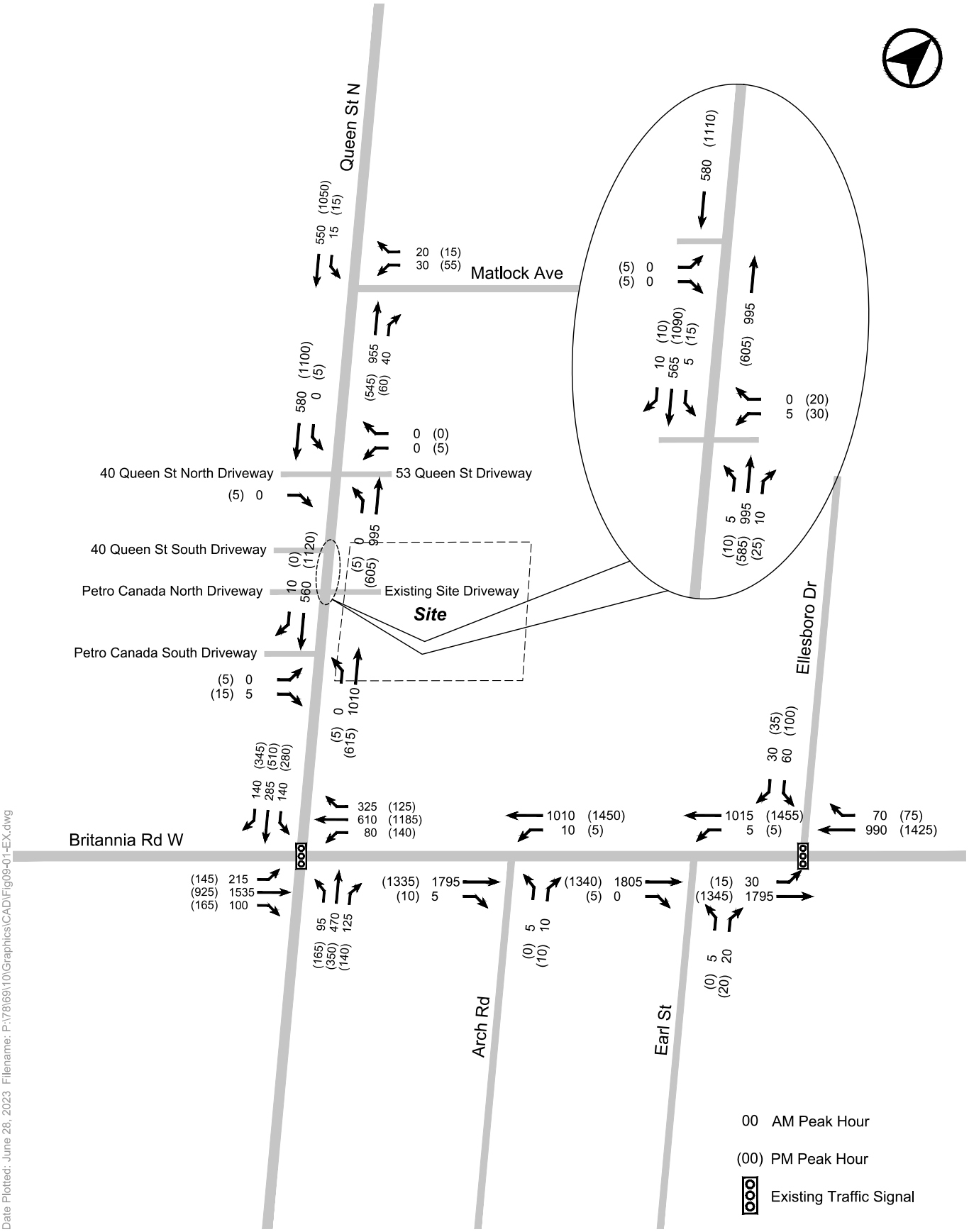


FIGURE 9 BASELINE EXISTING TRAFFIC VOLUMES

11.2 BACKGROUND TRAFFIC VOLUMES

11.2.1 Corridor Growth

Based on forecasting model outputs from both the City of Mississauga (for Queen Street) and the Region of Peel (for Britannia Road West), compounding corridor growth rates were applied along both corridors. All corridor growth rates have been applied over 10 years and are compounded annually.

Corridor growth rates are based on the rates outlined in **Table 16** below.

TABLE 16 ANNUAL CORRIDOR GROWTH RATES TO 2031

	AM Peak Hour	PM Peak Hour	Source
Northbound on Queen Street	+0.5%	+0.5%	City of Mississauga
Southbound on Queen Street	+1.5%	+0.5%	City of Mississauga
Eastbound on Britannia Road West	+0.5%	+0.5%	Region of Peel
Westbound on Britannia Road West	+0.5%	+0.5%	Region of Peel

Agency correspondence pertaining to corridor growth is attached in **Appendix G**.

11.2.2 Other Background Development

Mississauga's development applications map was reviewed to check for other development applications within the surrounding area that may impact traffic growth at the study intersections.

It was identified that the development at 6, 10, and 12 Queen Street South, 16 James Street, 2 William Street and 0 William Street (OZ/OPA 21 14) would impact the area street network and has therefore been considered as background traffic based on NexTrans transportation report dated August 2021. The development includes 77 townhomes with retail space fronting Queen Street.

11.2.3 Future Background Traffic

Future background traffic volumes reflect a combination of baseline existing traffic volumes, projected corridor growth allowance and any future area development related traffic activity. Study horizons of 5 and 10 years were considered for this analysis and future background volumes developed for each horizon year.

Future background traffic volumes on the area road network for the weekday morning and afternoon peak hours are summarized for the 5-year and 10-year horizons in **Figure 10** and **Figure 11**, respectively.

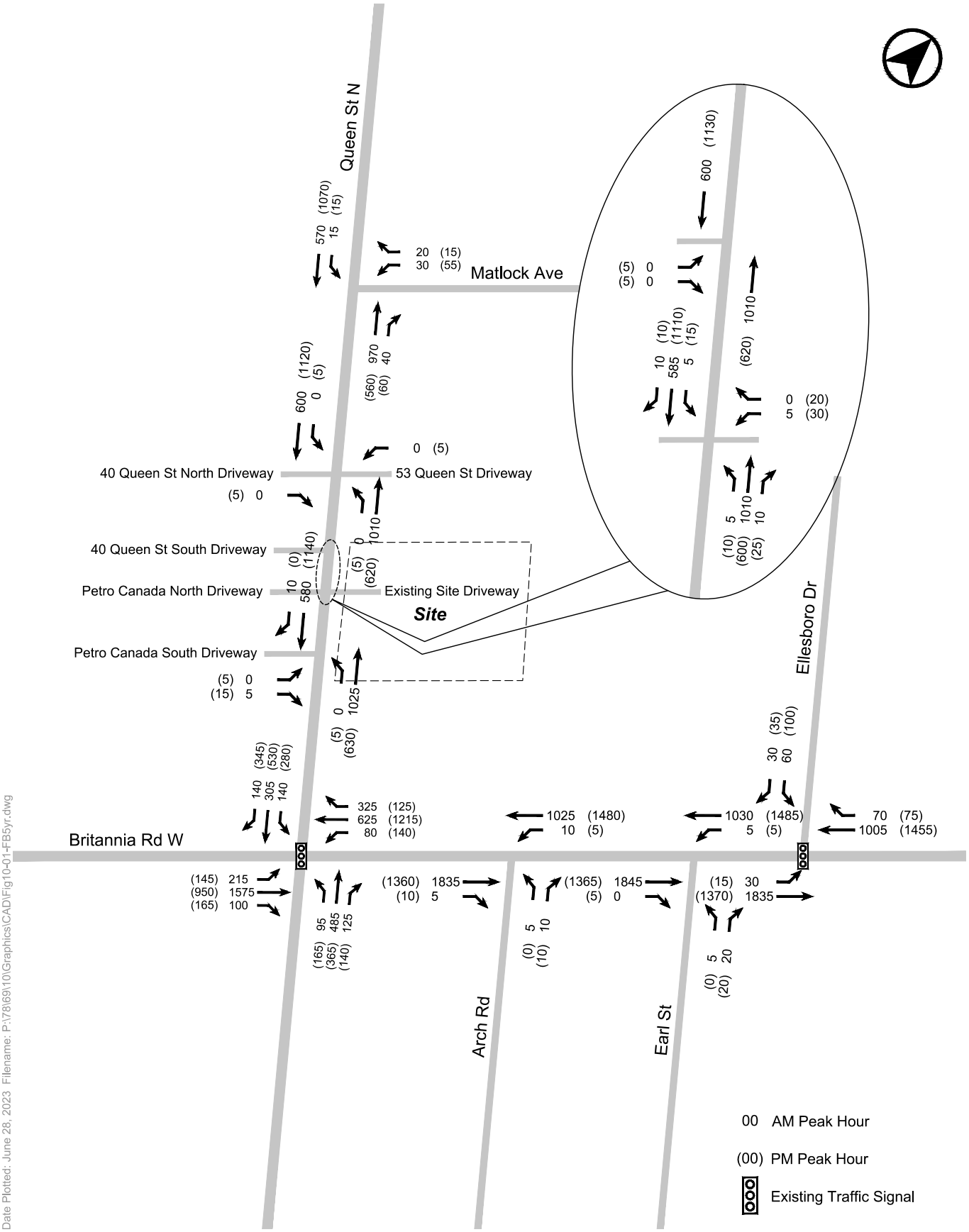


FIGURE 10 FUTURE BACKGROUND TRAFFIC VOLUMES - 5 YEAR

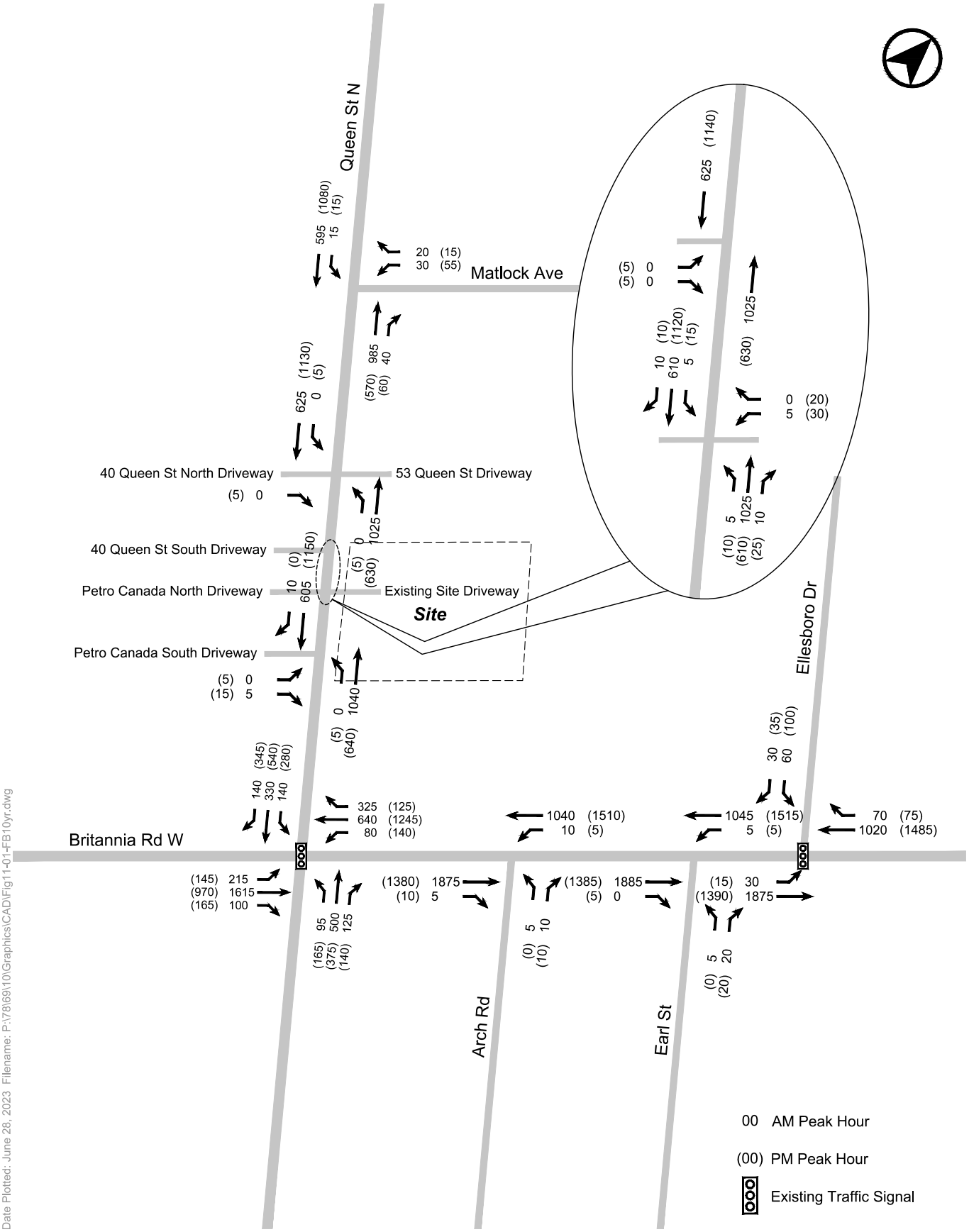


FIGURE 11 FUTURE BACKGROUND TRAFFIC VOLUMES - 10 YEAR

11.3 SITE TRAFFIC

11.3.1 Trip Distribution and Assignment

Trip distribution patterns and traffic route assignment for the residential component of the Site are derived from a 2016 Transportation Tomorrow Survey (TTS) residential travel query for 2006 GTA Zones 3715, 3717, 3718 and 3836. Retail traffic distribution is derived from existing traffic survey patterns.

Table 17 presents adopted distribution of inbound and outbound vehicle traffic**.**

TABLE 17 SITE TRIP DISTRIBUTION

Direction (to or from)	Residential Traffic		Retail Traffic	
	Outbound	Inbound	Outbound	Inbound
North via Queen Street North	35%	30%	40%	35%
South via Queen Street South	25%	20%	50%	35%
East via Britannia Road West	25%	40%	5%	15%
West via Britannia Road West	15%	10%	5%	15%
Total	**100%**	**100%**	**100%**	**100%**

11.3.2 Existing Site Traffic

Traffic surveys for the Site's existing driveway demonstrated the generation of some peak hour traffic. Future total conditions account for existing Site traffic removal based on the approximate trip distribution patterns realized within the existing survey data.

11.3.3 Site Vehicle Trip Forecast

The vehicle trip generation rates adopted for the purposes of this study are based on rates outlined within the *ITE Trip Generation Manual 11th Edition* for Land Use Codes 221 (Mid-Rise Residential) and 822 (Strip Retail Plaza <40k).

Vehicle trip generation is extrapolated into multimodal person trips, based on methodology in Section 5.3 of the *ITE Trip Generation Handbook (3rd Edition)*. The volumes are subsequently adjusted from ITE's baseline vehicle mode share to the vehicle mode share applicable to the Site. The below formulae demonstrate these calculations.

$$baseline\ person\ trips = \frac{baseline\ vehicle\ trips\ \times baseline\ vehicle\ occupancy}{baseline\ person\ trip\ mode\ share\ in\ vehicles}$$

$$adjusted\ vehicle\ trips = \frac{person\ trips\ \times area\ vehicle\ mode\ share}{area\ average\ vehicle\ occupancy}$$

Where:

- Baseline vehicle occupancy (morning peak) = **1.09** (ITE Trip Generation Manual, 3rd Ed.)
- Baseline vehicle occupancy (afternoon peak) = **1.21** (ITE Trip Generation Manual, 3rd Ed.)
- Baseline mode share (morning peak) = **95%** (ITE Trip Generation Manual, 3rd Ed.)
- Baseline mode share (afternoon peak) = **95%** (ITE Trip Generation Manual, 3rd Ed.)
- Area vehicle occupancy (morning peak) = **1.26** (TTS, 2016)
- Area vehicle occupancy (afternoon peak) = **1.29** (TTS, 2016)
- Area mode share (morning peak) = **64%** (TTS, 2016)
- Area mode share (afternoon peak) = **67%** (TTS, 2016)

Table 18 is a summary of trip generation, including the rates utilized for each component and an existing site traffic removal allowance.

TABLE 18 VEHICLE TRIP GENERATION

Land Use / Land Use Code	Weekday Morning Peak Hour			Weekday Afternoon Peak Hour		
	In	Out	2-Way	In	Out	2-Way
ITE Baseline Resident Trip Generation[3,4]						
Land Use Code 221 (Mid-Rise), Not Close to Rail Transit – trips per unit	*0.09*	*0.28*	*0.37*	*0.24*	*0.15*	*0.39*
Baseline New Residential Site Traffic (444 units)	40	125	165	105	70	175
Baseline New Residential Person Trips	46	143	189	134	89	223
Adjusted New Vehicle Trips (Resident)[5]	**25**	**75**	**100**	**70**	**45**	**115**
Retail Trip Generation[6]						
Land Use Code 822 (Strip Retail Plaza <40k) – trips per 1,000 sqft GFA	*1.42*	*0.94*	*2.36*	*3.29*	*3.30*	*6.59*
New Retail Vehicle Trips (1,423 m^2 or 15,317 ft^2)	**20**	**15**	**35**	**50**	**50**	**100**
Total Site Trip Generation						
Total New Site Trips	45	90	130	120	95	215
Existing Site Trips to be Removed (based on survey data)[2]	-15	-5	-20	-40	-50	-90
Net-New Site Trips	**30**	**85**	**115**	**80**	**45**	**125**

Notes:
1. Trips rounded to the nearest five (5).
2. Traffic volumes based on counts conducted on September 9, 2021.
3. Baseline ITE vehicle occupancy is 1.09 people per vehicle for the morning peak hour and 1.21 people per vehicle in the afternoon peak hour, based on ITE Trip Generation Handbook (3rd Ed.) **Appendix D** contains the calculations.
4. Baseline ITE automobile mode share is 95%, based on ITE Trip Generation Handbook (3rd Ed.) Section 5.5.2.
5. Actual site mode split and vehicle occupancy based on TTS 2016 'home-based' survey data for 2006 GTA Zones 3715, 3717, 3718 & 3836.
6. For retail trip generation purposes, baseline vehicle occupancy and mode splits are maintained throughout to remain conservative.

Based on the trip generation methodology outlined above**,** the site is expected to generate in the order of **115** and **125** new two-way vehicle trips in the weekday morning and afternoon peak hours, respectively.

Net-new site traffic volumes are illustrated on **Figure 13**.

11.3.4 Mode Split

Modal share characteristics for resident (home-based) travel during the morning and afternoon peak periods are summarized in **Table 19** and are based on a 2016 Transportation Tomorrow Survey (TTS) data query.

TABLE 19 AREA RESIDENTIAL MODE SPLIT (2016 TTS, ZONES 3718, 3715, 3717 AND 3836)

Mode	Morning Peak Period Outbound	Afternoon Peak Period Inbound
Auto Driver	64%	67%
Auto Passenger	17%	19%
Transit	13%	10%
Cycle	0%	0%
Walk	6%	4%

Notes:
1. Based on 2016 TTS results for morning (6:00 - 8:59) and afternoon (15:00 - 17:59) peak traffic periods for TTS 2006 GTA Zones 3715, 3717, 3718 and 3836.
2. Auto passenger trips (includes auto passengers, school bus passengers and taxi passengers).

Overall, the area has an auto driver mode share in the order of 64% and 67% for morning outbound and afternoon inbound home-based trips during the peak travel periods, respectively.

11.3.5 Site Multimodal Trips

A multimodal person trip forecast was undertaken through back-calculation of vehicular trip generation and modal split percentages. **Table 20** summarizes net-new person trips forecast to result from the proposed development.

TABLE 20 NET-NEW SITE PERSON TRIPS

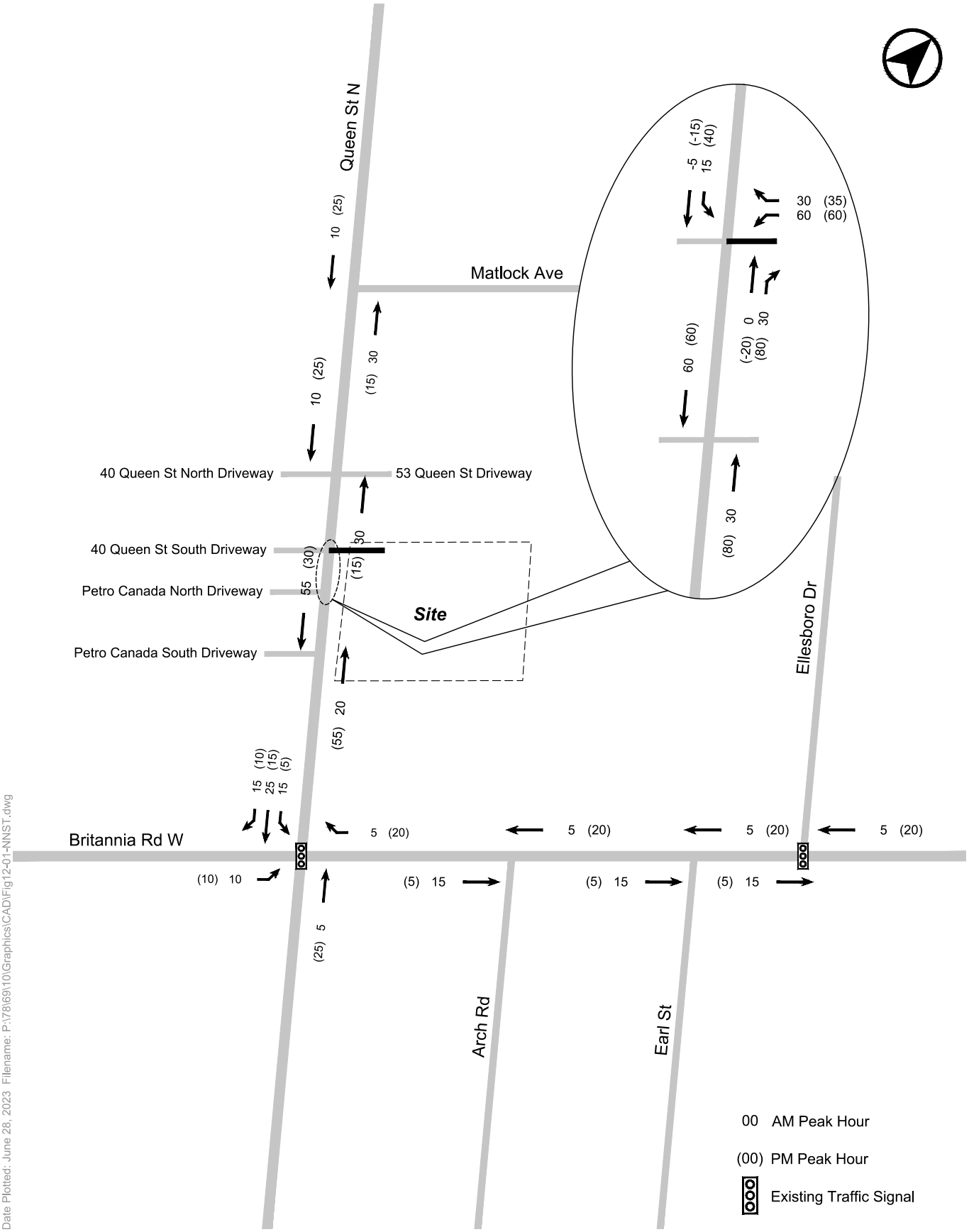
	AM Peak Hour			PM Peak Hour		
	In	**Out**	**2-Way**	**In**	**Out**	**2-Way**
Area Mode Split						
Driver	64%			67%		
Passenger	17%			19%		
Transit	13%			10%		
Active (Walk/Cycle)	6%			4%		
Multimodal Trips Generated						
Trips	-	-	-	-	-	-
Driver	30	85	115	80	45	125
Passenger	10	25	30	25	15	35
Transit	5	15	25	10	5	20
Active (Walk/Cycle)	5	10	10	5	5	5
Total New Site Trips	**50**	**135**	**180**	**120**	**70**	**185**

The proposed development is forecast to generate **180** and **185** net-new two-way person trips during the weekday morning and weekday afternoon peak hours, respectively.

It is envisioned that the relatively small number of new transit trips will utilize nearby transit options that are available within the study area, including the nearby GO rail and bus services.

11.4 FUTURE TOTAL TRAFFIC VOLUMES

Future total traffic volumes during the weekday morning and afternoon peak hours reflect the sum of future background traffic volumes and new site traffic volumes. Future total traffic volumes for the 5-year and 10-year study horizons are summarized in **Figure 13** and **Figure 14**, respectively.



Date Plotted: June 28, 2023 Filename: P:\78\69\10\Graphics\CAD\Fig12-01-NNST.dwg

FIGURE 12 NET-NEW SITE TRAFFIC

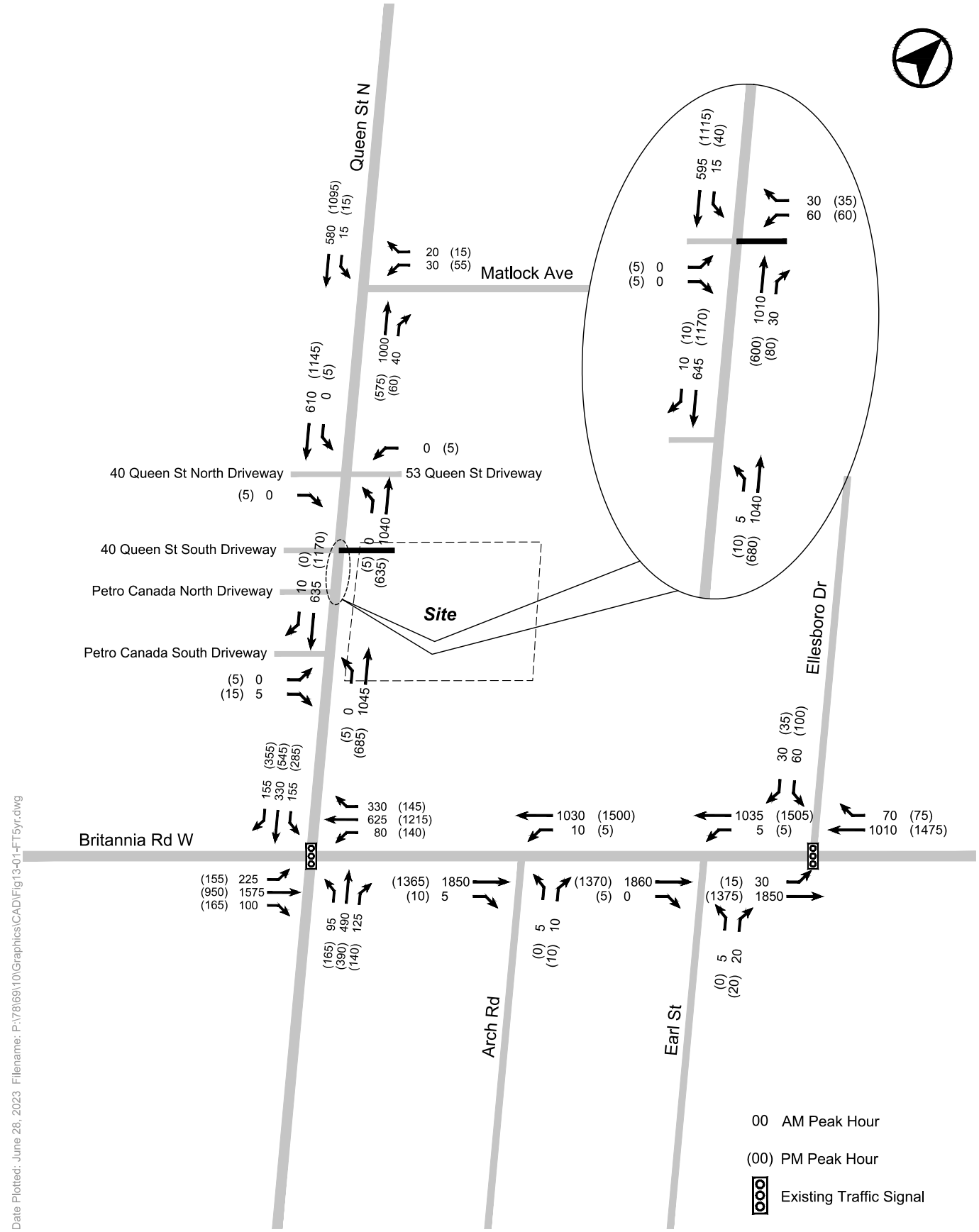


FIGURE 13 FUTURE TOTAL TRAFFIC VOLUMES - 5 YEAR

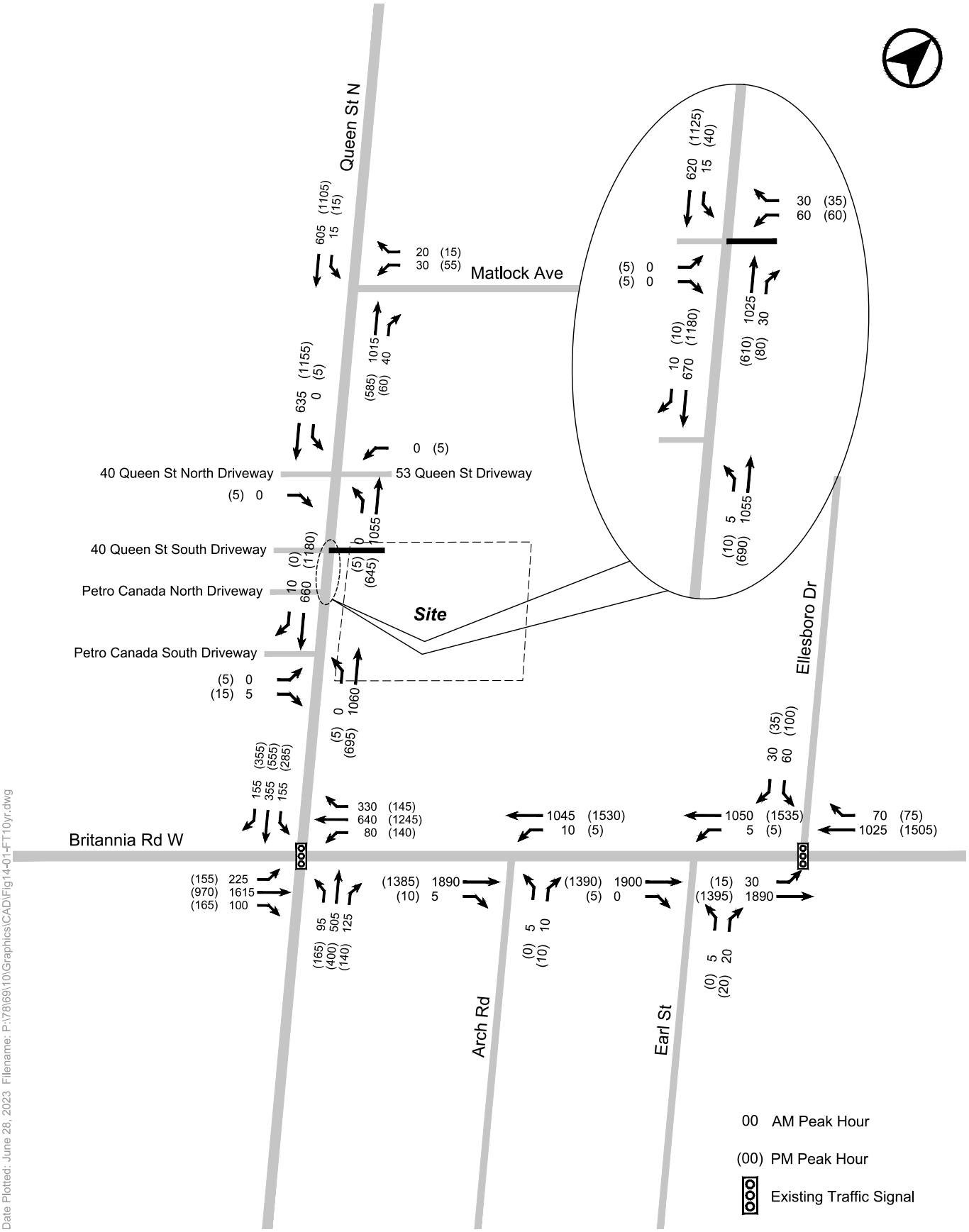


FIGURE 14 FUTURE TOTAL TRAFFIC VOLUMES - 10 YEAR

12.0 TRAFFIC OPERATIONS ANALYSIS

12.1 ANALYSIS METHODOLOGY

12.1.1 Analysis Scenarios

Traffic operations analyses have been undertaken during the weekday morning and afternoon street peak hours under the following traffic conditions:

- **Baseline existing traffic conditions** that reflect activity levels and patterns on the area road network in a “pre-COVID” context, based on the derived baseline existing traffic volumes;
- **Future background traffic conditions** that include general corridor growth over 5-year and 10-year planning periods and traffic activity generated by other new area developments; and
- **Future total traffic conditions** with the development of the Site as planned, which includes new traffic generated by the development proposal in addition to future background traffic volumes.

Traffic operations analyses were undertaken at the following locations in proximity of the proposed development Site:

Signalized:

- Britannia Road West / Queen Street
- Britannia Road West / Ellesboro Drive

Unsignalized:

- Britannia Road West / Arch Road
- Britannia Road West / Earl Street
- Britannia Road West / Ellesboro Drive
- Queen Street North / Petro Canada South Driveway
- Queen Street North / Petro Canada North Driveway
- Queen Street North / 39 Queen Street North
- Queen Street North / 53 Queen Street North
- Queen Street North / Matlock Avenue

The traffic analysis of this study is based on Highway Capacity Manual (HCM) 2000 methodology. A brief overview of the software, analysis parameters and assumptions are provided below.

12.1.2 Analysis Software

The analysis has been completed using Synchro (version 11) capacity analysis software in accordance with the methodologies outlined in the Highway Capacity Manual (HCM 2000). The analysis is also in accordance with the City of Mississauga’s *Traffic Impact Study Guidelines* for intersections along Queen Street North, and Peel Region’s *Regional Guidelines for Using Synchro* (December 2010) for intersections along Britannia Road West.

For signalized intersections, two indicators are used to reflect an intersection’s operation. The first is a volume to capacity (v/c) ratio which is an indicator of the capacity utilization at an intersection or on specific movements at an intersection. A v/c of 1.00 indicates that a movement, or intersection as a whole, is operating at or near theoretical capacity, based on HCM 2000 methodology.

The second indicator is a Level of Service (LOS) designation for an intersection as a whole or for individual movements. The LOS designation ranges from LOS A to LOS F, providing an understanding of the relative time a motorist may have to wait, on average, to travel through an intersection and complete any movement. A LOS A designation is reflective of a condition where motorists may experience little delay, while a LOS F designation is reflective of extended delays.

12.1.3 Traffic Signal Timings

Analysis at signalized intersections were undertaken using the available signal timing parameters in an attempt to reflect how the signals were operating at the time of existing traffic data collection. Where signals have been optimized in future, existing signal cycle lengths and pedestrian minimum times were maintained.

Traffic signal timings adopted for this analysis were obtained for the area signalized intersections from the Region of Peel and are provided in **Appendix H**.

12.2 ANALYSIS PARAMETERS

12.2.1 Parameters and Assumptions

12.2.1.1 Peak Hour Factors

Where available, Peak Hour Factors (PHF's) were adopted for signalized intersections within the study area in accordance with observed survey data. Where data was not available, PHFs consistent with adjacent intersections were adopted. For intersections under Peel Region jurisdiction, a PHF of 1.00 was adopted in as per Peel's *Regional Guidelines for Using Synchro* (December 2010).

12.2.1.2 Lost Time Adjustment

A lost time adjustment of 0 seconds was adopted by default for all signalized intersection movements within the study area, consistent with the Region of Peel Synchro Guidelines.

12.3 SIGNALIZED INTERSECTIONS

This section contains an analysis of signalized intersections under existing, future background and future total traffic conditions for both the morning and afternoon peak hours. The results of the signalized intersection traffic operations analyses are summarized in **Table 21** and briefly in the following sections.

Detailed capacity analysis calculation worksheets for signalized intersections are attached in **Appendix I**.

Overall, signalized intersections proximate to the site operate well, with the exception of selected movements that are already constrained under existing or future background conditions. The Site can be comfortably accommodated by the existing road network and no changes outside of signal timing adjustments are recommended for this development.

TABLE 21 SIGNALIZED INTERSECTION ANALYSIS SUMMARY

	Existing		5-Year Future Background		5-Year Future Total		10-Year Future Background		10-Year Future Total	
	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS
Queen Street & Britannia Rd West										
EBL	0.43 (0.72)	B (D)	0.44 (0.77)	B (D)	0.46 (0.83)	B (E)	0.46 (0.81)	B (E)	0.48 (0.87)	B (E)
EBTR	0.86 (0.70)	D (D)	0.87 (0.75)	D (D)	0.87 (0.75)	D (D)	0.91 (0.74)	D (D)	0.91 (0.75)	D (D)
WBL	0.55 (0.65)	D (C)	0.62 (0.67)	D (D)	0.62 (0.69)	D (D)	0.56 (0.73)	D (D)	0.57 (0.74)	D (D)
WBT	0.34 (0.76)	C (D)	0.36 (0.81)	C (D)	0.36 (0.82)	C (D)	0.37 (0.82)	C (D)	0.37 (0.84)	C (D)
WBR	0.25 (0.13)	B (B)	0.25 (0.11)	B (B)	0.25 (0.14)	B (C)	0.26 (0.13)	B (C)	0.26 (0.16)	B (C)
NBL	0.47 (0.91)	E (F)	0.49 (0.90)	E (F)	0.53 (0.91)	E (F)	0.52 (0.95)	E (F)	0.58 (0.97)	E (F)
NBTR	0.82 (0.49)	E (D)	0.89 (0.59)	E (E)	0.89 (0.61)	E (D)	0.83 (0.50)	E (D)	0.82 (0.51)	E (D)
SBL	0.82 (0.84)	E (E)	0.77 (0.74)	E (D)	0.84 (0.76)	E (D)	0.82 (0.84)	E (E)	0.91 (0.86)	F (E)
SBT	0.54 (0.90)	D (E)	0.57 (0.92)	D (E)	0.61 (0.93)	D (E)	0.60 (0.92)	D (E)	0.64 (0.93)	D (E)
SBR	0.10 (0.55)	D (D)	0.10 (0.49)	D (D)	0.11 (0.51)	D (D)	0.10 (0.54)	D (D)	0.11 (0.55)	D (D)
Overall	**0.84 (0.83)**	**D (D)**	**0.85 (0.85)**	**D (D)**	**0.86 (0.88)**	**D (D)**	**0.88 (0.88)**	**D (D)**	**0.91 (0.92)**	**D (D)**
Britannia Rd West & Ellesboro Dr										
EBL	0.07 (0.06)	A (A)	0.07 (0.07)	A (A)	0.08 (0.07)	A (A)	0.08 (0.07)	A (A)	0.08 (0.07)	A (A)
EBT	0.59 (0.45)	A (A)	0.60 (0.46)	A (A)	0.60 (0.46)	A (A)	0.61 (0.46)	A (A)	0.62 (0.47)	A (A)
WBTR	0.36 (0.50)	A (A)	0.37 (0.51)	A (A)	0.37 (0.52)	A (A)	0.37 (0.52)	A (A)	0.38 (0.53)	A (A)
SBL	0.50 (0.59)	E (E)	0.50 (0.59)	E (E)	0.50 (0.59)	E (E)	0.50 (0.59)	E (E)	0.50 (0.59)	E (E)
SBR	0.02 (0.05)	E (E)	0.02 (0.05)	E (E)	0.02 (0.05)	E (E)	0.02 (0.05)	E (E)	0.02 (0.05)	E (E)
Overall	**0.58 (0.51)**	**A (A)**	**0.59 (0.52)**	**A (A)**	**0.60 (0.53)**	**A (A)**	**0.60 (0.53)**	**A (A)**	**0.61 (0.54)**	**A (A)**

Note:
1. xx (xx): Weekday morning peak hour (Weekday afternoon peak hour).

12.3.1 Britannia Road West / Queen Street

Under existing conditions, the Britannia Road West / Queen Street signalized intersection operates under acceptable conditions at all times. Overall volume to capacity (v/c) ratios are 0.84 and 0.83 for the weekday morning and afternoon peak hours, respectively.

With the addition of future background traffic in the 5-year planning horizon, the intersection will remain within capacity, with an overall v/c ratio of 0.85 in both peak hours. With the addition of site traffic for this horizon, the intersection will remain within capacity, with overall v/c ratios of 0.86 and 0.88 in the weekday morning and afternoon peak hours, respectively.

With the addition of future background traffic in the 10-year planning horizon, the intersection will remain within capacity, with an overall v/c ratio of 0.88 in both peak hours. With the addition of site traffic for this horizon, the intersection will remain within capacity, with overall v/c ratios of 0.91 and 0.92 in the weekday morning and afternoon peak hours, respectively.

With development of the Site as planned, the intersection can operate within capacity at all times.

12.3.2 Britannia Road West / Ellesboro Drive

Under existing conditions, the Britannia Road West / Ellesboro Drive signalized intersection operates under acceptable conditions at all times. Overall volume to capacity (v/c) ratios are 0.58 and 0.51 for the weekday morning and afternoon peak hours, respectively.

With the addition of future background traffic in the 5-year planning horizon, the intersection will remain within capacity, with overall v/c ratios of 0.59 and 0.52 in the weekday morning and weekday afternoon peak hours, respectively. With the addition of site traffic for this horizon, the intersection will remain within capacity, with overall v/c ratios of 0.60 and 0.53 in the weekday morning and afternoon peak hours, respectively.

With the addition of future background traffic in the 10-year planning horizon, the intersection will remain within capacity, with overall v/c ratios of 0.60 and 0.53 in the weekday morning and weekday afternoon peak hours, respectively. With the addition of site traffic for this horizon, the intersection will remain within capacity, with overall v/c ratios of 0.61 and 0.54 in the weekday morning and afternoon peak hours, respectively.

With development of the Site as planned, the intersection can operate within capacity at all times.

12.4 UNSIGNALIZED INTERSECTIONS

Unsignalized intersection operations were analyzed under existing, future background and future total traffic conditions for both the morning and afternoon peak hours. **Table 22** summarizes results of the unsignalized intersection traffic operations analyses, including the Site driveway.

TABLE 22 UNSIGNALIZED INTERSECTION ANALYSIS SUMMARY

	Existing		5-Year Future Background		5-Year Future Total		10-Year Future Background		10-Year Future Total	
	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
Queen Street North / Matlock Avenue										
WBLR	C (C)	17.0 (15.8)	C (C)	17.0 (15.7)	C (C)	17.6 (16.5)	C (C)	17.2 (16.0)	C (C)	17.9 (16.7)
SBL	B (A)	12.3 (9.3)	B (A)	12.3 (9.3)	B (A)	12.6 (9.5)	B (A)	12.4 (9.4)	B (A)	12.8 (9.6)
Queen Street North / 40 Queen Street North N Driveway / 53 Queen Street North Driveway										
EBLTR	A (B)	0.0 (13.2)	A (B)	0.0 (13.3)	A (B)	0.0 (13.5)	A (B)	0.0 (13.4)	A (B)	0.0 (13.5)
WBLTR	A (C)	0.0 (15.9)	A (C)	0.0 (15.9)	A (C)	0.0 (16.5)	A (C)	0.0 (16.1)	A (C)	0.0 (16.6)
NBL	A (B)	0.0 (11.2)	A (B)	0.0 (11.3)	A (B)	0.0 (11.5)	A (B)	0.0 (11.4)	A (B)	0.0 (11.6)
SBL	A (A)	0.0 (8.7)	A (A)	0.0 (8.7)	A (A)	0.0 (8.8)	A (A)	0.0 (8.7)	A (A)	0.0 (8.8)
Queen Street North / 40 Queen Street North S Driveway / Proposed Site Driveway (Future Only)										
EBLTR	A (C)	0.0 (17.1)	A (C)	0.0 (17.4)	A (C)	0.0 (21.3)	A (C)	0.0 (17.6)	A (C)	0.0 (21.6)
WBLTR	Future only				C (C)	21.4 (16.9)	Future only		C (C)	22.0 (17.2)
SBL					B (A)	10.6 (8.9)			B (A)	10.7 (9.0)
Queen Street North / Petro Canada N Driveway / Existing Site Driveway (Existing Only)										
EBLTR	A (A)	0.0 (0.0)	A (A)	0.0 (0.0)	Existing only		A (A)	0.0 (0.0)	Existing only	
WBLTR	C (B)	19.6 (14.7)	C (B)	19.7 (14.7)			C (B)	20.1 (14.9)		
NBL	A (B)	8.9 (11.3)	A (B)	9.0 (11.4)	A (B)	9.2 (11.8)	A (B)	9.1 (11.5)	A (B)	9.3 (11.9)
SBL	B (A)	10.4 (8.8)	B (A)	10.4 (8.8)	Existing only		B (A)	10.5 (8.9)	Existing only	
Queen Street North / Petro Canada S Driveway										
EBLR	B (C)	10.4 (15.9)	B (C)	10.5 (16.2)	B (C)	10.8 (16.5)	B (C)	10.6 (16.3)	B (C)	10.9 (16.7)
NBL	A (B)	0.0 (11.4)	A (B)	0.0 (11.5)	A (B)	0.0 (11.7)	A (B)	0.0 (11.5)	A (B)	0.0 (11.7)
Britannia Road West / Arch Road										
WBL	B (B)	13.7 (10.8)	B (B)	14.1 (10.9)	B (B)	14.3 (10.9)	B (B)	14.3 (11.0)	B (B)	14.5 (11.0)
NBLR	C (A)	15.7 (9.4)	C (A)	16.1 (9.5)	C (A)	16.3 (9.5)	C (A)	16.4 (9.5)	C (A)	16.6 (9.6)

Table continued on following page.

	Existing		5-Year Future Background		5-Year Future Total		10-Year Future Background		10-Year Future Total	
	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
Britannia Road West / Earl Street										
WBL	C (B)	20.4 (10.9)	C (B)	21.1 (11.0)	C (B)	21.5 (11.0)	C (B)	21.2 (11.1)	C (B)	21.7 (11.1)
NBLR	B (A)	14.1 (9.5)	B (A)	14.4 (9.6)	B (A)	14.5 (9.6)	B (A)	14.7 (9.6)	B (A)	14.9 (9.6)

Note:
1. 00 (00): Weekday morning peak hour (Weekday afternoon peak hour).
2. Movements not reported by Synchro are not shown in this table due to zero (0) seconds calculated delay.

All area unsignalized intersections, inclusive of the Site driveway, operate adequately today and will continue to operate well under future conditions with background traffic growth and redevelopment of the Site.

12.5 SIGNAL WARRANT – QUEEN STREET N & MATLOCK AVENUE

A signal warrant analysis was undertaken for the intersection of Queen Street North and Matlock Avenue, under existing, 10-year future background and 10-year future total conditions. *Ontario Traffic Manual Book 12 (March, 2012*) was consulted for the warrant.

In the absence of 8-hour traffic volumes for the intersection, 'Justification 7 – Projected Volumes' was utilized to determine the future need for a traffic signal at the existing intersection. As part of the transportation study, peak hour volumes (PHV) are estimated and converted into average hourly volumes (AHV) which can be compared with traffic signal justification thresholds for projected volumes.

As all three scenarios failed to meet the traffic signal justification, a signal isn't warranted or required at the intersection at this time. Justification tables demonstrating further details are included in **Appendix J**.

Pedestrian crossing volumes across Queen Street North at this location are also very low (less than one per hour on average), as only a railway reserve lies opposite Matlock Drive on the west side of Queen Street North. Consequently, further to not explicitly meeting the signal warrant, a traffic signal would not have any value in enhancing pedestrian safety or connectivity at this location.

13.0 COMMUNITY IMPACTS

One of the key considerations in this study is the generation of traffic resulting from development of the Site. While it is anticipated that the project will generate additional vehicular activity, impacts on the community are expected to be minimal and generally localized to the arterial road network.

Nearby arterial roads are designed to handle higher traffic volumes and have sufficient capacity to accommodate the projected increase. Existing intersections near the proposed development have been evaluated and found to be capable of accommodating the additional traffic generated by the Site. **Table 23** provides a summary of net-new two-way traffic volumes added to key road sections within the study area during peak hours.

TABLE 23 NET-NEW TWO-WAY TRAFFIC VOLUME SUMMARY

Road Name	Road Classification	Net-New Two-Way Volumes
Britannia Road West	Regional Arterial	20 (25)
Queen Street North	Major Collector	75 (85)
Queen Street South	Major Collector (Scenic Route)	30 (40)
Arch Road, Earl Street, Matlock Avenue, Ellesboro Drive	Local	< 5

Notes:
1. xx (xx) = weekday morning peak hour (weekday afternoon peak hour).

In summary, the immediate residential areas surrounding the development are unlikely to experience any noticeable impact on traffic flow or congestion.

14.0 SUMMARY AND CONCLUSIONS

Key findings of the transportation review are as follows:

Context

1. The Site is currently known as the “Streetsville Plaza”. The Streetsville Plaza contains the following stores and services: Qasimul Uloom (Islamic Culture) Centre, Erum’s Creations, Evan’s Variety store, Streetsville Martial Arts Karate, Belmonte Unisex Salon Hairstylists, Tulipz Spa, Queen Street Burger and Taters, Mediterranean Meats & Deli, Smart Vaccum Plus, Baghad Pastries & Catering, Offside Sports Bar and Roti Vybz. In addition to the stores and services located within the commercial plaza, there is a parking lot available in front of the strip of stores.

2. The subject Site is located in an area that contain sidewalks along Queen Street North and the surrounding roads to allow for pedestrian movement, cycling facilities, and MiWay services including the 10, 39, 43, 44, 87 and 306 bus routes.

3. There are various cycling facilities surrounding the site including the immediate bike lane along Queen Street South and a multi-use trail along Britannia Road West. The existing cycling network is planned to be further connected with the proposed new cycling facilities that will improve connectivity.

Proposed Development

4. A Zoning By-law Amendment (ZBA) and Official Plan Amendment (OPA) application is being made to permit the proposed development of a 9-storey mixed-used building consisting of 444 residential units and a retail component with a GFA of 1,423 m^2 located at-grade.

5. The applicant is proposing to provide a total parking supply of 359 parking spaces, including 311 residential parking spaces, 22 residential visitor parking spaces, 26 retail parking spaces. In addition to the overall parking supply, six (6) tandem parking spaces are proposed. Parking is provided in an underground two-level parking garage. A total of 170 parking spaces, including 26 retail spaces, 22 residential visitors and 122 residential spaces are located in the P1 level. A total of 189 residential spaces are located in the P2 level. In addition, the six (6) tandem spaces are located in the P2 level of the garage. Access to the underground parking garage is provided via the proposed driveway extending from Queen Street North.

6. A total of 386 bicycle parking spaces, including 330 long-term residential bicycle parking spaces and 56 short-term bicycle parking spaces are proposed for the Site. From the long-term bicycle parking supply, 326 are residential long-term spaces and four (4) are for retail long term spaces. From the short-term bicycle parking supply, 48 are residential short-term spaces, and eight (8) are short-term spaces. Access to the residential long-term and short-term bicycle storage rooms are provided from the path provided south of the site. The pathway connects east of Queen Street North.

7. Two loading spaces are proposed to be located at-grade adjacent to the proposed driveway extending from Queen Street North.

Transportation Demand Management (TDM) Plan

8. A proposed transportation demand management (TDM) plan is proposed for the Site, both as a method to reduce vehicular traffic but also to reduce parking demand. Highlights of the Plan, in addition to the proposed parking supply reductions, are provided below:

    - Provision of public pedestrian sidewalks on all new public streets within the Project's boundaries including a new pedestrian / cyclist pathway south of the building with adequate lighting;
    - Provision of 386 bicycle parking spaces including 330 long-term bicycle parking spaces and 56 short-term spaces;
    - Implementation of two bicycle repair/maintenance stations to be provided on-site;
    - Implementation of a transit screen in the lobby;
    - Provision of a pre-loaded PRESTO card with a value of $50 to each first-time unit owner;
    - Implementation of travel information brochures;
    - A reduced parking rate is proposed on-site to reduce car dependence;
    - Opportunities will be explored to offer ride-sharing programs on-site such as participation in the Smart Commute program; and
    - Smart lockers will be provided to facilitate convenient deliveries for residents.

Vehicular Parking

9. Application of the parking requirements outlined in the City of Mississauga's Zoning By-law 0225-2007 (amended by Zoning By-law 0118-2022) (Precinct 4) results a total requirement of 576 parking spaces, inclusive of 488 resident spaces and 88 non-resident spaces to be shared between resident visitors and retail visitors.

10. It is proposed to provide less parking than is required by the Zoning By-law 0225-2007 in accordance with 311 residential parking spaces (0.70 spaces per unit), 22 residential visitor parking spaces and 26 retail parking spaces resulting in a total parking supply of 359 parking spaces. In addition to the proposed parking supply, 6 tandem parking spaces will be provided.

11. In summary, the proposed resident parking supply rate (0.70 spaces per unit) and non-residential parking supply is considered to be appropriate based upon the following:
    - The subject Site is in close proximity to existing transit services including the MiWay bus routes (i.e. 43, 44, 10, 39, 87, and 306 bus routes), the Streetsville GO station, and bicycle route facilities that provide non-automobile dependent travel connections across the City;
    - A series of Transportation Demand Management measures proposed to be incorporated in the development to support the use of non-automobile travel modes;
    - A review of parking demands observed / recorded by BA Group at another residential condominium including resident and residential visitor supplies in the City of Mississauga with similar transit context; and
    - Range of approvals for reductions in resident parking supply ratios for developments with less proximate access to a GO Station.

Bicycle Parking

12. Bicycle parking standards have been introduced in the newly amended Zoning By-law 0225-2007 by the bicycle parking requirements outlined in Zoning By-law 0118-2022. Application of the bicycle parking standards to the Site will result in a total provision of 293 bicycle parking spaces, including five (5) spaces for retail and 288 spaces for residential.

13. A total of 386 bicycle parking spaces, including 330 long-term residential bicycle parking spaces and 56 short-term bicycle parking spaces are proposed for the Site. From the long-term bicycle parking supply, 326 are residential long-term spaces and four (4) are for retail long term spaces. From the short-term bicycle parking supply, 48 are residential short-term spaces, and eight (8) are short-term spaces. Access to the residential long-term and short-term bicycle storage rooms are provided from the path provided south of the site. The pathway connects east of Queen Street North.

14. The proposed bicycle parking supply meets and exceeds the requirements outlined in Zoning By-law 0225-2007, and is therefore an appropriate supply to serve the cycling needs of the proposed development. By providing a bicycle parking supply (386 bicycle parking spaces) that exceeds the By-law's requirement of 293 bicycle parking spaces, the applicant is not only ensuring compliance but also strategically supporting the reduced parking approach adopted for the development.

Loading

15. Application of the City of Mississauga Zoning By-law 0225-2007 loading standards to the proposed development requires the provision of two (2) loading spaces, including one loading space for the residential use and one loading space for the retail component of the proposed development.

16. The development proposal includes two loading spaces located at-grade adjacent to the proposed northeast driveway. Loading access is provided from the proposed northeast driveway that extends from Queen Street North. The proposed loading supply meets the Zoning By-law 0225-2007 requirements.

Multi-Modal Travel Demand Forecasts

17. Volumes were balanced to the ‘primary’ intersection at Britannia Road West / Queen Street, as this intersection was surveyed in 2019 before the onset of the Covid-19 pandemic. Volumes were balanced in all four cardinal directions along each corridor, to ensure matching to the 2019 survey at the master intersection.

18. Based on forecasting model outputs from both the City of Mississauga (for Queen Street) and the Region of Peel (for Britannia Road West), compounding corridor growth rates were applied along both corridors. All corridor growth rates have been applied over 10 years and are compounded annually.

19. Mississauga’s development applications map was reviewed to check for other development applications within the surrounding area that may impact traffic growth at the study intersections. It was identified that the development at 6, 10, and 12 Queen Street South, 16 James Street, 2 William Street and 0 William Street (OZ/OPA 21 14) would impact the area street network and has therefore been considered as background traffic based on NexTrans’ transportation report dated August 2021. The development includes 77 townhomes with retail space fronting Queen Street.

20. Traffic surveys for the Site's existing driveway demonstrated the generation of some peak hour traffic. Future total conditions account for existing Site traffic removal based on the approximate trip distribution patterns realized within the existing survey data.

21. The vehicle trip generation rates adopted for the purposes of this study are based on rates outlined within the ITE Trip Generation Manual 11th Edition for Land Use Codes 221 (Mid-Rise Residential) and 822 (Strip Retail Plaza <40k).

22. Vehicle trip generation is extrapolated into multimodal person trips, based on methodology in Section 5.3 of the ITE Trip Generation Handbook (3rd Edition). The volumes are subsequently adjusted from ITE's baseline vehicle mode share to the vehicle mode share applicable to the Site.

23. The Site is expected to generate in the order of **115** and **125** new two-way vehicle trips in the weekday morning and afternoon peak hours, respectively.

24. TTS data suggest that the area has an auto driver mode share in the order of 64% and 67% for morning outbound and afternoon inbound home-based trips during the peak travel periods, respectively.

25. The proposed development is forecast to generate **180** and **185** net-new two-way person trips during the weekday morning and weekday afternoon peak hours, respectively.

Traffic Operations Analysis

26. Traffic operations analyses have been undertaken during the weekday morning and afternoon street peak hours under baseline existing, future background and future total conditions.

27. Overall, signalized intersections proximate to the Site operate well in all scenarios. The Site can be comfortably accommodated by the existing road network with no changes to signal timings required.

28. Unsignalized intersection operations were analyzed under existing, future background and future total traffic conditions for both the morning and afternoon peak hours.

29. All area unsignalized intersections, inclusive of the Site driveway, operate well today and will continue to operate acceptably under future conditions with background traffic growth and redevelopment of the Site.

30. A signal warrant analysis was undertaken for the intersection of Queen Street North and Matlock Avenue, under existing, 10-year future background and 10-year future total conditions. As all three scenarios failed to meet the traffic signal justification, a signal isn't warranted or required at the intersection at this time.

Overall Conclusion

31. **Based upon our review of the development proposal for 21-51 Queen Street North, including 444 residential units and 1,423 m^2 GFA of retail space, can be reasonably accommodated on the surrounding area road network for all types of travel modes (i.e. transit, walking, cycling and vehicle).**

Appendix A:
Reduced Scale Architectural Plans

SITE STATISTICS INCLUDING EASEMENT AREA				
Area	Building Foot Print	TOTAL GFA	COVERAGE	FSI
9,676 m²	6,009 m²	28,238 m²	0.62	2.92

GROSS FLOOR AREA (GFA) - APARTMENT ZONE

MEANS THE SUM OF THE AREAS OF EACH STOREY OF A BUILDING ABOVE OR BELOW ESTABLISHED GRADE, MEASURED FROM THE EXTERIOR OF OUTSIDE WALLS OF THE BUILDING INCLUDING FLOOR AREA OCCUPIED BY INTERIOR WALLS BUT EXCLUDING ANY PART OF THE BUILDING USED FOR MECHANICAL FLOOR AREA, STAIRWELLS, ELEVATORS, MOTOR VEHICLE PARKING, BICYCLE PARKING, STORAGE LOCKERS, BELOW-GRADE STORAGE, ANY ENCLOSED AREA USED FOR THE COLLECTION OR STORAGE OF DISPOSABLE OR RECYCLABLE WASTE GENERATED WITHIN THE BUILDING, COMMON FACILITIES FOR THE USE OF THE RESIDENTS OF THE BUILDING, A DAY CARE AND AMENITY AREA.

*AVERAGE GRADE= 165.55 + 165.05 /2 = 165.30

TOTAL OPEN TO BELOW AREA IS NOT INCLUDED IN GCA	
LEVEL	Area
LEVEL 2	2,229 m²

STATISTICS/ TOTAL

LEVEL	NUMBER OF REPEATED FLOOR	GCA (ABOVE GRADE)- TOTAL: GCA	GCA sf	DEDUCTION: PARKING	STORAGE / BIKE	GARBAGE CHUTE	ELEVATOR	MECH.PH	MECH./ELEC.	STAIR	GARBAGE LOADING	RESIDENTIAL GARBAGE LOADING	RETAIL GARBAGE LOADING	GARBAGE RETAIL	INDOOR AMENITY	TOTAL DEDUCTION	GFA-TOTAL: GFA	GFA sf
LEVEL 1	1	5,648.6 m²	60,801.1 SF	247.2 m²	406.5 m²	0.3 m²	36.9 m²	0 m²	1.2 m²	63.0 m²	283.4 m²	216.1 m²	23.9 m²	135.4 m²	313.5 m²	1,727.3 m²	3,921.3 m²	42,208.3 SF
LEVEL 2	1	3,442.1 m²	37,050.7 SF	0.0 m²	0.0 m²	0.6 m²	25.3 m²	0 m²	359.4 m²	101.5 m²	0.0 m²	0.0 m²	0.0 m²	0.0 m²	906.9 m²	1,393.6 m²	2,048.5 m²	22,049.8 SF
LEVEL 3	1	4,052.4 m²	43,619.9 SF	0.0 m²	0.0 m²	0.6 m²	22.8 m²	0 m²	11.8 m²	55.8 m²	0.0 m²	0.0 m²	0.0 m²	0.0 m²	258.2 m²	349.2 m²	3,703.2 m²	39,861.4 SF
LEVEL 4	1	4,052.9 m²	43,624.5 SF	0.0 m²	0.0 m²	0.6 m²	22.8 m²	0 m²	11.8 m²	55.9 m²	0.0 m²	0.0 m²	0.0 m²	0.0 m²	0 m²	91 m²	3,961.8 m²	42,644.5 SF
LEVEL 5	1	3,171.9 m²	34,142.3 SF	0.0 m²	0.0 m²	0.6 m²	22.8 m²	0 m²	9.4 m²	53.1 m²	0.0 m²	0.0 m²	0.0 m²	0.0 m²	0 m²	85.8 m²	3,086.1 m²	33,218.3 SF
LEVEL 6	1	3,201.3 m²	34,458 SF	0.0 m²	0.0 m²	0.6 m²	22.8 m²	0 m²	9.4 m²	53.1 m²	0.0 m²	0.0 m²	0.0 m²	0.0 m²	0 m²	85.9 m²	3,115.4 m²	33,533.9 SF
LEVEL 7-8	2	5,883.4 m²	63,328.6 SF	0.0 m²	0.0 m²	1.2 m²	45.5 m²	0 m²	18.8 m²	102.7 m²	0.0 m²	0.0 m²	0.0 m²	0.0 m²	0 m²	168.2 m²	5,715.2 m²	61,518 SF
LEVEL 9	1	2,772.8 m²	29,845.9 SF	0.0 m²	0.0 m²	0.6 m²	22.8 m²	0 m²	9.5 m²	53.0 m²	0.0 m²	0.0 m²	0.0 m²	0.0 m²	0 m²	85.9 m²	2,686.9 m²	28,921.7 SF
MPH	1	478 m²	5,145.6 SF	0.0 m²	0.0 m²	0.0 m²	32.5 m²	410.4 m²	0.0 m²	35.1 m²	0.0 m²	0.0 m²	0.0 m²	0.0 m²	0 m²	478 m²	0 m²	0 SF
		32,703.4 m²	352,016.7 SF	247.2 m²	406.5 m²	5.0 m²	254.0 m²	410.4 m²	431.3 m²	573.3 m²	283.4 m²	216.1 m²	23.9 m²	135.4 m²	1,478.6 m²	4,465 m²	28,238.4 m²	303,955.9 SF

STATISTICS/ RESIDENTIAL

LEVEL	NUMBER OF REPEATED FLOOR	GCA(ABOVE GRADE)- RES.: GCA	GCA sf	DEDUCTION: PARKING	STORAGE / BIKE	GARBAGE CHUTE	ELEVATOR	MECH.PH	MECH./ELEC.	STAIR	GARBAGE LOADING	RESIDENTIAL GARBAGE LOADING	RETAIL GARBAGE LOADING	GARBAGE RETAIL	INDOOR AMENITY	TOTAL DEDUCTION	GFA- RESIDENTIAL: GFA	GFA sf
LEVEL 1	1	4,066.1 m²	43,767.2 SF	247.2 m²	406.5 m²	0.3 m²	36.9 m²	0 m²	1.2 m²	63.0 m²	283.4 m²	216.1 m²	0.0 m²	0.0 m²	313.5 m²	1,568 m²	2,498.1 m²	26,889.4 SF
LEVEL 2	1	3,442.1 m²	37,050.7 SF	0.0 m²	0.0 m²	0.6 m²	25.3 m²	0 m²	359.4 m²	101.5 m²	0.0 m²	0.0 m²	0.0 m²	0.0 m²	906.9 m²	1,393.6 m²	2,048.5 m²	22,049.8 SF
LEVEL 3	1	4,052.4 m²	43,619.9 SF	0.0 m²	0.0 m²	0.6 m²	22.8 m²	0 m²	11.8 m²	55.8 m²	0.0 m²	0.0 m²	0.0 m²	0.0 m²	258.2 m²	349.2 m²	3,703.2 m²	39,861.4 SF
LEVEL 4	1	4,052.9 m²	43,624.5 SF	0.0 m²	0.0 m²	0.6 m²	22.8 m²	0 m²	11.8 m²	55.9 m²	0.0 m²	0.0 m²	0.0 m²	0.0 m²	0.0 m²	91 m²	3,961.8 m²	42,644.5 SF
LEVEL 5	1	3,171.9 m²	34,142.3 SF	0.0 m²	0.0 m²	0.6 m²	22.8 m²	0 m²	9.4 m²	53.1 m²	0.0 m²	0.0 m²	0.0 m²	0.0 m²	0.0 m²	85.8 m²	3,086.1 m²	33,218.3 SF
LEVEL 6	1	3,201.3 m²	34,458 SF	0.0 m²	0.0 m²	0.6 m²	22.8 m²	0 m²	9.4 m²	53.1 m²	0.0 m²	0.0 m²	0.0 m²	0.0 m²	0.0 m²	85.9 m²	3,115.4 m²	33,533.9 SF
LEVEL 7-8	2	5,883.4 m²	63,328.6 SF	0.0 m²	0.0 m²	1.2 m²	45.5 m²	0 m²	18.8 m²	102.7 m²	0.0 m²	0.0 m²	0.0 m²	0.0 m²	0.0 m²	168.2 m²	5,715.2 m²	61,518 SF
LEVEL 9	1	2,772.8 m²	29,845.9 SF	0.0 m²	0.0 m²	0.6 m²	22.8 m²	0 m²	9.5 m²	53.0 m²	0.0 m²	0.0 m²	0.0 m²	0.0 m²	0.0 m²	85.9 m²	2,686.9 m²	28,921.7 SF
MPH	1	478 m²	5,145.6 SF	0.0 m²	0.0 m²	0.0 m²	32.5 m²	410.4 m²	0 m²	35.1 m²	0.0 m²	0.0 m²	0.0 m²	0.0 m²	0.0 m²	478 m²	0 m²	0 SF
		31,120.9 m²	334,982.8 SF	247.2 m²	406.5 m²	5.0 m²	254.0 m²	410.4 m²	431.3 m²	573.3 m²	283.4 m²	216.1 m²	0.0 m²	0.0 m²	1478.6 m²	4,305.7 m²	26,815.3 m²	288,637 SF

STATISTICS/ RETAIL

LEVEL	NUMBER OF REPEATED FLOOR	GCA(ABOVE GRADE)- RETAIL: GCA	GCA sf	DEDUCTION: PARKING	Area Storage/ Bike	GARBAGE CHUTE	ELEVATOR	MECH.PH	MECH./ELEC.	STAIR	GARBAGE LOADING	RESIDENTIAL GARBAGE LOADING	RETAIL GARBAGE LOADING	GARBAGE RETAIL	INDOOR AMENITY	TOTAL DEDUCTION	GFA- RETAIL: GFA	GFA sf
LEVEL 1	1	1,582.5 m²	17,033.9 SF	0.0 m²	0.0 m²	0.0 m²	0.0 m²	0 m²	0 m²	0.0 m²	0 m²	0.0 m²	23.9 m²	135.4 m²	0.0 m²	159.3 m²	1,423.2 m²	15,318.9 SF
		1,582.5 m²	17,033.9 SF	0.0 m²	0.0 m²	0.0 m²	0.0 m²	0 m²	0 m²	0.0 m²	0 m²	0.0 m²	23.9 m²	135.4 m²	0.0 m²	159.3 m²	1,423.2 m²	15,318.9 SF

NOTE: 90% OF LOADING AREA HAS BEEN DEDUCTED FOR RESIDENTIAL GFA CALCULATION
10% OF LOADING AREA HAS BEEN DEDUCTED FOR RETAIL GFA CALCULATION

LOADING AREA REQUIRED		REQUIRED	PROVIDED
RETAIL:	BETWEEN 2,350 sm UP TO 7,500 sm	2	N/A
RETAIL:	BETWEEN 250 sm UP TO 2,350 sm	1	1
RESIDENTIAL	APARTMENT MORE THAN 30 UNITS	1	1

GCA (BELOW GRADE PARKING AREA)			
Level	NUMBER OF REPEATED FLOOR	GCA	GCA sf
P2	1	7,240 m²	77,931 SF
P1	1	7,296.5 m²	78,539 SF
		14,536.5 m²	156,470 SF

RESIDENTIAL UNIT COUNT

LEVEL	NUMBER OF REPEATED FLOOR	RESIDENTIAL UNIT COUNT: STUDIO	1B	1BD	2B	2BD	3B	TOTAL UNIT
LEVEL 1	1	8	2	1	10	0	0	21
LEVEL 2	1	20	0	1	10	0	0	31
LEVEL 3	1	23	2	32	8	0	0	65
LEVEL 4	1	27	2	33	9	0	0	71
LEVEL 5	1	22	2	22	9	0	0	55
LEVEL 6	1	20	2	24	9	0	0	55
LEVEL 7-8	2	36	4	44	16	0	0	100
LEVEL 9	1	19	1	17	5	2	2	46
MPH	1	0	0	0	0	0	0	0
		175	15	174	76	2	2	444

UNIT COUNT

STUDIO	1B	1BD	2B	2BD	3B	TOTAL UNIT
175	15	174	76	2	2	444

*UNIT BREAKDOWN %

NUMBER OF UNITS	STUDIO	1B	1 BD	2B	2BD	3B	TOTAL %
444	39.4%	3.4%	39.2%	17.1%	0.5%	0.5%	100.0

*UNIT BREAKDOWN COUNT%

NUMBER OF UNITS	STUDIO	1B+1BD	2B+2BD+3B	TOTAL %
444	39.4%	42.6%	18.0%	100.0

*AVERAGE UNIT

NUMBER OF UNITS	SALEABLE	AVERAGE UNITS	AVERAGE UNIT SF
444	23,023 m²	52 m²	558 SF

REQUIRED BF UNITS 15%

STUDIO_ BF %	1 B+ 1BD _BF%	2B+2BD_ BF %	3B_BF %
26.25	28.35	11.7	0

MIN AMENITY AREA IS THE GREATER OF 5.6 sm PER UNIT OR 10% OF THE SITE AREA

TOTAL PROVIDED AMENITY

LEVEL	Area
LEVEL 1	313 m²
LEVEL 2	907 m²
LEVEL 3	1,098 m²
LEVEL 3	258 m²
Grand total	2,576 m²

REQUIRED AMENITY AREA

NET UNITS	TOTAL
444	2,486.4

PROVIDED INTERIOR AMENITY

LEVEL	Area
LEVEL 1	313 m²
LEVEL 2	907 m²
LEVEL 3	258 m²
Grand total	1,479 m²

INTERIOR AMENITY RATIO: TOTAL AREA / NUMBER OF UNIS = 1,469 /444=3.3

MIN EXTERIOR AMENITY 55 sm

PROVIDED EXTERIOR AMENITY

LEVEL	Area
LEVEL 3	1,098 m²
Grand total	1,098 m²

EXTERIOR AMENITY RATIO: TOTAL AREA / NUMBER OF UNIS = 1,098/444=2.47

3	2023-06-19	RE ISSUED FOR OPA & ZBA COORDINATION
2	2022-01-07	ISSUED FOR OPA & ZBA COORDINATION
1	2021-03-02	ISSUED FOR PRE-APPLICATION MEETING

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CLIENT:
LAMBDEVELOPMENTCORP

PROJECT:
THE MISS QUEEN
21-51 QUEEN ST. N, MISSISSAUGA, ONTARIO

SCALE:
DATE: DECEMBER 2020

TITLE
STATISTICS

PROJECT NO.
20-121

A-002

RESIDENTIAL UNIT COUNT B.F								
		RESIDENTIAL UNIT COUNT						
LEVEL	NUMBER OF REPEATED FLOOR	STUDIO	1B	1BD	2B	2BD	3B	TOTAL UNIT
LEVEL 1	1	0	0	0	1	0	0	1
LEVEL 2	1	3	0	0	0	0	0	3
LEVEL 3	1	4	0	5	1	0	0	10
LEVEL 4	1	4	0	5	1	0	0	10
LEVEL 5	1	3	0	5	2	0	0	10
LEVEL 6	1	3	0	5	2	0	0	10
LEVEL 7-8	2	6	0	10	4	0	0	20
LEVEL 9	1	4	0	0	1	0	2	7
		27	0	30	12	0	2	71

SALEABLE AREA					
		SALEABLE (RESIDENTIAL)		SALEABLE (RETAIL)	
LEVEL	NUMBER OF REPEATED FLOOR	SALEABLE	SALEABLE sf	RETAIL LEASABLE	RETAIL LEASABLE sf
LEVEL 1	1	1,204.9 m²	12,969 SF	1,423.2 m²	15,319 SF
LEVEL 2	1	1,416 m²	15,242 SF	0 m²	0 SF
LEVEL 3	1	3,364.3 m²	36,213 SF	0 m²	0 SF
LEVEL 4	1	3,622.9 m²	38,997 SF	0 m²	0 SF
LEVEL 5	1	2,838.6 m²	30,554 SF	0 m²	0 SF
LEVEL 6	1	2,867.9 m²	30,870 SF	0 m²	0 SF
LEVEL 7-8	2	5,250 m²	56,510 SF	0 m²	0 SF
LEVEL 9	1	2,458.4 m²	26,462 SF	0 m²	0 SF
MPH	1	0 m²	0 SF	0 m²	0 SF
		23,023 m²	247,818 SF	1,423.2 m²	15,319 SF

UNIT SIZE:	SM	SF
STUDIO	29	313
	43	458
1B-1B+D	43	458
	63	681
2B-2B+D	61	661
	83	893
3B	87	941
	94	1,013

TOTAL PROPOSED EV PARKING	
EV PARKING TYPE	COUNT
RESIDENTIAL REGULAR PARKING	98
RETAIL REGULAR PARKING	7
VISITOR REGULAR PARKING	9
	114

EV PARKING REQUIREMENTS (PROVIDED BY BA GROUP)	
USE	PARKING REQUIREMENTS
RESIDENTIAL - CONDOMINIUM APARTMENT	98
RETAIL STORE	7
VISITOR - CONDOMINIUM APARTMENT	9
TOTAL	**114**

*GARBAGE	GARBAGE ROOM	REQUIRED sm	PROVIDED sm
	RESIDENTIAL	127.5	188.31
	RETAIL		134.94
	BULKROOM	10	41
	STAGING	44.4	54.10
	TOTAL (SM)	181.9	418.35

TOTAL GARBAGE AREA	
LEVEL	GARBAGE AREA
P1	75.40 m²
LEVEL 1	283.41 m²
	358.81 m²

TOTAL RETAIL GARBAGE	
LEVEL	RETAIL GARBAGE
LEVEL 1	135.39 m²
	135.39 m²

GARBAGE ROOM: MIN. 25 sm FOR THE FIRST 50 UNITS AND 13 sm FOR ADDITIONAL 50
STAGING: 5 sm FOR EVERY 50 UNITS
GARBAGE (1/50) RECYCLE (1/50) ORGANIC (1/100)

* MIN. CLEAR HEIGHT FOR LOADING = 7.5m

PARKING REQUIREMENTS (PROVIDED BY BA GROUP)			
Resident Rate			
USE	UNITS / SQ.M	BY-LAW	PARKING REQUIREMENTS
RESIDENTIAL - CONDOMINIUM APARTMENT	444 UNITS	1.1 SPACE / UNITS	488
RESIDENTIAL SUBTOTAL			**488**
Rate NON - RESIDENTIAL RATE			
USE	**UNITS / SQ.M**	**BY-LAW**	**PARKING REQUIREMENTS**
VISITOR - CONDOMINIUM APARTMENT	444 UNITS	0.2 SPACE / UNITS	88
Retail Store	1,424 M2 GFA	5 Space /100 M2 GFA	71
NON- RESIDENTIAL SUBTOTAL(BEFORE SHARING)			159
NON- RESIDENTIAL SHARED PARKING ARRAGEMENT			88
NON- RESIDENTIAL SUBTOTAL (AFTER SHARING)			**88**
TOTAL			
TOTAL(RESIDENTIAL+NON- RESIDENTIAL AFTER...			**576**

TOTAL RETAIL PARKING		
LEVEL	PARKING TYPE	COUNT
P1	RETAIL REGULAR PARKING	25
P1	RETAIL BARRIER FREE PARKING	1
		26

TOTAL VISITOR PARKING		
LEVEL	PARKING TYPE	COUNT
P1	VISITOR REGULAR PARKING	22
		22

TOTAL RESIDENTIAL (NOT INCLUD TANDEM)		
LEVEL	PARKING TYPE	COUNT
P2	RESIDENTIAL REGULAR PARKING	186
P1	RESIDENTIAL REGULAR PARKING	120
P2	RESIDENTIAL BARRIER FREE TYPE A PARKING	3
P1	RESIDENTIAL BARRIER FREE TYPE A PARKING	2
		311

TOTAL PROPOSED PARKING (TANDEM)		
LEVEL	PARKING TYPE	COUNT
P2	TANDEM REGULAR PARKING (SMALL CAR)	6
		6

TOTAL PROPOSED PARKING (NOT INCLUD TANDEM)	
Level	Count
P2	189
P1	170
Grand total	359

TOTAL PROPOSED PARKING(INCLUDING TANDEM)		
LEVEL	PARKING TYPE	COUNT
P2	RESIDENTIAL BARRIER FREE TYPE A PARKING	3
P1	RESIDENTIAL BARRIER FREE TYPE A PARKING	2
		5
P2	RESIDENTIAL REGULAR PARKING	186
P1	RESIDENTIAL REGULAR PARKING	120
		306
P1	RETAIL BARRIER FREE PARKING	1
		1
P1	RETAIL REGULAR PARKING	25
		25
P2	TANDEM REGULAR PARKING (SMALL CAR)	6
		6
P1	VISITOR REGULAR PARKING	22
		22
		365

TOTAL PROPOSED PARKING	
TOTAL PROPOSED PARKING	**Count**
RESIDENTIAL PARKING	311
RETAIL PARKING	26
TANDEM PARKING	6
VISITOR PARKING	22
	365

REQUIRED PARKING (Zoning)			
REIDENT - CONDOMINIUM APARTMENT (TOTAL UNIT X 1.1)	VISITOR - CONDOMINIUM APARTMENT (TOTAL UNIT X 0.2)	RETAIL (5 SPACE / 100 M2 GFA)	TOTAL
488.4	88.8	71.2	648

PROVIDED RESIDENTIAL SHORT-TERM BIKE		
LEVEL	TYPE	COUNT
Level 1	<varies>	48
		48

PROVIDED RESIDENTIAL LONG-TERM BIKE		
LEVEL	TYPE	COUNT
Level 1	RES. 1525X450 STACK BIKE	274
Level 1	RES. 1700X450 STACK BIKE	52
		326

PROVIDED TOTAL RESIDENTIAL SHORT/LONG-TERM BIKE		
LEVEL	TYPE	COUNT
Level 1	RES. 1525X450 STACK BIKE	274
Level 1	RES. 1700X450 STACK BIKE	52
Level 1	VIS. 1525X450 STACK BIKE	28
Level 1	VIS. 1700X450 STACK BIKE	20
		374

REQUIRED RESIDENTIAL BIKE		
RESIDENTIAL LONG-TERM(X0.6)	RESIDENTIAL SHORT-TERM (X0.15)	TOTAL
266.4	67	333

REQUIRED RETAIL BIKE		
RETAIL LONG-TERM (X0.085/100 sm)	RETAIL SHORT-TERM (X0.25)	TOTAL
1.21	3.56	4.77

PROVIDED RETAIL SHORT-TERM BIKE		
LEVEL	TYPE	COUNT
Level 1 Lower	RETAIL SHORT-TERM BIKE	8
		8

PROVIDED RETAIL LONG-TERM BIKE		
LEVEL	TYPE	COUNT
Level 1 Lower	RETAIL LONG-TERM BIKE	4
		4

PROVIDED TOTAL RETAIL SHORT/LONG-TERM BIKE		
LEVEL	TYPE	COUNT
Level 1 Lower	RETAIL LONG-TERM BIKE	4
Level 1 Lower	RETAIL SHORT-TERM BIKE	8
		12

PROVIDED RESIDENTIAL LOCKER		
LEVEL	LOCKER TYPE	COUNT
P2	RES. 1830X915 LOCKER	173
P1	RES. 1830X915 LOCKER	87
Level 1	RES. 1830X915 LOCKER	35
		295

Low Impact Design Features List

1. Development Density
   - The proposed development serves to maximize the permitted density on the land, maximizing efficient use of the lands while minimizing urban sprawl
2. Public Transportation Access
   - 21-51 Queen Street North will be located adjacent to several Mississauga Transit bus lines. Furthermore, it is a short bus ride to the GO Train, therefore encouraging mass transit and consequently reducing the carbon footprint.
3. Walkability
   - 21-51 Queen Street North will be situated within walking distance to public transit and retail, therefore encouraging mass transit. All the public and private walkways are continuous, accessible, and barrier-free. All the building entries are connected to pedestrian pathways.
4. Bicycle Storage
   - Conveniently located bicycle parking spaces for residents and visitors have been proposed to encourage bicycle use as an alternative form of transportation
5. Green Roof System
   - Where feasible, all portions of the roof will have either a high solar reflectance surface, outdoor amenity areas or a "green roof" created through the use of plant material, reducing temperature extremes inside the buildings and providing attractive views from suites. These areas will not only help to reduce energy use and the heat island effect but will also serve as outdoor amenity and recreation areas.
6. New Trees
   - New shade trees along all street frontages and public walkways will be provided in areas with sufficient soil quality and volume.
   - Previous hardscape areas will be converted to landscape areas and act as a buffer between existing residents and the proposed building.
7. Erosion And Sediment Control
   - The erosion and sediment control plan for the site will be designed in conformance with the City of Mississauga and Credit Valley Conservation Authority guidelines. Construction management will be taking erosion and sediment control measures as well as following the requirements of the grading plan to prevent loss of topsoil, while also working to contain dust within the site.
8. Green Site Maintenance
   - A comprehensive site maintenance program will be implemented.
9. Heat Island Effect (Non-Roof and Roof)
   - Of the vehicular parking provided, all will be contained within underground parking levels. This will reduce the heat island effect which results from exposed surface parking lots
10. Indoor Water Use Reduction
    - To reduce water consumption, high-efficiency toilets and water reducing fixtures will be provided.
11. Tri-Sorter Recycling
    - A tri-sorter system will be installed and made accessible to each residential floor, allowing for convenient separation and disposal of recyclables and refuse.
12. Regional Material
    - Construction materials where available will be sourced from the GTA to minimize the carbon footprint associated with the shipment of materials.
13. Pedestrian Walkways (Incorporated)
    - Private sidewalks and walkways are continuous, universally accessible, barrier-free, and clearly designated. Sidewalks within immediate site vicinity have a buffer of vegetation between traffic and the walkway.
    - New sidewalks and pathways are proposed intended for the enjoyment of residents.
    - Walkways will have various shaded, resting spots for relaxation and recreation
14. Site and Building Lighting (Incorporated)
    - Install exterior light fixtures that are properly shielded to prevent glare and/or light to trespass onto any neighbouring properties.
    - Avoid up-lighting from exterior light fixtures mounted on buildings unless they are designated as an integral component to a heritage structure.

3	2023-06-19	RE ISSUED FOR OPA & ZBA COORDINATION
2	2022-01-07	ISSUED FOR OPA & ZBA COORDINATION
1	2021-03-02	ISSUED FOR PRE-APPLICATION MEETING

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A& Architects Inc
130 QUEENS QUAY EAST, SUITE 1018
TORONTO, ONTARIO, M5A 0P6
(416) 466-0100
WWW.AARCHITECTS.CA

CLIENT:
LAMB DEVELOPMENT CORP

PROJECT:
THE MISS QUEEN
21-51 QUEEN ST. N, MISSISSAUGA, ONTARIO

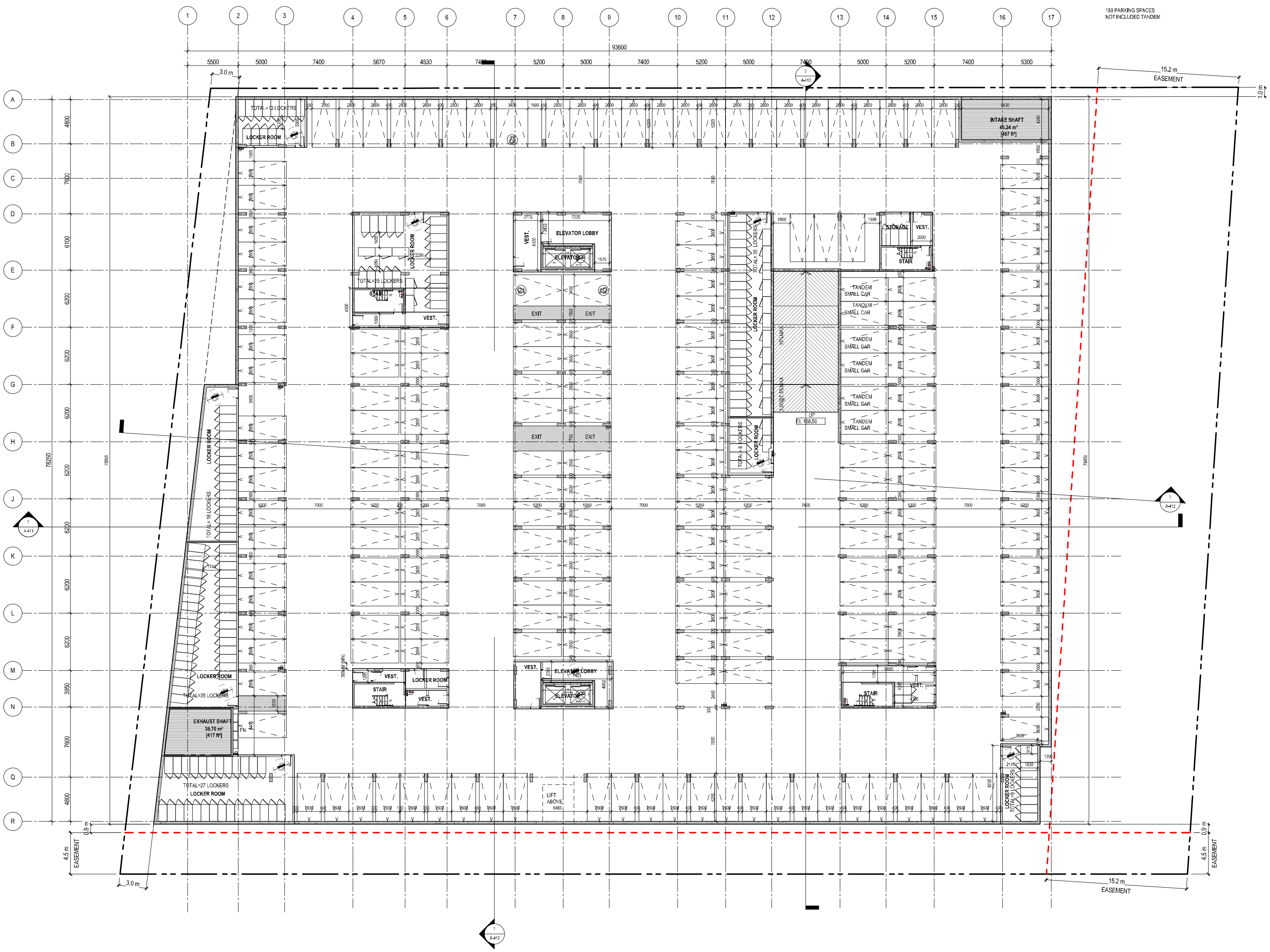
SCALE:

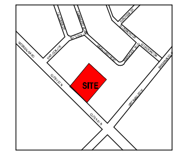
DATE: DECEMBER 2020

TITLE: STATISTICS

PROJECT NO. 20-121

A-003





THE APPLICATION NUMBER: OZ/OPA 22-9 W11.

3	2023-06-19	RE ISSUED FOR OPA & ZBA COORDINATION
2	2022-01-07	ISSUED FOR OPA & ZBA COORDINATION
1	2021-03-02	ISSUED FOR PRE-APPLICATION MEETING

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CLIENT:
LAMB DEVELOPMENT CORP

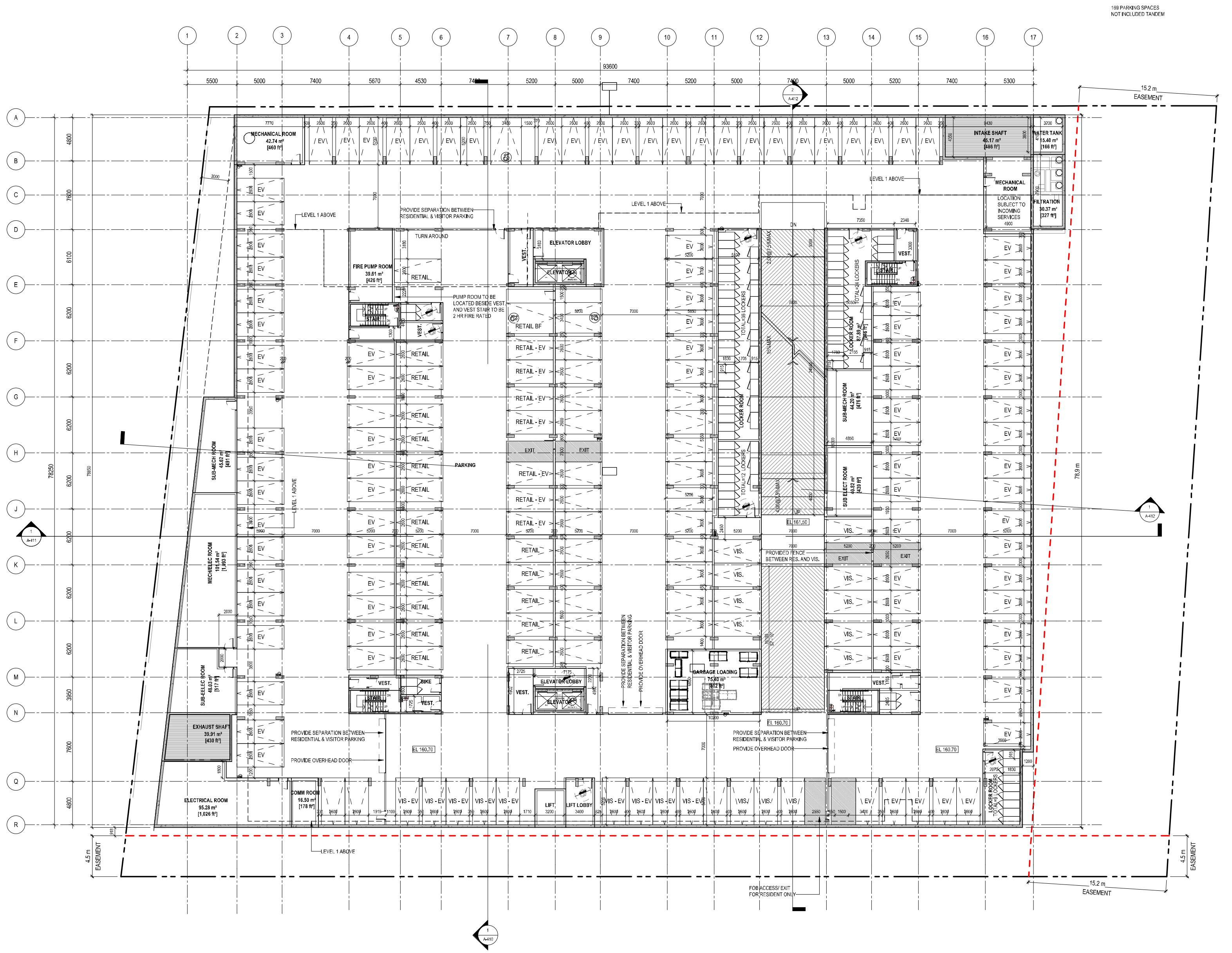
PROJECT:
THE MISS QUEEN
21-51 QUEEN ST. N, MISSISSAUGA, ONTARIO

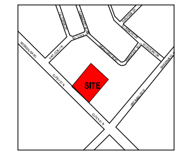
SCALE: As indicated
DATE:

TITLE:
P2

PROJECT NO.
20-121

A-150





THE APPLICATION NUMBER: OZ/OPA 22-9 W11.

3	2023-06-19	RE ISSUED FOR OPA & ZBA COORDINATION
2	2022-01-07	ISSUED FOR OPA & ZBA COORDINATION
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(416) 466-0100
WWW.AARCHITECTS.CA

CLIENT:
LAMB DEVELOPMENT CORP

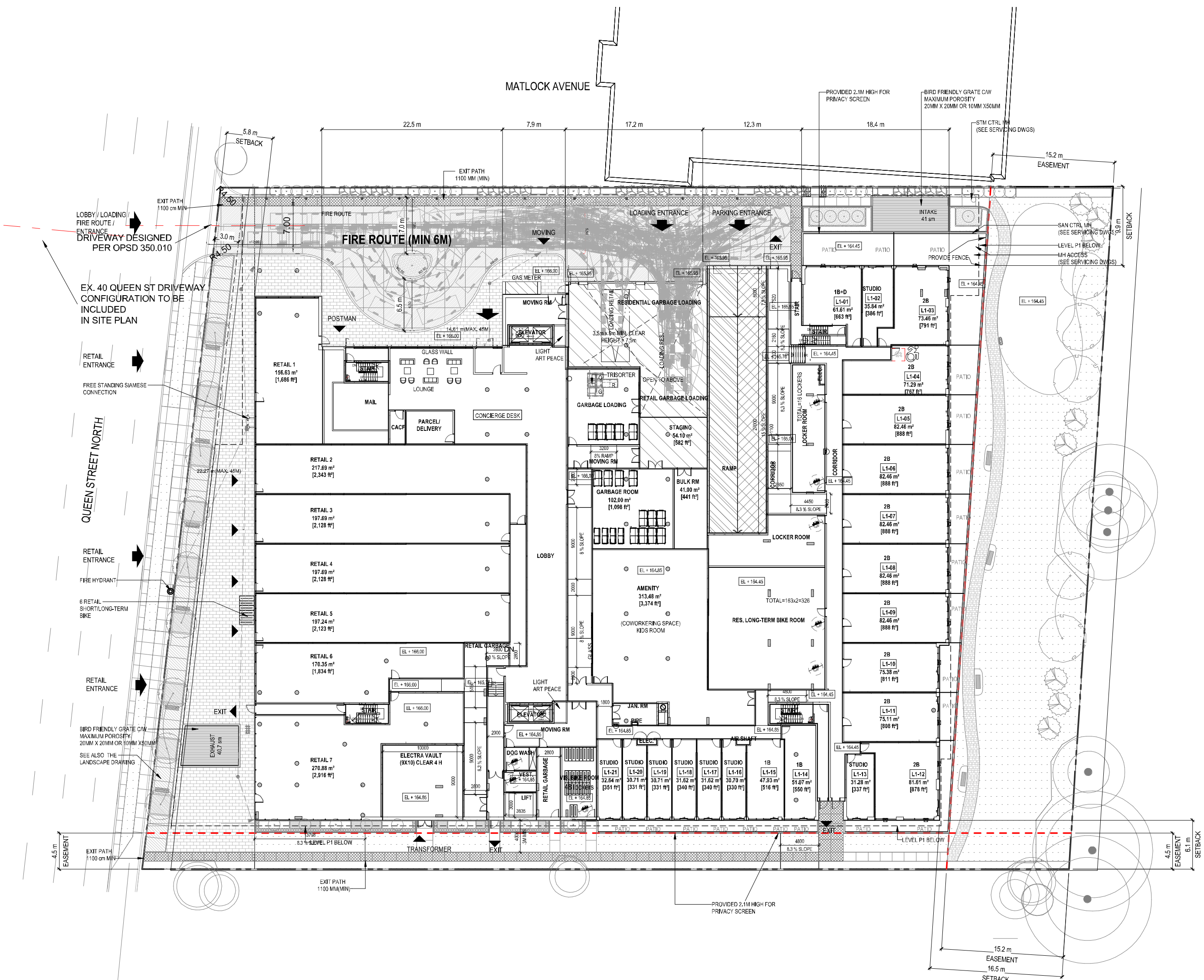
PROJECT:
THE MISS QUEEN
21-51 QUEEN ST. N, MISSISSAUGA, ONTARIO

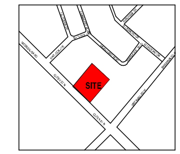
SCALE: As indicated
DATE:

TITLE: P1

PROJECT NO. 20-121

A-151





THE APPLICATION NUMBER: OZ/OPA 22-9 W11.

GENERAL NOTES:

1. A SEPARATE GARBAGE AND RECYCLING STORAGE FACILITY FOR COMMERCIAL COMPONENT HAS BEEN PROVIDED. COMMERCIAL WASTE CONTAINERS WILL BE IDENTIFIED.

2. A TRI SORTER HAS BEEN CONSIDERED FOR THE BUILDING.

3. THE LOADING FACILITY MUST CONFORM TO:
A. DESIGN CODE (O.B.C.)
B. DESIGN LOAD
C. IMPACT FACTOR - 5% FOR MAX VEHICULAR SPEEDS TO 15Km/h AND 30% FOR HIGHER SPEEDS

4 LOADING PAD CAN BE USED BY BOTH RESIDENTIAL AND COMMERCIAL OCCUPANCIES AND THEIR COLLECTION DAYS WILL BE SCHEDULED TO BE ON OPPOSITE DAYS.

5. THE PROPERTY MANAGER WILL HAVE AN ONSITE REPRESENTATIVE EQUIPPED WITH A CELLULAR PHONE WHO WILL BE AVAILABLE TO OPEN THE LOADING BAY DOOR AND ASSIST WITH THE GARBAGE/RECYCLING REMOVALS. GARBAGE/RECYCLING PICK UP TIMES WILL BE PRE-ARRANGED WITH THIS REPRESENTATIVE AND RESPECTIVE FIRM(S) CARRYING OUT THIS COLLECTION SUCH THAT THE LOADING BAY DOOR WILL BE OPEN AND THE COLLECTION VEHICLES CAN DRIVE STRAIGHT INTO THE LOADING BAY WITHOUT PAUSING OR STOPPING ON THE STREET.

6. THE PROPERTY MANAGER WILL HAVE AN ONSITE REPRESENTATIVE EQUIPPED WITH A CELLULAR PHONE WHO WILL BE AVAILABLE TO OPEN THE LOADING BAY DOOR FOR RESIDENT MOVE-INS AND DELIVERIES. ALL RESIDENT MOVE-INS AND DELIVERIES MUST BE PRE-ARRANGED WITH THE PROPERTY MANAGER AND THIS REPRESENTATIVE- THE ONSITE REPRESENTATIVE WILL ENSURE THAT THE LOADING BAY DOOR WILL BE OPEN AND MOVING/ DELIVERY VEHICLES CAN DRIVE STRAIGHT INTO THE LOADING BAY WITHOUT PAUSING OR STOPPING ON THE STREET.

7. EXTENT OF CLEAR VERTICAL HEIGHT OF 7,5 M TO BE VISUALLY IDENTIFIED BY PAINT ON WALLS AND FLOORS. INDICATING THE SAFE ZONE FOR BIN STAGING.

8. TRAINED ON SITE STAFF WILL BE AVAILABLE TO MANEUVER BINS COLLECTION DRIVER AND ALSO ACT AS A FLAGMAN WHEN THE TRUCK IS REVERSING.
IN THE ABSENCE OF A FLAGMAN. THE COLLECTION VEHICLE WILL LEAVE THE SITE.

9. A LEVEL (2%) OF 200 MM REINFORCED CONCRETE WILL BE PROVIDED AT LOADING SPACE.(3.5M WIDTH 9M LONG)

10. ALL PARKING LEVEL EXIT DOCKS AND VESTIBULES SHOULD BE GLAZED TO THE MAXIMUM ALLOWABLE AREA BY CODE TO INCREASE SAFETY AND NATURAL SURVEILLANCE.

11. ALL RESIDENTIAL VISITOR/RETAIL PARKING SPACES TO BE CLEARLY IDENTIFIED WITH 'RESIDENTIAL VISITOR/RETAIL.

12. PROVIDE INDIVIDUAL SIGNAGE INDICATING SPACES DESIGNATED FOR 'VISITOR PARKING.

13. VISITOR'S WHO REQUIRE A VISITOR PARKING SPACE WILL CONTACT FRONT DESK FOR PERMIT JUST PRICK TO ACCESSING THE GARAGE DRIVEWAY. THE PARKING GARAGE DOOR AUTOMATICALLY WILL BE OPEN AND VISITORS CAN DRIVE STRAIGHT INTO GARAGE WITHOUT PAUSING OR STOPPING ON THE STREET.
THE ONLY ACCESS FOR VISITOR/RETAIL PARKING IS SOUTH PARKING ENTRANCE AT SOUTH SIDE OF THE BUILDING.

14. ALL PEDESTRIAN SIDEWALKS SHALL CROSS VEHICULAR ENTRANCE AS ONE CONTINUOUS LEVEL SURFACE, CURB CUTS SHOULD RAMP UP TO LEVEL OF THE SIDEWALK SO AS NOT TO IMPEDE PEDESTRIAN MOVEMENT. REFER ALSO TO LANDSCAPE DRAWINGS.

2	2023-06-19	RE ISSUED FOR OPA & ZBA COORDINATION
1	2022-01-07	ISSUED FOR OPA & ZBA COORDINATION

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TORONTO, ONTARIO, M5A 0P6
(416) 466-0100
WWW.AARCHITECTS.CA

CLIENT:
LAMB DEVELOPMENT CORP

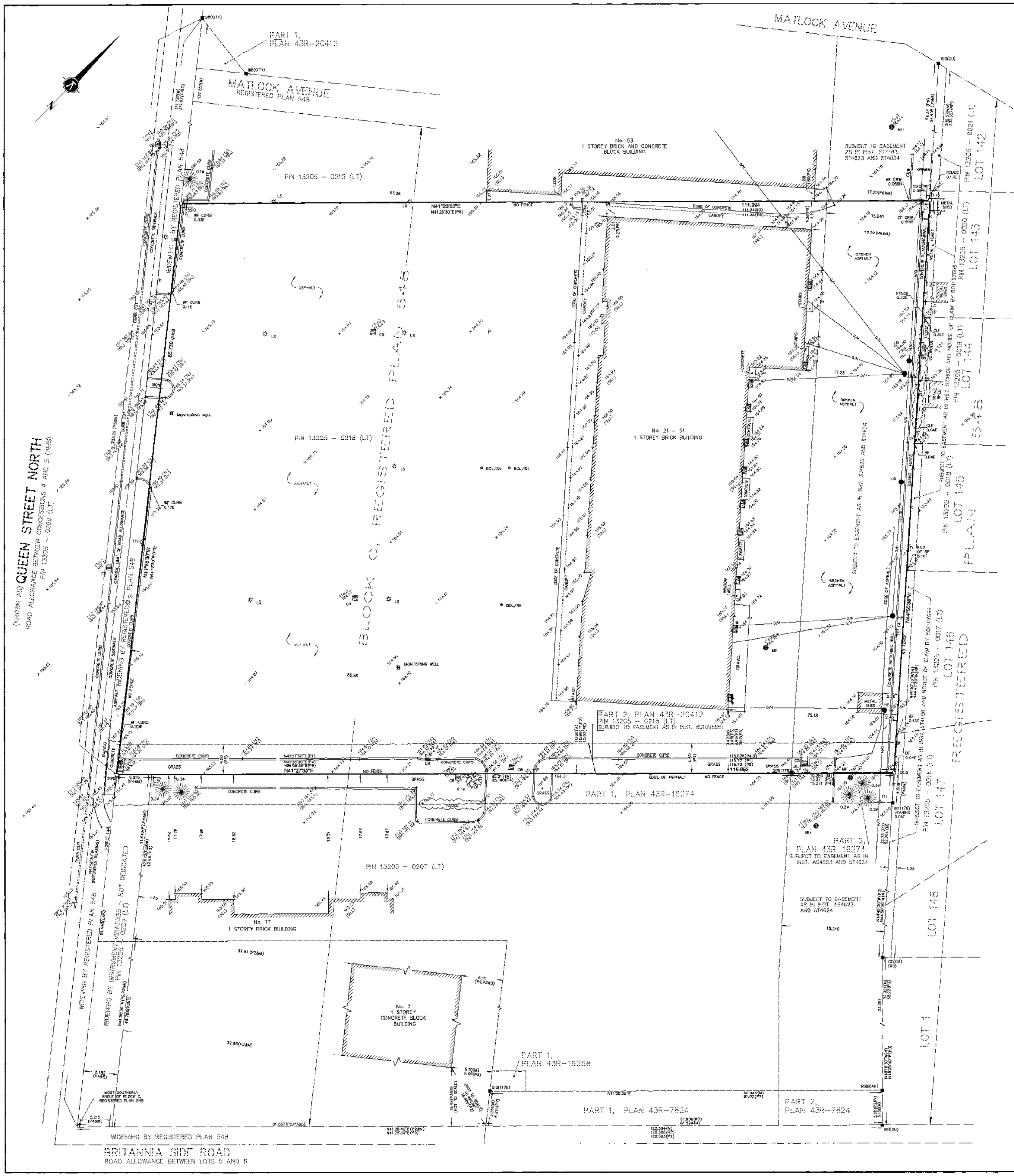
PROJECT:
THE MISS QUEEN
21-51 QUEEN ST. N, MISSISSAUGA, ONTARIO

SCALE: 1 : 250
DATE: DECEMBER 2020

TITLE: SITE PLAN

PROJECT NO. 20-121

A-102



PLAN OF SURVEY
SHOWING TOPOGRAPHICAL INFORMATION OF

PART OF BLOCK C, REGISTERED PLAN 548 CITY OF MISSIUSSAUGA

REGIONAL MUNICIPALITY OF PEEL

SCALE 1:250

0 5 10 15 20 25m

KRCMAR SURVEYORS LTD. 2017

METRIC: DISTANCES SHOWN HEREON ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048

BEARING

BEARINGS SHOWN HEREON ARE ASTRONOMIC AND ARE REFERRED TO THE EASTERLY LIMIT OF QUEEN STREET NORTH AS SHOWN ON REGISTERED PLAN 548 HAVING A BEARING OF N41°58'30"W.

ELEVATION

ELEVATIONS SHOWN HEREON ARE MISSISSAUGA DATUM AND ARE RELATED TO THE CITY OF MISSISSAUGA BENCHMARK No. 075033019 HAVING AN ELEVATION OF 167.744 METRES.

LEGEND

■	DENOTES SURVEY MONUMENT FOUND
□	DENOTES SURVEY MONUMENT PLANTED
SIB	DENOTES STANDARD IRON BAR
SSIB	DENOTES SHORT STANDARD IRON BAR
IB	DENOTES IRON BAR
RIB	DENOTES ROUND IRON BAR
RSIB	DENOTES ROUND STANDARD IRON BAR
IP	DENOTES IRON PIPE
CC	DENOTES CUT CROSS
(M)	DENOTES MEASURED
(S)	DENOTES SET
(OU)	DENOTES ORIGIN UNKNOWN
(WIT)	DENOTES WITNESS
(RP)	DENOTES REGISTERED PLAN 548
(P1)	DENOTES PLAN OF SURVEY BY McCONNELL AND MAUGHAN O.L.S. DATED SEPTEMBER 9, 1975
(P2)	DENOTES PLAN OF SURVEY BY McCONNELL, MAUGHAN LIMITED O.L.S. DATED JANUARY 5, 1979
(P3)	DENOTES PLAN OF SURVEY BY A. H. HEYWOOD INC, O.L.S. DATED MAY 10, 1983
(P4)	DENOTES PLAN 43R-16274
(P5)	DENOTES PLAN 43R-20412
(P6)	DENOTES TOPOGRAPHIC PLAN BY MARSHALL, MACKLIN MONAGHAN ONTARIO LIMITED O.L.S. JANUARY 18 AND 20 2001
(P7)	DENOTES PLAN 43R-7624
(D)	DENOTES INSTRUMENT RO682959
(D1)	DENOTES INSTRUMENT ST7762
(AH)	DENOTES A. H. HEYWOOD, O.L.S.
(CITY)	DENOTES CITY OF MISSISSAUGA
(1176)	DENOTES DONALD E. ROBERTS, O.L.S.
(1370)	DENOTES KRCMAR SURVEYORS LTD, O.L.S.
(CALC)	DENOTES REGISTERED PLAN 548 + PLAN 43R-20412
CRW	DENOTES CONCRETE RETAINING WALL
SILL	DENOTES DOOR SILL ELEVATION
BF	DENOTES BOARD FENCE
CLF	DENOTES CHAIN LINK FENCE
WF	DENOTES WEST FACE
EF	DENOTES EAST FACE
(Tc)	DENOTES TOP OF CURB
(Bc)	DENOTES BOTTOM OF CURB
123.45	DENOTES EXISTING GRADE ELEVATION
⊕	DENOTES BOLLARD
BOL/SN	DENOTES BOLLARD WITH SIGN
CB	DENOTES CATCH BASIN
0.1ø	DENOTES CONIFEROUS TREE WITH TRUNK DIAMETER
0.1ø	DENOTES DECIDUOUS TREE WITH TRUNK DIAMETER
	DENOTES DOWN GUY ANCHOR
FH	DENOTES FIRE HYDRANT
GM	DENOTES GAS METER
GV	DENOTES GAS VALVE
HP	DENOTES HYDRO POLE
LS	DENOTES LAMP STANDARD
MH	DENOTES MANHOLE
	DENOTES SIGN
WV	DENOTES WATER VALVE

TOTAL AREA OF THE SITE = 0.9677 ha

ASSOCIATION OF ONTARIO LAND SURVEYORS
PLAN SUBMISSION FORM
2038143

THIS PLAN IS NOT VALID UNLESS IT IS AN EMBOSSED ORIGINAL COPY ISSUED BY THE SURVEYOR In accordance with Regulation 1026, Section 29(3).

MUNICIPAL ADDRESSES
No. 21 – 51 QUEEN STREET NORTH, MISSISSAUGA

SURVEYOR'S CERTIFICATE

I CERTIFY THAT:

1. THIS SURVEY AND PLAN ARE CORRECT AND IN ACCORDANCE WITH THE SURVEYS ACT, THE SURVEYORS ACT AND THE REGULATIONS MADE UNDER THEM.
2. THE SURVEY WAS COMPLETED ON THE 12th DAY OF DECEMBER, 2017

DATE DECEMBER 13, 2017

WALDEMAR GOLINSKI
ONTARIO LAND SURVEYOR

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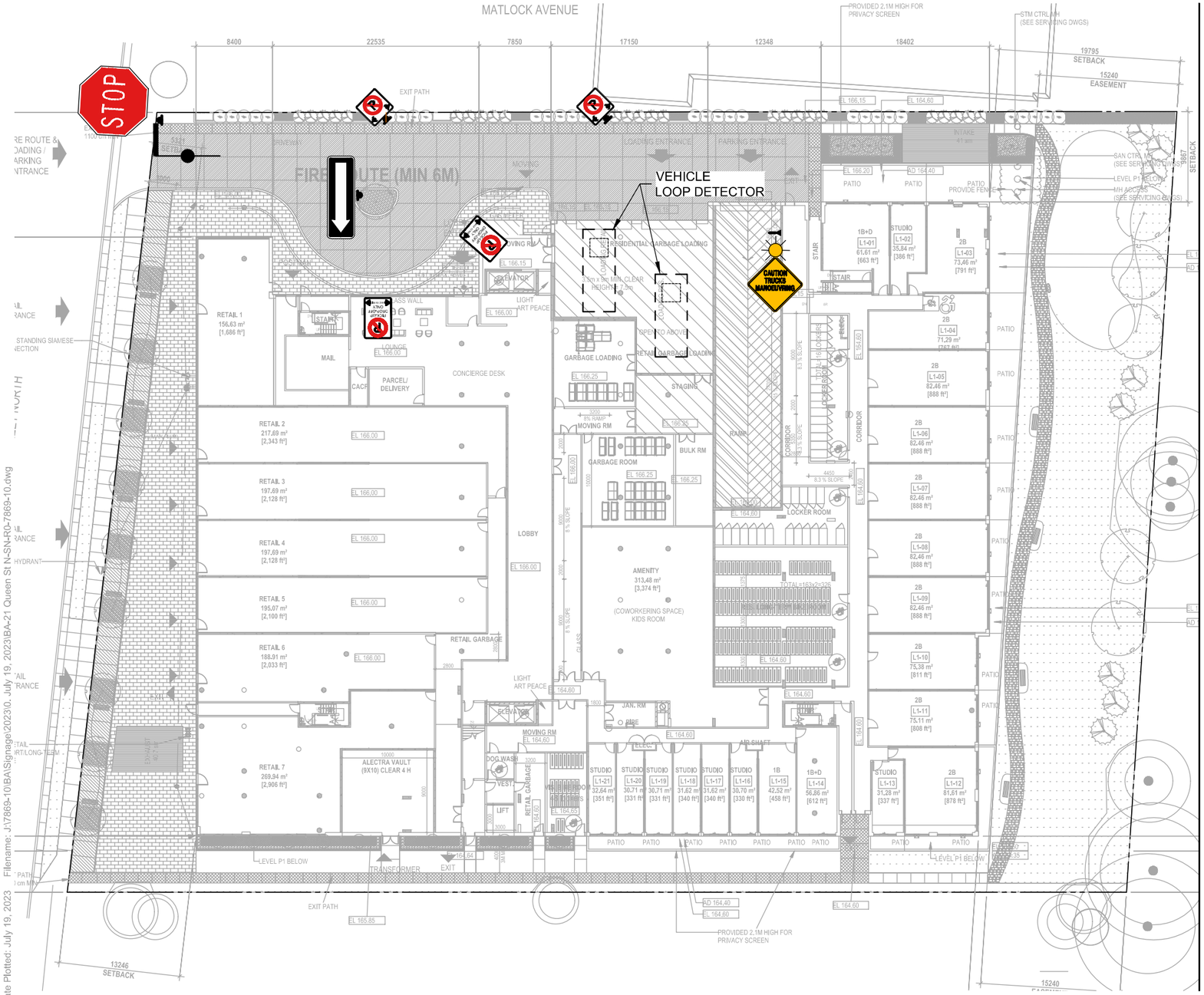
PLAN AVAILABLE AT www.ProtectYourBoundaries.ca

FIELD:	J.L.	DRAWN:	J.M.	CHECKED:	W.G.	JOB NO:	17-245
DWG NAME:	17-245BTC1	PLOT INFO:	10:09 13/Dec/2017	WORK ORDER NO:	20826		

1137 Centre Street Thornhill ON L4J 3M6 905.738.0053 F 905.738.9221 www.krcmar.ca

KRCMAR

Appendix B:
Signage Plan and Pavement Marking Plan



SIGNAGE LEGEND

Ra-1
(600 x 600)mm

Rb-93
(300 x 450)mm

PUDO
(300x 450)mm

CUSTOM WARNING SIGN WITH FLASHING BEACON (600 x 600)mm

1. SIGN MUST BE MOUNTED SUCH THAT THERE IS A MINIMUM 2.1 METRES CLEARANCE FROM THE BOTTOM OF THE SIGN TO THE SURFACE;
2. CUSTOM WARNING SIGN WITH FLASHING BEACON ACTIVATED WHEN TRUCK MANOUVRES OVER LOOP DETECTOR IN THE LOADING AREA;
3. WARNING SIGNAGE TO BE DESIGNED AND INSTALLED BY OTHERS

Rb-51
(300 x 300)mm

LZ_LR
(300 x 450)mm

Rb-21
(300 x 900)mm

SIGN MOUNT LEGEND

ALL SIGNS ARE SHOWN IN APPROXIMATE LOCATIONS AND TO BE DETERMINED ON SITE. SIGNS MUST BE VISIBLE TO DRIVER AND NOT OBSTRUCTED BY LANDSCAPE.

- PROPOSED POST
- PROPOSED WALL/COLUMN MOUNT SIGN
- PROPOSED WALL PERPENDICULAR POST
- CONVEX MIRROR

PAVEMENT MARKING:

(NOTE-ALL MARKINGS MUST CONFORM TO THE ONTARIO TRAFFIC MANUAL (OTM) BOOK 11

- 10cm (4 in.) YELLOW SOLID
- THROUGH ARROW (3m (10 ft.))
- ALL STOP BARS TO BE 60cm (2 ft.) WHITE SOLID
- INTERNATIONAL SYMBOL OF ACCESS (1.5m x 1.5m)
  - BORDER AND SYMBOL TRAFFIC WHITE
  - BORDER TO BE 10cm WIDE
  - BLUE BACKGROUND

ZONE PAINTING
- 10cm SOLID TRAFFIC YELLOW
- 45° ANGLE
- 60cm O/C

Filename: J:\7869-10\BA\Signage\2023\0..July 19, 2023\BA-21 Queen St N-SN-R0-7869-10.dwg

Date Plotted: July 19, 2023

BA Group

21-51 QUEEN STREET NORTH

PAVEMENT MARKING & SIGNAGE
GROUND FLOOR

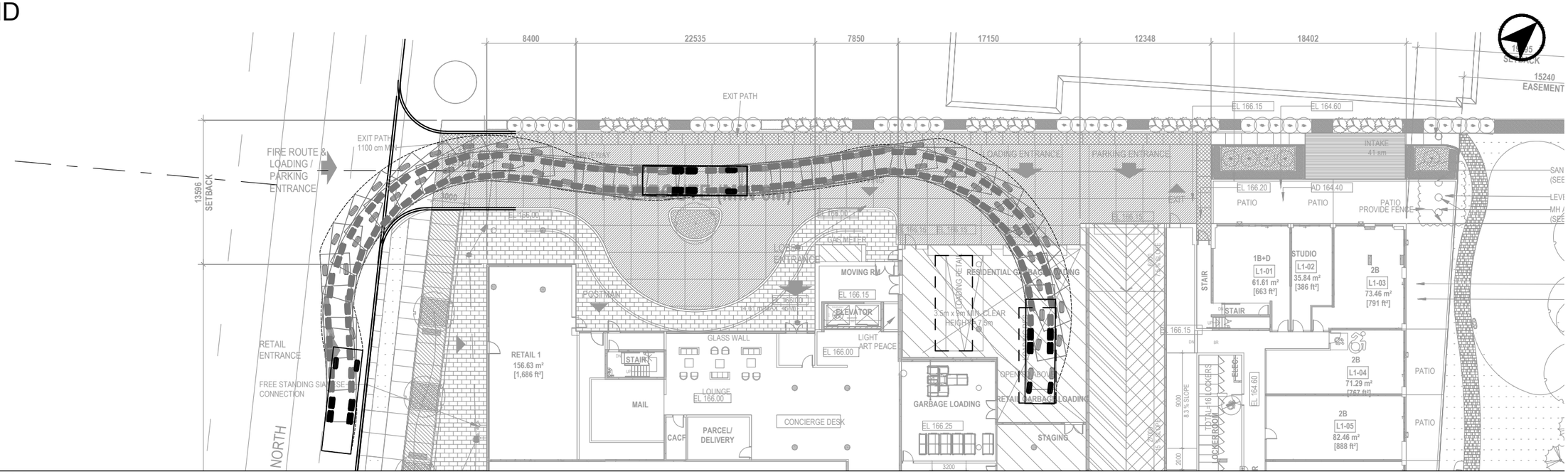
Project:	21-51 Queen Street N
Project No.	7869-10
Date:	July 19, 2023
Revised:	--

Scale 1:400 — 0 2 4 6 8 10 20m

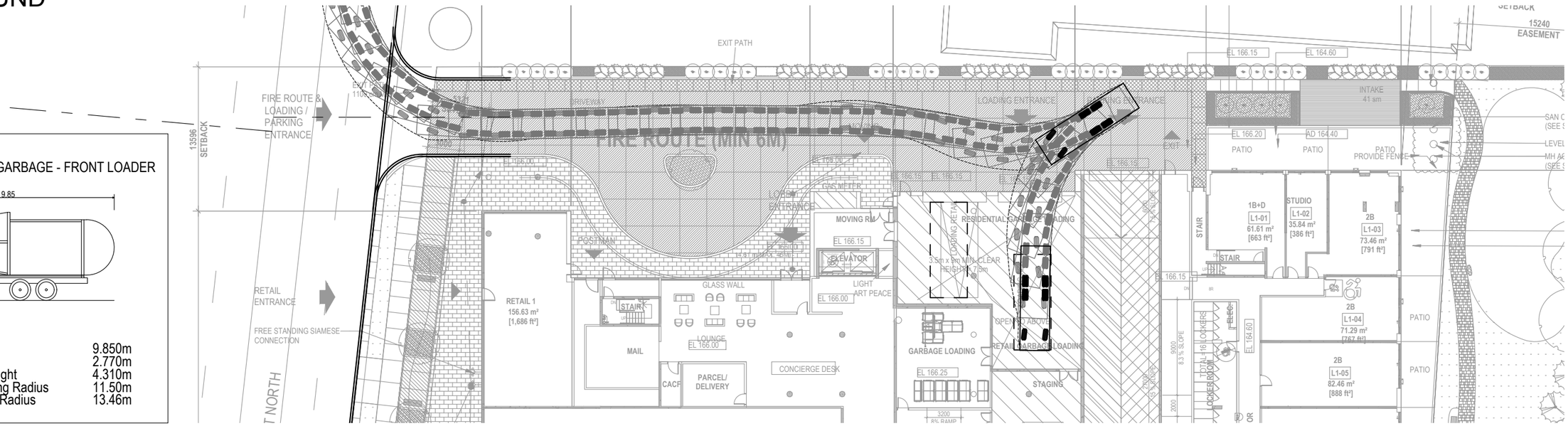
Drawing No. SN-01

Appendix C:
Vehicle Manoeuvring Diagrams (VMDs)

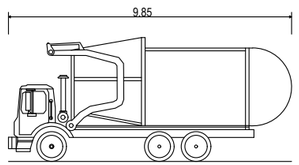
INBOUND



OUTBOUND



Design Vehicle -
PEEL REGION GARBAGE - FRONT LOADER



Overall Length	9.850m
Overall Width	2.770m
Overall Body Height	4.310m
Centreline Turning Radius	11.50m
Outside Turning Radius	13.46m

BA Group

21-51 QUEEN STREET NORTH

VEHICLE MANOEUVRING DIAGRAM

PEEL REGION GARBAGE TRUCK - FRONT LOADER

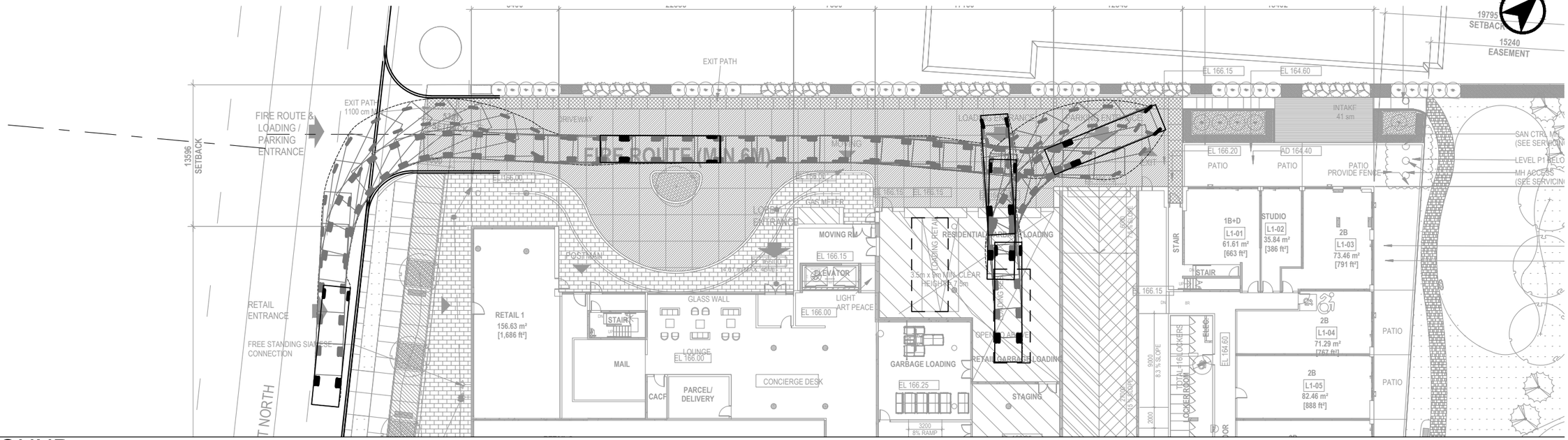
Project:	21 Queen Street N
Project No.	7869-10
Date:	July 19, 2023
Revised:	--

Scale 1:300 (0, 5, 10m)

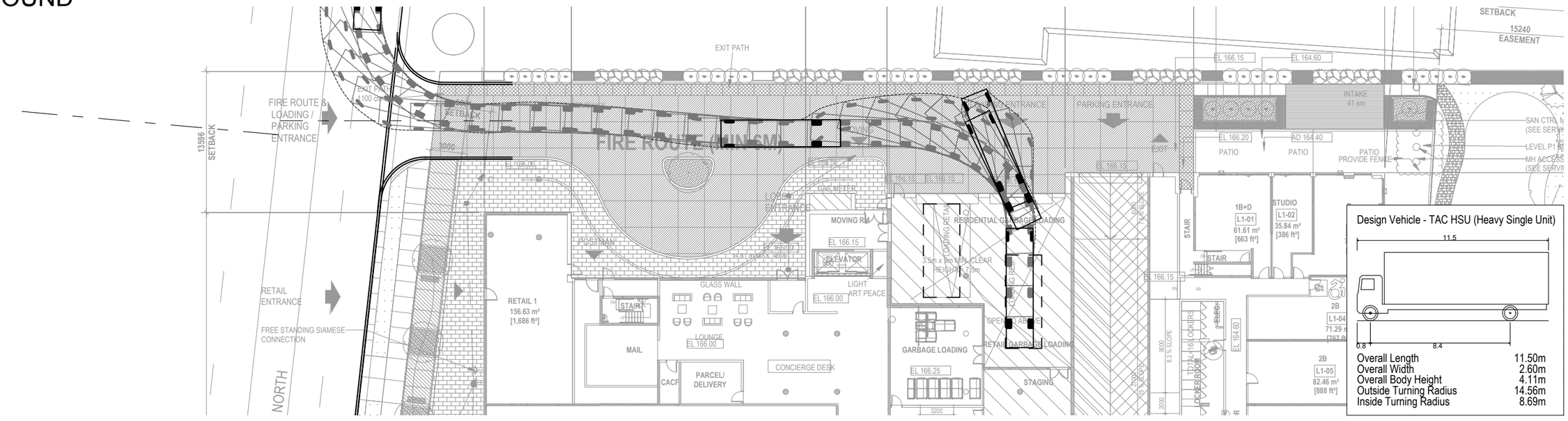
Drawing No. VMD-01

Date Plotted: July 19, 2023 Filename: J:\7869-10\BA\SPR\20231\3_July 06, 2023\BA-21 Queen St N-SPR-R03-7

INBOUND



OUTBOUND



Design Vehicle - TAC HSU (Heavy Single Unit)

Overall Length	11.50m
Overall Width	2.60m
Overall Body Height	4.11m
Outside Turning Radius	14.56m
Inside Turning Radius	8.69m

Date Plotted: July 19, 2023 Filename: J:\7869-10\BA\SPR\20233. July 06, 2023\BA-21 Queen St N-SPR-R03-7869-10.dwg

BA Group

21-51 QUEEN STREET NORTH

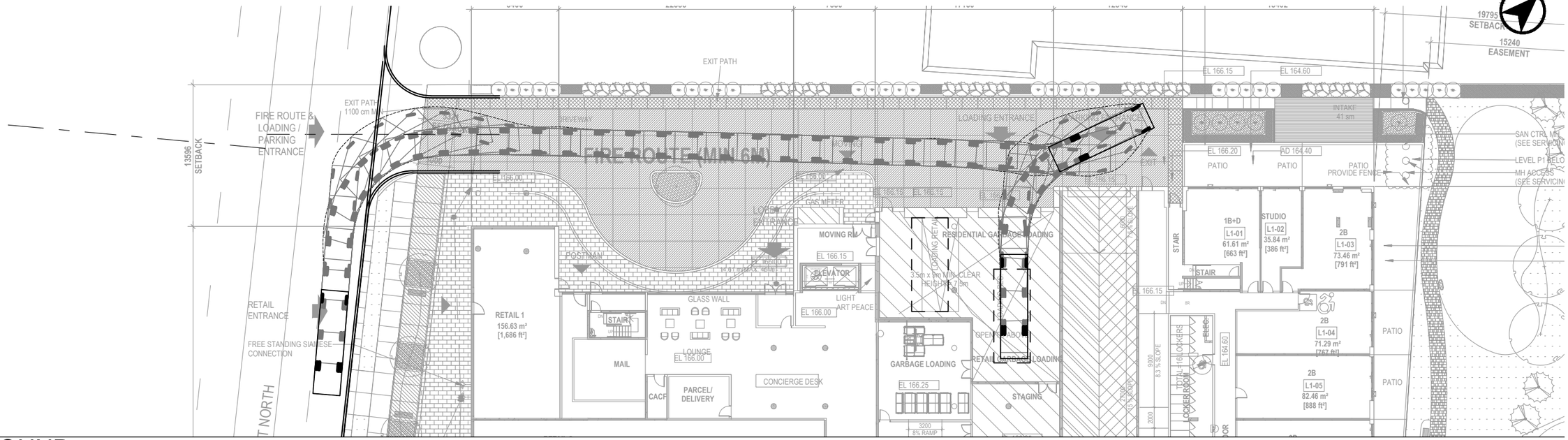
VEHICLE MANOEUVRING DIAGRAM
HEAVY SINGLE UNIT TRUCK

Project:	21 Queen Street N
Project No.	7869-10
Date:	July 19, 2023
Revised:	--

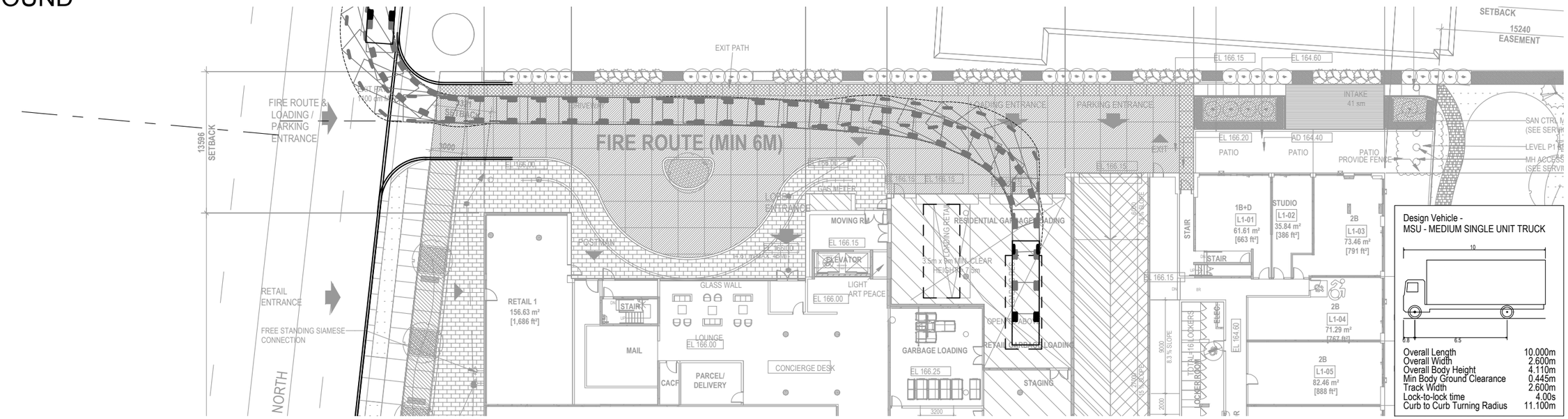
Scale 1:300 (0 5 10m)

Drawing No. VMD-02

INBOUND



OUTBOUND



Date Plotted: July 19, 2023 Filename: J:\7869-10\BA\SPR\20233. July 06, 2023\BA-21 Queen St N-SPR-R03-7869-10.dwg

BA Group

21-51 QUEEN STREET NORTH

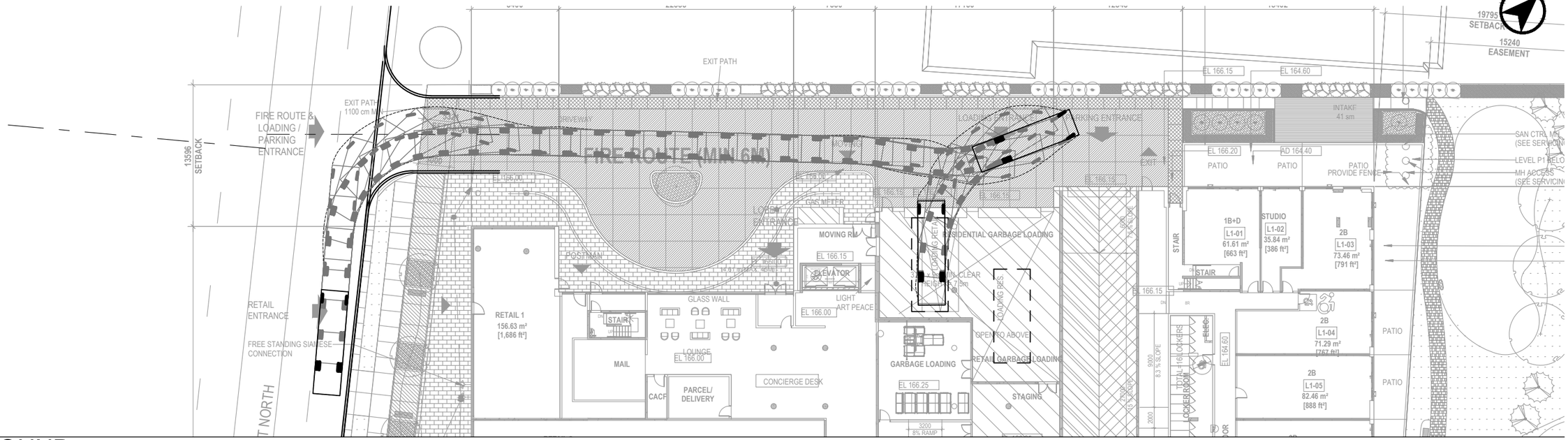
VEHICLE MANOEUVRING DIAGRAM
MEDIUM SINGLE UNIT TRUCK

Project:	21 Queen Street N
Project No.	7869-10
Date:	July 19, 2023
Revised:	--

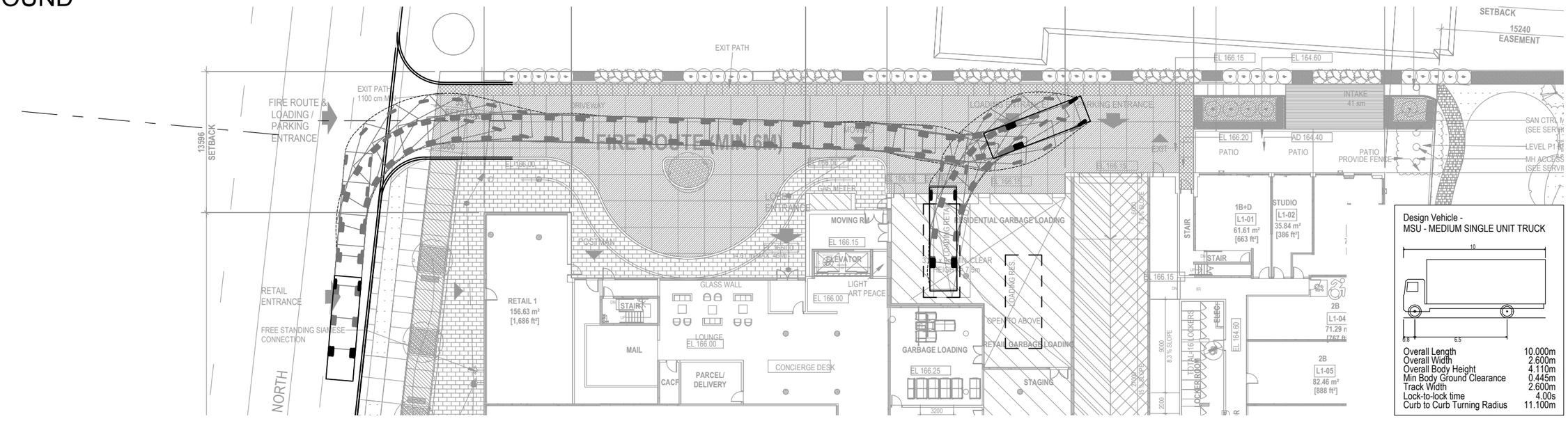
Scale 1:300 (0, 5, 10m)

Drawing No. VMD-03

INBOUND



OUTBOUND



Date Plotted: July 19, 2023 Filename: J:\7869-10\BA\SPR\20233. July 06, 2023\BA-21 Queen St N-SPR-R03-7869-10.dwg

BA Group

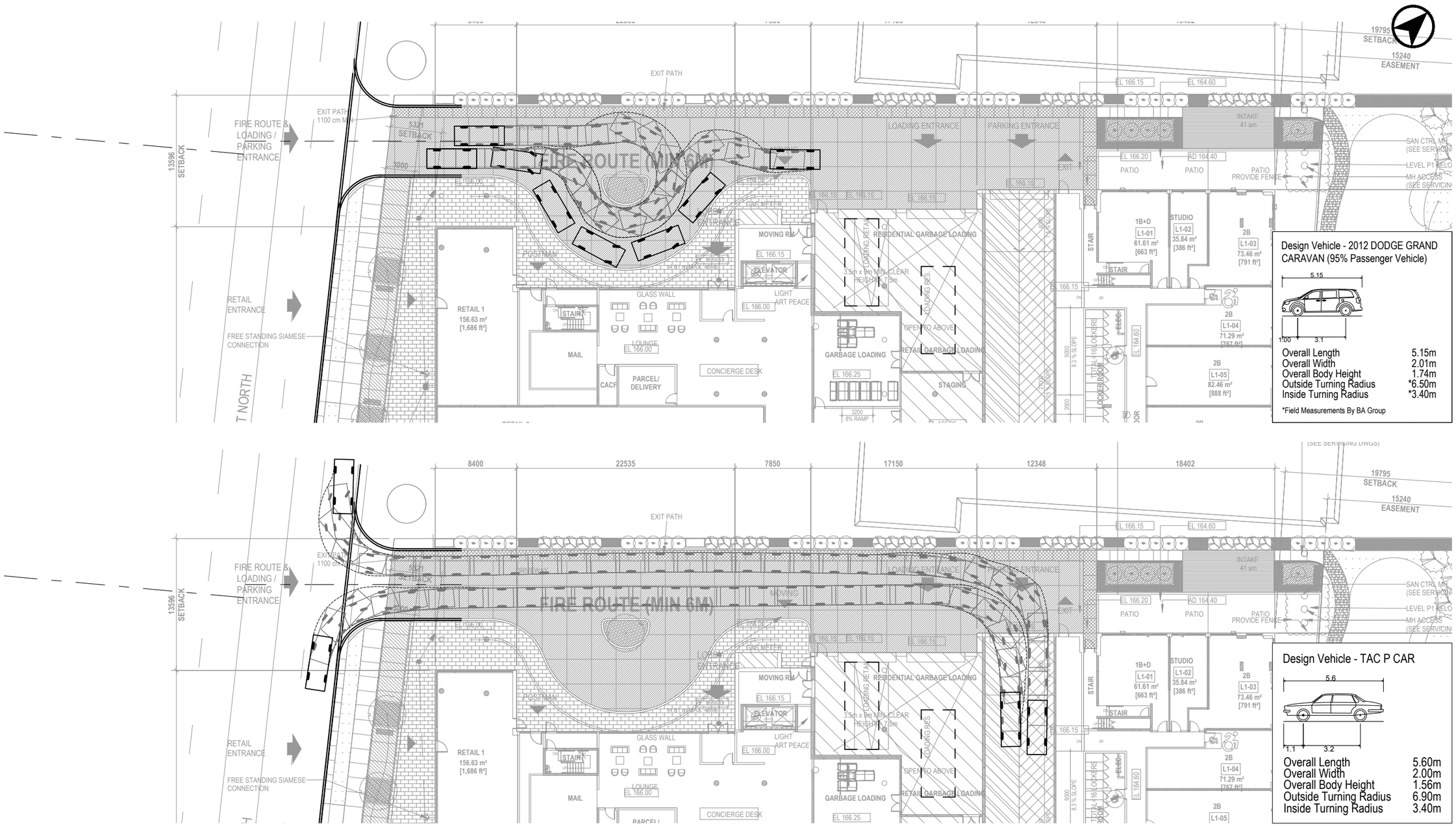
21-51 QUEEN STREET NORTH

VEHICLE MANOEUVRING DIAGRAM
MEDIUM SINGLE UNIT TRUCK

Project:	21 Queen Street N
Project No.	7869-10
Date:	July 19, 2023
Revised:	--

Scale 1:300 (0, 5, 10m)

Drawing No. VMD-04



Design Vehicle - 2012 DODGE GRAND CARAVAN (95% Passenger Vehicle)

Overall Length	5.15m
Overall Width	2.01m
Overall Body Height	1.74m
Outside Turning Radius	*6.50m
Inside Turning Radius	*3.40m

*Field Measurements By BA Group

Design Vehicle - TAC P CAR

Overall Length	5.60m
Overall Width	2.00m
Overall Body Height	1.56m
Outside Turning Radius	6.90m
Inside Turning Radius	3.40m

Date Plotted: July 19, 2023 Filename: J:\7869-10\BA\SPR\202313. July 06, 2023\BA-21 Queen St N-SPR-R03-7869-10.dwg

BA Group

21-51 QUEEN STREET NORTH

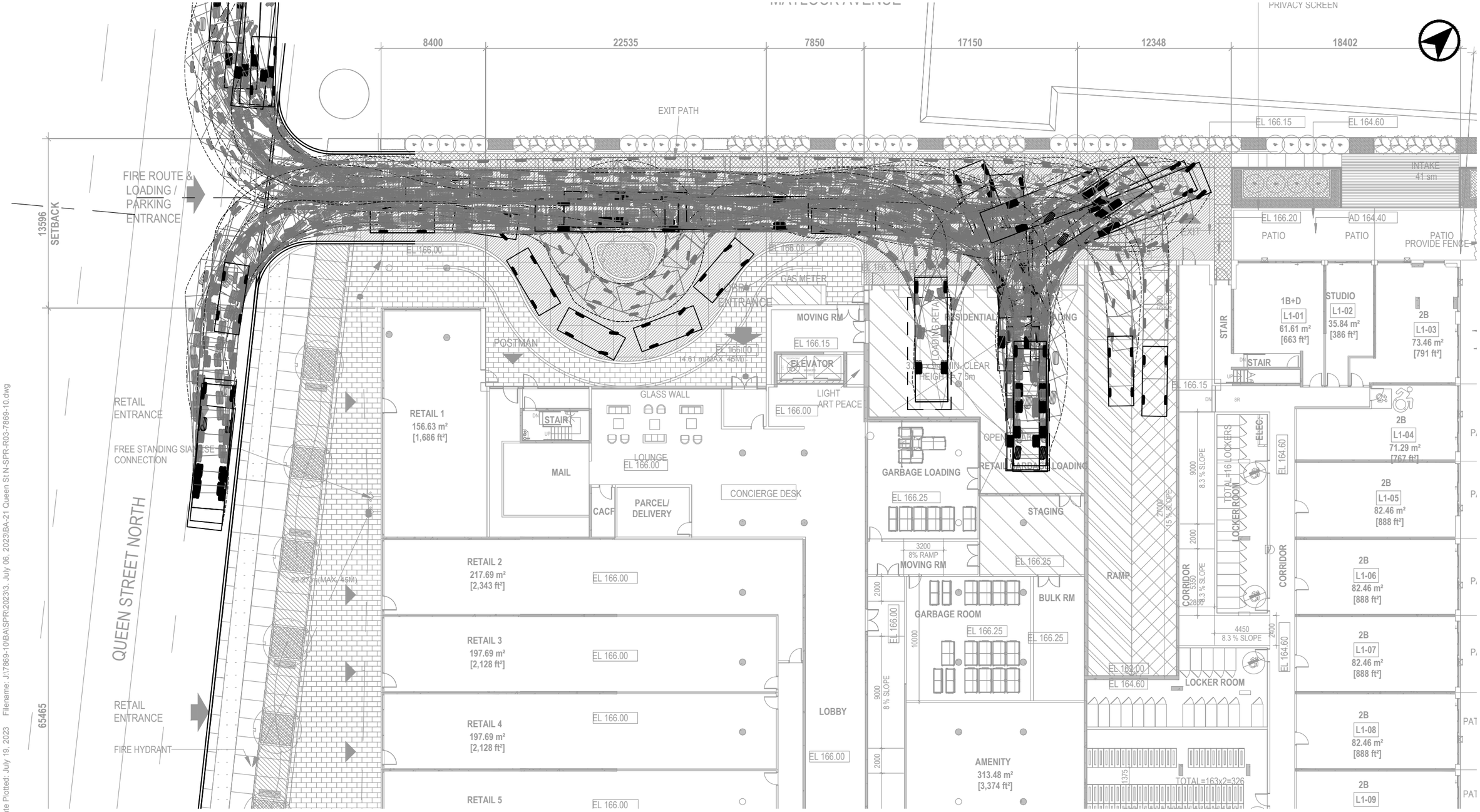
VEHICLE MANOEUVRING DIAGRAM

TAC P CAR / DODGE GRAND CARAVAN

Project:	21 Queen Street N
Project No.	7869-10
Date:	July 19, 2023
Revised:	--

Scale 1:300 (0 5 10m)

Drawing No. VMD-05



Date Plotted: July 19, 2023 Filename: J:\7869-10\BA\SPR\202313. July 06, 2023\BA-21 Queen St N-SPR-R03-7869-10.dwg

BA Group

21-51 QUEEN STREET NORTH

VEHICLE MANOEUVRING DIAGRAM
ALL MANOEUVRES

Project:	21 Queen Street N
Project No.	7869-10
Date:	July 19, 2023
Revised:	--

Scale 1:300 (0, 5, 10m)

Drawing No. VMD-06

Appendix D:
Transportation Tomorrow Survey (TTS) Queries – Mode Splits

TTS MODE SPLIT QUERY

Thu Sep 30 2021 13:54:11 GMT-0400 (Eastern Daylight Time)

Frequency Distribution Query Form - Trip - 2016 v1.1

Field: Primary travel mode of trip - mode_prime

Filters:
2006 GTA zone of origin - gta06_orig In 3718,3715,3717,3836
and
Trip purpose of origin - purp_orig In H
and
Start time of trip - start_time In 600-859

Table: Trip 2016

Row:	Count:	Expanded:	%
Transit exclu	12	296	7%
Cycle	1	15	0%
Auto driver	143	2886	64%
GO rail only	14	171	4%
Joint GO rai	8	126	3%
Auto passen	30	600	13%
School bus	8	133	3%
Taxi passen	2	11	0%
Walk	11	257	6%
Total:	229	4493	100%

Thu Sep 30 2021 13:54:54 GMT-0400 (Eastern Da

Frequency Distribution Query Form - Trip - 2016 v1

Field: Primary travel mode of trip - mode_prime

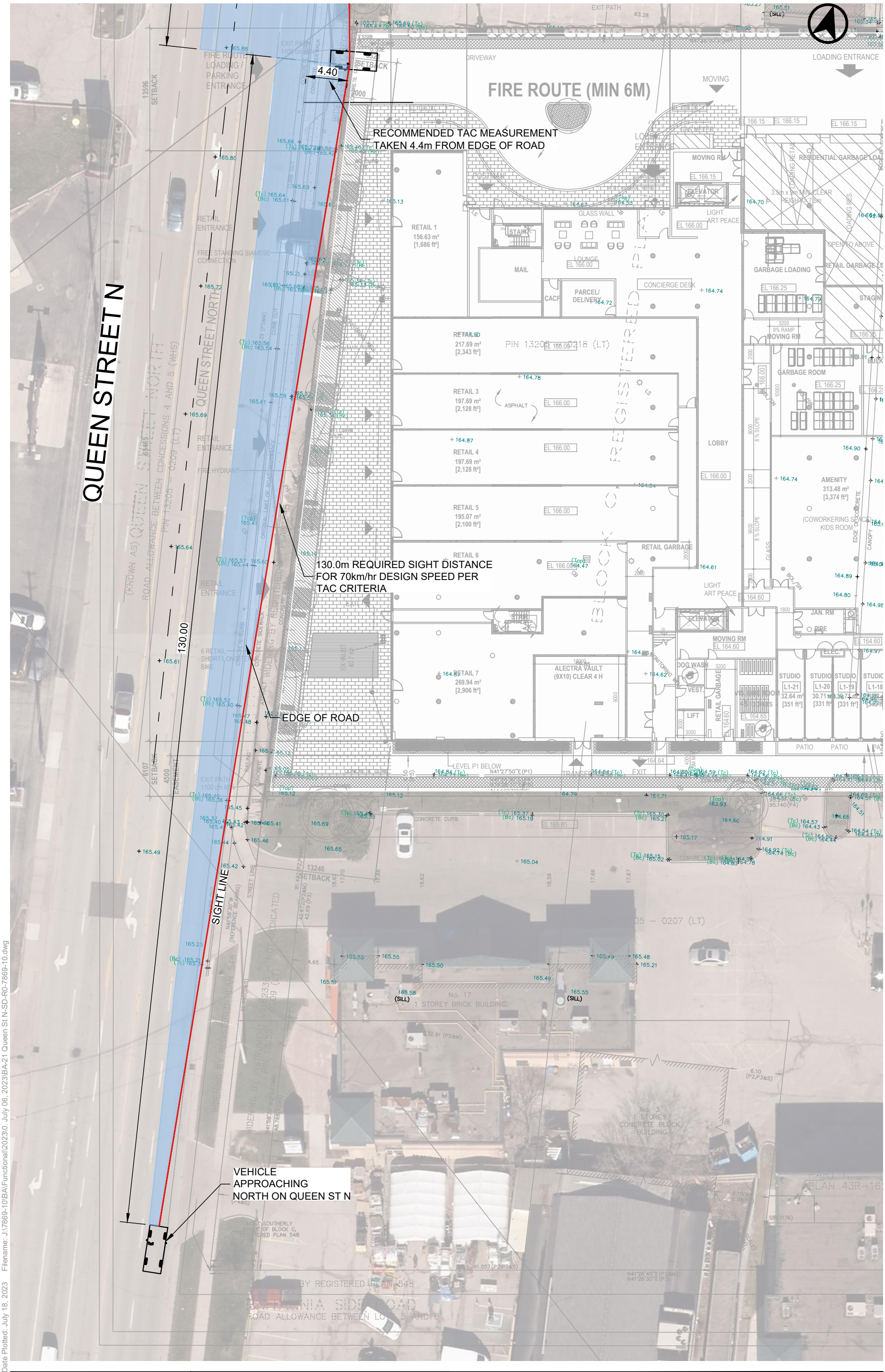
Filters:
2006 GTA zone of destination - gta06_dest In 371
and
Trip purpose of destination - purp_dest In H
and
Start time of trip - start_time In 1500-1759

Table: Trip 2016

Row:	Count:	Expanded:	%
Transit exclu	5	98	2%
Auto driver	149	2731	67%
GO rail only	13	186	5%
Joint GO rai	9	131	3%
Auto passen	28	606	15%
School bus	8	176	4%
Taxi passen	1	7	0%
Walk	6	165	4%
Total:	219	4100	100%

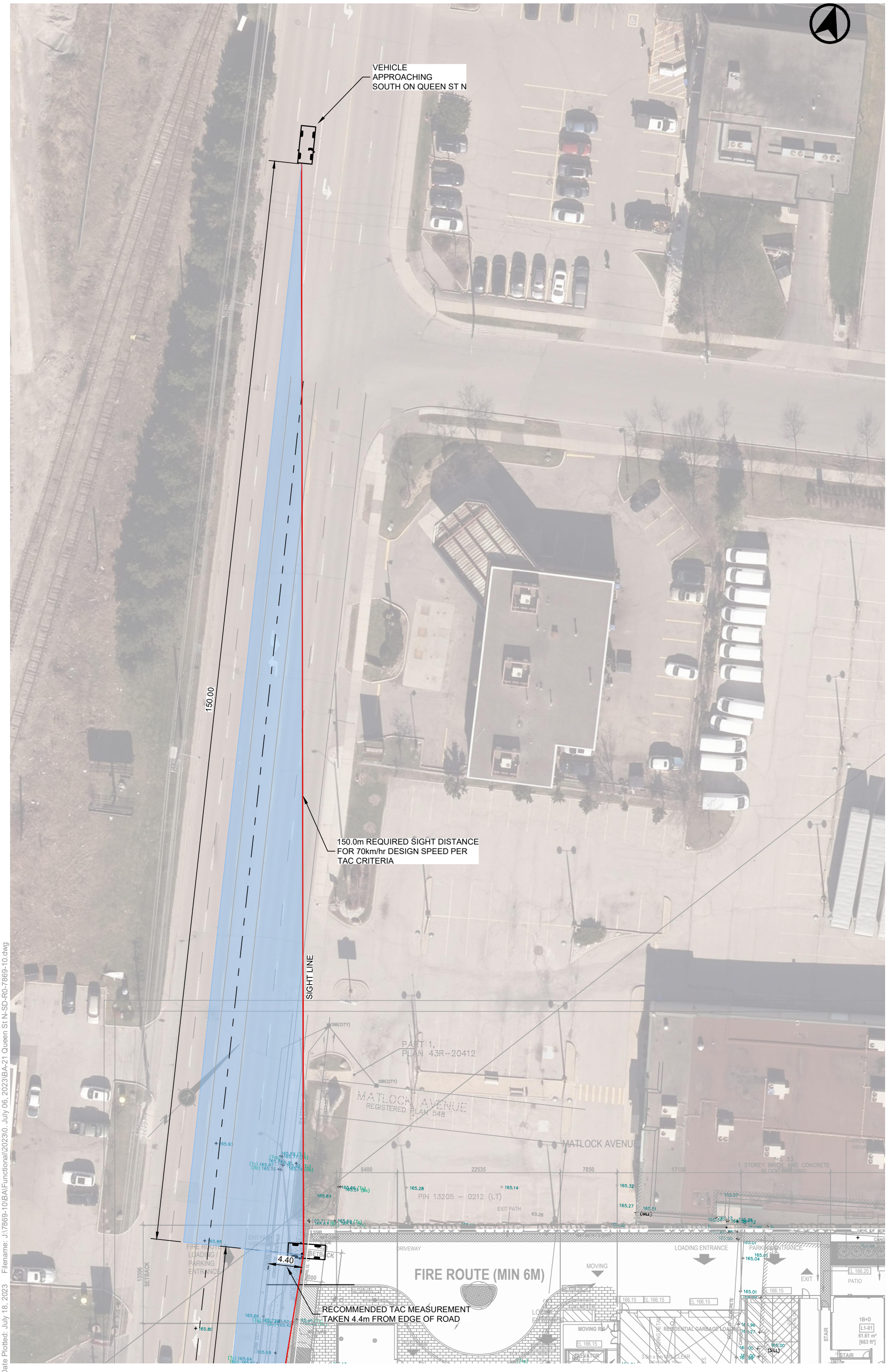
	AM	PM
Auto driver	64%	67%
Auto passe	17%	19%
Transit	13%	10%
Cycle	0%	0
Walk	6%	4%
	100%	100%

Appendix E:
Sight Distance



BA Group	21-51 QUEEN ST N DRIVEWAY DESIGN TAC RECOMMENDED SIGHT LINE POLICY RIGHT TURN FROM STOP	Project: 21-51 QUEEN ST N Project No. 7869-10 Date: July 18, 2023 Revised: --	Scale 1:400 (0 2 4 6 8 10 20m) Drawing No. SD-01

Date Plotted: July 18, 2023 Filename: J:\7869-10\BA\Functional\202310. July 06, 2023\BA-21 Queen St N-SD-R0-7869-10.dwg



Date Plotted: July 18, 2023 Filename: J:\7869-10\BA\Functional\202310_July 06, 2023\BA-21 Queen St N-SD-R0-7869-10.dwg

BA Group

21-51 QUEEN ST N

DRIVEWAY DESIGN

TAC RECOMMENDED SIGHT LINE POLICY
LEFT TURN FROM STOP

Project:	21-51 QUEEN ST N
Project No.	7869-10
Date:	July 18, 2023
Revised:	--

Scale 1:400 (0 2 4 6 8 10 20m)

Drawing No. SD-02

Appendix F:
Traffic Data

Turning Movement Count (24 . BRITANNIA RD & ARCH RD) CustID: 00305338 MioID:

Start Time	Westbound					Northbound					Eastbound					Int. Total (15 min)
	Left	Thru	UTurn	Peds	Approach Total	Left	Right	UTurn	Peds	Approach Total	Thru	Right	UTurn	Peds	Approach Total	
07:00:00	2	146	0	0	148	0	2	0	1	2	429	0	0	0	429	579
07:15:00	2	171	0	0	173	0	0	0	4	0	510	2	0	0	512	685
07:30:00	5	198	0	0	203	2	3	0	6	5	553	2	0	0	555	763
07:45:00	5	285	0	0	290	0	5	0	0	5	560	0	0	0	560	855
Hourly	14	800	0	0	814	2	10	0	11	12	2052	4	0	0	2056	2882
08:00:00	4	268	0	0	272	2	1	0	2	3	640	2	0	0	642	917
08:15:00	0	275	0	0	275	1	4	0	1	5	674	1	0	0	675	955
08:30:00	1	357	0	0	358	2	3	0	3	5	593	0	0	0	593	956
08:45:00	3	291	0	0	294	2	4	0	1	6	572	1	0	0	573	873
Hourly	8	1191	0	0	1199	7	12	0	7	19	2479	4	0	0	2483	3701
BREAK																
11:00:00	0	211	0	0	211	0	1	0	0	1	235	0	0	0	235	447
11:15:00	1	211	0	0	212	1	1	0	0	2	253	2	0	0	255	469
11:30:00	0	181	0	0	181	2	0	0	0	2	226	4	1	0	231	414
11:45:00	0	231	0	0	231	0	2	0	0	2	249	1	0	0	250	483
Hourly	1	834	0	0	835	3	4	0	0	7	963	7	1	0	971	1813
12:00:00	0	239	0	0	239	1	0	0	2	1	282	0	0	0	282	522
12:15:00	4	231	0	0	235	2	0	0	0	2	246	4	0	0	250	487
12:30:00	0	217	0	0	217	0	2	0	1	2	262	0	0	0	262	481
12:45:00	3	232	0	0	235	0	1	0	0	1	290	1	0	0	291	527
Hourly	7	919	0	0	926	3	3	0	3	6	1080	5	0	0	1085	2017
13:00:00	1	240	0	0	241	1	1	0	2	2	233	0	0	0	233	476
13:15:00	0	224	0	0	224	1	1	0	2	2	257	1	0	0	258	484
13:30:00	0	240	0	0	240	1	0	0	0	1	217	0	0	0	217	458
13:45:00	0	264	0	0	264	0	1	0	2	1	253	1	0	0	254	519

Hourly	1	968	0	0	969	3	3	0	6	6	960	2	0	0	962	1937
BREAK																
15:00:00	4	376	0	0	380	0	2	0	3	2	279	0	0	0	279	661
15:15:00	0	276	0	0	276	1	0	0	2	1	243	1	0	0	244	521
15:30:00	4	276	0	0	280	0	1	0	5	1	305	1	0	0	306	587
15:45:00	5	390	0	0	395	2	0	0	2	2	207	21	0	0	228	625
Hourly	13	1318	0	0	1331	3	3	0	12	6	1034	23	0	0	1057	2394
16:00:00	5	433	1	0	439	9	2	0	7	11	202	14	0	0	216	666
16:15:00	3	387	3	0	393	6	5	0	5	11	247	13	0	0	260	664
16:30:00	1	364	0	0	365	1	1	0	0	2	285	2	0	0	287	654
16:45:00	2	461	0	0	463	0	2	0	1	2	288	3	0	0	291	756
Hourly	11	1645	4	0	1660	16	10	0	13	26	1022	32	0	0	1054	2740
17:00:00	1	433	0	0	434	0	1	0	3	1	333	0	0	0	333	768
17:15:00	1	459	0	0	460	0	4	0	7	4	345	1	0	0	346	810
17:30:00	3	482	0	0	485	0	2	0	0	2	399	6	0	0	405	892
17:45:00	0	453	0	0	453	0	2	0	4	2	375	3	0	0	378	833
Hourly	5	1827	0	0	1832	0	9	0	14	9	1452	10	0	0	1462	3303
Grand Total	60	9502	4	0	9566	37	54	0	66	91	11042	87	1	0	11130	**20787**
Approach%	0.6%	99.3%	0%		-	40.7%	59.3%	0%		-	99.2%	0.8%	0%		-	**-**
Totals %	0.3%	45.7%	0%		46%	0.2%	0.3%	0%		0.4%	53.1%	0.4%	0%		53.5%	**-**
Heavy	0	291	0		-	3	5	0		-	285	5	0		-	**-**
Heavy %	0%	3.1%	0%		-	8.1%	9.3%	0%		-	2.6%	5.7%	0%		-	**-**
Bicycles	0	1	0		-	0	0	0		-	4	0	0		-	**-**
Bicycle %	0%	0%	0%		-	0%	0%	0%		-	0%	0%	0%		-	**-**

Peak Hour: 08:00 AM - 09:00 AM Weather: Mist (13.18 °C)

Start Time	Westbound					Northbound					Eastbound					Int. Total (15 min)
	Left	Thru	UTurn	Peds	Approach Total	Left	Right	UTurn	Peds	Approach Total	Thru	Right	UTurn	Peds	Approach Total	
08:00:00	4	268	0	0	272	2	1	0	2	3	640	2	0	0	642	917
08:15:00	0	275	0	0	275	1	4	0	1	5	674	1	0	0	675	955
08:30:00	1	357	0	0	358	2	3	0	3	5	593	0	0	0	593	956
08:45:00	3	291	0	0	294	2	4	0	1	6	572	1	0	0	573	873
Grand Total	8	1191	0	0	1199	7	12	0	7	19	2479	4	0	0	2483	**3701**
Approach%	0.7%	99.3%	0%		-	36.8%	63.2%	0%		-	99.8%	0.2%	0%		-	**-**
Totals %	0.2%	32.2%	0%		32.4%	0.2%	0.3%	0%		0.5%	67%	0.1%	0%		67.1%	**-**
PHF	0.5	0.83	0		0.84	0.88	0.75	0		0.79	0.92	0.5	0		0.92	**-**
Heavy	0	55	0		55	0	1	0		1	44	1	0		45	**-**
Heavy %	0%	4.6%	0%		4.6%	0%	8.3%	0%		5.3%	1.8%	25%	0%		1.8%	**-**
Lights	8	1136	0		1144	7	11	0		18	2435	3	0		2438	**-**
Lights %	100%	95.4%	0%		95.4%	100%	91.7%	0%		94.7%	98.2%	75%	0%		98.2%	**-**
Single-Unit Trucks	0	17	0		17	0	1	0		1	13	1	0		14	**-**
Single-Unit Trucks %	0%	1.4%	0%		1.4%	0%	8.3%	0%		5.3%	0.5%	25%	0%		0.6%	**-**
Buses	0	33	0		33	0	0	0		0	25	0	0		25	**-**
Buses %	0%	2.8%	0%		2.8%	0%	0%	0%		0%	1%	0%	0%		1%	**-**
Articulated Trucks	0	5	0		5	0	0	0		0	6	0	0		6	**-**
Articulated Trucks %	0%	0.4%	0%		0.4%	0%	0%	0%		0%	0.2%	0%	0%		0.2%	**-**
Pedestrians	-	-	-	0	-	-	-	-	7	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	0%		-	-	-	100%		-	-	-	0%		**-**
Bicycles on Road	0	0	0	0	-	0	0	0	0	-	2	0	0	0	-	**-**
Bicycles on Road%	-	-	-	0%		-	-	-	0%		-	-	-	0%		**-**

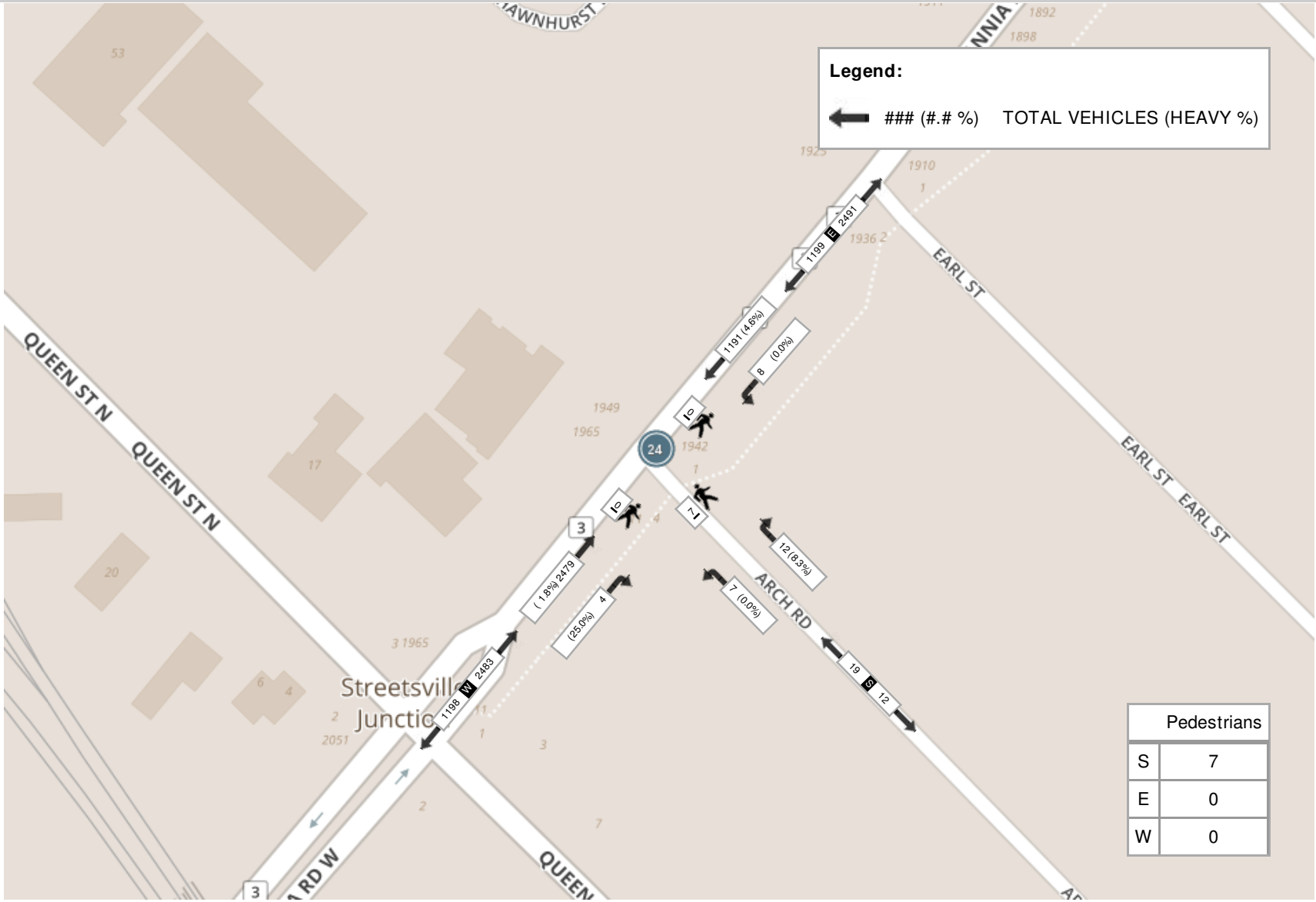
Peak Hour: 12:00 PM - 01:00 PM Weather: Broken Clouds (23.38 °C)

Start Time	Westbound					Northbound					Eastbound					Int. Total (15 min)
	Left	Thru	UTurn	Peds	Approach Total	Left	Right	UTurn	Peds	Approach Total	Thru	Right	UTurn	Peds	Approach Total	
12:00:00	0	239	0	0	239	1	0	0	2	1	282	0	0	0	282	522
12:15:00	4	231	0	0	235	2	0	0	0	2	246	4	0	0	250	487
12:30:00	0	217	0	0	217	0	2	0	1	2	262	0	0	0	262	481
12:45:00	3	232	0	0	235	0	1	0	0	1	290	1	0	0	291	527
Grand Total	7	919	0	0	926	3	3	0	3	6	1080	5	0	0	1085	**2017**
Approach%	0.8%	99.2%	0%		-	50%	50%	0%		-	99.5%	0.5%	0%		-	-
Totals %	0.3%	45.6%	0%		45.9%	0.1%	0.1%	0%		0.3%	53.5%	0.2%	0%		53.8%	-
PHF	0.44	0.96	0		0.97	0.38	0.38	0		0.75	0.93	0.31	0		0.93	-
Heavy	0	30	0		30	0	0	0		0	30	0	0		30	-
Heavy %	0%	3.3%	0%		3.2%	0%	0%	0%		0%	2.8%	0%	0%		2.8%	-
Lights	7	889	0		896	3	3	0		6	1050	5	0		1055	-
Lights %	100%	96.7%	0%		96.8%	100%	100%	0%		100%	97.2%	100%	0%		97.2%	-
Single-Unit Trucks	0	15	0		15	0	0	0		0	12	0	0		12	-
Single-Unit Trucks %	0%	1.6%	0%		1.6%	0%	0%	0%		0%	1.1%	0%	0%		1.1%	-
Buses	0	11	0		11	0	0	0		0	13	0	0		13	-
Buses %	0%	1.2%	0%		1.2%	0%	0%	0%		0%	1.2%	0%	0%		1.2%	-
Articulated Trucks	0	4	0		4	0	0	0		0	5	0	0		5	-
Articulated Trucks %	0%	0.4%	0%		0.4%	0%	0%	0%		0%	0.5%	0%	0%		0.5%	-
Pedestrians	-	-	-	0	-	-	-	-	3	-	-	-	-	0	-	-
Pedestrians%	-	-	-	0%		-	-	-	100%		-	-	-	0%		-
Bicycles on Road	0	1	0	0	-	0	0	0	0	-	1	0	0	0	-	-
Bicycles on Road%	-	-	-	0%		-	-	-	0%		-	-	-	0%		-

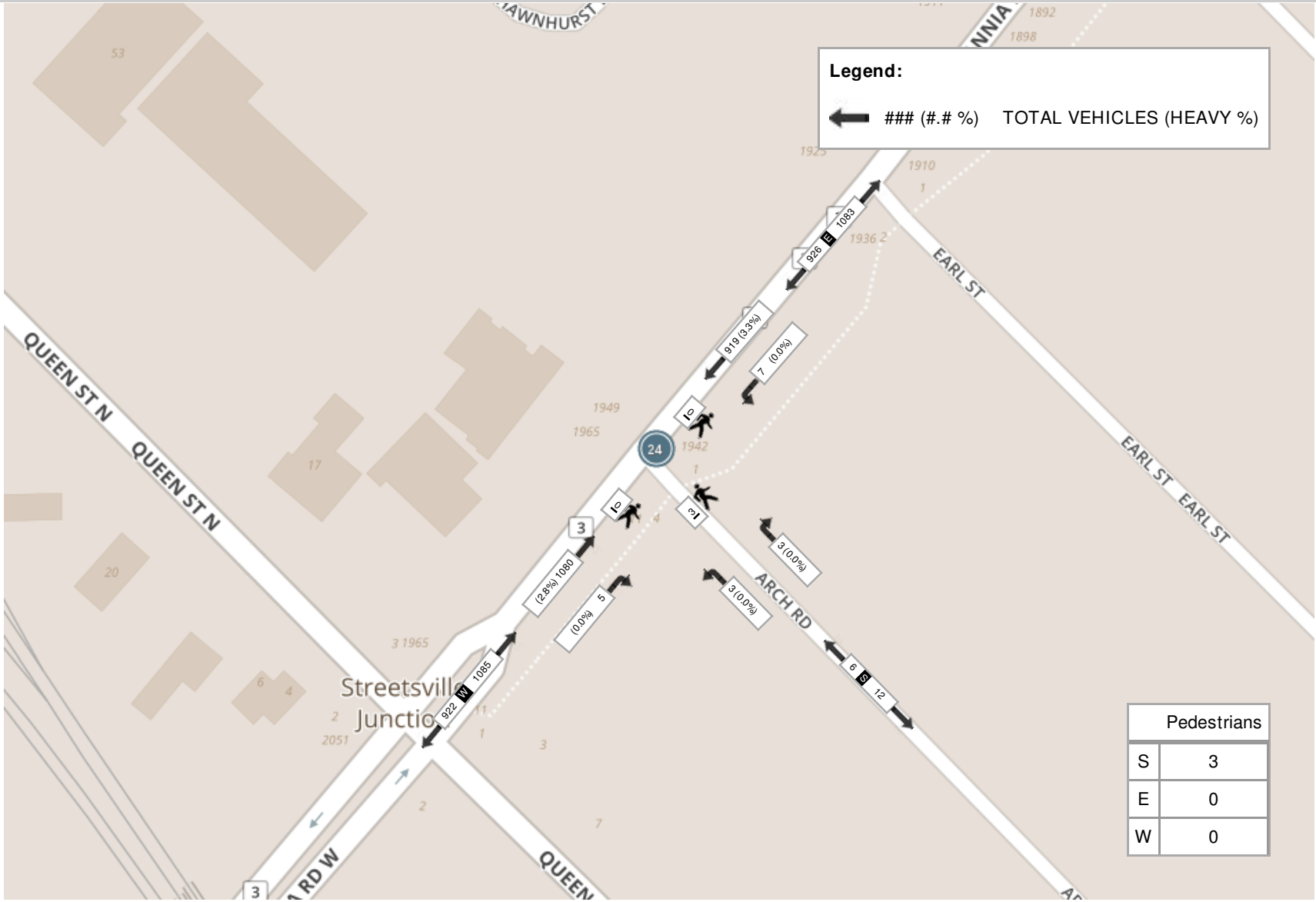
Peak Hour: 05:00 PM - 06:00 PM Weather: Broken Clouds (25.35 °C)

Start Time	Westbound					Northbound					Eastbound					Int. Total (15 min)
	Left	Thru	UTurn	Peds	Approach Total	Left	Right	UTurn	Peds	Approach Total	Thru	Right	UTurn	Peds	Approach Total	
17:00:00	1	433	0	0	434	0	1	0	3	1	333	0	0	0	333	768
17:15:00	1	459	0	0	460	0	4	0	7	4	345	1	0	0	346	810
17:30:00	3	482	0	0	485	0	2	0	0	2	399	6	0	0	405	892
17:45:00	0	453	0	0	453	0	2	0	4	2	375	3	0	0	378	833
Grand Total	5	1827	0	0	1832	0	9	0	14	9	1452	10	0	0	1462	**3303**
Approach%	0.3%	99.7%	0%		-	0%	100%	0%		-	99.3%	0.7%	0%		-	-
Totals %	0.2%	55.3%	0%		55.5%	0%	0.3%	0%		0.3%	44%	0.3%	0%		44.3%	-
PHF	0.42	0.95	0		0.94	0	0.56	0		0.56	0.91	0.42	0		0.9	-
Heavy	0	13	0		13	0	0	0		0	24	0	0		24	-
Heavy %	0%	0.7%	0%		0.7%	0%	0%	0%		0%	1.7%	0%	0%		1.6%	-
Lights	5	1814	0		1819	0	9	0		9	1428	10	0		1438	-
Lights %	100%	99.3%	0%		99.3%	0%	100%	0%		100%	98.3%	100%	0%		98.4%	-
Single-Unit Trucks	0	4	0		4	0	0	0		0	8	0	0		8	-
Single-Unit Trucks %	0%	0.2%	0%		0.2%	0%	0%	0%		0%	0.6%	0%	0%		0.5%	-
Buses	0	7	0		7	0	0	0		0	13	0	0		13	-
Buses %	0%	0.4%	0%		0.4%	0%	0%	0%		0%	0.9%	0%	0%		0.9%	-
Articulated Trucks	0	2	0		2	0	0	0		0	3	0	0		3	-
Articulated Trucks %	0%	0.1%	0%		0.1%	0%	0%	0%		0%	0.2%	0%	0%		0.2%	-
Pedestrians	-	-	-	0	-	-	-	-	14	-	-	-	-	0	-	-
Pedestrians%	-	-	-	0%		-	-	-	100%		-	-	-	0%		-
Bicycles on Road	0	0	0	0	-	0	0	0	0	-	0	0	0	0	-	-
Bicycles on Road%	-	-	-	0%		-	-	-	0%		-	-	-	0%		-

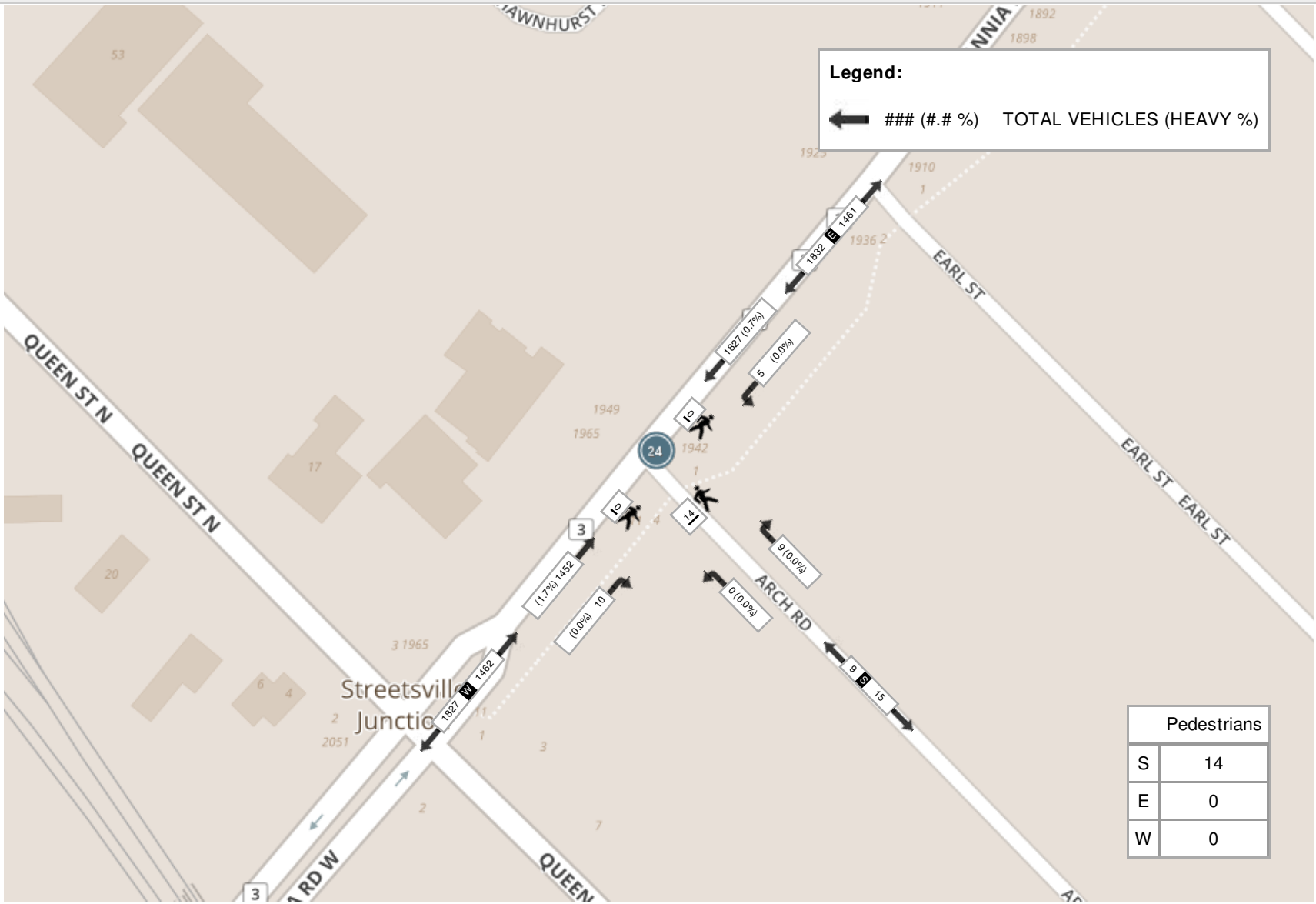
Peak Hour: 08:00 AM - 09:00 AM Weather: Mist (13.18 °C)



Peak Hour: 12:00 PM - 01:00 PM Weather: Broken Clouds (23.38 °C)



Peak Hour: 05:00 PM - 06:00 PM Weather: Broken Clouds (25.35 °C)



Turning Movement Count (25 . BRITANNIA RD & EARL ST) CustID: 00305224 MioID:

Start Time	Westbound					Northbound					Eastbound					Int. Total (15 min)
	Left	Thru	UTurn	Peds	Approach Total	Left	Right	UTurn	Peds	Approach Total	Thru	Right	UTurn	Peds	Approach Total	
07:00:00	1	150	1	0	152	0	3	0	0	3	424	0	0	0	424	579
07:15:00	2	160	0	0	162	0	4	0	1	4	476	0	0	0	476	642
07:30:00	2	200	0	0	202	1	6	0	1	7	524	1	0	0	525	734
07:45:00	1	251	0	0	252	0	4	0	0	4	448	0	0	0	448	704
Hourly	6	761	1	0	768	1	17	0	2	18	1872	1	0	0	1873	2659
08:00:00	0	257	0	0	257	0	3	0	4	3	488	0	0	0	488	748
08:15:00	1	265	0	0	266	0	7	0	2	7	485	0	0	0	485	758
08:30:00	1	251	0	0	252	0	5	0	1	5	461	0	0	0	461	718
08:45:00	1	256	0	0	257	2	3	0	0	5	510	2	0	0	512	774
Hourly	3	1029	0	0	1032	2	18	0	7	20	1944	2	0	0	1946	2998
BREAK																
11:00:00	0	159	0	0	159	0	3	0	3	3	210	0	0	1	210	372
11:15:00	3	210	0	0	213	0	4	0	0	4	247	0	0	0	247	464
11:30:00	0	212	0	0	212	1	2	0	1	3	213	0	0	0	213	428
11:45:00	2	231	0	0	233	0	2	0	0	2	242	2	1	0	245	480
Hourly	5	812	0	0	817	1	11	0	4	12	912	2	1	1	915	1744
12:00:00	2	218	0	0	220	0	6	0	3	6	256	0	1	0	257	483
12:15:00	0	206	0	0	206	1	1	0	3	2	248	2	0	0	250	458
12:30:00	0	236	0	0	236	0	1	0	1	1	225	0	0	0	225	462
12:45:00	3	283	0	0	286	0	1	0	1	1	253	1	0	0	254	541
Hourly	5	943	0	0	948	1	9	0	8	10	982	3	1	0	986	1944
13:00:00	2	216	0	0	218	1	3	0	1	4	217	0	0	0	217	439
13:15:00	2	273	0	0	275	0	2	0	2	2	233	0	0	0	233	510
13:30:00	1	233	0	0	234	0	4	0	0	4	225	0	1	0	226	464
13:45:00	1	296	0	0	297	0	3	0	1	3	260	0	0	0	260	560

Hourly	6	1018	0	0	1024	1	12	0	4	13	935	0	1	0	936	1973
BREAK																
15:00:00	1	341	0	0	342	1	1	0	0	2	274	0	0	0	274	618
15:15:00	6	315	0	0	321	0	4	0	0	4	258	1	0	0	259	584
15:30:00	2	378	0	0	380	0	4	0	7	4	259	1	1	0	261	645
15:45:00	2	367	0	0	369	0	2	0	1	2	281	3	0	0	284	655
Hourly	11	1401	0	0	1412	1	11	0	8	12	1072	5	1	0	1078	2502
16:00:00	7	392	0	0	399	1	9	0	2	10	291	1	0	0	292	701
16:15:00	3	383	0	0	386	1	3	0	1	4	269	0	0	0	269	659
16:30:00	2	342	1	0	345	0	2	0	6	2	305	0	0	0	305	652
16:45:00	0	370	0	0	370	0	6	0	2	6	293	1	0	0	294	670
Hourly	12	1487	1	0	1500	2	20	0	11	22	1158	2	0	0	1160	2682
17:00:00	1	357	0	0	358	0	7	0	0	7	351	0	0	0	351	716
17:15:00	0	336	0	0	336	0	4	0	1	4	343	3	0	0	346	686
17:30:00	1	383	0	0	384	0	2	0	0	2	384	1	0	0	385	771
17:45:00	3	363	0	0	366	0	7	0	4	7	378	3	0	0	381	754
Hourly	5	1439	0	0	1444	0	20	0	5	20	1456	7	0	0	1463	2927
Grand Total	53	8890	2	0	8945	9	118	0	49	127	10331	22	4	1	10357	**19429**
Approach%	0.6%	99.4%	0%		-	7.1%	92.9%	0%		-	99.7%	0.2%	0%		-	**-**
Totals %	0.3%	45.8%	0%		46%	0%	0.6%	0%		0.7%	53.2%	0.1%	0%		53.3%	**-**
Heavy	4	294	0		-	1	6	0		-	269	1	0		-	**-**
Heavy %	7.5%	3.3%	0%		-	11.1%	5.1%	0%		-	2.6%	4.5%	0%		-	**-**
Bicycles	8	4	0		-	0	4	0		-	7	0	0		-	**-**
Bicycle %	15.1%	0%	0%		-	0%	3.4%	0%		-	0.1%	0%	0%		-	**-**

Peak Hour: 08:00 AM - 09:00 AM Weather: Moderate Rain (15.36 °C)

Start Time	Westbound					Northbound					Eastbound					Int. Total (15 min)
	Left	Thru	UTurn	Peds	Approach Total	Left	Right	UTurn	Peds	Approach Total	Thru	Right	UTurn	Peds	Approach Total	
08:00:00	0	257	0	0	257	0	3	0	4	3	488	0	0	0	488	748
08:15:00	1	265	0	0	266	0	7	0	2	7	485	0	0	0	485	758
08:30:00	1	251	0	0	252	0	5	0	1	5	461	0	0	0	461	718
08:45:00	1	256	0	0	257	2	3	0	0	5	510	2	0	0	512	774
Grand Total	3	1029	0	0	1032	2	18	0	7	20	1944	2	0	0	1946	**2998**
Approach%	0.3%	99.7%	0%		-	10%	90%	0%		-	99.9%	0.1%	0%		-	**-**
Totals %	0.1%	34.3%	0%		34.4%	0.1%	0.6%	0%		0.7%	64.8%	0.1%	0%		64.9%	**-**
PHF	0.75	0.97	0		0.97	0.25	0.64	0		0.71	0.95	0.25	0		0.95	**-**
Heavy	2	47	0		49	0	1	0		1	46	0	0		46	**-**
Heavy %	66.7%	4.6%	0%		4.7%	0%	5.6%	0%		5%	2.4%	0%	0%		2.4%	**-**
Lights	1	982	0		983	2	17	0		19	1898	2	0		1900	**-**
Lights %	33.3%	95.4%	0%		95.3%	100%	94.4%	0%		95%	97.6%	100%	0%		97.6%	**-**
Single-Unit Trucks	0	10	0		10	0	0	0		0	16	0	0		16	**-**
Single-Unit Trucks %	0%	1%	0%		1%	0%	0%	0%		0%	0.8%	0%	0%		0.8%	**-**
Buses	2	35	0		37	0	1	0		1	28	0	0		28	**-**
Buses %	66.7%	3.4%	0%		3.6%	0%	5.6%	0%		5%	1.4%	0%	0%		1.4%	**-**
Articulated Trucks	0	2	0		2	0	0	0		0	2	0	0		2	**-**
Articulated Trucks %	0%	0.2%	0%		0.2%	0%	0%	0%		0%	0.1%	0%	0%		0.1%	**-**
Pedestrians	-	-	-	0	-	-	-	-	7	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	0%		-	-	-	100%		-	-	-	0%		**-**
Bicycles on Road	0	1	0	0	-	0	0	0	0	-	1	0	0	0	-	**-**
Bicycles on Road%	-	-	-	0%		-	-	-	0%		-	-	-	0%		**-**

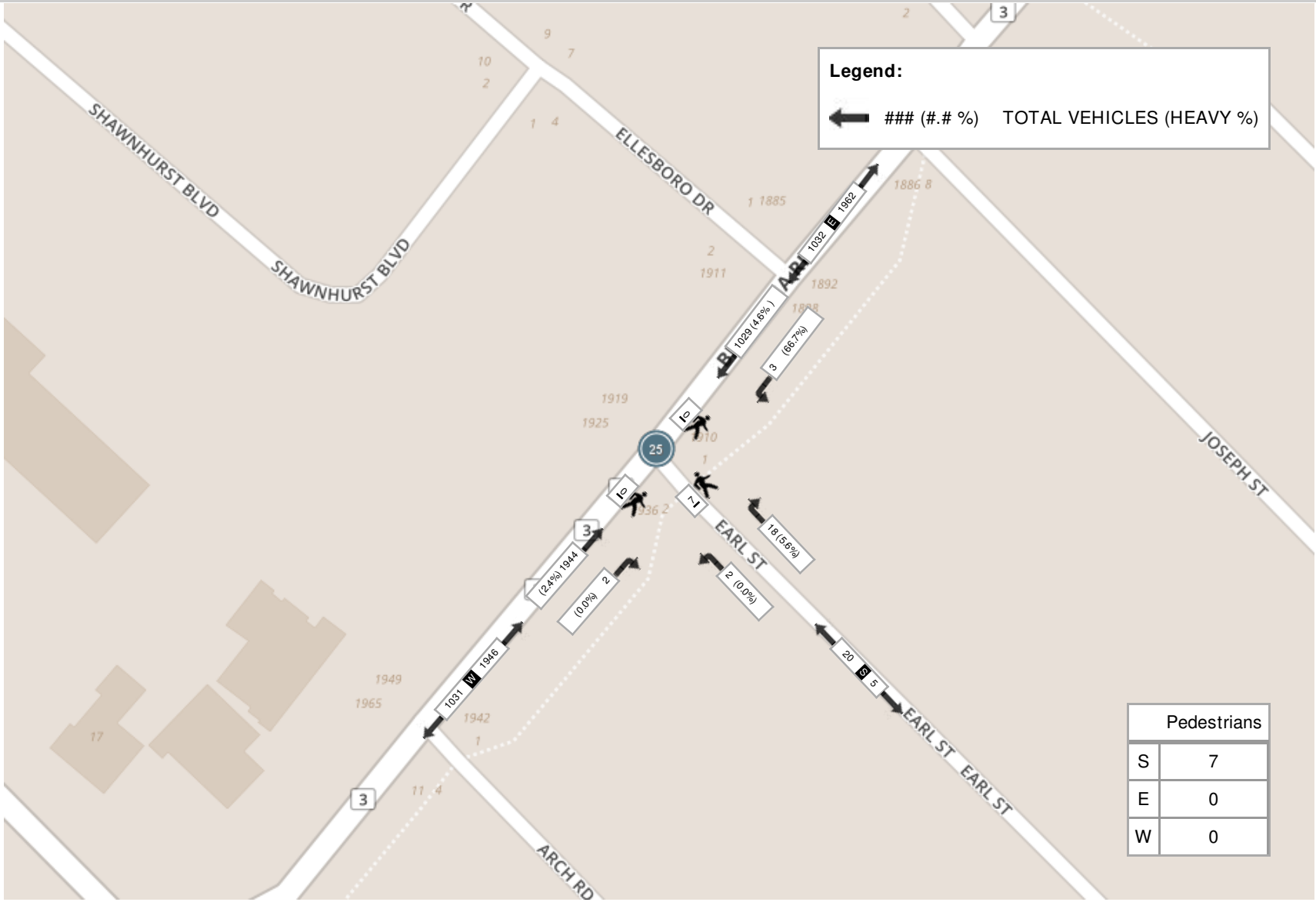
Peak Hour: 01:00 PM - 02:00 PM Weather: Broken Clouds (16.94 °C)

Start Time	Westbound					Northbound					Eastbound					Int. Total (15 min)
	Left	Thru	UTurn	Peds	Approach Total	Left	Right	UTurn	Peds	Approach Total	Thru	Right	UTurn	Peds	Approach Total	
13:00:00	2	216	0	0	218	1	3	0	1	4	217	0	0	0	217	439
13:15:00	2	273	0	0	275	0	2	0	2	2	233	0	0	0	233	510
13:30:00	1	233	0	0	234	0	4	0	0	4	225	0	1	0	226	464
13:45:00	1	296	0	0	297	0	3	0	1	3	260	0	0	0	260	560
Grand Total	6	1018	0	0	1024	1	12	0	4	13	935	0	1	0	936	**1973**
Approach%	0.6%	99.4%	0%		-	7.7%	92.3%	0%		-	99.9%	0%	0.1%		-	**-**
Totals %	0.3%	51.6%	0%		51.9%	0.1%	0.6%	0%		0.7%	47.4%	0%	0.1%		47.4%	**-**
PHF	0.75	0.86	0		0.86	0.25	0.75	0		0.81	0.9	0	0.25		0.9	**-**
Heavy	0	56	0		56	0	0	0		0	35	0	0		35	**-**
Heavy %	0%	5.5%	0%		5.5%	0%	0%	0%		0%	3.7%	0%	0%		3.7%	**-**
Lights	6	962	0		968	1	12	0		13	900	0	1		901	**-**
Lights %	100%	94.5%	0%		94.5%	100%	100%	0%		100%	96.3%	0%	100%		96.3%	**-**
Single-Unit Trucks	0	27	0		27	0	0	0		0	23	0	0		23	**-**
Single-Unit Trucks %	0%	2.7%	0%		2.6%	0%	0%	0%		0%	2.5%	0%	0%		2.5%	**-**
Buses	0	19	0		19	0	0	0		0	11	0	0		11	**-**
Buses %	0%	1.9%	0%		1.9%	0%	0%	0%		0%	1.2%	0%	0%		1.2%	**-**
Articulated Trucks	0	10	0		10	0	0	0		0	1	0	0		1	**-**
Articulated Trucks %	0%	1%	0%		1%	0%	0%	0%		0%	0.1%	0%	0%		0.1%	**-**
Pedestrians	-	-	-	0	-	-	-	-	4	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	0%		-	-	-	100%		-	-	-	0%		**-**
Bicycles on Road	1	0	0	0	-	0	0	0	0	-	1	0	0	0	-	**-**
Bicycles on Road%	-	-	-	0%		-	-	-	0%		-	-	-	0%		**-**

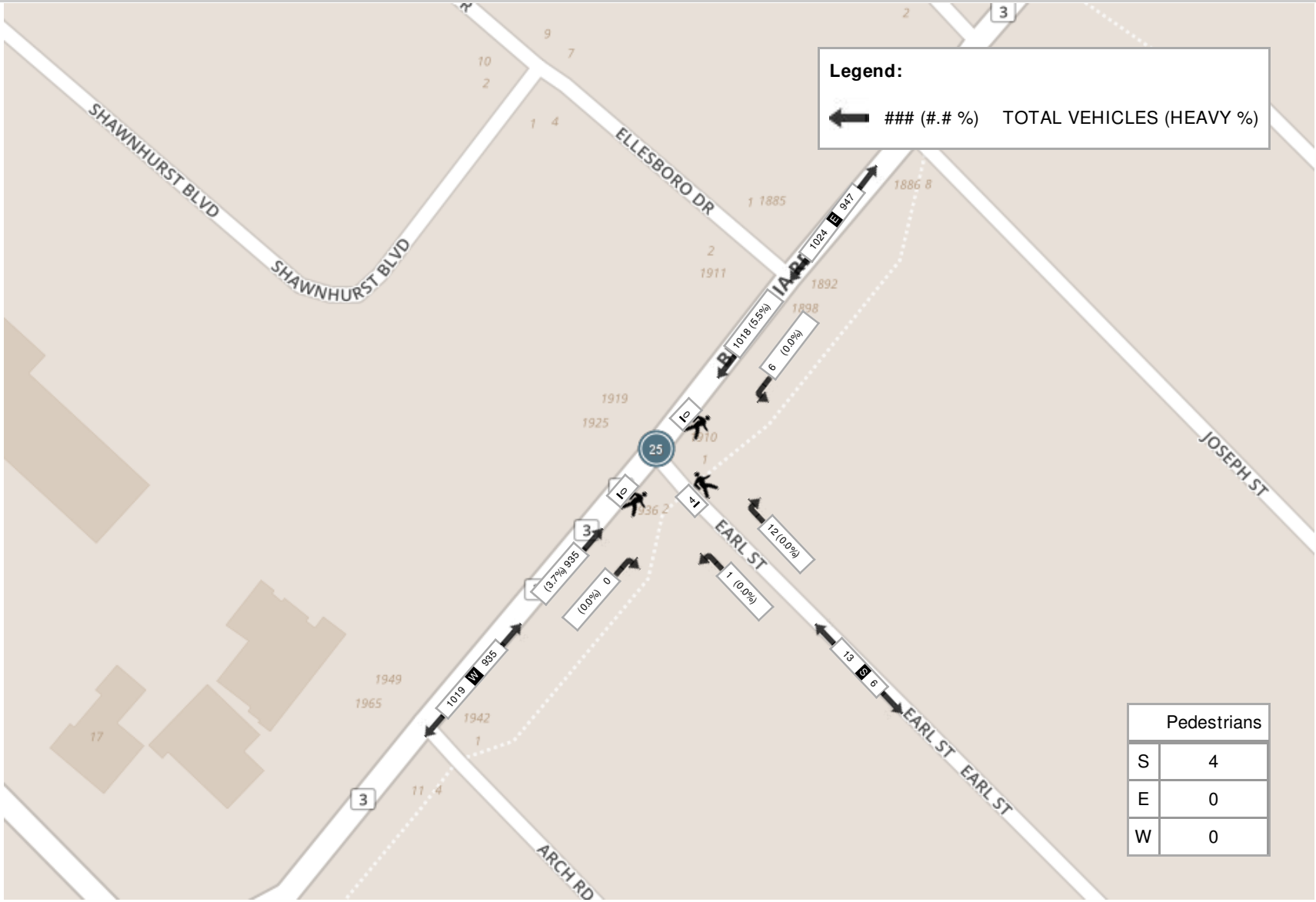
Peak Hour: 05:00 PM - 06:00 PM Weather: Scattered Clouds (20.41 °C)

Start Time	Westbound					Northbound					Eastbound					Int. Total (15 min)
	Left	Thru	UTurn	Peds	Approach Total	Left	Right	UTurn	Peds	Approach Total	Thru	Right	UTurn	Peds	Approach Total	
17:00:00	1	357	0	0	358	0	7	0	0	7	351	0	0	0	351	716
17:15:00	0	336	0	0	336	0	4	0	1	4	343	3	0	0	346	686
17:30:00	1	383	0	0	384	0	2	0	0	2	384	1	0	0	385	771
17:45:00	3	363	0	0	366	0	7	0	4	7	378	3	0	0	381	754
Grand Total	5	1439	0	0	1444	0	20	0	5	20	1456	7	0	0	1463	**2927**
Approach%	0.3%	99.7%	0%		-	0%	100%	0%		-	99.5%	0.5%	0%		-	-
Totals %	0.2%	49.2%	0%		49.3%	0%	0.7%	0%		0.7%	49.7%	0.2%	0%		50%	-
PHF	0.42	0.94	0		0.94	0	0.71	0		0.71	0.95	0.58	0		0.95	-
Heavy	0	20	0		20	0	0	0		0	17	0	0		17	-
Heavy %	0%	1.4%	0%		1.4%	0%	0%	0%		0%	1.2%	0%	0%		1.2%	-
Lights	5	1419	0		1424	0	20	0		20	1439	7	0		1446	-
Lights %	100%	98.6%	0%		98.6%	0%	100%	0%		100%	98.8%	100%	0%		98.8%	-
Single-Unit Trucks	0	5	0		5	0	0	0		0	4	0	0		4	-
Single-Unit Trucks %	0%	0.3%	0%		0.3%	0%	0%	0%		0%	0.3%	0%	0%		0.3%	-
Buses	0	11	0		11	0	0	0		0	10	0	0		10	-
Buses %	0%	0.8%	0%		0.8%	0%	0%	0%		0%	0.7%	0%	0%		0.7%	-
Articulated Trucks	0	4	0		4	0	0	0		0	3	0	0		3	-
Articulated Trucks %	0%	0.3%	0%		0.3%	0%	0%	0%		0%	0.2%	0%	0%		0.2%	-
Pedestrians	-	-	-	0	-	-	-	-	5	-	-	-	-	0	-	-
Pedestrians%	-	-	-	0%		-	-	-	100%		-	-	-	0%		-
Bicycles on Road	2	1	0	0	-	0	2	0	0	-	0	0	0	0	-	-
Bicycles on Road%	-	-	-	0%		-	-	-	0%		-	-	-	0%		-

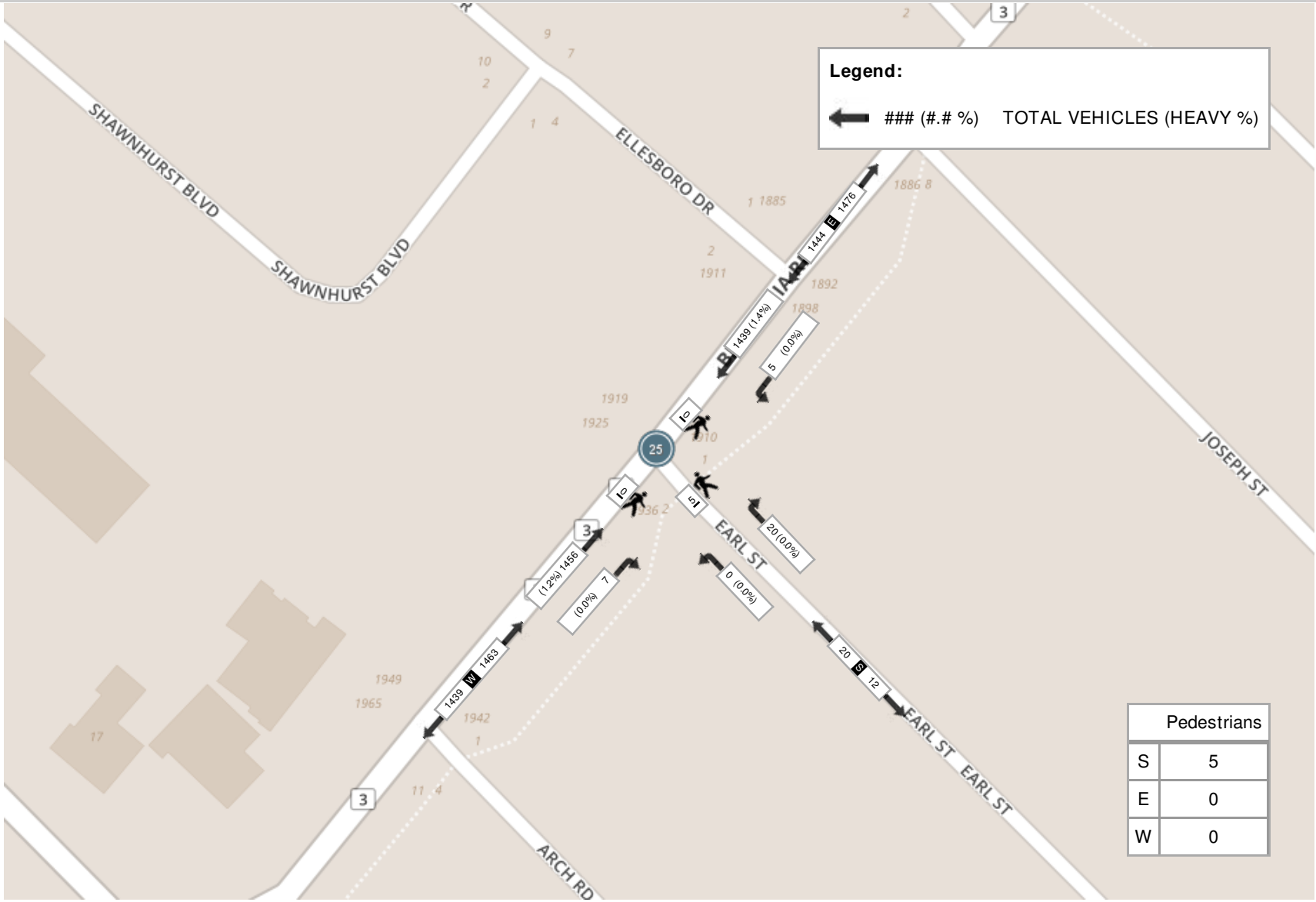
Peak Hour: 08:00 AM - 09:00 AM Weather: Moderate Rain (15.36 °C)



Peak Hour: 01:00 PM - 02:00 PM Weather: Broken Clouds (16.94 °C)



Peak Hour: 05:00 PM - 06:00 PM Weather: Scattered Clouds (20.41 °C)



Turning Movement Count (14 . BRITANNIA RD & ELLESBORO DR) CustID: 00305155 MioID: 663715

Start Time	Southbound ELLESBORO DR					Westbound BRITANNIA RD					Eastbound BRITANNIA RD					Int. Total (15 min)
	Left	Right	U-Turn	Peds	Approach Total	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	U-Turn	Peds	Approach Total	
07:00:00	4	2	0	0	6	139	5	0	0	144	0	362	0	0	362	512
07:15:00	9	2	0	0	11	158	10	0	0	168	0	421	0	2	421	600
07:30:00	9	10	0	3	19	212	7	0	0	219	2	502	0	0	504	742
07:45:00	14	11	0	2	25	268	19	0	0	287	0	476	0	3	476	788
Hourly	36	25	0	5	61	777	41	0	0	818	2	1761	0	5	1763	2642
08:00:00	12	6	0	0	18	212	17	0	0	229	6	487	0	1	493	740
08:15:00	26	9	0	3	35	266	22	0	1	288	7	448	0	7	455	778
08:30:00	13	9	0	1	22	220	6	0	0	226	3	475	0	3	478	726
08:45:00	11	5	0	0	16	282	24	0	0	306	13	401	0	1	414	736
Hourly	62	29	0	4	91	980	69	0	1	1049	29	1811	0	12	1840	2980
BREAK																
11:00:00	3	4	0	0	7	172	8	0	0	180	5	237	0	0	242	429
11:15:00	9	3	0	0	12	199	9	0	0	208	7	240	0	0	247	467
11:30:00	6	4	0	1	10	207	12	0	0	219	2	251	0	1	253	482
11:45:00	8	5	0	3	13	220	8	0	0	228	2	249	0	0	251	492
Hourly	26	16	0	4	42	798	37	0	0	835	16	977	0	1	993	1870
12:00:00	10	8	0	0	18	239	10	0	1	249	4	231	0	1	235	502
12:15:00	13	8	0	0	21	213	5	0	0	218	7	240	0	0	247	486
12:30:00	11	5	0	0	16	218	13	0	1	231	3	251	0	0	254	501
12:45:00	12	3	0	4	15	241	13	0	0	254	5	228	0	1	233	502
Hourly	46	24	0	4	70	911	41	0	2	952	19	950	0	2	969	1991
13:00:00	10	7	0	1	17	263	10	0	0	273	1	215	0	0	216	506
13:15:00	13	3	0	1	16	244	8	0	0	252	6	204	0	0	210	478
13:30:00	11	6	0	1	17	244	16	0	0	260	4	218	0	1	222	499

13:45:00	8	5	0	0	13	279	7	0	0	286	5	234	0	0	239	538
Hourly	42	21	0	3	63	1030	41	0	0	1071	16	871	0	1	887	2021
BREAK																
15:00:00	3	4	0	3	7	341	22	0	0	363	7	273	0	4	280	650
15:15:00	17	8	0	3	25	358	22	0	2	380	10	261	0	3	271	676
15:30:00	18	16	0	0	34	339	11	0	0	350	6	294	0	2	300	684
15:45:00	8	7	0	1	15	390	19	0	0	409	4	267	0	0	271	695
Hourly	46	35	0	7	81	1428	74	0	2	1502	27	1095	0	9	1122	2705
16:00:00	21	5	0	3	26	397	16	0	1	413	9	246	0	0	255	694
16:15:00	6	8	0	1	14	390	19	0	0	409	12	313	0	0	325	748
16:30:00	14	3	0	1	17	377	11	0	2	388	8	301	0	0	309	714
16:45:00	26	6	0	3	32	373	10	0	0	383	2	337	0	1	339	754
Hourly	67	22	0	8	89	1537	56	0	3	1593	31	1197	0	1	1228	2910
17:00:00	26	3	0	1	29	361	16	0	0	377	5	335	0	1	340	746
17:15:00	36	10	0	0	46	364	24	0	0	388	6	323	0	1	329	763
17:30:00	22	13	0	1	35	367	21	0	0	388	2	372	0	0	374	797
17:45:00	16	9	0	3	25	324	14	0	0	338	4	321	0	3	325	688
Hourly	100	35	0	5	135	1416	75	0	0	1491	17	1351	0	5	1368	2994
Grand Total	425	207	0	40	632	8877	434	0	8	9311	157	10013	0	36	10170	**20113**
Approach%	67.2%	32.8%	0%		-	95.3%	4.7%	0%		-	1.5%	98.5%	0%		-	**-**
Totals %	2.1%	1%	0%		3.1%	44.1%	2.2%	0%		46.3%	0.8%	49.8%	0%		50.6%	**-**
Heavy	6	15	0		-	296	23	0		-	11	259	0		-	**-**
Heavy %	1.4%	7.2%	0%		-	3.3%	5.3%	0%		-	7%	2.6%	0%		-	**-**
Bicycles	0	2	0		-	1	2	0		-	0	1	0		-	**-**
Bicycle %	0%	1%	0%		-	0%	0.5%	0%		-	0%	0%	0%		-	**-**

Peak Hour: 08:00 AM - 09:00 AM Weather: Fog (11.77 °C)

Start Time	Southbound ELLESBORO DR					Westbound BRITANNIA RD					Eastbound BRITANNIA RD					Int. Total (15 min)
	Left	Right	U-Turn	Peds	Approach Total	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	U-Turn	Peds	Approach Total	
08:00:00	12	6	0	0	18	212	17	0	0	229	6	487	0	1	493	740
08:15:00	26	9	0	3	35	266	22	0	1	288	7	448	0	7	455	778
08:30:00	13	9	0	1	22	220	6	0	0	226	3	475	0	3	478	726
08:45:00	11	5	0	0	16	282	24	0	0	306	13	401	0	1	414	736
Grand Total	62	29	0	4	91	980	69	0	1	1049	29	1811	0	12	1840	**2980**
Approach%	68.1%	31.9%	0%		-	93.4%	6.6%	0%		-	1.6%	98.4%	0%		-	-
Totals %	2.1%	1%	0%		3.1%	32.9%	2.3%	0%		35.2%	1%	60.8%	0%		61.7%	-
PHF	0.6	0.81	0		0.65	0.87	0.72	0		0.86	0.56	0.93	0		0.93	-
Heavy	0	2	0		2	55	4	0		59	1	37	0		38	-
Heavy %	0%	6.9%	0%		2.2%	5.6%	5.8%	0%		5.6%	3.4%	2%	0%		2.1%	-
Lights	62	27	0		89	925	65	0		990	28	1774	0		1802	-
Lights %	100%	93.1%	0%		97.8%	94.4%	94.2%	0%		94.4%	96.6%	98%	0%		97.9%	-
Single-Unit Trucks	0	0	0		0	17	1	0		18	0	14	0		14	-
Single-Unit Trucks %	0%	0%	0%		0%	1.7%	1.4%	0%		1.7%	0%	0.8%	0%		0.8%	-
Buses	0	2	0		2	30	3	0		33	1	20	0		21	-
Buses %	0%	6.9%	0%		2.2%	3.1%	4.3%	0%		3.1%	3.4%	1.1%	0%		1.1%	-
Articulated Trucks	0	0	0		0	8	0	0		8	0	3	0		3	-
Articulated Trucks %	0%	0%	0%		0%	0.8%	0%	0%		0.8%	0%	0.2%	0%		0.2%	-
Pedestrians	-	-	-	4	-	-	-	-	1	-	-	-	-	12	-	-
Pedestrians%	-	-	-	23.5%		-	-	-	5.9%		-	-	-	70.6%		-
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
Bicycles on Crosswalk%	-	-	-	0%		-	-	-	0%		-	-	-	0%		-
Bicycles on Road	0	0	0	0	-	0	0	0	0	-	0	0	0	0	-	-
Bicycles on Road%	-	-	-	0%		-	-	-	0%		-	-	-	0%		-

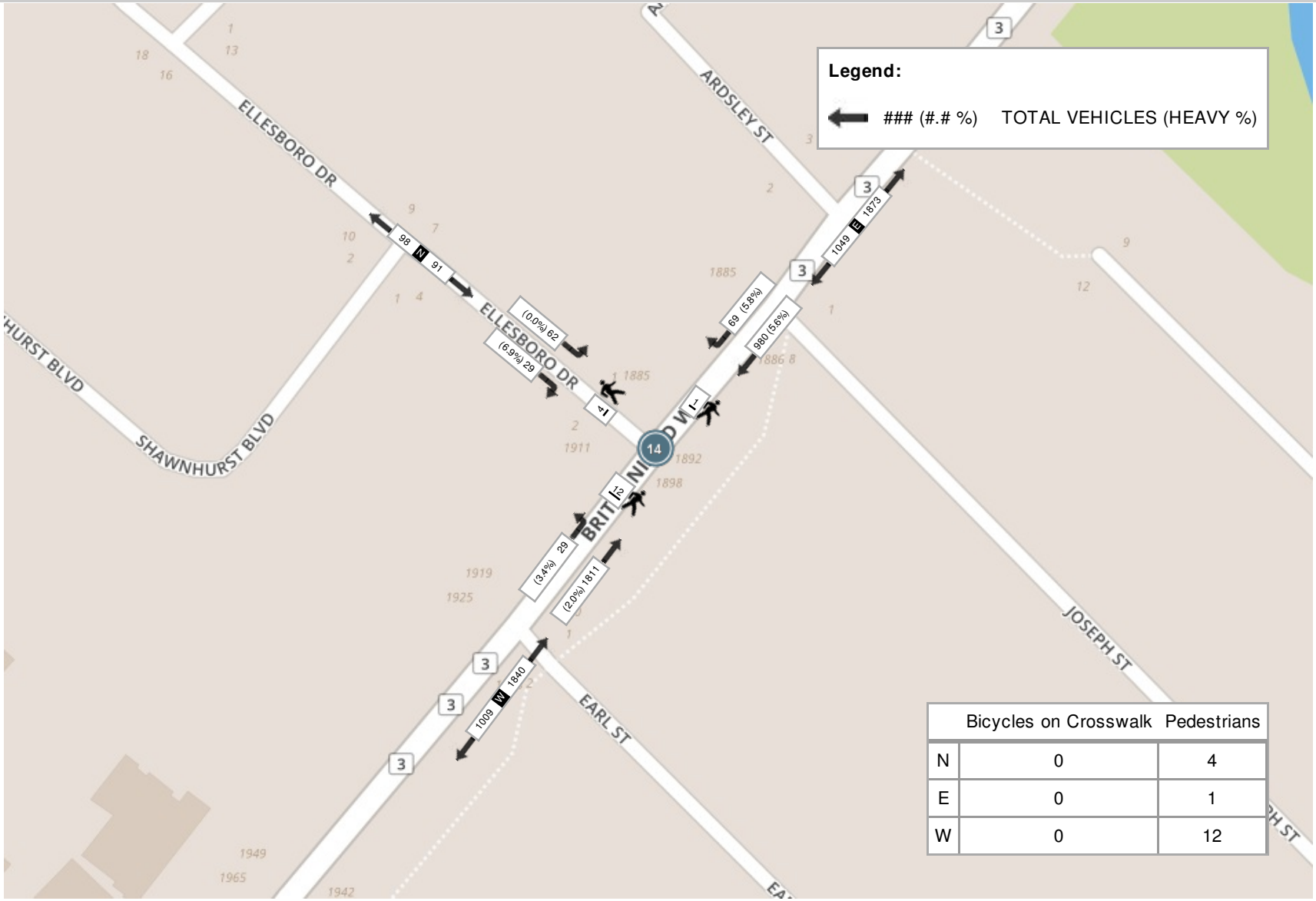
Peak Hour: 01:00 PM - 02:00 PM Weather: Haze (17.96 °C)

Start Time	Southbound ELLESBORO DR					Westbound BRITANNIA RD					Eastbound BRITANNIA RD					Int. Total (15 min)
	Left	Right	U-Turn	Peds	Approach Total	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	U-Turn	Peds	Approach Total	
13:00:00	10	7	0	1	17	263	10	0	0	273	1	215	0	0	216	506
13:15:00	13	3	0	1	16	244	8	0	0	252	6	204	0	0	210	478
13:30:00	11	6	0	1	17	244	16	0	0	260	4	218	0	1	222	499
13:45:00	8	5	0	0	13	279	7	0	0	286	5	234	0	0	239	538
Grand Total	42	21	0	3	63	1030	41	0	0	1071	16	871	0	1	887	**2021**
Approach%	66.7%	33.3%	0%		-	96.2%	3.8%	0%		-	1.8%	98.2%	0%		-	-
Totals %	2.1%	1%	0%		3.1%	51%	2%	0%		53%	0.8%	43.1%	0%		43.9%	-
PHF	0.81	0.75	0		0.93	0.92	0.64	0		0.94	0.67	0.93	0		0.93	-
Heavy	0	1	0		1	38	2	0		40	0	26	0		26	-
Heavy %	0%	4.8%	0%		1.6%	3.7%	4.9%	0%		3.7%	0%	3%	0%		2.9%	-
Lights	42	20	0		62	992	39	0		1031	16	845	0		861	-
Lights %	100%	95.2%	0%		98.4%	96.3%	95.1%	0%		96.3%	100%	97%	0%		97.1%	-
Single-Unit Trucks	0	1	0		1	19	2	0		21	0	11	0		11	-
Single-Unit Trucks %	0%	4.8%	0%		1.6%	1.8%	4.9%	0%		2%	0%	1.3%	0%		1.2%	-
Buses	0	0	0		0	14	0	0		14	0	13	0		13	-
Buses %	0%	0%	0%		0%	1.4%	0%	0%		1.3%	0%	1.5%	0%		1.5%	-
Articulated Trucks	0	0	0		0	5	0	0		5	0	2	0		2	-
Articulated Trucks %	0%	0%	0%		0%	0.5%	0%	0%		0.5%	0%	0.2%	0%		0.2%	-
Pedestrians	-	-	-	3	-	-	-	-	0	-	-	-	-	1	-	-
Pedestrians%	-	-	-	75%		-	-	-	0%		-	-	-	25%		-
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
Bicycles on Crosswalk%	-	-	-	0%		-	-	-	0%		-	-	-	0%		-
Bicycles on Road	0	0	0	0	-	0	2	0	0	-	0	0	0	0	-	-
Bicycles on Road%	-	-	-	0%		-	-	-	0%		-	-	-	0%		-

Peak Hour: 05:00 PM - 06:00 PM Weather: Broken Clouds (21.25 °C)

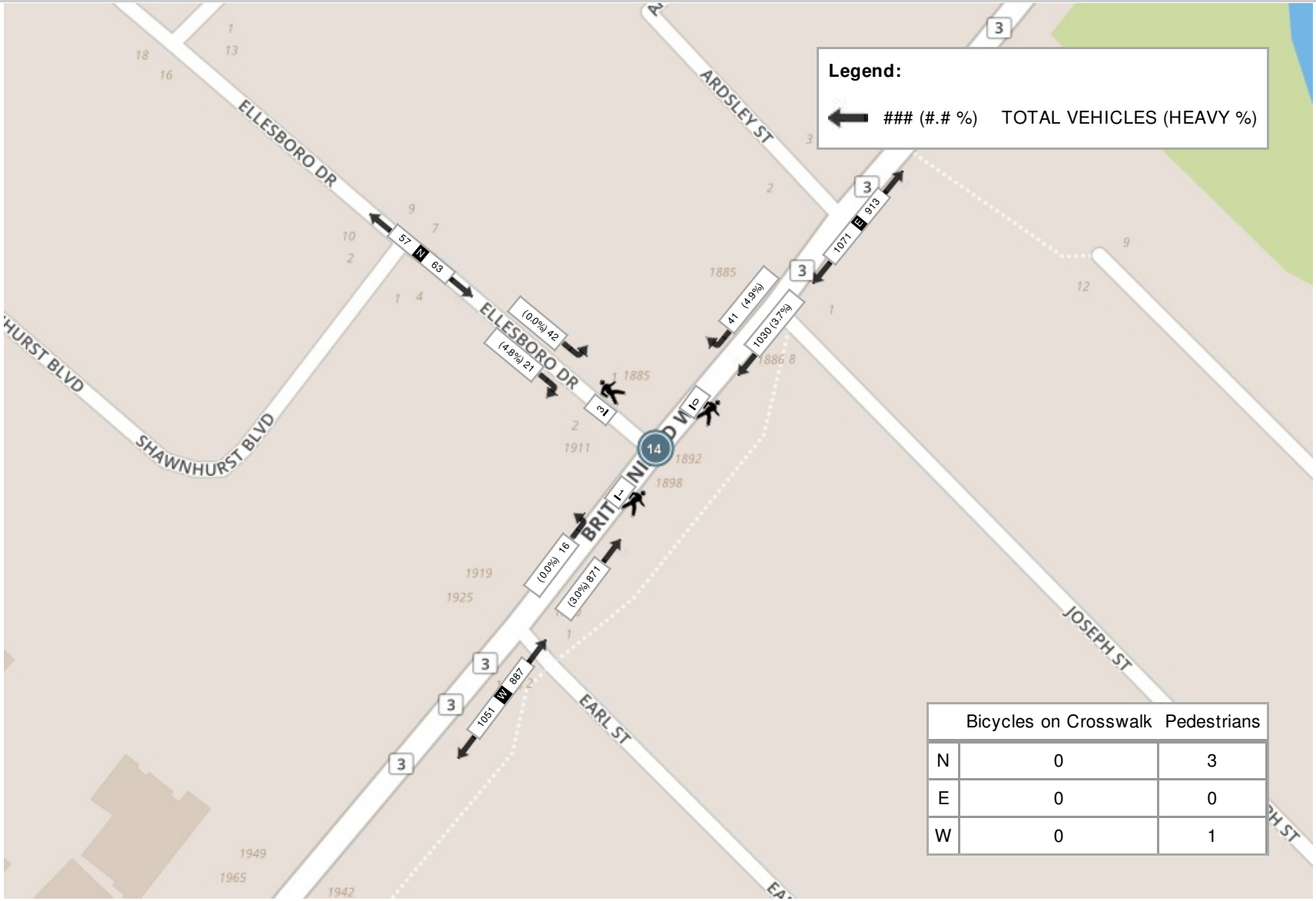
Start Time	Southbound ELLESBORO DR					Westbound BRITANNIA RD					Eastbound BRITANNIA RD					Int. Total (15 min)
	Left	Right	U-Turn	Peds	Approach Total	Thru	Right	U-Turn	Peds	Approach Total	Left	Thru	U-Turn	Peds	Approach Total	
17:00:00	26	3	0	1	29	361	16	0	0	377	5	335	0	1	340	746
17:15:00	36	10	0	0	46	364	24	0	0	388	6	323	0	1	329	763
17:30:00	22	13	0	1	35	367	21	0	0	388	2	372	0	0	374	797
17:45:00	16	9	0	3	25	324	14	0	0	338	4	321	0	3	325	688
Grand Total	100	35	0	5	135	1416	75	0	0	1491	17	1351	0	5	1368	**2994**
Approach%	74.1%	25.9%	0%		-	95%	5%	0%		-	1.2%	98.8%	0%		-	-
Totals %	3.3%	1.2%	0%		4.5%	47.3%	2.5%	0%		49.8%	0.6%	45.1%	0%		45.7%	-
PHF	0.69	0.67	0		0.73	0.96	0.78	0		0.96	0.71	0.91	0		0.91	-
Heavy	0	1	0		1	19	0	0		19	0	17	0		17	-
Heavy %	0%	2.9%	0%		0.7%	1.3%	0%	0%		1.3%	0%	1.3%	0%		1.2%	-
Lights	100	34	0		134	1397	75	0		1472	17	1334	0		1351	-
Lights %	100%	97.1%	0%		99.3%	98.7%	100%	0%		98.7%	100%	98.7%	0%		98.8%	-
Single-Unit Trucks	0	1	0		1	8	0	0		8	0	8	0		8	-
Single-Unit Trucks %	0%	2.9%	0%		0.7%	0.6%	0%	0%		0.5%	0%	0.6%	0%		0.6%	-
Buses	0	0	0		0	9	0	0		9	0	7	0		7	-
Buses %	0%	0%	0%		0%	0.6%	0%	0%		0.6%	0%	0.5%	0%		0.5%	-
Articulated Trucks	0	0	0		0	2	0	0		2	0	2	0		2	-
Articulated Trucks %	0%	0%	0%		0%	0.1%	0%	0%		0.1%	0%	0.1%	0%		0.1%	-
Pedestrians	-	-	-	4	-	-	-	-	0	-	-	-	-	5	-	-
Pedestrians%	-	-	-	40%		-	-	-	0%		-	-	-	50%		-
Bicycles on Crosswalk	-	-	-	1	-	-	-	-	0	-	-	-	-	0	-	-
Bicycles on Crosswalk%	-	-	-	10%		-	-	-	0%		-	-	-	0%		-
Bicycles on Road	0	0	0	0	-	1	0	0	0	-	0	0	0	0	-	-
Bicycles on Road%	-	-	-	0%		-	-	-	0%		-	-	-	0%		-

Peak Hour: 08:00 AM - 09:00 AM Weather: Fog (11.77 °C)



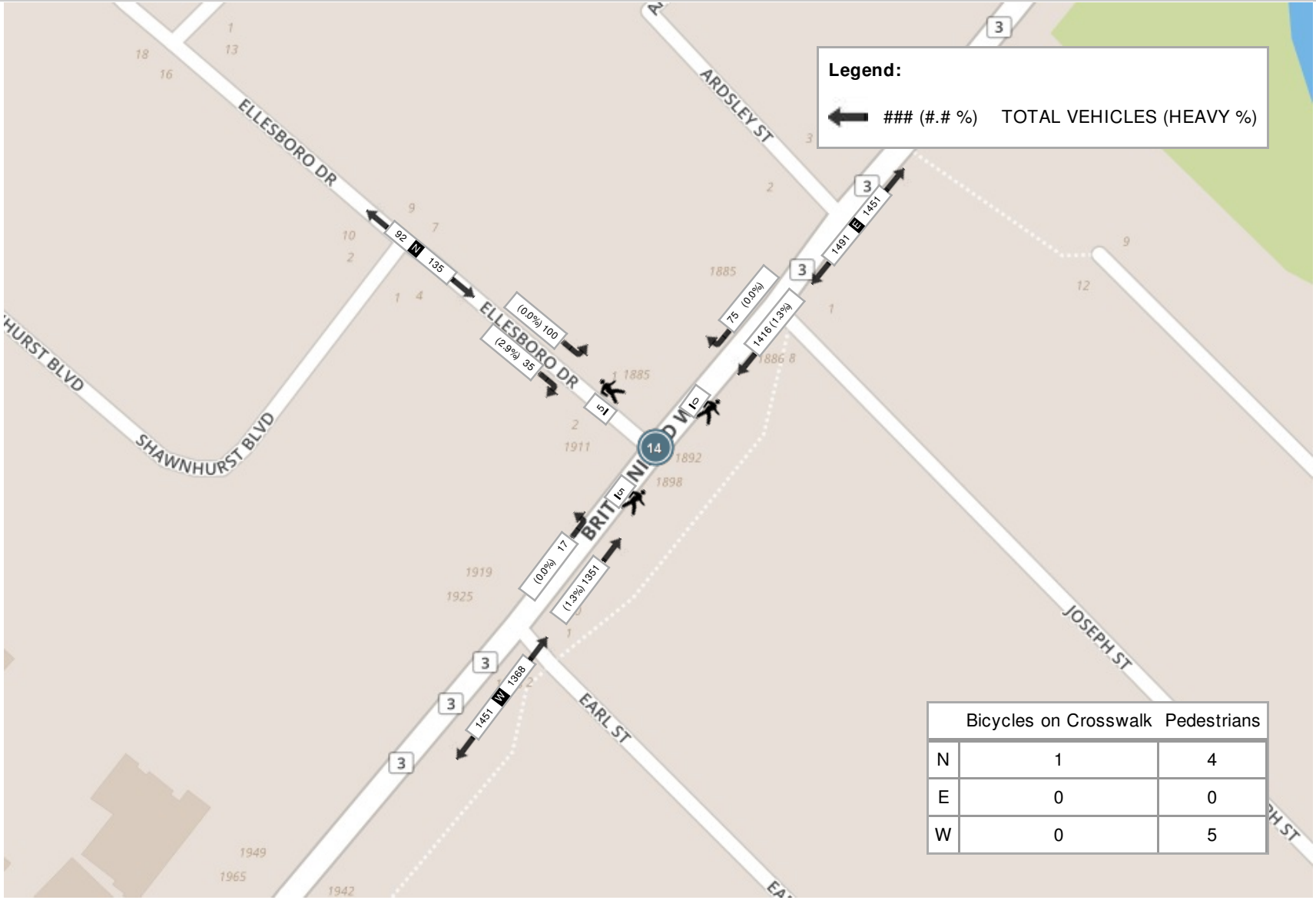
	Bicycles on Crosswalk	Pedestrians
N	0	4
E	0	1
W	0	12

Peak Hour: 01:00 PM - 02:00 PM Weather: Haze (17.96 °C)



	Bicycles on Crosswalk	Pedestrians
N	0	3
E	0	0
W	0	1

Peak Hour: 05:00 PM - 06:00 PM Weather: Broken Clouds (21.25 °C)



	Bicycles on Crosswalk	Pedestrians
N	1	4
E	0	0
W	0	5

Turning Movement Count (3 . BRITANNIA RD & QUEEN ST) CustID: 00305449 MioID:

Start Time	Southbound						Westbound						Northbound						Eastbound						Int. Total (15 min)
	Left	Thru	Right	UTurn	Peds	Approach Total	Left	Thru	Right	UTurn	Peds	Approach Total	Left	Thru	Right	UTurn	Peds	Approach Total	Left	Thru	Right	UTurn	Peds	Approach Total	
07:00:00	45	37	29	0	1	111	13	96	29	0	0	138	12	36	14	0	1	62	28	388	13	0	1	429	740
07:15:00	59	48	31	0	0	138	19	97	38	0	2	154	11	73	23	0	6	107	30	353	11	0	0	394	793
07:30:00	37	49	38	0	2	124	16	134	38	0	3	188	8	61	24	0	1	93	24	454	15	0	2	493	898
07:45:00	36	64	44	0	5	144	24	217	54	0	2	295	20	111	37	0	1	168	36	360	15	0	5	411	1018
Hourly	177	198	142	0	8	517	72	544	159	0	7	775	51	281	98	0	9	430	118	1555	54	0	8	1727	3449
08:00:00	31	67	46	0	7	144	23	151	59	0	4	233	25	92	29	0	10	146	56	401	27	0	5	484	1007
08:15:00	24	67	37	0	1	128	22	163	88	0	10	273	21	104	41	0	11	166	51	387	25	0	1	463	1030
08:30:00	43	81	28	0	3	152	24	138	86	0	1	248	22	150	30	0	2	202	60	346	20	0	5	426	1028
08:45:00	44	70	28	0	3	142	11	154	93	0	3	258	27	124	23	0	1	174	48	402	28	0	3	478	1052
Hourly	142	285	139	0	14	566	80	606	326	0	18	1012	95	470	123	0	24	688	215	1536	100	0	14	1851	4117
BREAK																									
11:00:00	33	55	23	0	6	111	25	130	26	0	2	181	24	59	26	0	1	109	38	153	27	0	6	218	619
11:15:00	27	59	26	0	2	112	18	118	29	0	0	165	26	57	28	0	1	111	25	190	31	0	2	246	634
11:30:00	24	47	16	0	1	87	17	120	22	0	0	159	29	68	28	0	0	125	24	181	33	0	1	238	609
11:45:00	49	107	39	0	1	195	37	167	39	0	0	243	37	64	35	0	0	136	41	162	30	0	2	233	807
Hourly	133	268	104	0	10	505	97	535	116	0	2	748	116	248	117	0	2	481	128	686	121	0	11	935	2669
12:00:00	42	68	41	0	3	151	27	151	25	0	0	203	28	46	32	0	4	106	35	218	34	0	2	287	747
12:15:00	38	73	32	0	3	143	22	144	32	0	0	198	26	64	29	0	0	119	35	167	23	0	3	225	685
12:30:00	28	55	34	0	3	117	24	156	30	0	0	210	26	67	28	0	2	121	30	174	28	0	3	232	680
12:45:00	47	68	40	0	0	155	23	170	32	0	2	225	35	73	37	0	1	145	44	179	24	0	1	247	772
Hourly	155	264	147	0	9	566	96	621	119	0	2	836	115	250	126	0	7	491	144	738	109	0	9	991	2884
13:00:00	26	58	47	0	1	131	33	160	36	0	4	229	38	81	41	0	3	160	32	140	25	0	2	197	717
13:15:00	36	53	32	0	1	121	21	166	23	0	4	210	13	58	34	0	2	105	32	162	26	0	1	220	656
13:30:00	38	72	32	0	3	142	28	156	36	0	4	220	34	76	28	0	3	138	28	149	26	0	5	203	703
13:45:00	36	62	40	0	5	138	37	174	34	0	2	245	31	75	19	0	2	125	26	137	28	0	3	191	699
Hourly	136	245	151	0	10	532	119	656	129	0	14	904	116	290	122	0	10	528	118	588	105	0	11	811	2775
BREAK																									
15:00:00	53	61	48	0	1	162	23	281	52	0	5	356	43	84	34	0	1	161	28	176	21	0	0	225	904
15:15:00	54	77	63	0	1	194	27	245	27	0	8	299	38	99	35	0	7	172	37	197	31	0	1	265	930
15:30:00	54	74	72	0	1	200	35	272	27	0	4	334	42	84	30	0	7	156	35	170	26	0	1	231	921
15:45:00	41	73	43	0	0	157	29	295	25	0	9	349	35	66	24	0	4	125	37	193	33	0	0	263	894
Hourly	202	285	226	0	3	713	114	1093	131	0	26	1338	158	333	123	0	19	614	137	736	111	0	2	984	3649

16:00:00	70	113	68	0	0	251	35	296	24	0	4	355	39	78	27	0	2	144	29	182	21	0	0	232	982
16:15:00	67	99	57	0	1	223	36	335	30	0	8	401	39	87	30	0	6	156	21	193	22	0	1	236	1016
16:30:00	61	104	67	0	3	232	25	308	18	0	4	351	37	66	22	0	3	125	28	203	29	0	1	260	968
16:45:00	61	128	77	0	2	266	27	355	19	0	5	401	48	92	25	0	11	165	39	186	25	0	3	250	1082
Hourly	259	444	269	0	6	972	123	1294	91	0	21	1508	163	323	104	0	22	590	117	764	97	0	5	978	4048
17:00:00	71	126	73	0	0	270	16	354	21	0	9	391	46	103	30	0	4	179	30	242	33	0	0	305	1145
17:15:00	86	145	121	0	6	352	30	327	18	0	8	375	39	81	37	0	1	157	29	214	44	0	3	287	1171
17:30:00	65	139	85	0	5	289	43	231	55	0	7	329	39	91	42	0	1	172	39	200	52	0	7	291	1081
17:45:00	57	100	68	0	1	225	49	273	29	0	0	351	40	73	29	0	3	142	49	267	38	0	0	354	1072
Hourly	279	510	347	0	12	1136	138	1185	123	0	24	1446	164	348	138	0	9	650	147	923	167	0	10	1237	4469
Grand Total	1483	2499	1525	0	72	5507	839	6534	1194	0	114	8567	978	2543	951	0	102	4472	1124	7526	864	0	70	9514	**28060**
Approach%	26.9%	45.4%	27.7%	0%		-	9.8%	76.3%	13.9%	0%		-	21.9%	56.9%	21.3%	0%		-	11.8%	79.1%	9.1%	0%		-	**-**
Totals %	5.3%	8.9%	5.4%	0%		19.6%	3%	23.3%	4.3%	0%		30.5%	3.5%	9.1%	3.4%	0%		15.9%	4%	26.8%	3.1%	0%		33.9%	**-**
Heavy	35	52	93	0		-	24	226	44	0		-	26	59	17	0		-	34	190	8	0		-	**-**
Heavy %	2.4%	2.1%	6.1%	0%		-	2.9%	3.5%	3.7%	0%		-	2.7%	2.3%	1.8%	0%		-	3%	2.5%	0.9%	0%		-	**-**
Bicycles	0	1	0	0		-	0	0	0	0		-	0	2	0	0		-	1	0	0	0		-	**-**
Bicycle %	0%	0%	0%	0%		-	0%	0%	0%	0%		-	0%	0.1%	0%	0%		-	0.1%	0%	0%	0%		-	**-**

Peak Hour: 08:00 AM - 09:00 AM Weather: Light Rain (16.39 °C)

Start Time	Southbound						Westbound						Northbound						Eastbound						Int. Total (15 min)
	Left	Thru	Right	UTurn	Peds	Approach Total	Left	Thru	Right	UTurn	Peds	Approach Total	Left	Thru	Right	UTurn	Peds	Approach Total	Left	Thru	Right	UTurn	Peds	Approach Total	
08:00:00	31	67	46	0	7	144	23	151	59	0	4	233	25	92	29	0	10	146	56	401	27	0	5	484	1007
08:15:00	24	67	37	0	1	128	22	163	88	0	10	273	21	104	41	0	11	166	51	387	25	0	1	463	1030
08:30:00	43	81	28	0	3	152	24	138	86	0	1	248	22	150	30	0	2	202	60	346	20	0	5	426	1028
08:45:00	44	70	28	0	3	142	11	154	93	0	3	258	27	124	23	0	1	174	48	402	28	0	3	478	1052
Grand Total	142	285	139	0	14	566	80	606	326	0	18	1012	95	470	123	0	24	688	215	1536	100	0	14	1851	**4117**
Approach%	25.1%	50.4%	24.6%	0%		-	7.9%	59.9%	32.2%	0%		-	13.8%	68.3%	17.9%	0%		-	11.6%	83%	5.4%	0%		-	**-**
Totals %	3.4%	6.9%	3.4%	0%		13.7%	1.9%	14.7%	7.9%	0%		24.6%	2.3%	11.4%	3%	0%		16.7%	5.2%	37.3%	2.4%	0%		45%	**-**
PHF	0.81	0.88	0.76	0		0.93	0.83	0.93	0.88	0		0.93	0.88	0.78	0.75	0		0.85	0.9	0.96	0.89	0		0.96	**-**
Heavy	9	10	12	0		31	4	41	12	0		57	8	9	4	0		21	4	34	2	0		40	**-**
Heavy %	6.3%	3.5%	8.6%	0%		5.5%	5%	6.8%	3.7%	0%		5.6%	8.4%	1.9%	3.3%	0%		3.1%	1.9%	2.2%	2%	0%		2.2%	**-**
Lights	133	275	127	0		535	76	565	314	0		955	87	461	119	0		667	211	1502	98	0		1811	**-**
Lights %	93.7%	96.5%	91.4%	0%		94.5%	95%	93.2%	96.3%	0%		94.4%	91.6%	98.1%	96.7%	0%		96.9%	98.1%	97.8%	98%	0%		97.8%	**-**
Single-Unit Trucks	7	3	2	0		12	2	10	5	0		17	1	5	2	0		8	0	8	1	0		9	**-**
Single-Unit Trucks %	4.9%	1.1%	1.4%	0%		2.1%	2.5%	1.7%	1.5%	0%		1.7%	1.1%	1.1%	1.6%	0%		1.2%	0%	0.5%	1%	0%		0.5%	**-**
Buses	0	7	10	0		17	0	29	7	0		36	7	4	2	0		13	4	26	1	0		31	**-**
Buses %	0%	2.5%	7.2%	0%		3%	0%	4.8%	2.1%	0%		3.6%	7.4%	0.9%	1.6%	0%		1.9%	1.9%	1.7%	1%	0%		1.7%	**-**
Articulated Trucks	2	0	0	0		2	2	2	0	0		4	0	0	0	0		0	0	0	0	0		0	**-**
Articulated Trucks %	1.4%	0%	0%	0%		0.4%	2.5%	0.3%	0%	0%		0.4%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	-	14	-	-	-	-	-	18	-	-	-	-	-	24	-	-	-	-	-	14	-	**-**
Pedestrians%	-	-	-	-	20%		-	-	-	-	25.7%		-	-	-	-	34.3%		-	-	-	-	20%		**-**
Bicycles on Road	0	0	0	0	0	-	0	0	0	0	0	-	0	1	0	0	0	-	1	0	0	0	0	-	**-**
Bicycles on Road%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**

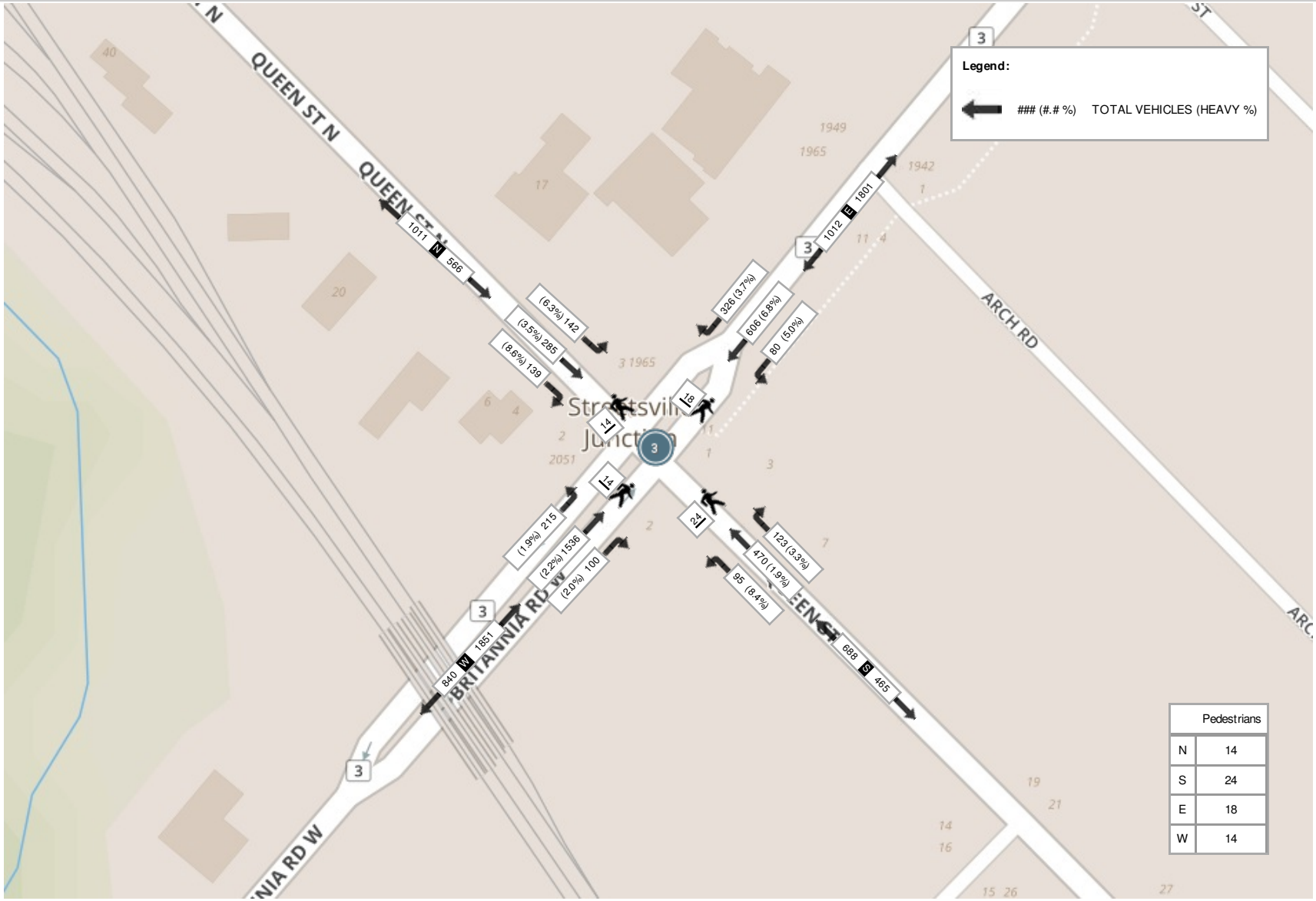
Peak Hour: 12:00 PM - 01:00 PM Weather: Light Rain (15.56 °C)

Start Time	Southbound						Westbound						Northbound						Eastbound						Int. Total (15 min)
	Left	Thru	Right	UTurn	Peds	Approach Total	Left	Thru	Right	UTurn	Peds	Approach Total	Left	Thru	Right	UTurn	Peds	Approach Total	Left	Thru	Right	UTurn	Peds	Approach Total	
12:00:00	42	68	41	0	3	151	27	151	25	0	0	203	28	46	32	0	4	106	35	218	34	0	2	287	747
12:15:00	38	73	32	0	3	143	22	144	32	0	0	198	26	64	29	0	0	119	35	167	23	0	3	225	685
12:30:00	28	55	34	0	3	117	24	156	30	0	0	210	26	67	28	0	2	121	30	174	28	0	3	232	680
12:45:00	47	68	40	0	0	155	23	170	32	0	2	225	35	73	37	0	1	145	44	179	24	0	1	247	772
Grand Total	155	264	147	0	9	566	96	621	119	0	2	836	115	250	126	0	7	491	144	738	109	0	9	991	**2884**
Approach%	27.4%	46.6%	26%	0%		-	11.5%	74.3%	14.2%	0%		-	23.4%	50.9%	25.7%	0%		-	14.5%	74.5%	11%	0%		-	-
Totals %	5.4%	9.2%	5.1%	0%		19.6%	3.3%	21.5%	4.1%	0%		29%	4%	8.7%	4.4%	0%		17%	5%	25.6%	3.8%	0%		34.4%	-
PHF	0.82	0.9	0.9	0		0.91	0.89	0.91	0.93	0		0.93	0.82	0.86	0.85	0		0.85	0.82	0.85	0.8	0		0.86	-
Heavy	4	6	12	0		22	3	24	7	0		34	3	4	1	0		8	6	21	1	0		28	-
Heavy %	2.6%	2.3%	8.2%	0%		3.9%	3.1%	3.9%	5.9%	0%		4.1%	2.6%	1.6%	0.8%	0%		1.6%	4.2%	2.8%	0.9%	0%		2.8%	-
Lights	151	258	135	0		544	93	597	112	0		802	112	246	125	0		483	138	717	108	0		963	-
Lights %	97.4%	97.7%	91.8%	0%		96.1%	96.9%	96.1%	94.1%	0%		95.9%	97.4%	98.4%	99.2%	0%		98.4%	95.8%	97.2%	99.1%	0%		97.2%	-
Single-Unit Trucks	3	2	3	0		8	3	13	3	0		19	2	1	1	0		4	0	10	0	0		10	-
Single-Unit Trucks %	1.9%	0.8%	2%	0%		1.4%	3.1%	2.1%	2.5%	0%		2.3%	1.7%	0.4%	0.8%	0%		0.8%	0%	1.4%	0%	0%		1%	-
Buses	1	4	8	0		13	0	10	0	0		10	1	3	0	0		4	6	9	1	0		16	-
Buses %	0.6%	1.5%	5.4%	0%		2.3%	0%	1.6%	0%	0%		1.2%	0.9%	1.2%	0%	0%		0.8%	4.2%	1.2%	0.9%	0%		1.6%	-
Articulated Trucks	0	0	1	0		1	0	1	4	0		5	0	0	0	0		0	0	2	0	0		2	-
Articulated Trucks %	0%	0%	0.7%	0%		0.2%	0%	0.2%	3.4%	0%		0.6%	0%	0%	0%	0%		0%	0%	0.3%	0%	0%		0.2%	-
Pedestrians	-	-	-	-	9	-	-	-	-	-	2	-	-	-	-	-	7	-	-	-	-	-	9	-	-
Pedestrians%	-	-	-	-	33.3%		-	-	-	-	7.4%		-	-	-	-	25.9%		-	-	-	-	33.3%		-
Bicycles on Road	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	-
Bicycles on Road%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-

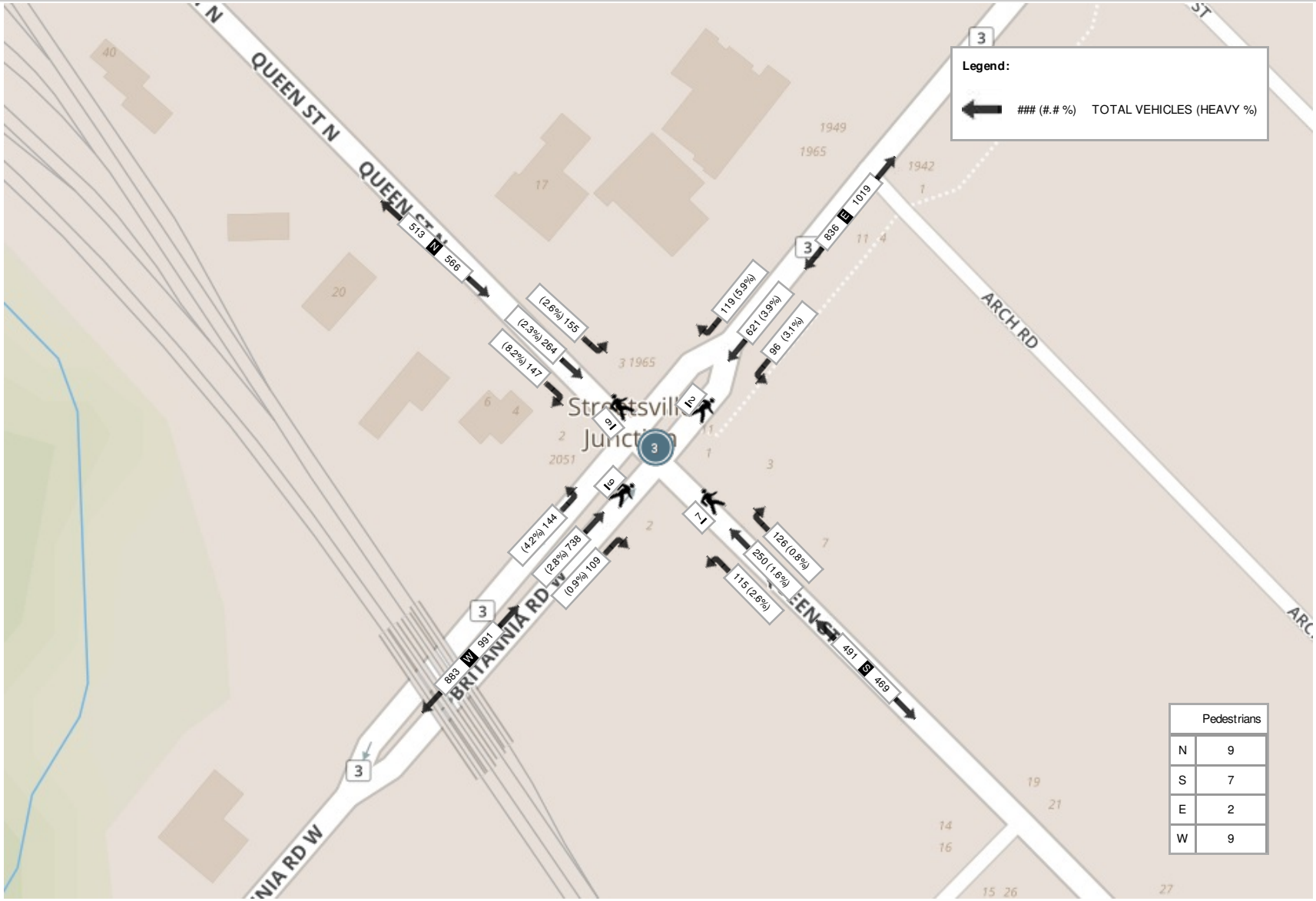
Peak Hour: 05:00 PM - 06:00 PM Weather: Light Rain (14.01 °C)

Start Time	Southbound						Westbound						Northbound						Eastbound						Int. Total (15 min)
	Left	Thru	Right	UTurn	Peds	Approach Total	Left	Thru	Right	UTurn	Peds	Approach Total	Left	Thru	Right	UTurn	Peds	Approach Total	Left	Thru	Right	UTurn	Peds	Approach Total	
17:00:00	71	126	73	0	0	270	16	354	21	0	9	391	46	103	30	0	4	179	30	242	33	0	0	305	1145
17:15:00	86	145	121	0	6	352	30	327	18	0	8	375	39	81	37	0	1	157	29	214	44	0	3	287	1171
17:30:00	65	139	85	0	5	289	43	231	55	0	7	329	39	91	42	0	1	172	39	200	52	0	7	291	1081
17:45:00	57	100	68	0	1	225	49	273	29	0	0	351	40	73	29	0	3	142	49	267	38	0	0	354	1072
Grand Total	279	510	347	0	12	1136	138	1185	123	0	24	1446	164	348	138	0	9	650	147	923	167	0	10	1237	**4469**
Approach%	24.6%	44.9%	30.5%	0%		-	9.5%	82%	8.5%	0%		-	25.2%	53.5%	21.2%	0%		-	11.9%	74.6%	13.5%	0%		-	-
Totals %	6.2%	11.4%	7.8%	0%		25.4%	3.1%	26.5%	2.8%	0%		32.4%	3.7%	7.8%	3.1%	0%		14.5%	3.3%	20.7%	3.7%	0%		27.7%	-
PHF	0.81	0.88	0.72	0		0.81	0.7	0.84	0.56	0		0.92	0.89	0.84	0.82	0		0.91	0.75	0.86	0.8	0		0.87	-
Heavy	2	2	3	0		7	1	22	1	0		24	0	4	1	0		5	3	22	0	0		25	-
Heavy %	0.7%	0.4%	0.9%	0%		0.6%	0.7%	1.9%	0.8%	0%		1.7%	0%	1.1%	0.7%	0%		0.8%	2%	2.4%	0%	0%		2%	-
Lights	277	508	344	0		1129	137	1163	122	0		1422	164	344	137	0		645	144	901	167	0		1212	-
Lights %	99.3%	99.6%	99.1%	0%		99.4%	99.3%	98.1%	99.2%	0%		98.3%	100%	98.9%	99.3%	0%		99.2%	98%	97.6%	100%	0%		98%	-
Single-Unit Trucks	0	0	1	0		1	0	9	1	0		10	0	0	1	0		1	2	9	0	0		11	-
Single-Unit Trucks %	0%	0%	0.3%	0%		0.1%	0%	0.8%	0.8%	0%		0.7%	0%	0%	0.7%	0%		0.2%	1.4%	1%	0%	0%		0.9%	-
Buses	1	2	1	0		4	1	9	0	0		10	0	4	0	0		4	1	7	0	0		8	-
Buses %	0.4%	0.4%	0.3%	0%		0.4%	0.7%	0.8%	0%	0%		0.7%	0%	1.1%	0%	0%		0.6%	0.7%	0.8%	0%	0%		0.6%	-
Articulated Trucks	1	0	1	0		2	0	4	0	0		4	0	0	0	0		0	0	6	0	0		6	-
Articulated Trucks %	0.4%	0%	0.3%	0%		0.2%	0%	0.3%	0%	0%		0.3%	0%	0%	0%	0%		0%	0%	0.7%	0%	0%		0.5%	-
Pedestrians	-	-	-	-	12	-	-	-	-	-	24	-	-	-	-	-	9	-	-	-	-	-	10	-	-
Pedestrians%	-	-	-	-	21.8%		-	-	-	-	43.6%		-	-	-	-	16.4%		-	-	-	-	18.2%		-
Bicycles on Road	0	1	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	-
Bicycles on Road%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-

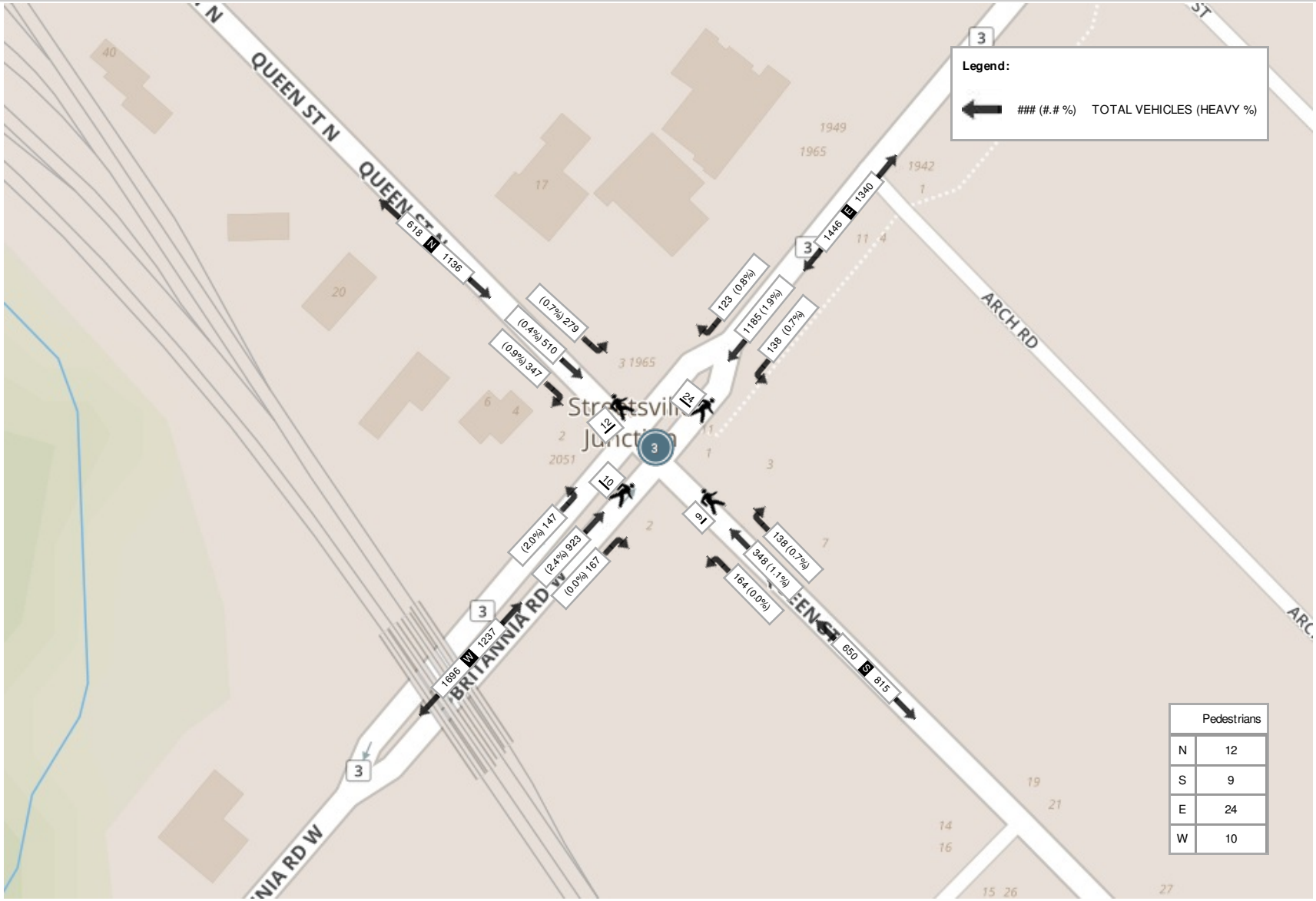
Peak Hour: 08:00 AM - 09:00 AM Weather: Light Rain (16.39 °C)



Peak Hour: 12:00 PM - 01:00 PM Weather: Light Rain (15.56 °C)



Peak Hour: 05:00 PM - 06:00 PM Weather: Light Rain (14.01 °C)



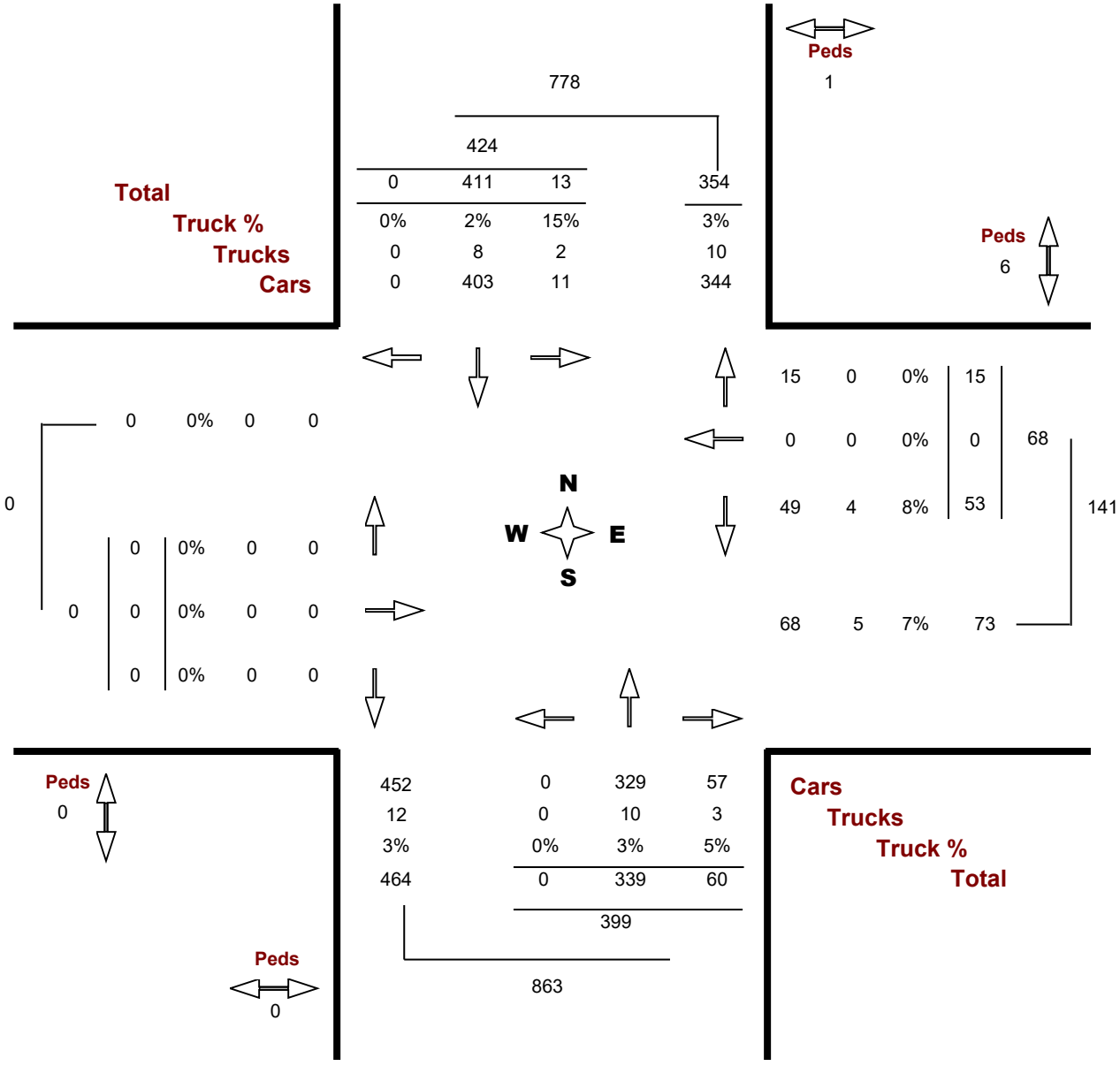
Turning Movements Report - PM Period

Location..... MATLOCK AVE @ QUEEN ST N

Municipality..... Mississauga **GeoID.....** 344899

Count Date..... Tuesday, 09 February, 2021 **Peak Hour.....** 04:15 PM — 05:15 PM

Road 1 MATLOCK AVE **Road 2** QUEEN ST N



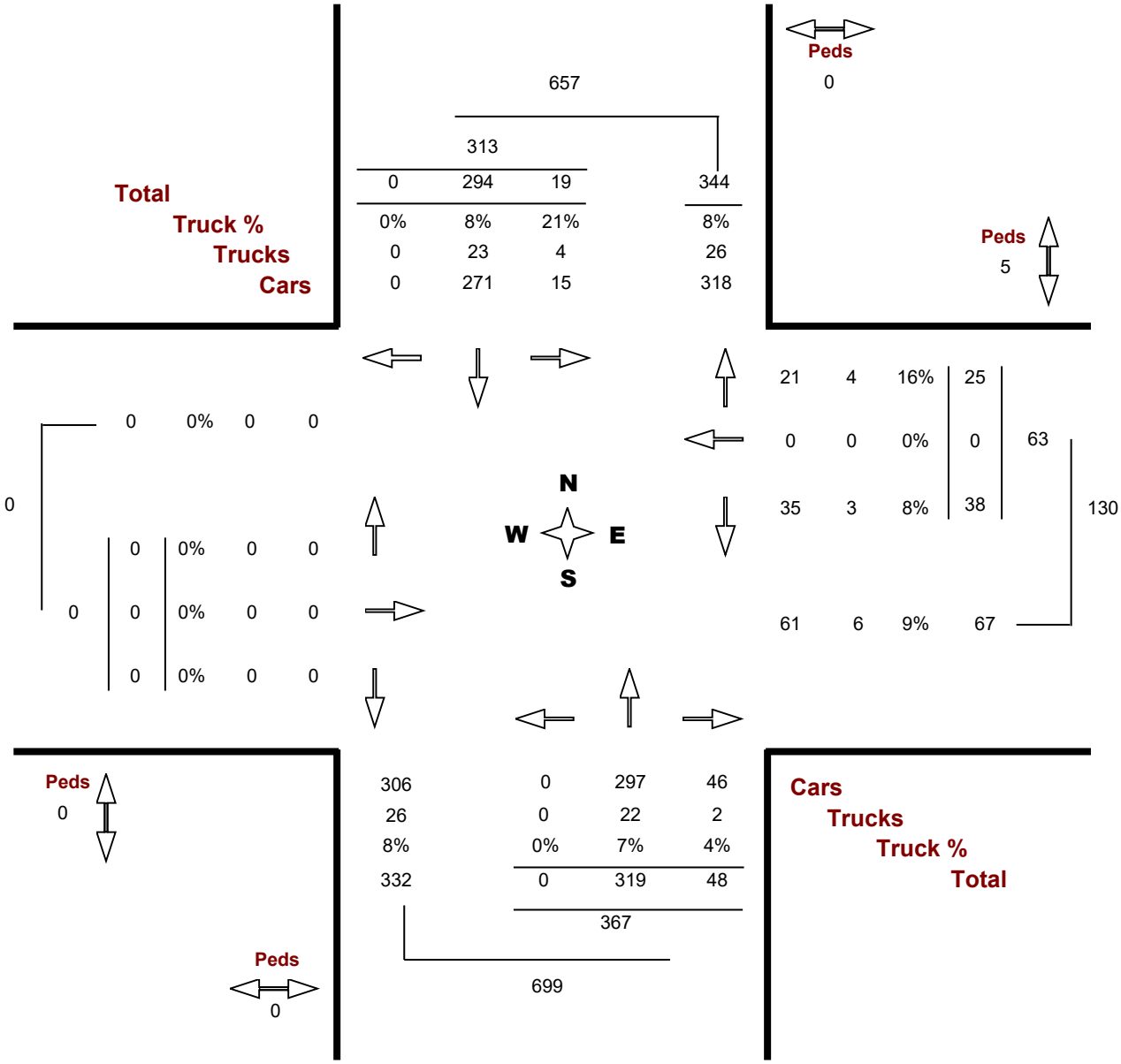
Turning Movements Report - MD Period

Location..... MATLOCK AVE @ QUEEN ST N

Municipality..... Mississauga **GeoID.....** 344899

Count Date..... Tuesday, 09 February, 2021 **Peak Hour.....** 12:15 PM — 01:15 PM

Road 1 MATLOCK AVE **Road 2** QUEEN ST N



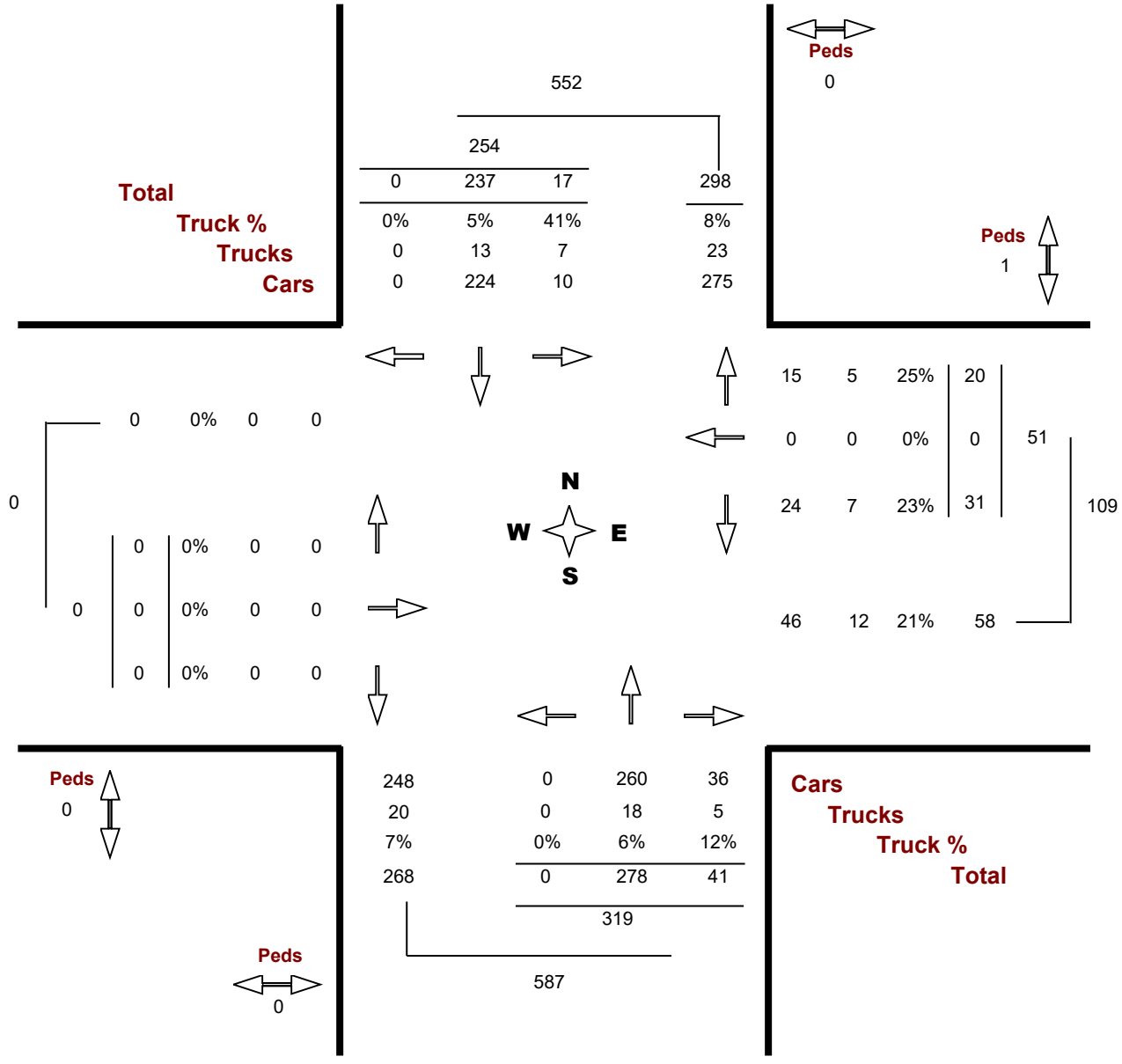
Turning Movements Report - AM Period

Location..... MATLOCK AVE @ QUEEN ST N

Municipality..... Mississauga **GeoID.....** 344899

Count Date..... Tuesday, 09 February, 2021 **Peak Hour.....** 08:00 AM — 09:00 AM

Road 1 MATLOCK AVE **Road 2** QUEEN ST N



Spectrum

Turning Movement Count
Location Name: QUEEN ST N & 26 QUEEN ST N (PETRO CANADA NORTH DRIVEWAY)
Date: Thu, Sep 09, 2021 Deployment Lead: Theo Daglis

BA Group
300 45 ST. CLAIR AVE W
TORONTO ONTARIO, M4V 1K9
CANADA

Turning Movement Count (5 . QUEEN ST N & 26 QUEEN ST N (PETRO CANADA NORTH DRIVEWAY))

Start Time	N Approach QUEEN ST N					S Approach QUEEN ST N					W Approach 26 QUEEN ST N (PETRO CANADA NORTH DRIVEWAY)					Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	UTurn N:N	Peds N:	Approach Total	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Left W:N	UTurn W:W	Peds W:	Approach Total		
07:00:00	1	48	0	0	49	53	0	0	0	53	0	0	0	0	0	102	
07:15:00	1	83	0	0	84	85	1	0	0	86	0	1	0	0	1	171	
07:30:00	2	80	0	0	82	71	1	0	0	72	0	0	0	0	0	154	
07:45:00	1	120	0	0	121	121	3	0	0	124	1	1	0	0	2	247	674
08:00:00	4	111	0	0	115	142	2	0	0	144	0	0	0	0	0	259	831
08:15:00	1	133	0	0	134	214	0	0	0	214	0	1	0	0	1	349	1009
08:30:00	1	146	0	1	147	165	2	0	0	167	0	0	0	2	0	314	1169
08:45:00	3	139	0	0	142	147	1	0	0	148	1	0	0	1	1	291	1213
BREAK																	
16:00:00	3	143	0	0	146	125	4	0	0	129	0	1	0	0	1	276	
16:15:00	5	154	0	0	159	103	1	0	0	104	2	2	0	0	4	267	
16:30:00	5	143	0	0	148	132	3	0	0	135	0	1	0	0	1	284	
16:45:00	2	143	0	0	145	138	3	0	0	141	0	0	0	1	0	286	1113
17:00:00	1	176	0	0	177	166	1	0	0	167	1	0	0	0	1	345	1182
17:15:00	4	188	0	0	192	142	2	0	0	144	0	0	0	0	0	336	1251
17:30:00	3	143	0	0	146	137	2	0	0	139	0	1	0	1	1	286	1253
17:45:00	3	132	0	0	135	115	0	0	0	115	0	1	0	4	1	251	1218
Grand Total	40	2082	0	1	2122	2056	26	0	0	2082	5	9	0	9	14	**4218**	-
Approach%	1.9%	98.1%	0%		-	98.8%	1.2%	0%		-	35.7%	64.3%	0%		-	**-**	-
Totals %	0.9%	49.4%	0%		50.3%	48.7%	0.6%	0%		49.4%	0.1%	0.2%	0%		0.3%	**-**	-
Heavy	4	68	0		-	55	0	0		-	0	1	0		-	**-**	-
Heavy %	10%	3.3%	0%		-	2.7%	0%	0%		-	0%	11.1%	0%		-	**-**	-
Bicycles	0	2	0		-	1	0	0		-	0	0	0		-	**-**	-
Bicycle %	0%	0.1%	0%		-	0%	0%	0%		-	0%	0%	0%		-	**-**	-

BA Group
300 45 ST. CLAIR AVE W
TORONTO ONTARIO, M4V 1K9
CANADA

Peak Hour: 08:00 AM - 09:00 AM Weather: Clear Sky (13.73 °C)

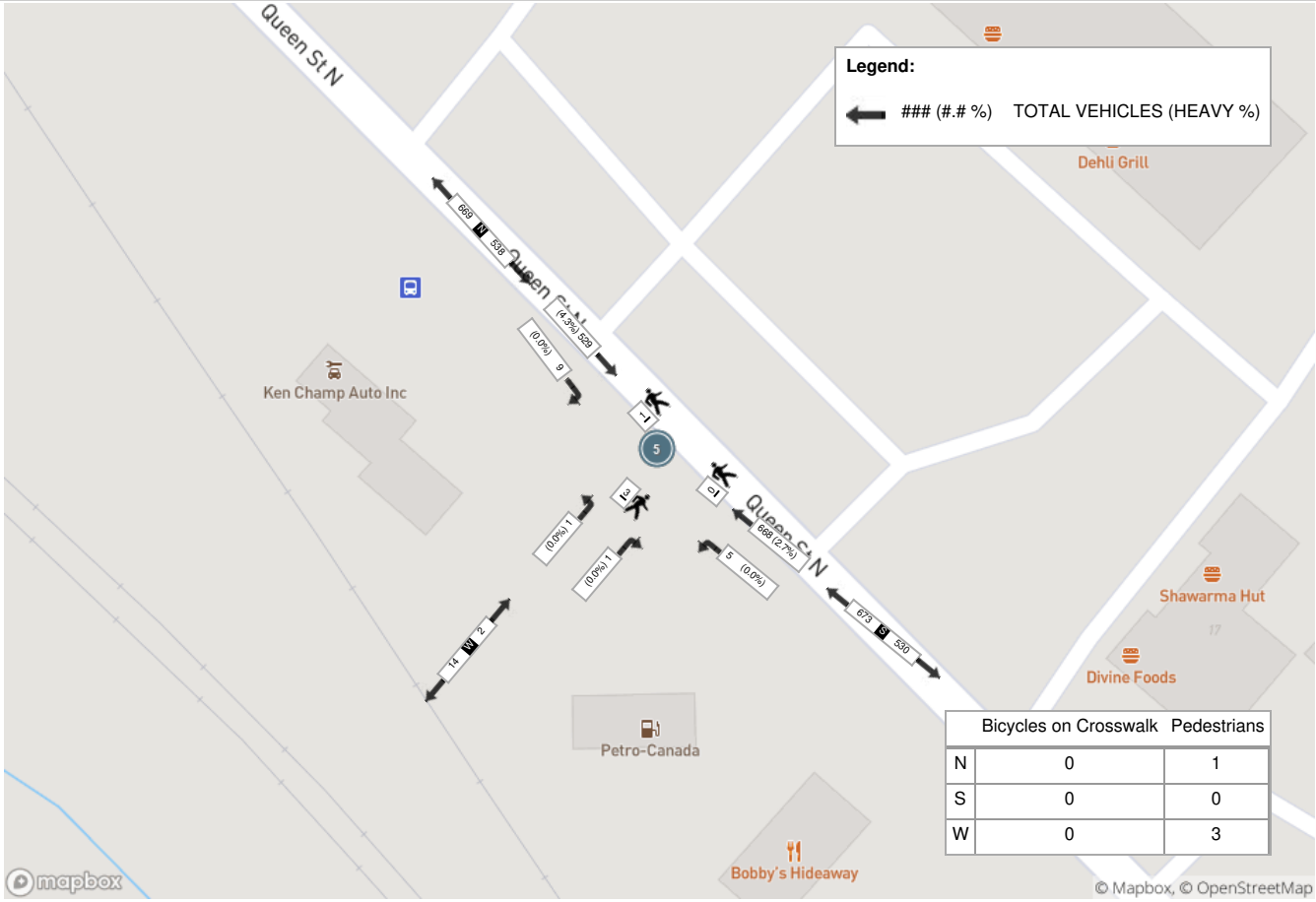
Start Time	N Approach QUEEN ST N					S Approach QUEEN ST N					W Approach 26 QUEEN ST N (PETRO CANADA NORTH DRIVEWAY)					Int. Total (15 min)
	Right	Thru	UTurn	Peds	Approach Total	Thru	Left	UTurn	Peds	Approach Total	Right	Left	UTurn	Peds	Approach Total	
08:00:00	4	111	0	0	115	142	2	0	0	144	0	0	0	0	0	259
08:15:00	1	133	0	0	134	214	0	0	0	214	0	1	0	0	1	349
08:30:00	1	146	0	1	147	165	2	0	0	167	0	0	0	2	0	314
08:45:00	3	139	0	0	142	147	1	0	0	148	1	0	0	1	1	291
Grand Total	9	529	0	1	538	668	5	0	0	673	1	1	0	3	2	**1213**
Approach%	1.7%	98.3%	0%		-	99.3%	0.7%	0%		-	50%	50%	0%		-	**-**
Totals %	0.7%	43.6%	0%		44.4%	55.1%	0.4%	0%		55.5%	0.1%	0.1%	0%		0.2%	**-**
PHF	0.56	0.91	0		0.91	0.78	0.63	0		0.79	0.25	0.25	0		0.5	**-**
Heavy	0	23	0		23	18	0	0		18	0	0	0		0	**-**
Heavy %	0%	4.3%	0%		4.3%	2.7%	0%	0%		2.7%	0%	0%	0%		0%	**-**
Lights	9	506	0		515	650	5	0		655	1	1	0		2	**-**
Lights %	100%	95.7%	0%		95.7%	97.3%	100%	0%		97.3%	100%	100%	0%		100%	**-**
Single-Unit Trucks	0	10	0		10	6	0	0		6	0	0	0		0	**-**
Single-Unit Trucks %	0%	1.9%	0%		1.9%	0.9%	0%	0%		0.9%	0%	0%	0%		0%	**-**
Buses	0	11	0		11	10	0	0		10	0	0	0		0	**-**
Buses %	0%	2.1%	0%		2%	1.5%	0%	0%		1.5%	0%	0%	0%		0%	**-**
Articulated Trucks	0	2	0		2	2	0	0		2	0	0	0		0	**-**
Articulated Trucks %	0%	0.4%	0%		0.4%	0.3%	0%	0%		0.3%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	1	-	-	-	-	0	-	-	-	-	3	-	**-**
Pedestrians%	-	-	-	25%		-	-	-	0%		-	-	-	75%		**-**
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	**-**
Bicycles on Crosswalk%	-	-	-	0%		-	-	-	0%		-	-	-	0%		**-**
Bicycles on Road	0	0	0	0	-	0	0	0	0	-	0	0	0	0	-	**-**
Bicycles on Road%	-	-	-	0%		-	-	-	0%		-	-	-	0%		**-**

BA Group
300 45 ST. CLAIR AVE W
TORONTO ONTARIO, M4V 1K9
CANADA

Peak Hour: 04:45 PM - 05:45 PM Weather: Scattered Clouds (20.46 °C)

Start Time	N Approach QUEEN ST N					S Approach QUEEN ST N					W Approach 26 QUEEN ST N (PETRO CANADA NORTH DRIVEWAY)					Int. Total (15 min)
	Right	Thru	UTurn	Peds	Approach Total	Thru	Left	UTurn	Peds	Approach Total	Right	Left	UTurn	Peds	Approach Total	
16:45:00	2	143	0	0	145	138	3	0	0	141	0	0	0	1	0	286
17:00:00	1	176	0	0	177	166	1	0	0	167	1	0	0	0	1	345
17:15:00	4	188	0	0	192	142	2	0	0	144	0	0	0	0	0	336
17:30:00	3	143	0	0	146	137	2	0	0	139	0	1	0	1	1	286
Grand Total	10	650	0	0	660	583	8	0	0	591	1	1	0	2	2	**1253**
Approach%	1.5%	98.5%	0%		-	98.6%	1.4%	0%		-	50%	50%	0%		-	**-**
Totals %	0.8%	51.9%	0%		52.7%	46.5%	0.6%	0%		47.2%	0.1%	0.1%	0%		0.2%	**-**
PHF	0.63	0.86	0		0.86	0.88	0.67	0		0.88	0.25	0.25	0		0.5	**-**
Heavy	1	10	0		11	9	0	0		9	0	0	0		0	**-**
Heavy %	10%	1.5%	0%		1.7%	1.5%	0%	0%		1.5%	0%	0%	0%		0%	**-**
Lights	9	640	0		649	574	8	0		582	1	1	0		2	**-**
Lights %	90%	98.5%	0%		98.3%	98.5%	100%	0%		98.5%	100%	100%	0%		100%	**-**
Single-Unit Trucks	0	5	0		5	3	0	0		3	0	0	0		0	**-**
Single-Unit Trucks %	0%	0.8%	0%		0.8%	0.5%	0%	0%		0.5%	0%	0%	0%		0%	**-**
Buses	1	4	0		5	6	0	0		6	0	0	0		0	**-**
Buses %	10%	0.6%	0%		0.8%	1%	0%	0%		1%	0%	0%	0%		0%	**-**
Articulated Trucks	0	1	0		1	0	0	0		0	0	0	0		0	**-**
Articulated Trucks %	0%	0.2%	0%		0.2%	0%	0%	0%		0%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	1	-	**-**
Pedestrians%	-	-	-	0%		-	-	-	0%		-	-	-	50%		**-**
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	1	-	**-**
Bicycles on Crosswalk%	-	-	-	0%		-	-	-	0%		-	-	-	50%		**-**
Bicycles on Road	0	0	0	0	-	0	0	0	0	-	0	0	0	0	-	**-**
Bicycles on Road%	-	-	-	0%		-	-	-	0%		-	-	-	0%		**-**

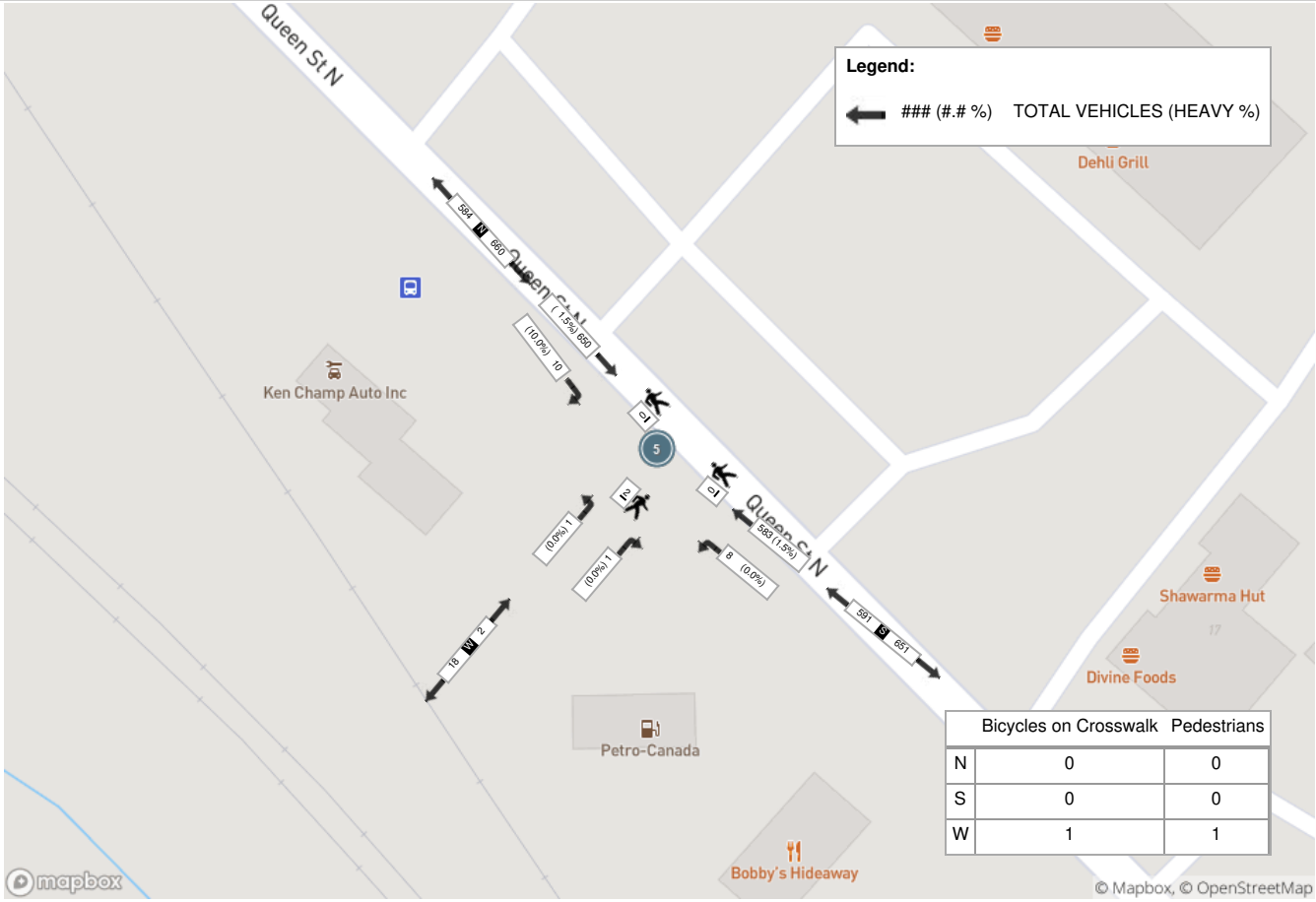
Peak Hour: 08:00 AM - 09:00 AM Weather: Clear Sky (13.73 °C)



	Bicycles on Crosswalk	Pedestrians
N	0	1
S	0	0
W	0	3

BA Group
300 45 ST. CLAIR AVE W
TORONTO ONTARIO, M4V 1K9
CANADA

Peak Hour: 04:45 PM - 05:45 PM Weather: Scattered Clouds (20.46 °C)



	Bicycles on Crosswalk	Pedestrians
N	0	0
S	0	0
W	1	1

BA Group
300 45 ST. CLAIR AVE W
TORONTO ONTARIO, M4V 1K9
CANADA

Turning Movement Count (6 . QUEEN ST N & 26 QUEEN ST N (PETRO CANADA SOUTH DRIVEWAY))

Start Time	N Approach QUEEN ST N					S Approach QUEEN ST N					W Approach 26 QUEEN ST N (PETRO CANADA SOUTH DRIVEWAY)					Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	UTurn N:N	Peds N:	Approach Total	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Left W:N	UTurn W:W	Peds W:	Approach Total		
07:00:00	0	50	0	0	50	51	0	0	1	51	1	0	0	0	1	102	
07:15:00	0	72	0	0	72	81	1	0	0	82	1	1	0	0	2	156	
07:30:00	0	83	0	0	83	78	1	0	0	79	0	0	0	0	0	162	
07:45:00	1	116	0	0	117	116	0	0	0	116	1	0	0	0	1	234	654
08:00:00	0	117	0	0	117	135	1	0	0	136	2	3	0	0	5	258	810
08:15:00	0	128	1	0	129	216	0	0	0	216	1	1	0	0	2	347	1001
08:30:00	0	154	0	0	154	163	0	0	2	163	1	3	0	2	4	321	1160
08:45:00	0	131	0	0	131	155	1	0	0	156	1	1	0	1	2	289	1215
BREAK																	
16:00:00	0	141	0	0	141	138	1	0	0	139	2	2	0	0	4	284	
16:15:00	1	145	0	0	146	106	1	0	0	107	5	1	0	0	6	259	
16:30:00	0	141	0	0	141	135	2	0	0	137	7	1	0	0	8	286	
16:45:00	0	145	0	0	145	143	0	1	0	144	4	1	0	1	5	294	1123
17:00:00	0	179	0	0	179	170	0	0	1	170	2	2	0	0	4	353	1192
17:15:00	0	202	0	0	202	145	2	2	3	149	2	0	0	0	2	353	1286
17:30:00	0	144	0	0	144	136	1	0	0	137	6	2	0	1	8	289	1289
17:45:00	0	133	0	0	133	128	2	0	0	130	1	0	0	4	1	264	1259
Grand Total	2	2081	1	0	2084	2096	13	3	7	2112	37	18	0	9	55	**4251**	-
Approach%	0.1%	99.9%	0%		-	99.2%	0.6%	0.1%		-	67.3%	32.7%	0%		-	**-**	-
Totals %	0%	49%	0%		49%	49.3%	0.3%	0.1%		49.7%	0.9%	0.4%	0%		1.3%	**-**	-
Heavy	0	69	0		-	56	1	0		-	3	0	0		-	**-**	-
Heavy %	0%	3.3%	0%		-	2.7%	7.7%	0%		-	8.1%	0%	0%		-	**-**	-
Bicycles	0	2	0		-	4	0	0		-	0	0	0		-	**-**	-
Bicycle %	0%	0.1%	0%		-	0.2%	0%	0%		-	0%	0%	0%		-	**-**	-

BA Group
300 45 ST. CLAIR AVE W
TORONTO ONTARIO, M4V 1K9
CANADA

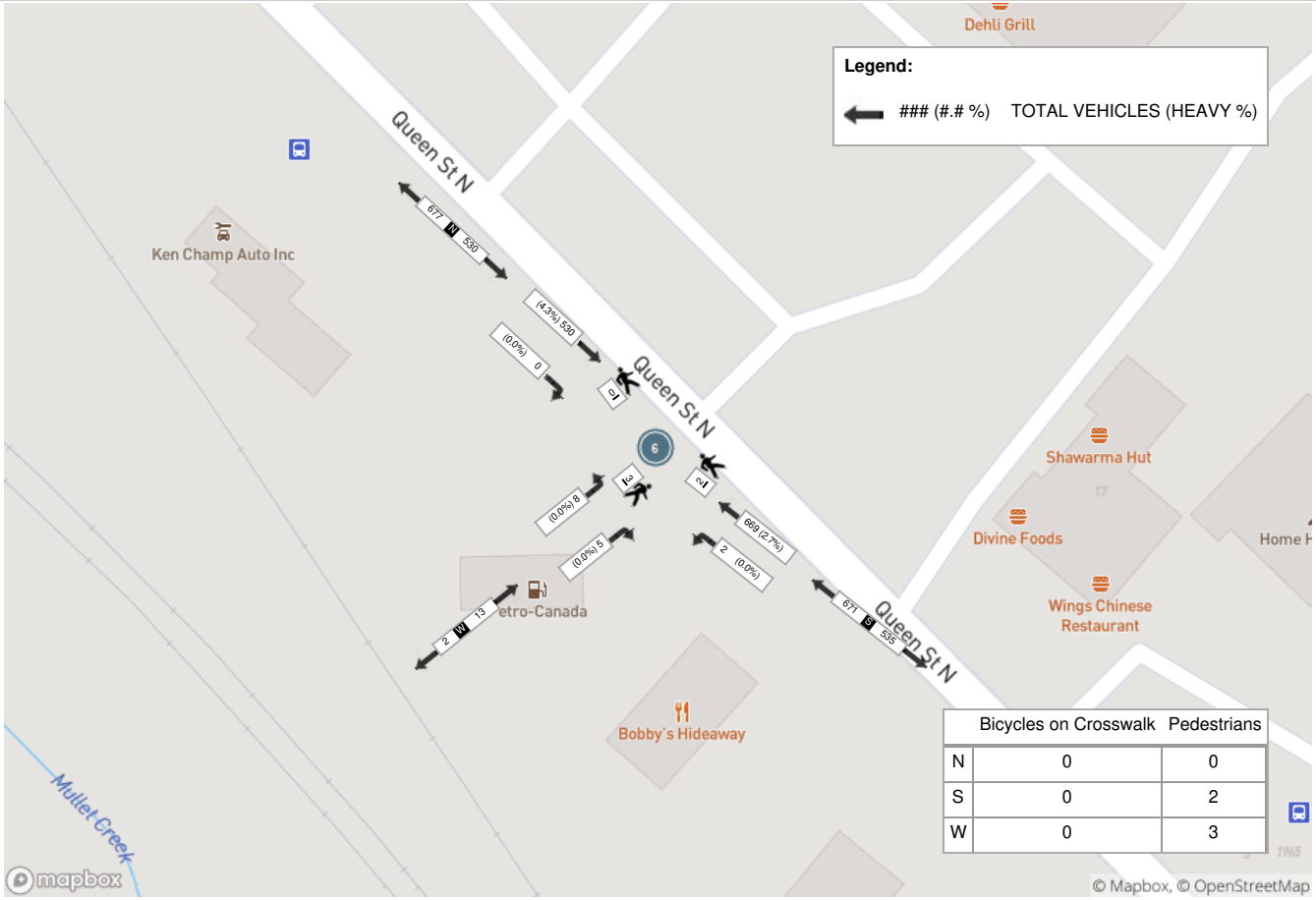
Peak Hour: 08:00 AM - 09:00 AM Weather: Clear Sky (13.73 °C)

Start Time	N Approach QUEEN ST N					S Approach QUEEN ST N					W Approach 26 QUEEN ST N (PETRO CANADA SOUTH DRIVEWAY)					Int. Total (15 min)
	Right	Thru	UTurn	Peds	Approach Total	Thru	Left	UTurn	Peds	Approach Total	Right	Left	UTurn	Peds	Approach Total	
08:00:00	0	117	0	0	117	135	1	0	0	136	2	3	0	0	5	258
08:15:00	0	128	1	0	129	216	0	0	0	216	1	1	0	0	2	347
08:30:00	0	154	0	0	154	163	0	0	2	163	1	3	0	2	4	321
08:45:00	0	131	0	0	131	155	1	0	0	156	1	1	0	1	2	289
Grand Total	0	530	1	0	531	669	2	0	2	671	5	8	0	3	13	**1215**
Approach%	0%	99.8%	0.2%		-	99.7%	0.3%	0%		-	38.5%	61.5%	0%		-	**-**
Totals %	0%	43.6%	0.1%		43.7%	55.1%	0.2%	0%		55.2%	0.4%	0.7%	0%		1.1%	**-**
PHF	0	0.86	0.25		0.86	0.77	0.5	0		0.78	0.63	0.67	0		0.65	**-**
Heavy	0	23	0		23	18	0	0		18	0	0	0		0	**-**
Heavy %	0%	4.3%	0%		4.3%	2.7%	0%	0%		2.7%	0%	0%	0%		0%	**-**
Lights	0	507	1		508	651	2	0		653	5	8	0		13	**-**
Lights %	0%	95.7%	100%		95.7%	97.3%	100%	0%		97.3%	100%	100%	0%		100%	**-**
Single-Unit Trucks	0	10	0		10	7	0	0		7	0	0	0		0	**-**
Single-Unit Trucks %	0%	1.9%	0%		1.9%	1%	0%	0%		1%	0%	0%	0%		0%	**-**
Buses	0	11	0		11	9	0	0		9	0	0	0		0	**-**
Buses %	0%	2.1%	0%		2.1%	1.3%	0%	0%		1.3%	0%	0%	0%		0%	**-**
Articulated Trucks	0	2	0		2	2	0	0		2	0	0	0		0	**-**
Articulated Trucks %	0%	0.4%	0%		0.4%	0.3%	0%	0%		0.3%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	0	-	-	-	-	2	-	-	-	-	3	-	**-**
Pedestrians%	-	-	-	0%		-	-	-	40%		-	-	-	60%		**-**
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	**-**
Bicycles on Crosswalk%	-	-	-	0%		-	-	-	0%		-	-	-	0%		**-**
Bicycles on Road	0	0	0	0	-	0	0	0	0	-	0	0	0	0	-	**-**
Bicycles on Road%	-	-	-	0%		-	-	-	0%		-	-	-	0%		**-**

Peak Hour: 04:45 PM - 05:45 PM Weather: Scattered Clouds (20.46 °C)

Start Time	N Approach QUEEN ST N					S Approach QUEEN ST N					W Approach 26 QUEEN ST N (PETRO CANADA SOUTH DRIVEWAY)					Int. Total (15 min)
	Right	Thru	UTurn	Peds	Approach Total	Thru	Left	UTurn	Peds	Approach Total	Right	Left	UTurn	Peds	Approach Total	
16:45:00	0	145	0	0	145	143	0	1	0	144	4	1	0	1	5	294
17:00:00	0	179	0	0	179	170	0	0	1	170	2	2	0	0	4	353
17:15:00	0	202	0	0	202	145	2	2	3	149	2	0	0	0	2	353
17:30:00	0	144	0	0	144	136	1	0	0	137	6	2	0	1	8	289
Grand Total	0	670	0	0	670	594	3	3	4	600	14	5	0	2	19	**1289**
Approach%	0%	100%	0%		-	99%	0.5%	0.5%		-	73.7%	26.3%	0%		-	**-**
Totals %	0%	52%	0%		52%	46.1%	0.2%	0.2%		46.5%	1.1%	0.4%	0%		1.5%	**-**
PHF	0	0.83	0		0.83	0.87	0.38	0.38		0.88	0.58	0.63	0		0.59	**-**
Heavy	0	11	0		11	9	0	0		9	1	0	0		1	**-**
Heavy %	0%	1.6%	0%		1.6%	1.5%	0%	0%		1.5%	7.1%	0%	0%		5.3%	**-**
Lights	0	659	0		659	585	3	3		591	13	5	0		18	**-**
Lights %	0%	98.4%	0%		98.4%	98.5%	100%	100%		98.5%	92.9%	100%	0%		94.7%	**-**
Single-Unit Trucks	0	6	0		6	3	0	0		3	0	0	0		0	**-**
Single-Unit Trucks %	0%	0.9%	0%		0.9%	0.5%	0%	0%		0.5%	0%	0%	0%		0%	**-**
Buses	0	4	0		4	6	0	0		6	1	0	0		1	**-**
Buses %	0%	0.6%	0%		0.6%	1%	0%	0%		1%	7.1%	0%	0%		5.3%	**-**
Articulated Trucks	0	1	0		1	0	0	0		0	0	0	0		0	**-**
Articulated Trucks %	0%	0.1%	0%		0.1%	0%	0%	0%		0%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	0	-	-	-	-	4	-	-	-	-	1	-	**-**
Pedestrians%	-	-	-	0%		-	-	-	66.7%		-	-	-	16.7%		**-**
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	1	-	**-**
Bicycles on Crosswalk%	-	-	-	0%		-	-	-	0%		-	-	-	16.7%		**-**
Bicycles on Road	0	0	0	0	-	1	0	0	0	-	0	0	0	0	-	**-**
Bicycles on Road%	-	-	-	0%		-	-	-	0%		-	-	-	0%		**-**

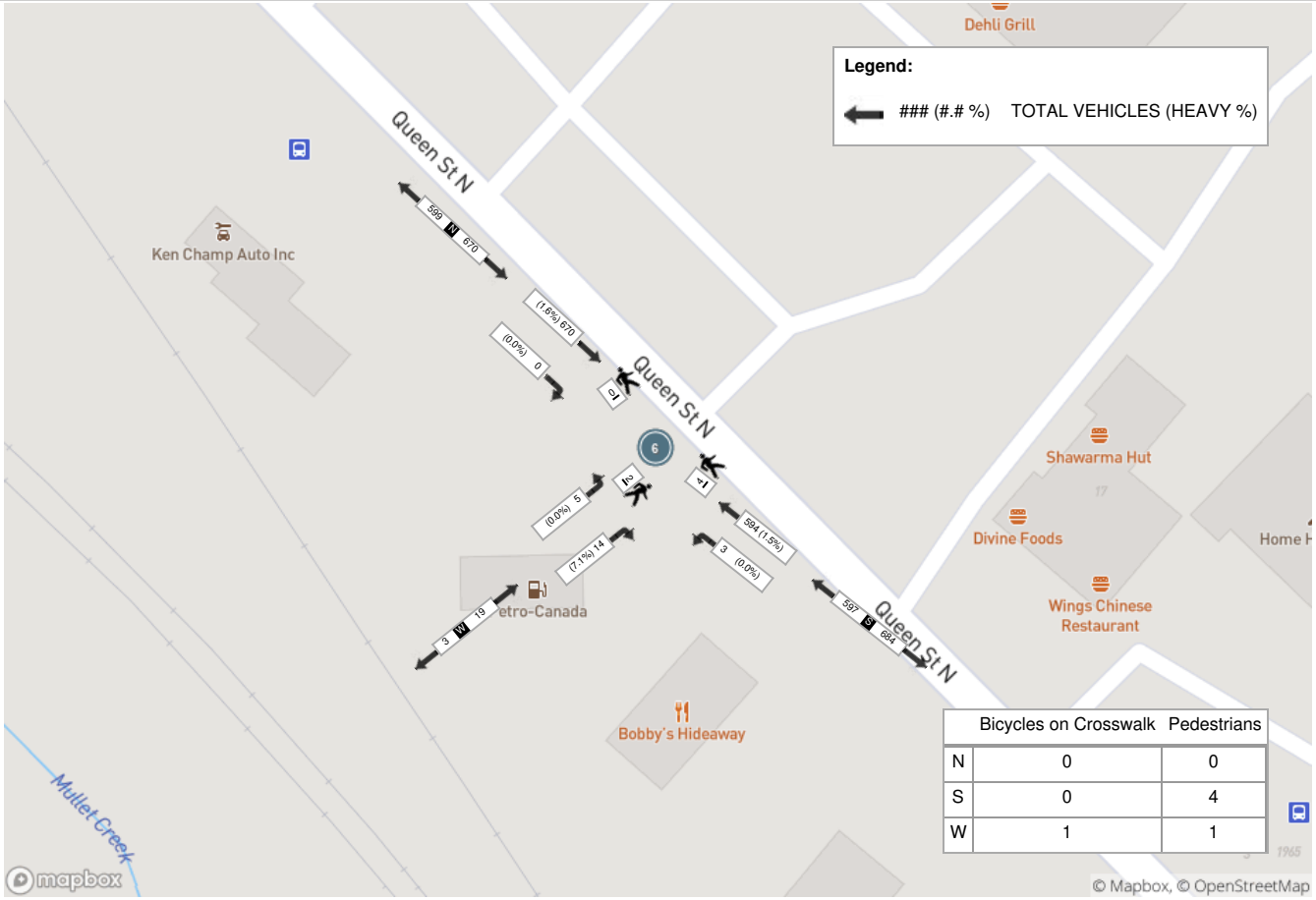
Peak Hour: 08:00 AM - 09:00 AM Weather: Clear Sky (13.73 °C)



	Bicycles on Crosswalk	Pedestrians
N	0	0
S	0	2
W	0	3

BA Group
300 45 ST. CLAIR AVE W
TORONTO ONTARIO, M4V 1K9
CANADA

Peak Hour: 04:45 PM - 05:45 PM Weather: Scattered Clouds (20.46 °C)



	Bicycles on Crosswalk	Pedestrians
N	0	0
S	0	4
W	1	1

BA Group
300 45 ST. CLAIR AVE W
TORONTO ONTARIO, M4V 1K9
CANADA

Turning Movement Count (7 . QUEEN ST N & 39 QUEEN ST N NORTH DRIVEWAY)

Start Time	N Approach QUEEN ST N					E Approach 39 QUEEN ST N NORTH DRIVEWAY					S Approach QUEEN ST N					Int. Total (15 min)	Int. Total (1 hr)
	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	UTurn S:S	Peds S:	Approach Total		
07:00:00	49	0	0	0	49	0	0	0	2	0	0	53	0	0	53	102	
07:15:00	84	1	0	0	85	0	0	0	3	0	0	86	0	0	86	171	
07:30:00	81	0	0	0	81	1	1	0	1	2	0	71	0	0	71	154	
07:45:00	122	0	0	0	122	0	0	0	1	0	0	121	0	0	121	243	670
08:00:00	114	1	0	0	115	0	0	0	1	0	0	142	0	0	142	257	825
08:15:00	133	0	0	0	133	1	1	0	1	2	1	215	0	0	216	351	1005
08:30:00	147	1	0	1	148	2	0	0	4	2	0	165	0	0	165	315	1166
08:45:00	143	0	0	0	143	0	0	0	0	0	0	147	0	0	147	290	1213
BREAK																	
16:00:00	137	1	0	0	138	2	9	0	0	11	0	126	0	0	126	275	
16:15:00	154	3	0	0	157	4	3	0	2	7	0	104	0	0	104	268	
16:30:00	143	0	0	0	143	0	5	0	1	5	0	133	0	0	133	281	
16:45:00	140	4	0	0	144	4	5	0	6	9	0	138	0	0	138	291	1115
17:00:00	171	3	0	0	174	3	7	0	1	10	0	166	0	0	166	350	1190
17:15:00	186	3	0	0	189	8	6	0	3	14	0	141	0	0	141	344	1266
17:30:00	140	2	0	0	142	5	6	0	3	11	1	138	0	0	139	292	1277
17:45:00	131	1	0	0	132	5	4	0	1	9	0	116	0	0	116	257	1243
Grand Total	2075	20	0	1	2095	35	47	0	30	82	2	2062	0	0	2064	**4241**	-
Approach%	99%	1%	0%		-	42.7%	57.3%	0%		-	0.1%	99.9%	0%		-	**-**	-
Totals %	48.9%	0.5%	0%		49.4%	0.8%	1.1%	0%		1.9%	0%	48.6%	0%		48.7%	**-**	-
Heavy	71	0	0		-	0	1	0		-	0	55	0		-	**-**	-
Heavy %	3.4%	0%	0%		-	0%	2.1%	0%		-	0%	2.7%	0%		-	**-**	-
Bicycles	2	0	0		-	0	0	0		-	0	3	0		-	**-**	-
Bicycle %	0.1%	0%	0%		-	0%	0%	0%		-	0%	0.1%	0%		-	**-**	-

BA Group
300 45 ST. CLAIR AVE W
TORONTO ONTARIO, M4V 1K9
CANADA

Peak Hour: 08:00 AM - 09:00 AM Weather: Clear Sky (13.73 °C)

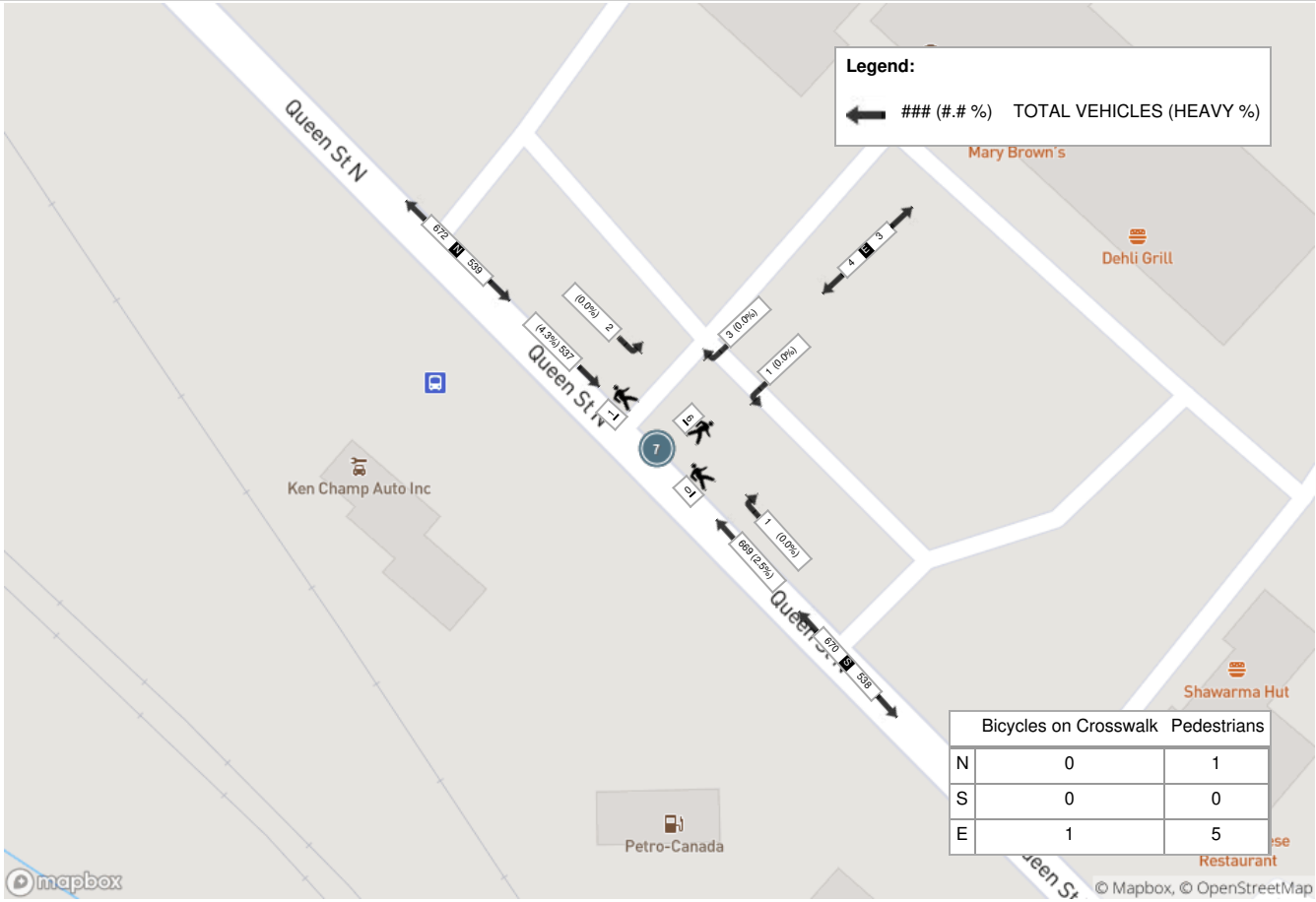
Start Time	N Approach QUEEN ST N					E Approach 39 QUEEN ST N NORTH DRIVEWAY					S Approach QUEEN ST N					Int. Total (15 min)
	Thru	Left	UTurn	Peds	Approach Total	Right	Left	UTurn	Peds	Approach Total	Right	Thru	UTurn	Peds	Approach Total	
08:00:00	114	1	0	0	115	0	0	0	1	0	0	142	0	0	142	257
08:15:00	133	0	0	0	133	1	1	0	1	2	1	215	0	0	216	351
08:30:00	147	1	0	1	148	2	0	0	4	2	0	165	0	0	165	315
08:45:00	143	0	0	0	143	0	0	0	0	0	0	147	0	0	147	290
Grand Total	537	2	0	1	539	3	1	0	6	4	1	669	0	0	670	**1213**
Approach%	99.6%	0.4%	0%		-	75%	25%	0%		-	0.1%	99.9%	0%		-	**-**
Totals %	44.3%	0.2%	0%		44.4%	0.2%	0.1%	0%		0.3%	0.1%	55.2%	0%		55.2%	**-**
PHF	0.91	0.5	0		0.91	0.38	0.25	0		0.5	0.25	0.78	0		0.78	**-**
Heavy	23	0	0		23	0	0	0		0	0	17	0		17	**-**
Heavy %	4.3%	0%	0%		4.3%	0%	0%	0%		0%	0%	2.5%	0%		2.5%	**-**
Lights	514	2	0		516	3	1	0		4	1	652	0		653	**-**
Lights %	95.7%	100%	0%		95.7%	100%	100%	0%		100%	100%	97.5%	0%		97.5%	**-**
Single-Unit Trucks	10	0	0		10	0	0	0		0	0	6	0		6	**-**
Single-Unit Trucks %	1.9%	0%	0%		1.9%	0%	0%	0%		0%	0%	0.9%	0%		0.9%	**-**
Buses	11	0	0		11	0	0	0		0	0	9	0		9	**-**
Buses %	2%	0%	0%		2%	0%	0%	0%		0%	0%	1.3%	0%		1.3%	**-**
Articulated Trucks	2	0	0		2	0	0	0		0	0	2	0		2	**-**
Articulated Trucks %	0.4%	0%	0%		0.4%	0%	0%	0%		0%	0%	0.3%	0%		0.3%	**-**
Pedestrians	-	-	-	1	-	-	-	-	5	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	14.3%		-	-	-	71.4%		-	-	-	0%		**-**
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	1	-	-	-	-	0	-	**-**
Bicycles on Crosswalk%	-	-	-	0%		-	-	-	14.3%		-	-	-	0%		**-**
Bicycles on Road	0	0	0	0	-	0	0	0	0	-	0	0	0	0	-	**-**
Bicycles on Road%	-	-	-	0%		-	-	-	0%		-	-	-	0%		**-**

Peak Hour: 04:45 PM - 05:45 PM Weather: Scattered Clouds (20.46 °C)

Start Time	N Approach QUEEN ST N					E Approach 39 QUEEN ST N NORTH DRIVEWAY					S Approach QUEEN ST N					Int. Total (15 min)
	Thru	Left	UTurn	Peds	Approach Total	Right	Left	UTurn	Peds	Approach Total	Right	Thru	UTurn	Peds	Approach Total	
16:45:00	140	4	0	0	144	4	5	0	6	9	0	138	0	0	138	291
17:00:00	171	3	0	0	174	3	7	0	1	10	0	166	0	0	166	350
17:15:00	186	3	0	0	189	8	6	0	3	14	0	141	0	0	141	344
17:30:00	140	2	0	0	142	5	6	0	3	11	1	138	0	0	139	292
Grand Total	637	12	0	0	649	20	24	0	13	44	1	583	0	0	584	**1277**
Approach%	98.2%	1.8%	0%		-	45.5%	54.5%	0%		-	0.2%	99.8%	0%		-	**-**
Totals %	49.9%	0.9%	0%		50.8%	1.6%	1.9%	0%		3.4%	0.1%	45.7%	0%		45.7%	**-**
PHF	0.86	0.75	0		0.86	0.63	0.86	0		0.79	0.25	0.88	0		0.88	**-**
Heavy	11	0	0		11	0	0	0		0	0	9	0		9	**-**
Heavy %	1.7%	0%	0%		1.7%	0%	0%	0%		0%	0%	1.5%	0%		1.5%	**-**
Lights	626	12	0		638	20	24	0		44	1	574	0		575	**-**
Lights %	98.3%	100%	0%		98.3%	100%	100%	0%		100%	100%	98.5%	0%		98.5%	**-**
Single-Unit Trucks	5	0	0		5	0	0	0		0	0	3	0		3	**-**
Single-Unit Trucks %	0.8%	0%	0%		0.8%	0%	0%	0%		0%	0%	0.5%	0%		0.5%	**-**
Buses	5	0	0		5	0	0	0		0	0	6	0		6	**-**
Buses %	0.8%	0%	0%		0.8%	0%	0%	0%		0%	0%	1%	0%		1%	**-**
Articulated Trucks	1	0	0		1	0	0	0		0	0	0	0		0	**-**
Articulated Trucks %	0.2%	0%	0%		0.2%	0%	0%	0%		0%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	0	-	-	-	-	12	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	0%		-	-	-	92.3%		-	-	-	0%		**-**
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	1	-	-	-	-	0	-	**-**
Bicycles on Crosswalk%	-	-	-	0%		-	-	-	7.7%		-	-	-	0%		**-**
Bicycles on Road	0	0	0	0	-	0	0	0	0	-	0	1	0	0	-	**-**
Bicycles on Road%	-	-	-	0%		-	-	-	0%		-	-	-	0%		**-**

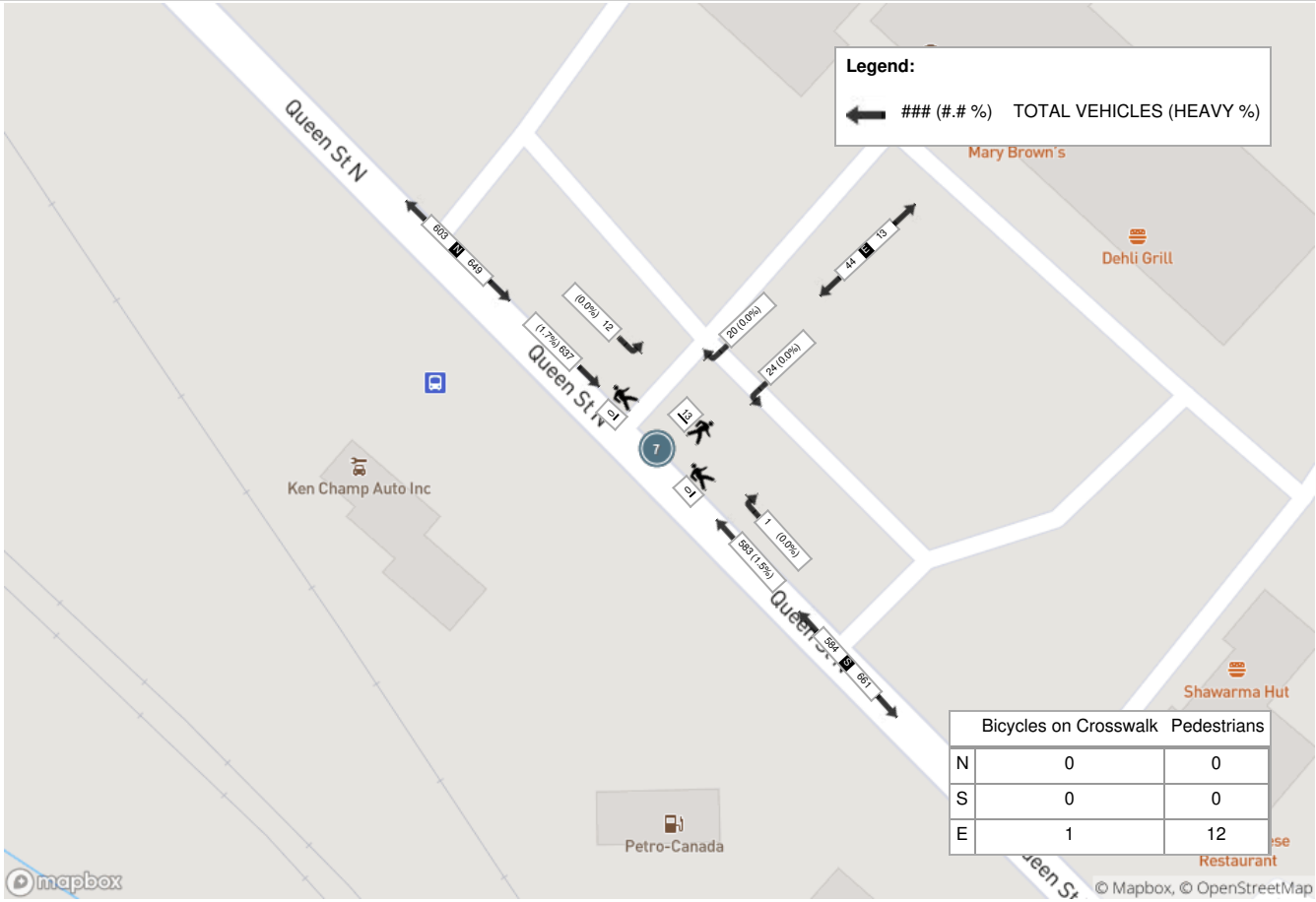
BA Group
300 45 ST. CLAIR AVE W
TORONTO ONTARIO, M4V 1K9
CANADA

Peak Hour: 08:00 AM - 09:00 AM Weather: Clear Sky (13.73 °C)



	Bicycles on Crosswalk	Pedestrians
N	0	1
S	0	0
E	1	5

Peak Hour: 04:45 PM - 05:45 PM Weather: Scattered Clouds (20.46 °C)



Spectrum

Turning Movement Count
Location Name: QUEEN ST N & 39 QUEEN ST N SOUTH DRIVEWAY
Date: Thu, Sep 09, 2021 Deployment Lead: Theo Daglis

BA Group
300 45 ST. CLAIR AVE W
TORONTO ONTARIO, M4V 1K9
CANADA

Turning Movement Count (8 . QUEEN ST N & 39 QUEEN ST N SOUTH DRIVEWAY)

Start Time	N Approach QUEEN ST N					E Approach 39 QUEEN ST N SOUTH DRIVEWAY					S Approach QUEEN ST N					Int. Total (15 min)	Int. Total (1 hr)
	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	UTurn S:S	Peds S:	Approach Total		
07:00:00	51	0	0	0	51	0	0	0	2	0	1	51	0	0	52	103	
07:15:00	75	0	0	0	75	0	0	0	4	0	1	82	0	0	83	158	
07:30:00	81	0	0	0	81	0	0	0	1	0	1	75	0	0	76	157	
07:45:00	118	0	0	0	118	0	0	0	2	0	0	122	0	0	122	240	658
08:00:00	116	0	0	0	116	0	0	0	2	0	0	137	0	0	137	253	808
08:15:00	132	0	0	0	132	0	0	0	1	0	4	214	0	0	218	350	1000
08:30:00	151	1	0	0	152	0	1	0	3	1	2	163	0	0	165	318	1161
08:45:00	133	0	0	0	133	0	0	0	0	0	1	156	0	0	157	290	1211
BREAK																	
16:00:00	144	1	0	0	145	0	1	0	0	1	8	128	0	0	136	282	
16:15:00	143	0	0	0	143	0	1	0	2	1	2	106	0	0	108	252	
16:30:00	142	3	0	0	145	0	1	0	2	1	6	133	0	0	139	285	
16:45:00	143	2	0	0	145	0	1	0	7	1	8	134	1	0	143	289	1108
17:00:00	179	0	0	0	179	0	2	0	2	2	3	179	0	0	182	363	1189
17:15:00	188	2	0	0	190	0	1	0	3	1	7	142	0	0	149	340	1277
17:30:00	146	0	0	0	146	0	1	0	3	1	6	133	0	0	139	286	1278
17:45:00	129	0	0	0	129	0	2	0	1	2	5	126	0	0	131	262	1251
Grand Total	2071	9	0	0	2080	0	11	0	35	11	55	2081	1	0	2137	**4228**	-
Approach%	99.6%	0.4%	0%		-	0%	100%	0%		-	2.6%	97.4%	0%		-	**-**	-
Totals %	49%	0.2%	0%		49.2%	0%	0.3%	0%		0.3%	1.3%	49.2%	0%		50.5%	**-**	-
Heavy	68	0	0		-	0	1	0		-	1	56	0		-	**-**	-
Heavy %	3.3%	0%	0%		-	0%	9.1%	0%		-	1.8%	2.7%	0%		-	**-**	-
Bicycles	2	0	0		-	0	0	0		-	0	2	0		-	**-**	-
Bicycle %	0.1%	0%	0%		-	0%	0%	0%		-	0%	0.1%	0%		-	**-**	-

BA Group
300 45 ST. CLAIR AVE W
TORONTO ONTARIO, M4V 1K9
CANADA

Peak Hour: 08:00 AM - 09:00 AM Weather: Clear Sky (13.73 °C)

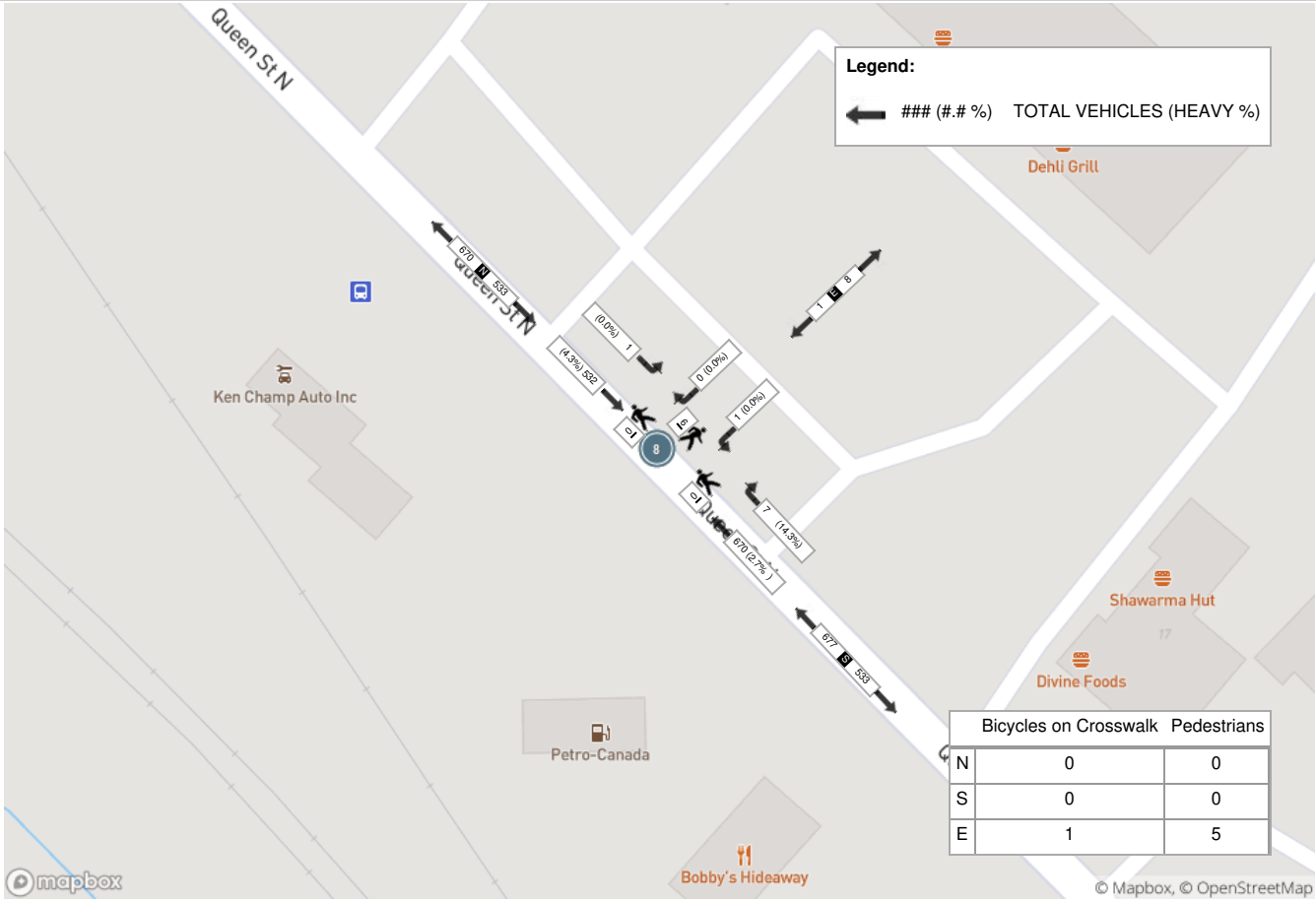
Start Time	N Approach QUEEN ST N					E Approach 39 QUEEN ST N SOUTH DRIVEWAY					S Approach QUEEN ST N					Int. Total (15 min)
	Thru	Left	UTurn	Peds	Approach Total	Right	Left	UTurn	Peds	Approach Total	Right	Thru	UTurn	Peds	Approach Total	
08:00:00	116	0	0	0	116	0	0	0	2	0	0	137	0	0	137	253
08:15:00	132	0	0	0	132	0	0	0	1	0	4	214	0	0	218	350
08:30:00	151	1	0	0	152	0	1	0	3	1	2	163	0	0	165	318
08:45:00	133	0	0	0	133	0	0	0	0	0	1	156	0	0	157	290
Grand Total	532	1	0	0	533	0	1	0	6	1	7	670	0	0	677	**1211**
Approach%	99.8%	0.2%	0%		-	0%	100%	0%		-	1%	99%	0%		-	**-**
Totals %	43.9%	0.1%	0%		44%	0%	0.1%	0%		0.1%	0.6%	55.3%	0%		55.9%	**-**
PHF	0.88	0.25	0		0.88	0	0.25	0		0.25	0.44	0.78	0		0.78	**-**
Heavy	23	0	0		23	0	0	0		0	1	18	0		19	**-**
Heavy %	4.3%	0%	0%		4.3%	0%	0%	0%		0%	14.3%	2.7%	0%		2.8%	**-**
Lights	509	1	0		510	0	1	0		1	6	652	0		658	**-**
Lights %	95.7%	100%	0%		95.7%	0%	100%	0%		100%	85.7%	97.3%	0%		97.2%	**-**
Single-Unit Trucks	10	0	0		10	0	0	0		0	1	6	0		7	**-**
Single-Unit Trucks %	1.9%	0%	0%		1.9%	0%	0%	0%		0%	14.3%	0.9%	0%		1%	**-**
Buses	11	0	0		11	0	0	0		0	0	10	0		10	**-**
Buses %	2.1%	0%	0%		2.1%	0%	0%	0%		0%	0%	1.5%	0%		1.5%	**-**
Articulated Trucks	2	0	0		2	0	0	0		0	0	2	0		2	**-**
Articulated Trucks %	0.4%	0%	0%		0.4%	0%	0%	0%		0%	0%	0.3%	0%		0.3%	**-**
Pedestrians	-	-	-	0	-	-	-	-	5	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	0%		-	-	-	83.3%		-	-	-	0%		**-**
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	1	-	-	-	-	0	-	**-**
Bicycles on Crosswalk%	-	-	-	0%		-	-	-	16.7%		-	-	-	0%		**-**
Bicycles on Road	0	0	0	0	-	0	0	0	0	-	0	0	0	0	-	**-**
Bicycles on Road%	-	-	-	0%		-	-	-	0%		-	-	-	0%		**-**

BA Group
300 45 ST. CLAIR AVE W
TORONTO ONTARIO, M4V 1K9
CANADA

Peak Hour: 04:45 PM - 05:45 PM Weather: Scattered Clouds (20.46 °C)

Start Time	N Approach QUEEN ST N					E Approach 39 QUEEN ST N SOUTH DRIVEWAY					S Approach QUEEN ST N					Int. Total (15 min)
	Thru	Left	UTurn	Peds	Approach Total	Right	Left	UTurn	Peds	Approach Total	Right	Thru	UTurn	Peds	Approach Total	
16:45:00	143	2	0	0	145	0	1	0	7	1	8	134	1	0	143	289
17:00:00	179	0	0	0	179	0	2	0	2	2	3	179	0	0	182	363
17:15:00	188	2	0	0	190	0	1	0	3	1	7	142	0	0	149	340
17:30:00	146	0	0	0	146	0	1	0	3	1	6	133	0	0	139	286
Grand Total	656	4	0	0	660	0	5	0	15	5	24	588	1	0	613	**1278**
Approach%	99.4%	0.6%	0%		-	0%	100%	0%		-	3.9%	95.9%	0.2%		-	**-**
Totals %	51.3%	0.3%	0%		51.6%	0%	0.4%	0%		0.4%	1.9%	46%	0.1%		48%	**-**
PHF	0.87	0.5	0		0.87	0	0.63	0		0.63	0.75	0.82	0.25		0.84	**-**
Heavy	11	0	0		11	0	0	0		0	0	9	0		9	**-**
Heavy %	1.7%	0%	0%		1.7%	0%	0%	0%		0%	0%	1.5%	0%		1.5%	**-**
Lights	645	4	0		649	0	5	0		5	24	579	1		604	**-**
Lights %	98.3%	100%	0%		98.3%	0%	100%	0%		100%	100%	98.5%	100%		98.5%	**-**
Single-Unit Trucks	6	0	0		6	0	0	0		0	0	3	0		3	**-**
Single-Unit Trucks %	0.9%	0%	0%		0.9%	0%	0%	0%		0%	0%	0.5%	0%		0.5%	**-**
Buses	4	0	0		4	0	0	0		0	0	6	0		6	**-**
Buses %	0.6%	0%	0%		0.6%	0%	0%	0%		0%	0%	1%	0%		1%	**-**
Articulated Trucks	1	0	0		1	0	0	0		0	0	0	0		0	**-**
Articulated Trucks %	0.2%	0%	0%		0.2%	0%	0%	0%		0%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	0	-	-	-	-	14	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	0%		-	-	-	93.3%		-	-	-	0%		**-**
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	1	-	-	-	-	0	-	**-**
Bicycles on Crosswalk%	-	-	-	0%		-	-	-	6.7%		-	-	-	0%		**-**
Bicycles on Road	0	0	0	0	-	0	0	0	0	-	0	1	0	0	-	**-**
Bicycles on Road%	-	-	-	0%		-	-	-	0%		-	-	-	0%		**-**

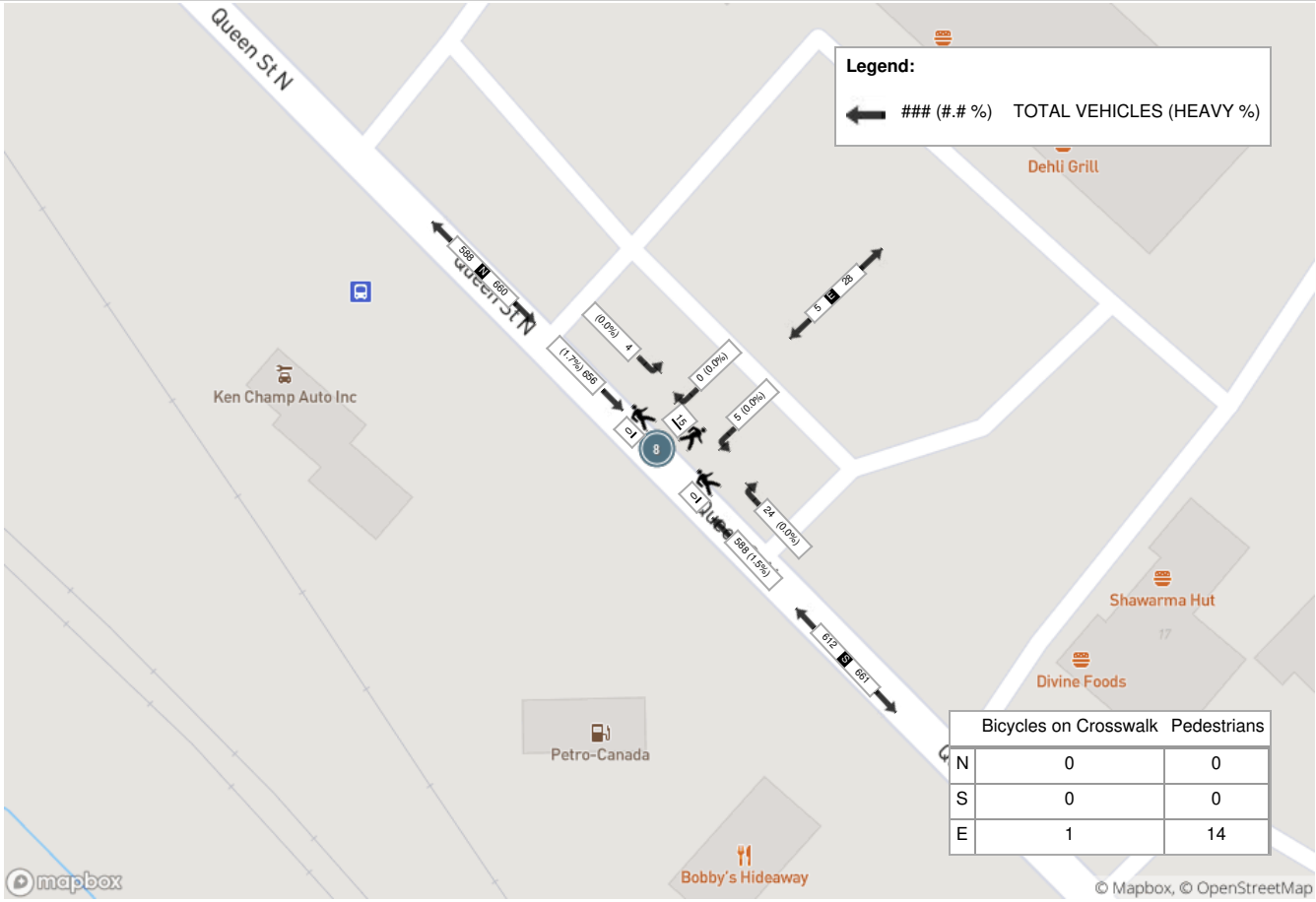
Peak Hour: 08:00 AM - 09:00 AM Weather: Clear Sky (13.73 °C)



	Bicycles on Crosswalk	Pedestrians
N	0	0
S	0	0
E	1	5

BA Group
300 45 ST. CLAIR AVE W
TORONTO ONTARIO, M4V 1K9
CANADA

Peak Hour: 04:45 PM - 05:45 PM Weather: Scattered Clouds (20.46 °C)



	Bicycles on Crosswalk	Pedestrians
N	0	0
S	0	0
E	1	14

Spectrum

Turning Movement Count
Location Name: QUEEN ST N & 40 QUEEN ST N NORTH DRIVEWAY
Date: Thu, Sep 09, 2021 Deployment Lead: Theo Daglis

BA Group
300 45 ST. CLAIR AVE W
TORONTO ONTARIO, M4V 1K9
CANADA

Turning Movement Count (3 . QUEEN ST N & 40 QUEEN ST N NORTH DRIVEWAY)

Start Time	N Approach QUEEN ST N					S Approach QUEEN ST N					W Approach 40 QUEEN ST N NORTH DRIVEWAY					Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	UTurn N:N	Peds N:	Approach Total	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Left W:N	UTurn W:W	Peds W:	Approach Total		
07:00:00	0	48	0	0	48	52	0	0	0	52	0	0	0	0	0	100	
07:15:00	0	86	0	0	86	86	1	0	0	87	0	0	0	0	0	173	
07:30:00	2	81	0	0	83	73	0	0	0	73	0	0	0	0	0	156	
07:45:00	0	122	0	0	122	123	0	0	0	123	0	0	0	0	0	245	674
08:00:00	1	117	0	0	118	145	0	0	0	145	0	0	0	0	0	263	837
08:15:00	0	134	0	0	134	219	0	0	0	219	0	0	0	0	0	353	1017
08:30:00	1	152	0	0	153	167	0	0	0	167	0	0	0	1	0	320	1181
08:45:00	0	142	0	0	142	144	1	0	0	145	0	0	0	1	0	287	1223
BREAK																	
16:00:00	0	138	0	0	138	128	0	0	0	128	0	0	0	0	0	266	
16:15:00	1	155	0	0	156	107	1	0	0	108	0	0	0	0	0	264	
16:30:00	3	142	0	0	145	136	0	0	0	136	0	1	0	0	1	282	
16:45:00	0	143	0	0	143	141	2	0	0	143	2	0	0	1	2	288	1100
17:00:00	0	173	0	0	173	168	0	0	0	168	2	1	0	0	3	344	1178
17:15:00	0	186	0	0	186	148	1	0	0	149	1	0	0	0	1	336	1250
17:30:00	1	142	0	0	143	142	1	0	0	143	0	0	0	0	0	286	1254
17:45:00	1	132	0	3	133	123	0	0	0	123	0	0	0	4	0	256	1222
Grand Total	10	2093	0	3	2103	2102	7	0	0	2109	5	2	0	7	7	**4219**	-
Approach%	0.5%	99.5%	0%		-	99.7%	0.3%	0%		-	71.4%	28.6%	0%		-	**-**	-
Totals %	0.2%	49.6%	0%		49.8%	49.8%	0.2%	0%		50%	0.1%	0%	0%		0.2%	**-**	-
Heavy	0	75	0		-	57	0	0		-	0	0	0		-	**-**	-
Heavy %	0%	3.6%	0%		-	2.7%	0%	0%		-	0%	0%	0%		-	**-**	-
Bicycles	0	2	0		-	2	0	0		-	0	0	0		-	**-**	-
Bicycle %	0%	0.1%	0%		-	0.1%	0%	0%		-	0%	0%	0%		-	**-**	-

Peak Hour: 08:00 AM - 09:00 AM Weather: Clear Sky (13.73 °C)

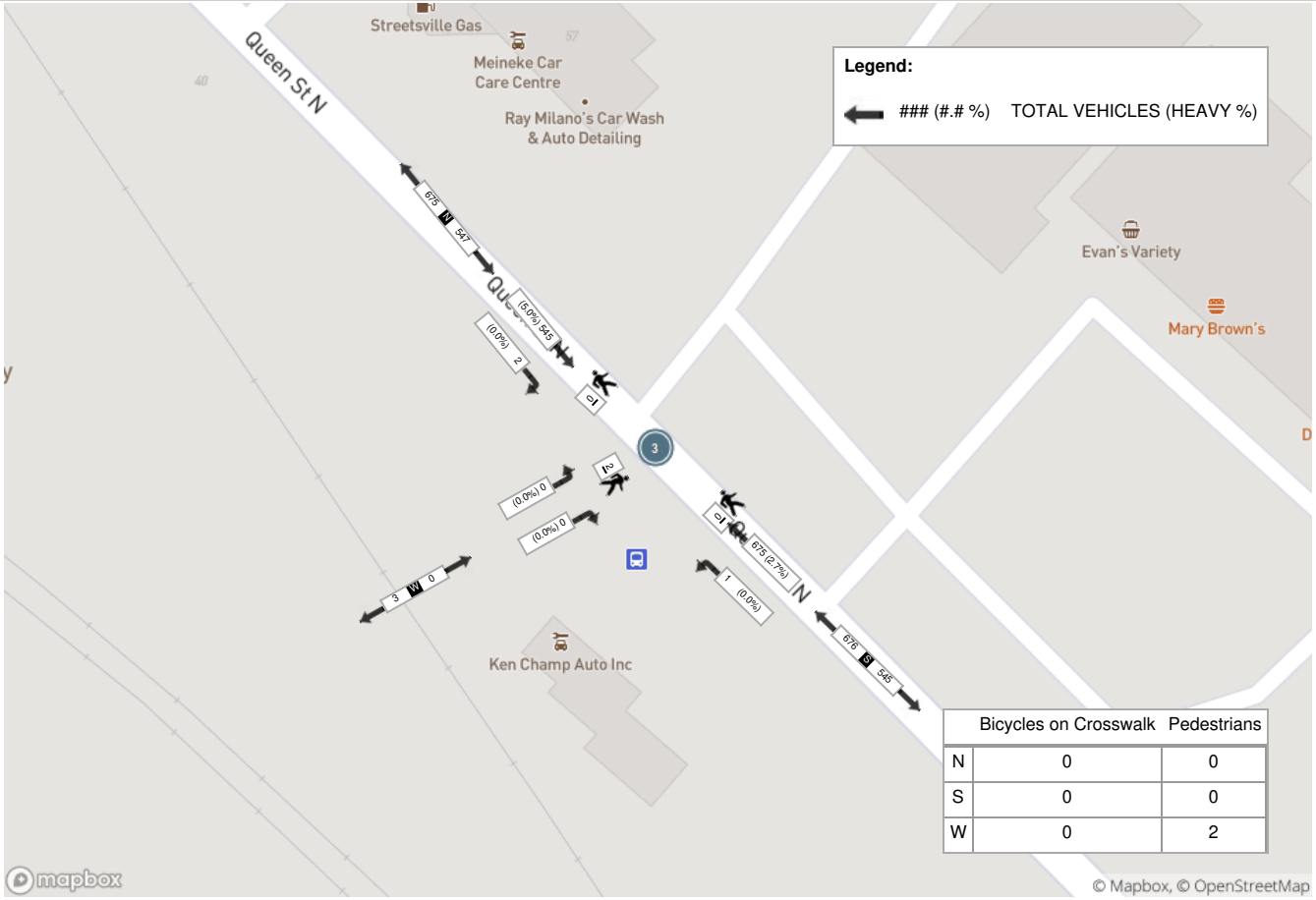
Start Time	N Approach QUEEN ST N					S Approach QUEEN ST N					W Approach 40 QUEEN ST N NORTH DRIVEWAY					Int. Total (15 min)
	Right	Thru	UTurn	Peds	Approach Total	Thru	Left	UTurn	Peds	Approach Total	Right	Left	UTurn	Peds	Approach Total	
08:00:00	1	117	0	0	118	145	0	0	0	145	0	0	0	0	0	263
08:15:00	0	134	0	0	134	219	0	0	0	219	0	0	0	0	0	353
08:30:00	1	152	0	0	153	167	0	0	0	167	0	0	0	1	0	320
08:45:00	0	142	0	0	142	144	1	0	0	145	0	0	0	1	0	287
Grand Total	2	545	0	0	547	675	1	0	0	676	0	0	0	2	0	**1223**
Approach%	0.4%	99.6%	0%		-	99.9%	0.1%	0%		-	0%	0%	0%		-	**-**
Totals %	0.2%	44.6%	0%		44.7%	55.2%	0.1%	0%		55.3%	0%	0%	0%		0%	**-**
PHF	0.5	0.9	0		0.89	0.77	0.25	0		0.77	0	0	0		0	**-**
Heavy	0	27	0		27	18	0	0		18	0	0	0		0	**-**
Heavy %	0%	5%	0%		4.9%	2.7%	0%	0%		2.7%	0%	0%	0%		0%	**-**
Lights	2	518	0		520	657	1	0		658	0	0	0		0	**-**
Lights %	100%	95%	0%		95.1%	97.3%	100%	0%		97.3%	0%	0%	0%		0%	**-**
Single-Unit Trucks	0	10	0		10	6	0	0		6	0	0	0		0	**-**
Single-Unit Trucks %	0%	1.8%	0%		1.8%	0.9%	0%	0%		0.9%	0%	0%	0%		0%	**-**
Buses	0	13	0		13	10	0	0		10	0	0	0		0	**-**
Buses %	0%	2.4%	0%		2.4%	1.5%	0%	0%		1.5%	0%	0%	0%		0%	**-**
Articulated Trucks	0	4	0		4	2	0	0		2	0	0	0		0	**-**
Articulated Trucks %	0%	0.7%	0%		0.7%	0.3%	0%	0%		0.3%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	2	-	**-**
Pedestrians%	-	-	-	0%		-	-	-	0%		-	-	-	100%		**-**
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	**-**
Bicycles on Crosswalk%	-	-	-	0%		-	-	-	0%		-	-	-	0%		**-**
Bicycles on Road	0	0	0	0	-	0	0	0	0	-	0	0	0	0	-	**-**
Bicycles on Road%	-	-	-	0%		-	-	-	0%		-	-	-	0%		**-**

Peak Hour: 04:45 PM - 05:45 PM Weather: Scattered Clouds (20.46 °C)

Start Time	N Approach QUEEN ST N					S Approach QUEEN ST N					W Approach 40 QUEEN ST N NORTH DRIVEWAY					Int. Total (15 min)
	Right	Thru	UTurn	Peds	Approach Total	Thru	Left	UTurn	Peds	Approach Total	Right	Left	UTurn	Peds	Approach Total	
16:45:00	0	143	0	0	143	141	2	0	0	143	2	0	0	1	2	288
17:00:00	0	173	0	0	173	168	0	0	0	168	2	1	0	0	3	344
17:15:00	0	186	0	0	186	148	1	0	0	149	1	0	0	0	1	336
17:30:00	1	142	0	0	143	142	1	0	0	143	0	0	0	0	0	286
Grand Total	1	644	0	0	645	599	4	0	0	603	5	1	0	1	6	**1254**
Approach%	0.2%	99.8%	0%		-	99.3%	0.7%	0%		-	83.3%	16.7%	0%		-	**-**
Totals %	0.1%	51.4%	0%		51.4%	47.8%	0.3%	0%		48.1%	0.4%	0.1%	0%		0.5%	**-**
PHF	0.25	0.87	0		0.87	0.89	0.5	0		0.9	0.63	0.25	0		0.5	**-**
Heavy	0	11	0		11	9	0	0		9	0	0	0		0	**-**
Heavy %	0%	1.7%	0%		1.7%	1.5%	0%	0%		1.5%	0%	0%	0%		0%	**-**
Lights	1	633	0		634	590	4	0		594	5	1	0		6	**-**
Lights %	100%	98.3%	0%		98.3%	98.5%	100%	0%		98.5%	100%	100%	0%		100%	**-**
Single-Unit Trucks	0	5	0		5	3	0	0		3	0	0	0		0	**-**
Single-Unit Trucks %	0%	0.8%	0%		0.8%	0.5%	0%	0%		0.5%	0%	0%	0%		0%	**-**
Buses	0	5	0		5	6	0	0		6	0	0	0		0	**-**
Buses %	0%	0.8%	0%		0.8%	1%	0%	0%		1%	0%	0%	0%		0%	**-**
Articulated Trucks	0	1	0		1	0	0	0		0	0	0	0		0	**-**
Articulated Trucks %	0%	0.2%	0%		0.2%	0%	0%	0%		0%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	0%		-	-	-	0%		-	-	-	0%		**-**
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	1	-	**-**
Bicycles on Crosswalk%	-	-	-	0%		-	-	-	0%		-	-	-	100%		**-**
Bicycles on Road	0	0	0	0	-	0	0	0	0	-	0	0	0	0	-	**-**
Bicycles on Road%	-	-	-	0%		-	-	-	0%		-	-	-	0%		**-**

BA Group
300 45 ST. CLAIR AVE W
TORONTO ONTARIO, M4V 1K9
CANADA

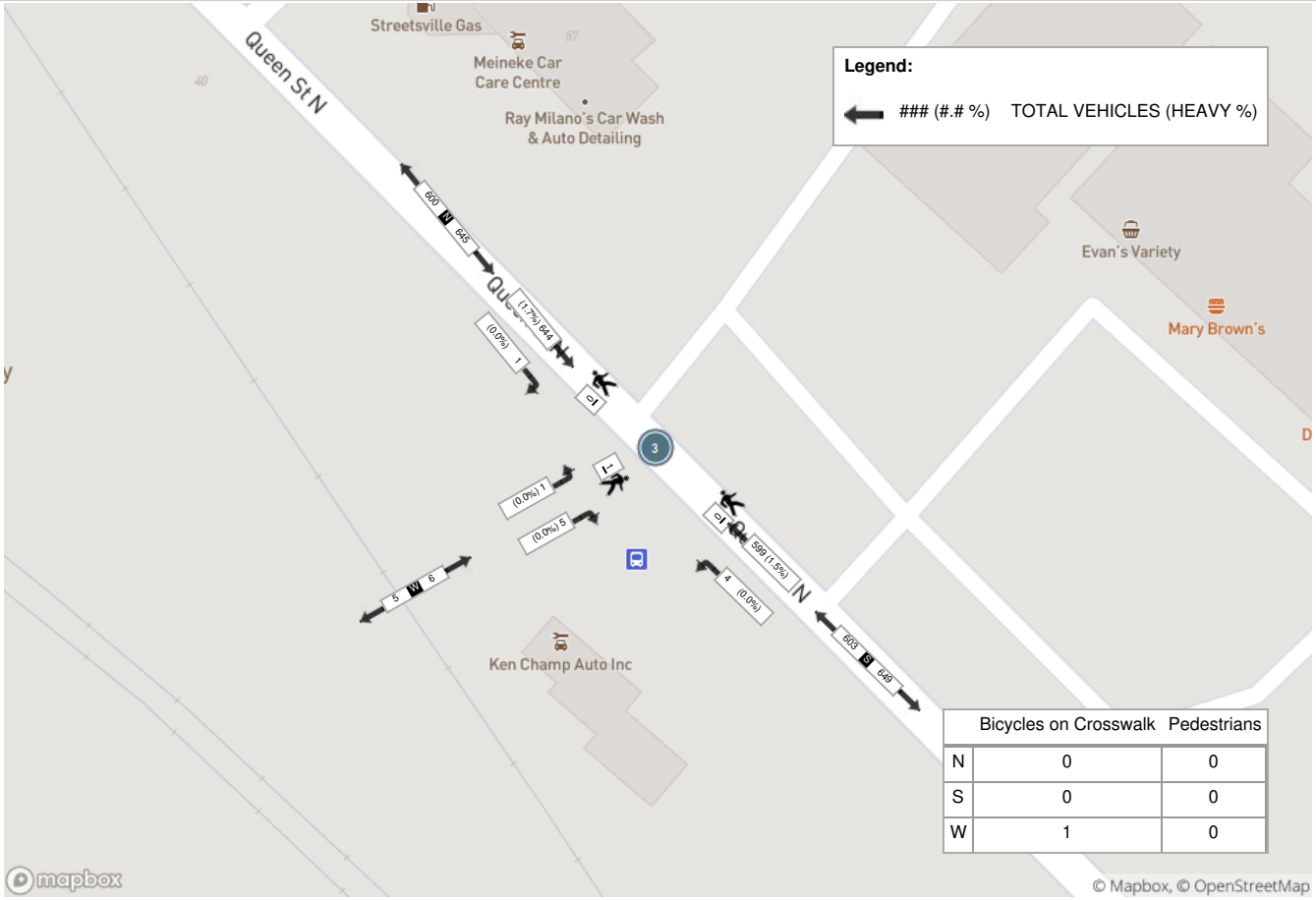
Peak Hour: 08:00 AM - 09:00 AM Weather: Clear Sky (13.73 °C)



	Bicycles on Crosswalk	Pedestrians
N	0	0
S	0	0
W	0	2

BA Group
300 45 ST. CLAIR AVE W
TORONTO ONTARIO, M4V 1K9
CANADA

Peak Hour: 04:45 PM - 05:45 PM Weather: Scattered Clouds (20.46 °C)



	Bicycles on Crosswalk	Pedestrians
N	0	0
S	0	0
W	1	0

Spectrum

Turning Movement Count
Location Name: QUEEN ST N & 40 QUEEN ST N SOUTH DRIVEWAY
Date: Thu, Sep 09, 2021 Deployment Lead: Theo Daglis

BA Group
300 45 ST. CLAIR AVE W
TORONTO ONTARIO, M4V 1K9
CANADA

Turning Movement Count (4 . QUEEN ST N & 40 QUEEN ST N SOUTH DRIVEWAY)

Start Time	N Approach QUEEN ST N					S Approach QUEEN ST N					W Approach 40 QUEEN ST N SOUTH DRIVEWAY					Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	UTurn N:N	Peds N:	Approach Total	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Left W:N	UTurn W:W	Peds W:	Approach Total		
07:00:00	0	51	0	0	51	52	1	0	0	53	0	0	0	0	0	104	
07:15:00	0	84	0	0	84	85	0	0	0	85	0	1	0	0	1	170	
07:30:00	0	81	0	0	81	74	1	0	0	75	0	0	0	0	0	156	
07:45:00	0	118	0	0	118	120	0	0	0	120	0	0	0	0	0	238	668
08:00:00	1	118	0	0	119	139	0	0	0	139	0	1	0	0	1	259	823
08:15:00	0	133	0	0	133	216	0	0	0	216	0	0	0	0	0	349	1002
08:30:00	0	148	0	0	148	170	0	0	0	170	0	0	0	2	0	318	1164
08:45:00	0	142	0	0	142	147	0	0	0	147	0	0	0	1	0	289	1215
BREAK																	
16:00:00	0	141	0	0	141	127	0	1	0	128	0	0	0	0	0	269	
16:15:00	0	146	0	0	146	110	0	0	0	110	1	0	0	0	1	257	
16:30:00	0	149	0	0	149	135	0	0	0	135	0	3	0	1	3	287	
16:45:00	1	143	0	0	144	135	0	0	0	135	2	1	0	1	3	282	1095
17:00:00	1	174	0	0	175	173	2	0	0	175	1	0	0	0	1	351	1177
17:15:00	0	189	0	0	189	149	0	0	0	149	1	0	0	0	1	339	1259
17:30:00	0	140	0	0	140	135	0	0	0	135	1	0	0	1	1	276	1248
17:45:00	2	128	0	0	130	130	0	0	0	130	1	1	0	4	2	262	1228
Grand Total	5	2085	0	0	2090	2097	4	1	0	2102	7	7	0	10	14	**4206**	-
Approach%	0.2%	99.8%	0%		-	99.8%	0.2%	0%		-	50%	50%	0%		-	**-**	-
Totals %	0.1%	49.6%	0%		49.7%	49.9%	0.1%	0%		50%	0.2%	0.2%	0%		0.3%	**-**	-
Heavy	0	72	0		-	57	0	0		-	0	0	0		-	**-**	-
Heavy %	0%	3.5%	0%		-	2.7%	0%	0%		-	0%	0%	0%		-	**-**	-
Bicycles	0	2	0		-	3	0	0		-	0	0	0		-	**-**	-
Bicycle %	0%	0.1%	0%		-	0.1%	0%	0%		-	0%	0%	0%		-	**-**	-

BA Group
300 45 ST. CLAIR AVE W
TORONTO ONTARIO, M4V 1K9
CANADA

Peak Hour: 08:00 AM - 09:00 AM Weather: Clear Sky (13.73 °C)

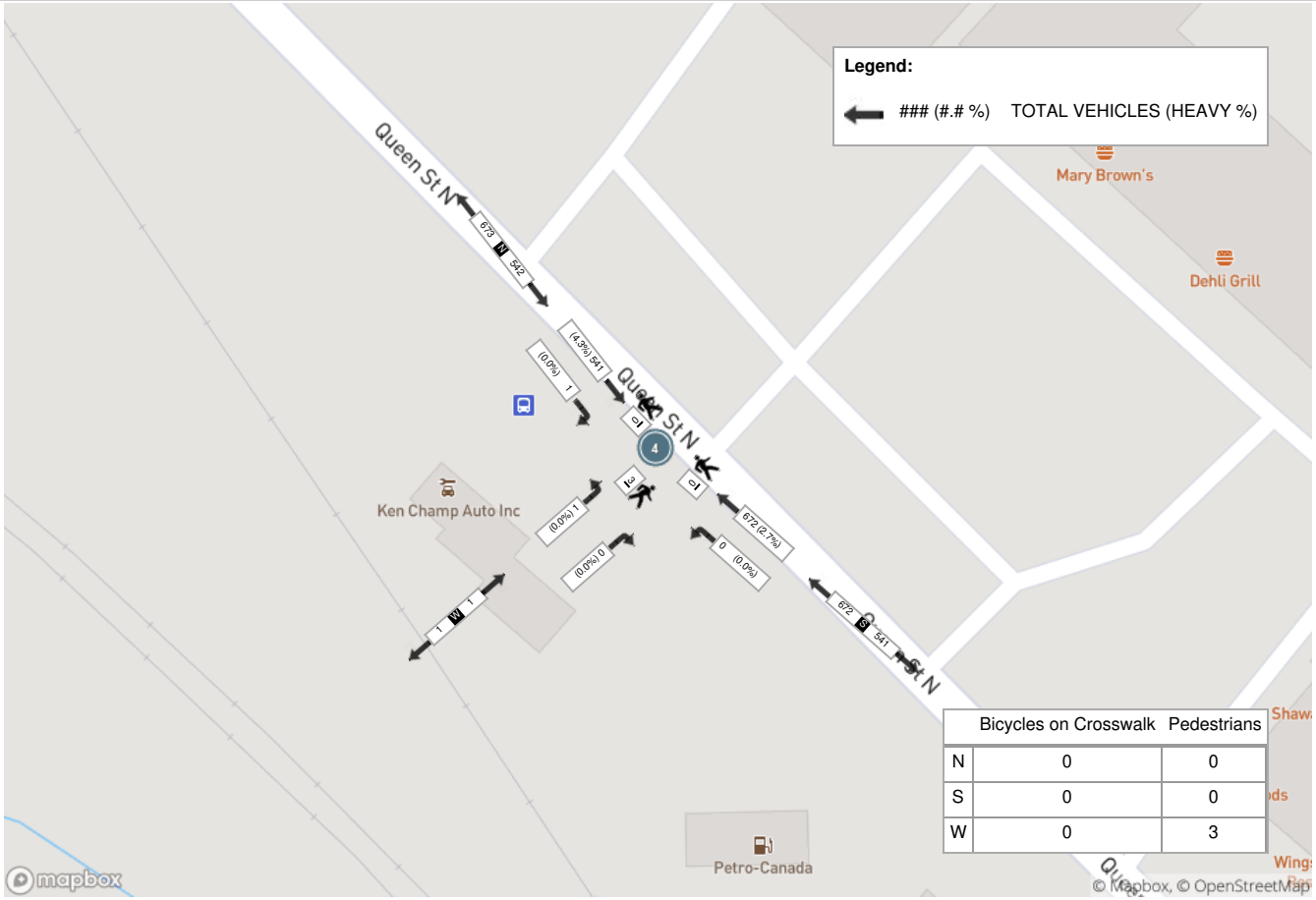
Start Time	N Approach QUEEN ST N					S Approach QUEEN ST N					W Approach 40 QUEEN ST N SOUTH DRIVEWAY					Int. Total (15 min)
	Right	Thru	UTurn	Peds	Approach Total	Thru	Left	UTurn	Peds	Approach Total	Right	Left	UTurn	Peds	Approach Total	
08:00:00	1	118	0	0	119	139	0	0	0	139	0	1	0	0	1	259
08:15:00	0	133	0	0	133	216	0	0	0	216	0	0	0	0	0	349
08:30:00	0	148	0	0	148	170	0	0	0	170	0	0	0	2	0	318
08:45:00	0	142	0	0	142	147	0	0	0	147	0	0	0	1	0	289
Grand Total	1	541	0	0	542	672	0	0	0	672	0	1	0	3	1	**1215**
Approach%	0.2%	99.8%	0%		-	100%	0%	0%		-	0%	100%	0%		-	**-**
Totals %	0.1%	44.5%	0%		44.6%	55.3%	0%	0%		55.3%	0%	0.1%	0%		0.1%	**-**
PHF	0.25	0.91	0		0.92	0.78	0	0		0.78	0	0.25	0		0.25	**-**
Heavy	0	23	0		23	18	0	0		18	0	0	0		0	**-**
Heavy %	0%	4.3%	0%		4.2%	2.7%	0%	0%		2.7%	0%	0%	0%		0%	**-**
Lights	1	518	0		519	654	0	0		654	0	1	0		1	**-**
Lights %	100%	95.7%	0%		95.8%	97.3%	0%	0%		97.3%	0%	100%	0%		100%	**-**
Single-Unit Trucks	0	10	0		10	6	0	0		6	0	0	0		0	**-**
Single-Unit Trucks %	0%	1.8%	0%		1.8%	0.9%	0%	0%		0.9%	0%	0%	0%		0%	**-**
Buses	0	11	0		11	10	0	0		10	0	0	0		0	**-**
Buses %	0%	2%	0%		2%	1.5%	0%	0%		1.5%	0%	0%	0%		0%	**-**
Articulated Trucks	0	2	0		2	2	0	0		2	0	0	0		0	**-**
Articulated Trucks %	0%	0.4%	0%		0.4%	0.3%	0%	0%		0.3%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	3	-	**-**
Pedestrians%	-	-	-	0%		-	-	-	0%		-	-	-	100%		**-**
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	**-**
Bicycles on Crosswalk%	-	-	-	0%		-	-	-	0%		-	-	-	0%		**-**
Bicycles on Road	0	0	0	0	-	0	0	0	0	-	0	0	0	0	-	**-**
Bicycles on Road%	-	-	-	0%		-	-	-	0%		-	-	-	0%		**-**

Peak Hour: 04:30 PM - 05:30 PM Weather: Scattered Clouds (20.46 °C)

Start Time	N Approach QUEEN ST N					S Approach QUEEN ST N					W Approach 40 QUEEN ST N SOUTH DRIVEWAY					Int. Total (15 min)
	Right	Thru	UTurn	Peds	Approach Total	Thru	Left	UTurn	Peds	Approach Total	Right	Left	UTurn	Peds	Approach Total	
16:30:00	0	149	0	0	149	135	0	0	0	135	0	3	0	1	3	287
16:45:00	1	143	0	0	144	135	0	0	0	135	2	1	0	1	3	282
17:00:00	1	174	0	0	175	173	2	0	0	175	1	0	0	0	1	351
17:15:00	0	189	0	0	189	149	0	0	0	149	1	0	0	0	1	339
Grand Total	2	655	0	0	657	592	2	0	0	594	4	4	0	2	8	**1259**
Approach%	0.3%	99.7%	0%		-	99.7%	0.3%	0%		-	50%	50%	0%		-	**-**
Totals %	0.2%	52%	0%		52.2%	47%	0.2%	0%		47.2%	0.3%	0.3%	0%		0.6%	**-**
PHF	0.5	0.87	0		0.87	0.86	0.25	0		0.85	0.5	0.33	0		0.67	**-**
Heavy	0	10	0		10	7	0	0		7	0	0	0		0	**-**
Heavy %	0%	1.5%	0%		1.5%	1.2%	0%	0%		1.2%	0%	0%	0%		0%	**-**
Lights	2	645	0		647	585	2	0		587	4	4	0		8	**-**
Lights %	100%	98.5%	0%		98.5%	98.8%	100%	0%		98.8%	100%	100%	0%		100%	**-**
Single-Unit Trucks	0	4	0		4	3	0	0		3	0	0	0		0	**-**
Single-Unit Trucks %	0%	0.6%	0%		0.6%	0.5%	0%	0%		0.5%	0%	0%	0%		0%	**-**
Buses	0	6	0		6	4	0	0		4	0	0	0		0	**-**
Buses %	0%	0.9%	0%		0.9%	0.7%	0%	0%		0.7%	0%	0%	0%		0%	**-**
Articulated Trucks	0	0	0		0	0	0	0		0	0	0	0		0	**-**
Articulated Trucks %	0%	0%	0%		0%	0%	0%	0%		0%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	1	-	**-**
Pedestrians%	-	-	-	0%		-	-	-	0%		-	-	-	50%		**-**
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	1	-	**-**
Bicycles on Crosswalk%	-	-	-	0%		-	-	-	0%		-	-	-	50%		**-**
Bicycles on Road	0	0	0	0	-	1	0	0	0	-	0	0	0	0	-	**-**
Bicycles on Road%	-	-	-	0%		-	-	-	0%		-	-	-	0%		**-**

BA Group
300 45 ST. CLAIR AVE W
TORONTO ONTARIO, M4V 1K9
CANADA

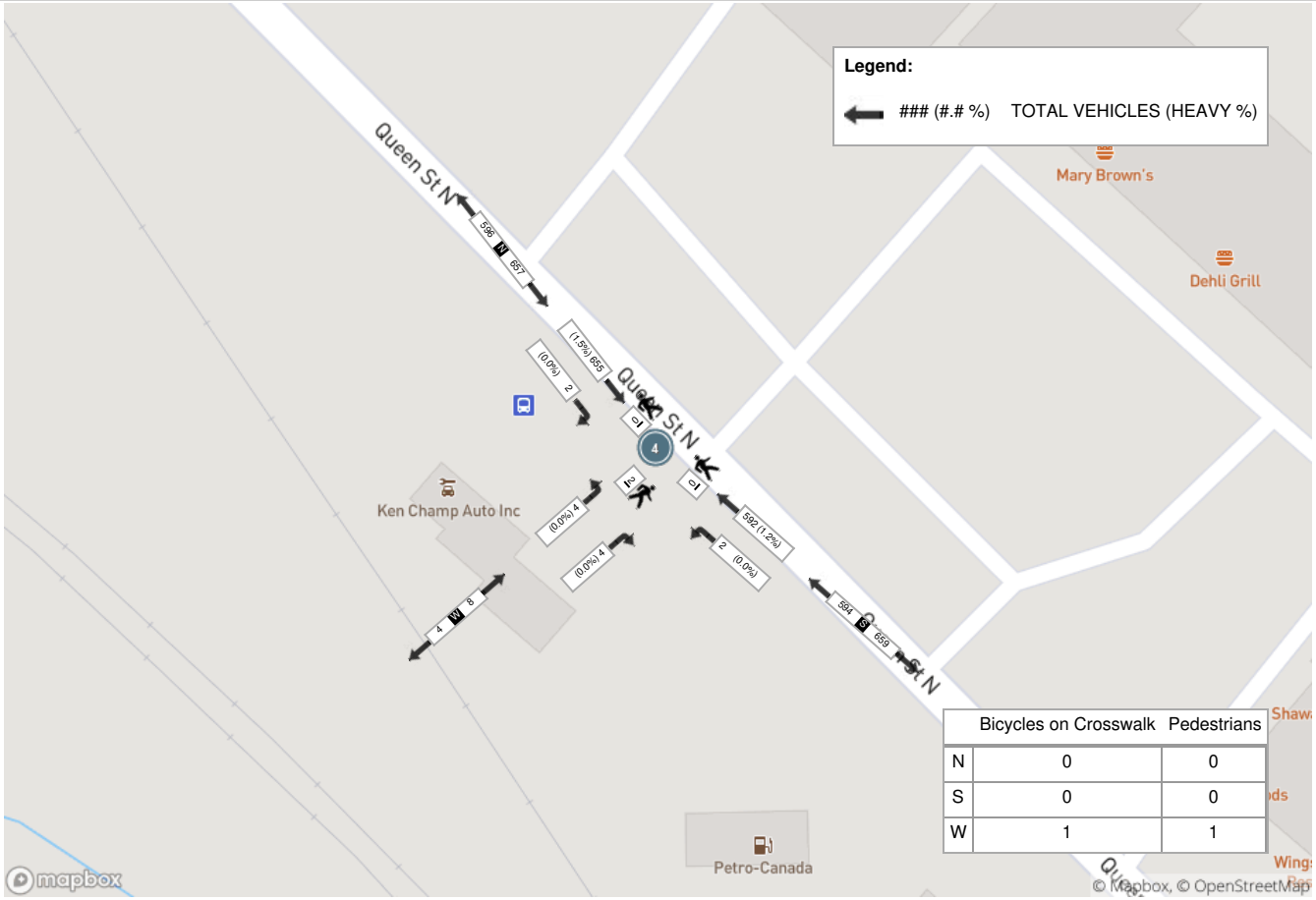
Peak Hour: 08:00 AM - 09:00 AM Weather: Clear Sky (13.73 °C)



	Bicycles on Crosswalk	Pedestrians
N	0	0
S	0	0
W	0	3

BA Group
300 45 ST. CLAIR AVE W
TORONTO ONTARIO, M4V 1K9
CANADA

Peak Hour: 04:30 PM - 05:30 PM Weather: Scattered Clouds (20.46 °C)



	Bicycles on Crosswalk	Pedestrians
N	0	0
S	0	0
W	1	1

BA Group
300 45 ST. CLAIR AVE W
TORONTO ONTARIO, M4V 1K9
CANADA

Turning Movement Count (1 . QUEEN ST N & 51 QUEEN ST N (NORTH DRIVEWAY 1))

Start Time	N Approach QUEEN ST N					E Approach 51 QUEEN ST N (NORTH DRIVEWAY 1)					S Approach QUEEN ST N					Int. Total (15 min)	Int. Total (1 hr)
	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	UTurn S:S	Peds S:	Approach Total		
07:00:00	83	0	0	0	83	0	0	0	2	0	0	52	0	0	52	135	
07:15:00	51	0	0	0	51	0	0	0	3	0	0	84	0	0	84	135	
07:30:00	84	0	0	0	84	1	0	0	1	1	0	73	0	0	73	158	
07:45:00	118	0	0	0	118	0	0	0	1	0	0	120	0	0	120	238	666
08:00:00	121	0	0	0	121	0	0	0	1	0	0	140	0	0	140	261	792
08:15:00	131	0	0	0	131	0	1	0	1	1	0	215	0	0	215	347	1004
08:30:00	148	0	0	0	148	0	0	0	3	0	0	171	0	1	171	319	1165
08:45:00	144	0	0	0	144	0	0	0	0	0	0	144	0	0	144	288	1215
BREAK																	
16:00:00	136	1	0	0	137	1	0	0	0	1	0	126	0	0	126	264	
16:15:00	156	0	0	0	156	0	0	0	1	0	0	109	0	0	109	265	
16:30:00	146	2	0	0	148	0	2	0	1	2	0	139	0	0	139	289	
16:45:00	139	1	0	0	140	0	0	0	7	0	0	138	0	0	138	278	1096
17:00:00	173	0	0	0	173	0	1	0	2	1	0	170	0	0	170	344	1176
17:15:00	186	0	0	0	186	1	1	0	3	2	0	150	0	0	150	338	1249
17:30:00	141	0	0	0	141	0	0	0	2	0	0	135	0	0	135	276	1236
17:45:00	136	0	0	3	136	0	0	0	0	0	0	127	0	0	127	263	1221
Grand Total	2093	4	0	3	2097	3	5	0	28	8	0	2093	0	1	2093	**4198**	-
Approach%	99.8%	0.2%	0%		-	37.5%	62.5%	0%		-	0%	100%	0%		-	**-**	-
Totals %	49.9%	0.1%	0%		50%	0.1%	0.1%	0%		0.2%	0%	49.9%	0%		49.9%	**-**	-
Heavy	72	0	0		-	0	0	0		-	0	57	0		-	**-**	-
Heavy %	3.4%	0%	0%		-	0%	0%	0%		-	0%	2.7%	0%		-	**-**	-
Bicycles	2	0	0		-	0	0	0		-	1	1	0		-	**-**	-
Bicycle %	0.1%	0%	0%		-	0%	0%	0%		-	0%	0%	0%		-	**-**	-

BA Group
300 45 ST. CLAIR AVE W
TORONTO ONTARIO, M4V 1K9
CANADA

Peak Hour: 08:00 AM - 09:00 AM Weather: Clear Sky (13.73 °C)

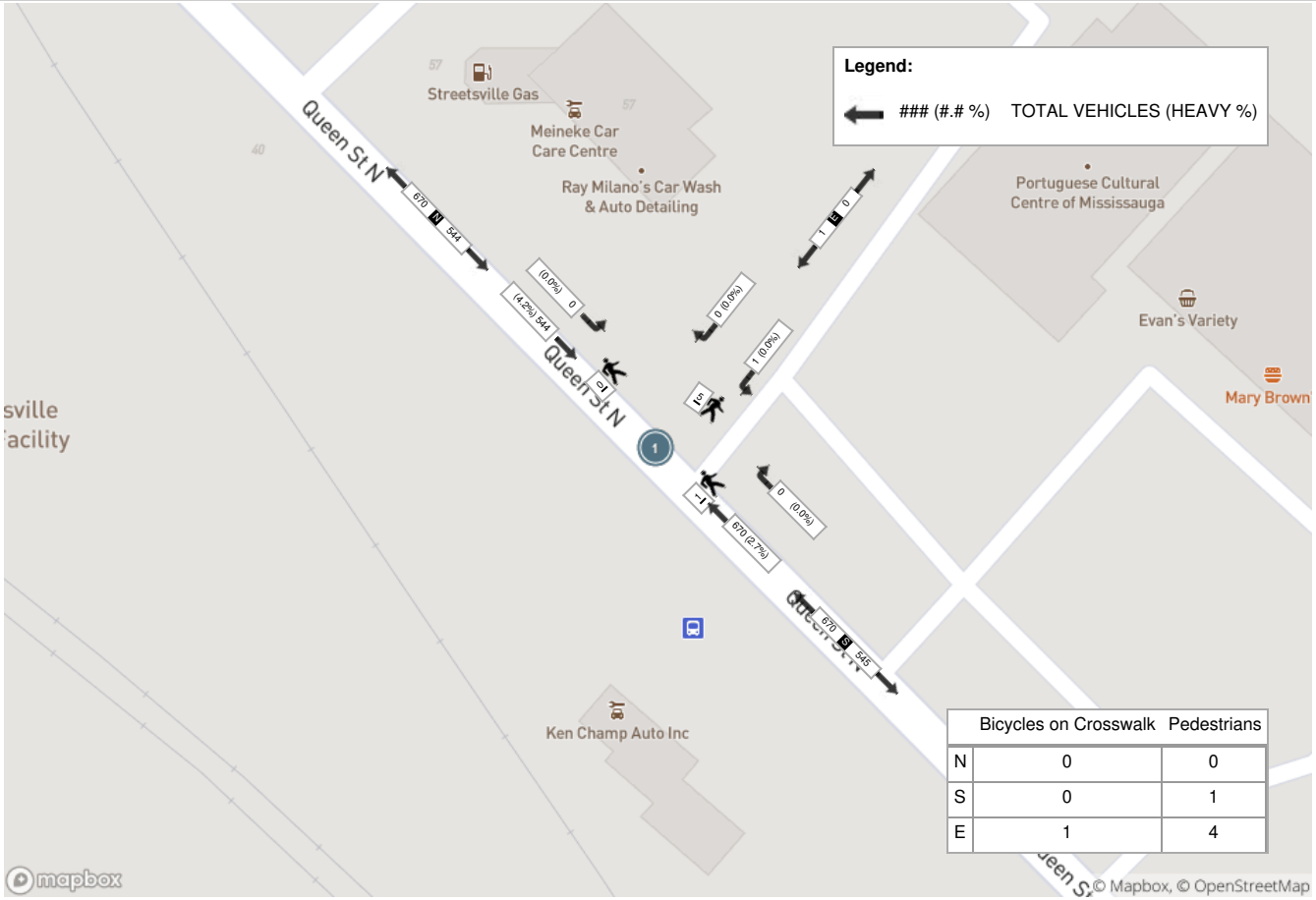
Start Time	N Approach QUEEN ST N					E Approach 51 QUEEN ST N (NORTH DRIVEWAY 1)					S Approach QUEEN ST N					Int. Total (15 min)
	Thru	Left	UTurn	Peds	Approach Total	Right	Left	UTurn	Peds	Approach Total	Right	Thru	UTurn	Peds	Approach Total	
08:00:00	121	0	0	0	121	0	0	0	1	0	0	140	0	0	140	261
08:15:00	131	0	0	0	131	0	1	0	1	1	0	215	0	0	215	347
08:30:00	148	0	0	0	148	0	0	0	3	0	0	171	0	1	171	319
08:45:00	144	0	0	0	144	0	0	0	0	0	0	144	0	0	144	288
Grand Total	544	0	0	0	544	0	1	0	5	1	0	670	0	1	670	**1215**
Approach%	100%	0%	0%		-	0%	100%	0%		-	0%	100%	0%		-	**-**
Totals %	44.8%	0%	0%		44.8%	0%	0.1%	0%		0.1%	0%	55.1%	0%		55.1%	**-**
PHF	0.92	0	0		0.92	0	0.25	0		0.25	0	0.78	0		0.78	**-**
Heavy	23	0	0		23	0	0	0		0	0	18	0		18	**-**
Heavy %	4.2%	0%	0%		4.2%	0%	0%	0%		0%	0%	2.7%	0%		2.7%	**-**
Lights	521	0	0		521	0	1	0		1	0	652	0		652	**-**
Lights %	95.8%	0%	0%		95.8%	0%	100%	0%		100%	0%	97.3%	0%		97.3%	**-**
Single-Unit Trucks	10	0	0		10	0	0	0		0	0	6	0		6	**-**
Single-Unit Trucks %	1.8%	0%	0%		1.8%	0%	0%	0%		0%	0%	0.9%	0%		0.9%	**-**
Buses	11	0	0		11	0	0	0		0	0	10	0		10	**-**
Buses %	2%	0%	0%		2%	0%	0%	0%		0%	0%	1.5%	0%		1.5%	**-**
Articulated Trucks	2	0	0		2	0	0	0		0	0	2	0		2	**-**
Articulated Trucks %	0.4%	0%	0%		0.4%	0%	0%	0%		0%	0%	0.3%	0%		0.3%	**-**
Pedestrians	-	-	-	0	-	-	-	-	4	-	-	-	-	1	-	**-**
Pedestrians%	-	-	-	0%		-	-	-	66.7%		-	-	-	16.7%		**-**
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	1	-	-	-	-	0	-	**-**
Bicycles on Crosswalk%	-	-	-	0%		-	-	-	16.7%		-	-	-	0%		**-**
Bicycles on Road	0	0	0	0	-	0	0	0	0	-	0	0	0	0	-	**-**
Bicycles on Road%	-	-	-	0%		-	-	-	0%		-	-	-	0%		**-**

Peak Hour: 04:30 PM - 05:30 PM Weather: Scattered Clouds (20.46 °C)

Start Time	N Approach QUEEN ST N					E Approach 51 QUEEN ST N (NORTH DRIVEWAY 1)					S Approach QUEEN ST N					Int. Total (15 min)
	Thru	Left	UTurn	Peds	Approach Total	Right	Left	UTurn	Peds	Approach Total	Right	Thru	UTurn	Peds	Approach Total	
16:30:00	146	2	0	0	148	0	2	0	1	2	0	139	0	0	139	289
16:45:00	139	1	0	0	140	0	0	0	7	0	0	138	0	0	138	278
17:00:00	173	0	0	0	173	0	1	0	2	1	0	170	0	0	170	344
17:15:00	186	0	0	0	186	1	1	0	3	2	0	150	0	0	150	338
Grand Total	644	3	0	0	647	1	4	0	13	5	0	597	0	0	597	**1249**
Approach%	99.5%	0.5%	0%		-	20%	80%	0%		-	0%	100%	0%		-	**-**
Totals %	51.6%	0.2%	0%		51.8%	0.1%	0.3%	0%		0.4%	0%	47.8%	0%		47.8%	**-**
PHF	0.87	0.38	0		0.87	0.25	0.5	0		0.63	0	0.88	0		0.88	**-**
Heavy	10	0	0		10	0	0	0		0	0	7	0		7	**-**
Heavy %	1.6%	0%	0%		1.5%	0%	0%	0%		0%	0%	1.2%	0%		1.2%	**-**
Lights	634	3	0		637	1	4	0		5	0	590	0		590	**-**
Lights %	98.4%	100%	0%		98.5%	100%	100%	0%		100%	0%	98.8%	0%		98.8%	**-**
Single-Unit Trucks	4	0	0		4	0	0	0		0	0	3	0		3	**-**
Single-Unit Trucks %	0.6%	0%	0%		0.6%	0%	0%	0%		0%	0%	0.5%	0%		0.5%	**-**
Buses	6	0	0		6	0	0	0		0	0	4	0		4	**-**
Buses %	0.9%	0%	0%		0.9%	0%	0%	0%		0%	0%	0.7%	0%		0.7%	**-**
Articulated Trucks	0	0	0		0	0	0	0		0	0	0	0		0	**-**
Articulated Trucks %	0%	0%	0%		0%	0%	0%	0%		0%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	0	-	-	-	-	10	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	0%		-	-	-	76.9%		-	-	-	0%		**-**
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	3	-	-	-	-	0	-	**-**
Bicycles on Crosswalk%	-	-	-	0%		-	-	-	23.1%		-	-	-	0%		**-**
Bicycles on Road	0	0	0	0	-	0	0	0	0	-	0	0	0	0	-	**-**
Bicycles on Road%	-	-	-	0%		-	-	-	0%		-	-	-	0%		**-**

BA Group
300 45 ST. CLAIR AVE W
TORONTO ONTARIO, M4V 1K9
CANADA

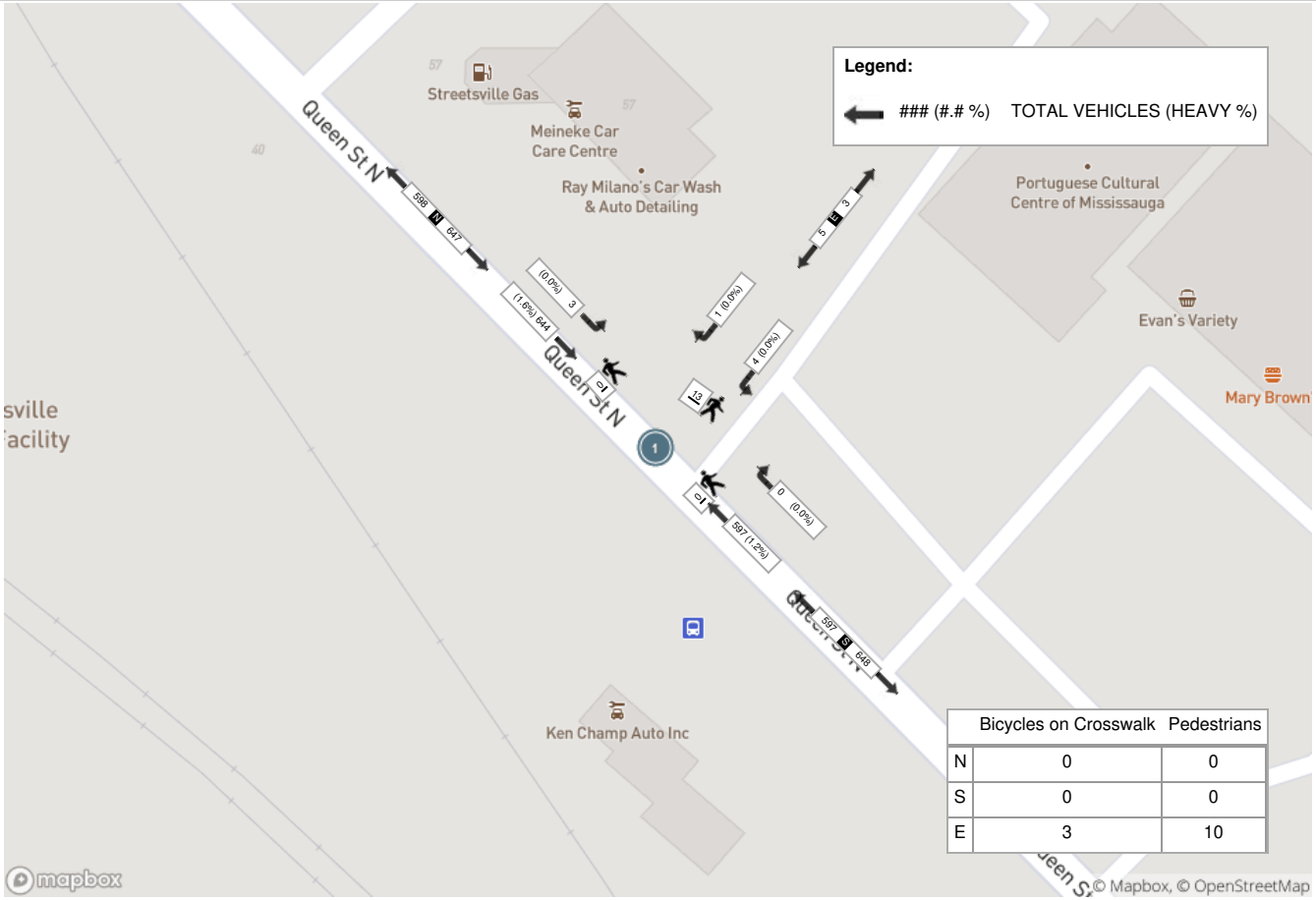
Peak Hour: 08:00 AM - 09:00 AM Weather: Clear Sky (13.73 °C)



	Bicycles on Crosswalk	Pedestrians
N	0	0
S	0	1
E	1	4

BA Group
300 45 ST. CLAIR AVE W
TORONTO ONTARIO, M4V 1K9
CANADA

Peak Hour: 04:30 PM - 05:30 PM Weather: Scattered Clouds (20.46 °C)



	Bicycles on Crosswalk	Pedestrians
N	0	0
S	0	0
E	3	10

Spectrum

Turning Movement Count
Location Name: QUEEN ST N & 51 QUEEN ST N (SOUTH DRIVEWAY 2)
Date: Thu, Sep 09, 2021 Deployment Lead: Theo Daglis

BA Group
300 45 ST. CLAIR AVE W
TORONTO ONTARIO, M4V 1K9
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Turning Movement Count (2 . QUEEN ST N & 51 QUEEN ST N (SOUTH DRIVEWAY 2))

Start Time	N Approach QUEEN ST N					E Approach 51 QUEEN ST N (SOUTH DRIVEWAY)					S Approach QUEEN ST N					Int. Total (15 min)	Int. Total (1 hr)
	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	UTurn S:S	Peds S:	Approach Total		
07:00:00	51	0	0	0	51	0	0	0	2	0	1	53	0	0	54	105	
07:15:00	84	0	0	0	84	0	0	0	3	0	0	85	0	0	85	169	
07:30:00	83	0	0	0	83	0	0	0	1	0	0	72	0	0	72	155	
07:45:00	118	0	0	0	118	0	0	0	1	0	0	120	0	0	120	238	667
08:00:00	121	0	0	0	121	0	0	0	1	0	0	140	0	0	140	261	823
08:15:00	134	0	0	0	134	0	0	0	1	0	1	216	0	0	217	351	1005
08:30:00	148	0	0	0	148	0	0	0	3	0	0	171	0	1	171	319	1169
08:45:00	143	0	0	0	143	0	0	0	0	0	0	144	0	0	144	287	1218
BREAK																	
16:00:00	135	1	0	0	136	0	0	0	0	0	0	126	0	0	126	262	
16:15:00	155	0	0	0	155	0	0	0	1	0	0	109	0	0	109	264	
16:30:00	148	0	0	0	148	0	0	0	1	0	0	139	0	0	139	287	
16:45:00	140	0	0	0	140	0	0	0	7	0	0	137	0	0	137	277	1090
17:00:00	174	0	0	0	174	0	0	0	2	0	1	170	0	0	171	345	1173
17:15:00	187	0	0	0	187	0	0	0	3	0	0	150	0	0	150	337	1246
17:30:00	140	1	0	0	141	0	0	0	2	0	0	135	0	0	135	276	1235
17:45:00	136	1	0	3	137	0	0	0	0	0	1	127	0	0	128	265	1223
Grand Total	2097	3	0	3	2100	0	0	0	28	0	4	2094	0	1	2098	**4198**	-
Approach%	99.9%	0.1%	0%		-	0%	0%	0%		-	0.2%	99.8%	0%		-	**-**	-
Totals %	50%	0.1%	0%		50%	0%	0%	0%		0%	0.1%	49.9%	0%		50%	**-**	-
Heavy	72	0	0		-	0	0	0		-	0	57	0		-	**-**	-
Heavy %	3.4%	0%	0%		-	0%	0%	0%		-	0%	2.7%	0%		-	**-**	-
Bicycles	2	0	0		-	0	0	0		-	0	2	0		-	**-**	-
Bicycle %	0.1%	0%	0%		-	0%	0%	0%		-	0%	0.1%	0%		-	**-**	-

BA Group
300 45 ST. CLAIR AVE W
TORONTO ONTARIO, M4V 1K9
CANADA

Peak Hour: 08:00 AM - 09:00 AM Weather: Clear Sky (13.73 °C)

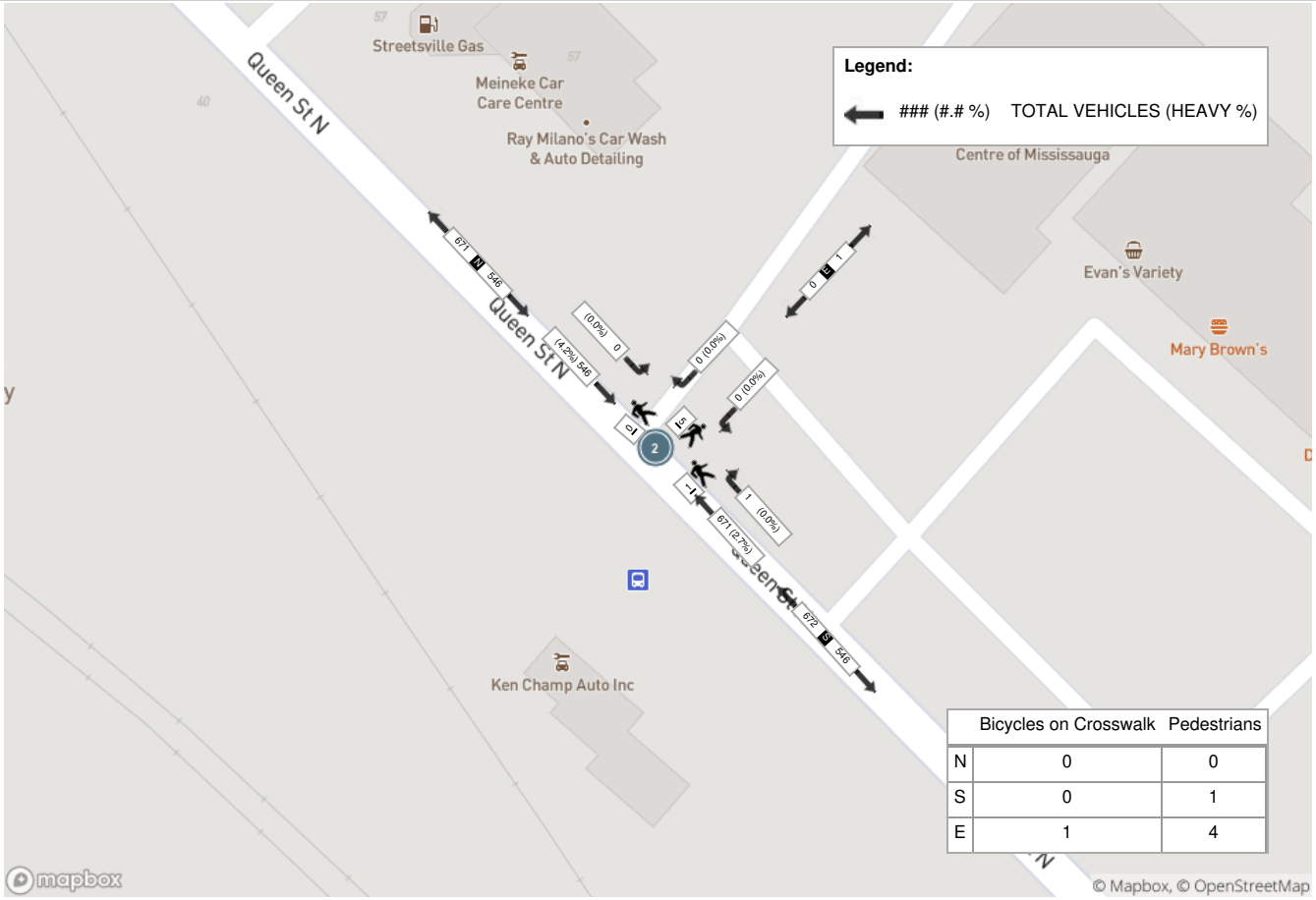
Start Time	N Approach QUEEN ST N					E Approach 51 QUEEN ST N (SOUTH DRIVEWAY)					S Approach QUEEN ST N					Int. Total (15 min)
	Thru	Left	UTurn	Peds	Approach Total	Right	Left	UTurn	Peds	Approach Total	Right	Thru	UTurn	Peds	Approach Total	
08:00:00	121	0	0	0	121	0	0	0	1	0	0	140	0	0	140	261
08:15:00	134	0	0	0	134	0	0	0	1	0	1	216	0	0	217	351
08:30:00	148	0	0	0	148	0	0	0	3	0	0	171	0	1	171	319
08:45:00	143	0	0	0	143	0	0	0	0	0	0	144	0	0	144	287
Grand Total	546	0	0	0	546	0	0	0	5	0	1	671	0	1	672	**1218**
Approach%	100%	0%	0%		-	0%	0%	0%		-	0.1%	99.9%	0%		-	**-**
Totals %	44.8%	0%	0%		44.8%	0%	0%	0%		0%	0.1%	55.1%	0%		55.2%	**-**
PHF	0.92	0	0		0.92	0	0	0		0	0.25	0.78	0		0.77	**-**
Heavy	23	0	0		23	0	0	0		0	0	18	0		18	**-**
Heavy %	4.2%	0%	0%		4.2%	0%	0%	0%		0%	0%	2.7%	0%		2.7%	**-**
Lights	523	0	0		523	0	0	0		0	1	653	0		654	**-**
Lights %	95.8%	0%	0%		95.8%	0%	0%	0%		0%	100%	97.3%	0%		97.3%	**-**
Single-Unit Trucks	10	0	0		10	0	0	0		0	0	6	0		6	**-**
Single-Unit Trucks %	1.8%	0%	0%		1.8%	0%	0%	0%		0%	0%	0.9%	0%		0.9%	**-**
Buses	11	0	0		11	0	0	0		0	0	10	0		10	**-**
Buses %	2%	0%	0%		2%	0%	0%	0%		0%	0%	1.5%	0%		1.5%	**-**
Articulated Trucks	2	0	0		2	0	0	0		0	0	2	0		2	**-**
Articulated Trucks %	0.4%	0%	0%		0.4%	0%	0%	0%		0%	0%	0.3%	0%		0.3%	**-**
Pedestrians	-	-	-	0	-	-	-	-	4	-	-	-	-	1	-	**-**
Pedestrians%	-	-	-	0%		-	-	-	66.7%		-	-	-	16.7%		**-**
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	1	-	-	-	-	0	-	**-**
Bicycles on Crosswalk%	-	-	-	0%		-	-	-	16.7%		-	-	-	0%		**-**
Bicycles on Road	0	0	0	0	-	0	0	0	0	-	0	0	0	0	-	**-**
Bicycles on Road%	-	-	-	0%		-	-	-	0%		-	-	-	0%		**-**

Peak Hour: 04:30 PM - 05:30 PM Weather: Scattered Clouds (20.46 °C)

Start Time	N Approach QUEEN ST N					E Approach 51 QUEEN ST N (SOUTH DRIVEWAY)					S Approach QUEEN ST N					Int. Total (15 min)
	Thru	Left	UTurn	Peds	Approach Total	Right	Left	UTurn	Peds	Approach Total	Right	Thru	UTurn	Peds	Approach Total	
16:30:00	148	0	0	0	148	0	0	0	1	0	0	139	0	0	139	287
16:45:00	140	0	0	0	140	0	0	0	7	0	0	137	0	0	137	277
17:00:00	174	0	0	0	174	0	0	0	2	0	1	170	0	0	171	345
17:15:00	187	0	0	0	187	0	0	0	3	0	0	150	0	0	150	337
Grand Total	649	0	0	0	649	0	0	0	13	0	1	596	0	0	597	**1246**
Approach%	100%	0%	0%		-	0%	0%	0%		-	0.2%	99.8%	0%		-	**-**
Totals %	52.1%	0%	0%		52.1%	0%	0%	0%		0%	0.1%	47.8%	0%		47.9%	**-**
PHF	0.87	0	0		0.87	0	0	0		0	0.25	0.88	0		0.87	**-**
Heavy	10	0	0		10	0	0	0		0	0	7	0		7	**-**
Heavy %	1.5%	0%	0%		1.5%	0%	0%	0%		0%	0%	1.2%	0%		1.2%	**-**
Lights	639	0	0		639	0	0	0		0	1	589	0		590	**-**
Lights %	98.5%	0%	0%		98.5%	0%	0%	0%		0%	100%	98.8%	0%		98.8%	**-**
Single-Unit Trucks	4	0	0		4	0	0	0		0	0	3	0		3	**-**
Single-Unit Trucks %	0.6%	0%	0%		0.6%	0%	0%	0%		0%	0%	0.5%	0%		0.5%	**-**
Buses	6	0	0		6	0	0	0		0	0	4	0		4	**-**
Buses %	0.9%	0%	0%		0.9%	0%	0%	0%		0%	0%	0.7%	0%		0.7%	**-**
Articulated Trucks	0	0	0		0	0	0	0		0	0	0	0		0	**-**
Articulated Trucks %	0%	0%	0%		0%	0%	0%	0%		0%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	0	-	-	-	-	10	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	0%		-	-	-	76.9%		-	-	-	0%		**-**
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	3	-	-	-	-	0	-	**-**
Bicycles on Crosswalk%	-	-	-	0%		-	-	-	23.1%		-	-	-	0%		**-**
Bicycles on Road	0	0	0	0	-	0	0	0	0	-	0	0	0	0	-	**-**
Bicycles on Road%	-	-	-	0%		-	-	-	0%		-	-	-	0%		**-**

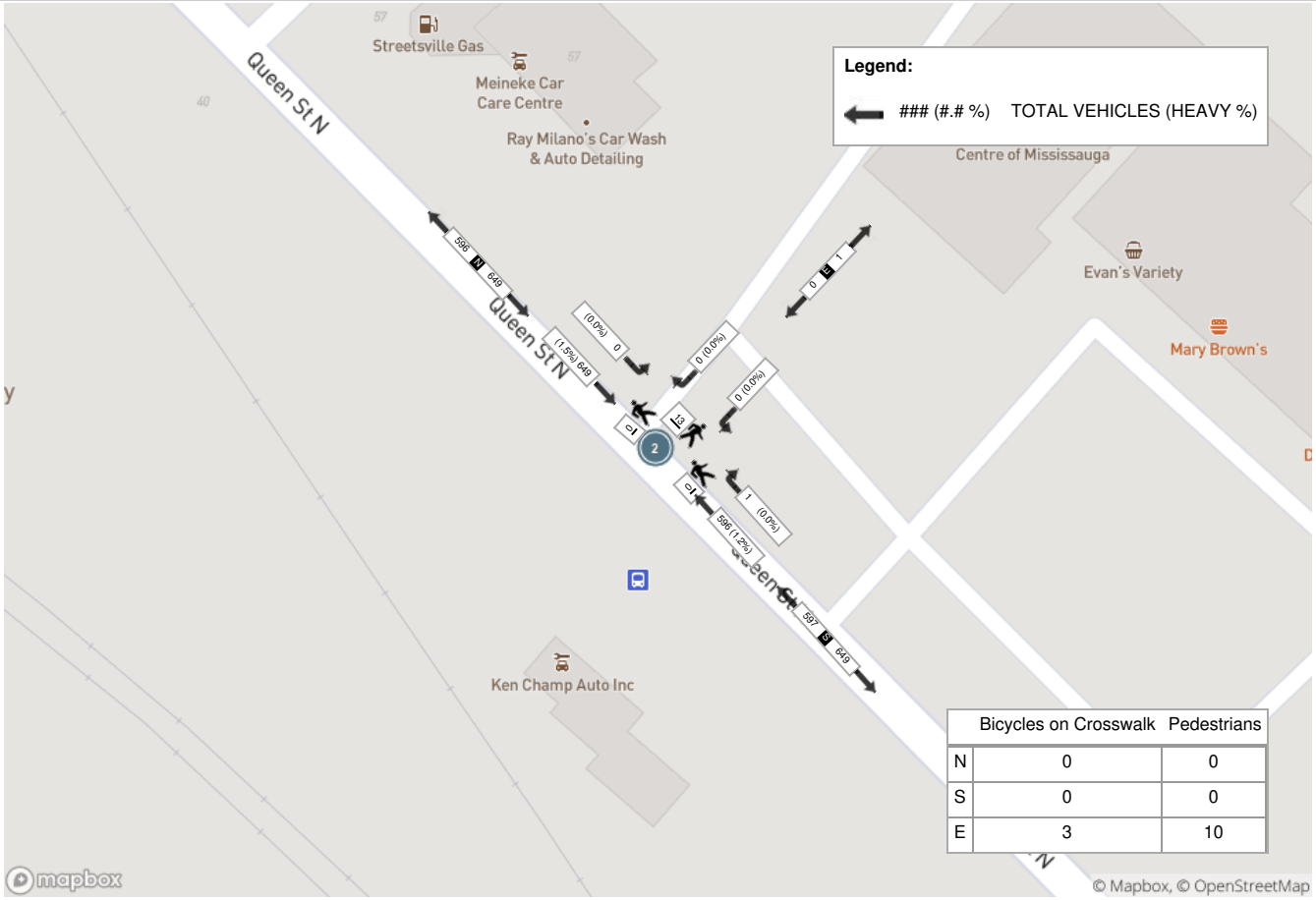
BA Group
300 45 ST. CLAIR AVE W
TORONTO ONTARIO, M4V 1K9
CANADA

Peak Hour: 08:00 AM - 09:00 AM Weather: Clear Sky (13.73 °C)



	Bicycles on Crosswalk	Pedestrians
N	0	0
S	0	1
E	1	4

Peak Hour: 04:30 PM - 05:30 PM Weather: Scattered Clouds (20.46 °C)



	Bicycles on Crosswalk	Pedestrians
N	0	0
S	0	0
E	3	10

Appendix G:
Corridor Growth Calculations

Date: October 19, 2021
From: Chris Asmanis, BA Consulting Group Ltd.
Re: Growth Rates Data Request – Britannia Road at Queen Street

Chris,
Here are the estimated CAGR values for Britannia Road at Queen Street:

2016 – 2021	2021 – 2031
0.5%	0.5%

These growth rates are estimated based on multiple sources including Peel Travel Demand forecasting model, ATR and land use/forecasts data. Please note that this area may be further affected by future growth (after 2031 and beyond). Please use your professional judgement when using these values.

If you require further assistance, please contact me at robert.jay@peelregion.ca.

Regards,

Robbie Jay
Transportation Planner, Transportation System Planning
Transportation Division, Public Works Services, Region of Peel
10 Peel Centre Drive, Suite B, 4th Floor
Brampton, ON L6T 4B9
W: (905) 791-7800 x6456
E: robert.jay@peelregion.ca

Chris Asmanis

From: Tyler Xuereb <Tyler.Xuereb@mississauga.ca>
Sent: Monday, October 18, 2021 2:24 PM
To: Chris Asmanis
Subject: RE: Growth Rate Request - Queen Street / Britannia Road West

Hi Chris,

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

Queen Street

	Compounded Annual Growth from Existing to 2031	
	NB	SB
AM Peak	0.5%	1.5%
PM Peak	0.5%	0.5%

Regards,

Tyler Xuereb
Transportation Planning Analyst
T 905-615-3200 ext.4783
Tyler.xuereb@mississauga.ca

City of Mississauga | Transportation and Works Department,
Infrastructure Planning and Engineering Services Division

Please consider the environment before printing.

From: Chris Asmanis <chris.asmanis@bagroup.com>
Sent: Thursday, October 14, 2021 9:12 AM
To: Tyler Xuereb <Tyler.Xuereb@mississauga.ca>
Subject: RE: Growth Rate Request - Queen Street / Britannia Road West

Hi Tyler,

No worries, I'll do some digging and see. Will await the rates for Queen Street!

Thanks again,
Chris

From: Tyler Xuereb <Tyler.Xuereb@mississauga.ca>
Sent: Thursday, October 14, 2021 9:05 AM
To: Chris Asmanis <chris.asmanis@bagroup.com>
Subject: RE: Growth Rate Request - Queen Street / Britannia Road West

Hi Chris,

Thanks for the information!

Unfortunately, I do not know the contact at the Region for growth rates.

Regards,

Tyler Xuereb
Transportation Planning Analyst
T 905-615-3200 ext.4783
Tyler.xuereb@mississauga.ca

City of Mississauga | Transportation and Works Department,
Infrastructure Planning and Engineering Services Division

Please consider the environment before printing.

From: Chris Asmanis <chris.asmanis@bagroup.com>
Sent: Thursday, October 14, 2021 8:58 AM
To: Tyler Xuereb <Tyler.Xuereb@mississauga.ca>
Subject: RE: Growth Rate Request - Queen Street / Britannia Road West

Hi Tyler,

Thanks for the quick reply. Please see the attached correspondence regarding the Site and ToR. The horizon years for our study are 2026 and 2031.

Do you have a contact that I could reach out to at Peel Region for the rates along Britannia Road?

Thanks,
Chris

Chris Asmanis
Transportation Analyst

BA Consulting Group Ltd.
300 - 45 St. Clair Ave. W.
Toronto, ON M4V 1K9

TEL 416 961 7110 x201
EMAIL chris.asmanis@bagroup.com

From: Tyler Xuereb <Tyler.Xuereb@mississauga.ca>
Sent: Thursday, October 14, 2021 7:49 AM
To: Chris Asmanis <chris.asmanis@bagroup.com>
Subject: RE: Growth Rate Request - Queen Street / Britannia Road West

Good Morning Chris,

Thank you for your email.

I can provide you with growth rates along Queen Street but Britannia Road is a regional road and as such, you will have to contact them for the rates along Britannia.

I just have a few questions in regards to your analysis.

-What is the location of your proposed development?
-What are your horizon years?
-What background developments are you including in your analysis?
-Have you submitted a ToR to the City and have you received comments back?

Regards,

Tyler Xuereb
Transportation Planning Analyst
T 905-615-3200 ext.4783
Tyler.xuereb@mississauga.ca

City of Mississauga | Transportation and Works Department,
Infrastructure Planning and Engineering Services Division

Please consider the environment before printing.

From: Chris Asmanis <chris.asmanis@bagroup.com>
Sent: Wednesday, October 13, 2021 3:37 PM
To: Tyler Xuereb <Tyler.Xuereb@mississauga.ca>
Subject: Growth Rate Request - Queen Street / Britannia Road West

Hi Tyler,

We are working on a development proposal in Streetsville and require some corridor growth rates for our analysis.

If possible, are you able to provide growth rates for Queen Street (North/South) & Britannia Road West?

Thanks,
Chris

Chris Asmanis
Transportation Analyst

BA Consulting Group Ltd.
300 - 45 St. Clair Ave. W.
Toronto, ON M4V 1K9

TEL 416 961 7110 x201
EMAIL chris.asmanis@bagroup.com

Appendix H:
Signal Timing Plans (STPs)

REGIONAL MUNICIPALITY OF PEEL

Traffic Signal Timing Parameters

Database Date	**April 30, 2021**	Region of Peel working with you	**Prepared Date**	**April 30, 2021**	
Database Rev	**iNET**		**Completed By**	**BL**	
Timing Card / Field rev	**iNET**		**Checked By**	**MA**	

Location — **Britannia Road at Queen Street**

Phase #	Street Name - Direction	Vehicle Minimum (s)	Pedestrian Minimum (s)		Amber (s)	All Red (s)	TIME PERIOD (s) SPLITS = Green+Amber+All Red MAX = Green only		
			WALK	FDWALK			AM SPLITS	OFF SPLITS	PM SPLITS
1	Britannia Road - WB PP LT	8	0	0	3	0	11	13	11
2	Britannia Road - EB	12	8	20	4	3.1	83	80	74
3	Queen Street - SB PP LT	8	0	0	3	0	13	13	17
4	Queen Street - NB	12	9	22	4	3.9	53	54	58
5	Britannia Road - EB PP LT	8	0	0	3	0	13	13	13
6	Britannia Road - WB	12	8	20	4	3.1	81	80	72
7	Queen Street - NB PP LT	8	0	0	3	0	0	19	14
8	Queen Street - SB	12	9	22	4	3.9	66	48	61

System Control
Yes

Semi-Actuated Mode
Yes

TIME (M-F)	PEAK	CYCLE LENGTH (s)	OFFSET (s)
06:00 - 09:30	AM	160	155
09:30 - 15:00 19:30 - 00:00	OFF	160	69
15:00 - 19:30	PM	160	114

REGIONAL MUNICIPALITY OF PEEL

Traffic Signal Timing Parameters

Database Date	**January 7, 2021**	Region of Peel working with you	**Prepared Date**	**April 30, 2021**	
Database Rev	**iNET**		**Completed By**	**BL**	
Timing Card / Field rev	**iNET**		**Checked By**	**MA**	
Location	**Britannia Road @ Ellesboro Drive**				

Phase #	Street Name - Direction	Vehicle Minimum (s)	Pedestrian Minimum (s)		Amber (s)	All Red (s)	TIME PERIOD (s) SPLITS = Green+Amber+All Red MAX = Green only		
			WALK	FDWALK			AM SPLITS	OFF SPLITS	PM SPLITS
1	Not in use	-	-	-	-	-	-	-	-
2	Britannia Road - EB	8	10	21	4	2.1	115	107	115
3	Not in use	-	-	-	-	-	-	-	-
4	Ring Balance / Computer Phase	13	10	20	4	2	45	53	45
5	Not in use	-	-	-	-	-	-	-	-
6	Britannia Road - WB	8	10	21	4	2.1	115	107	115
7	Not in use	-	-	-	-	-	-	-	-
8	Ellesboro Drive - SB	13	10	20	4	2	45	53	45

System Control
Yes

Semi-Actuated Mode
Yes

TIME (M-F)	PEAK	CYCLE LENGTH (s)	OFFSET (s)
06:00 - 09:30	AM	160	139
09:30 - 15:00 19:30 - 00:00	OFF	160	59
15:00 - 19:30	PM	160	96

Region of Peel
working with you

REGIONAL MUNICIPALITY OF PEEL
Traffic Signal Timing Parameters

Database Date	April 30, 2021
Prepared Date	April 30, 2021

Completed By	BL
Checked By	MA

Intersection Name
BRITANNIA ROAD at Queen Street

System Control	Yes
Semi Actuated	Yes

Phase #	Street Name - Direction	Min Green	Max Green	Min Ped Times		Amber	All-Red
				Walk	FDWalk		
1	Britannia Road - WB PP LT	8	12	0	0	3	0
2	Britannia Road - EB	12	40	8	20	4	3.1
3	Queen Street - SB PP LT	8	12	0	0	3	0
4	Queen Street - NB	12	40	9	22	4	3.9
5	Britannia Road - EB PP LT	8	17	0	0	3	0
6	Britannia Road - WB	12	40	8	20	4	3.1
7	Queen Street - NB PP LT	8	12	0	0	3	0
8	Queen Street - SB	12	40	9	22	4	3.9

Day Plan			
Event	Hour	Minute	Action
1	0	0	8
1	6	0	1
1	9	30	2
1	15	0	3
1	19	30	2
1	3	0	7
1	0	0	0
1	0	0	0

Actions	
Action	Pattern
1	Pattern 1
2	Pattern 2
3	Pattern 3
4	Pattern 4
5	Pattern 5
6	Pattern 6
7	Free
8	Free

Patterns			
Pattern	Cycle	Offset	Split
1	160	155	1
1	160	69	2
1	160	114	3
1	0	0	4
1	0	0	5
1	0	0	6
1	0	0	7
1	0	0	8

Split Parameters (Green+Amber+All-Red)

Split 1	
Phase	Time
1	11
1	83
1	13
1	53
1	13
1	81
1	0
1	66

Split 2	
Phase	Time
1	13
1	80
1	13
1	54
1	13
1	80
1	19
1	48

Split 3	
Phase	Time
1	11
1	74
1	17
1	58
1	13
1	72
1	14
1	61

Split 4	
Phase	Time
1	0
1	0
1	0
1	0
1	0
1	0
1	0
1	0

Split 5	
Phase	Time
1	0
1	0
1	0
1	0
1	0
1	0
1	0
1	0

Split 6	
Phase	Time
1	0
1	0
1	0
1	0
1	0
1	0
1	0
1	0

Split 7	
Phase	Time
1	0
1	0
1	0
1	0
1	0
1	0
1	0
1	0

Split 8	
Phase	Time
1	0
1	0
1	0
1	0
1	0
1	0
1	0
1	0

Split 9	
Phase	Time
1	0
1	0
1	0
1	0
1	0
1	0
1	0
1	0

Split 10	
Phase	Time
1	0
1	0
1	0
1	0
1	0
1	0
1	0
1	0

Notes

Times are in seconds unless otherwise noted.

When intersection uses the "Free" pattern, use Max Green times instead of Split times.

Region of Peel
working with you

REGIONAL MUNICIPALITY OF PEEL
Traffic Signal Timing Parameters

Database Date	January 7, 2021
Prepared Date	April 30, 2021

Completed By	BL
Checked By	MA

Intersection Name
BRITANNIA ROAD at Ellesboro Drive

System Control	Yes
Semi Actuated	Yes

Phase #	Street Name - Direction	Min Green	Max Green	Min Ped Times		Amber	All-Red
				Walk	FDWalk		
1	Not in use	0	0	0	0	3	0
2	Britannia Road - EB	8	35	10	21	4	2.1
3	Not in use	0	0	0	0	3	0
4	Ring Balance / Computer Phase	13	30	10	20	4	2
5	Not in use	0	0	0	0	3	0
6	Britannia Road - WB	8	35	10	21	4	2.1
7	Not in use	0	0	0	0	3	0
8	Ellesboro Drive - SB	13	30	10	20	4	2

Day Plan			
Event	Hour	Minute	Action
1	0	0	8
1	6	0	1
1	9	30	2
1	15	0	3
1	19	30	2
1	3	0	7
1	0	0	0
1	0	0	0

Actions	
Action	Pattern
1	Pattern 1
2	Pattern 2
3	Pattern 3
4	Pattern 4
5	Pattern 5
6	Pattern 6
7	Free
8	Free

Patterns			
Pattern	Cycle	Offset	Split
1	160	139	1
1	160	59	2
1	160	96	3
1	0	0	4
1	0	0	5
1	0	0	6
1	0	0	7
1	0	0	8

Split Parameters (Green+Amber+All-Red)

Split 1	
Phase	Time
1	0
1	115
1	0
1	45
1	0
1	115
1	0
1	45

Split 2	
Phase	Time
1	0
1	107
1	0
1	53
1	0
1	107
1	0
1	53

Split 3	
Phase	Time
1	0
1	115
1	0
1	45
1	0
1	115
1	0
1	45

Split 4	
Phase	Time
1	0
1	0
1	0
1	0
1	0
1	0
1	0
1	0

Split 5	
Phase	Time
1	0
1	0
1	0
1	0
1	0
1	0
1	0
1	0

Split 6	
Phase	Time
1	0
1	0
1	0
1	0
1	0
1	0
1	0
1	0

Split 7	
Phase	Time
1	0
1	0
1	0
1	0
1	0
1	0
1	0
1	0

Split 8	
Phase	Time
1	0
1	0
1	0
1	0
1	0
1	0
1	0
1	0

Split 9	
Phase	Time
1	0
1	0
1	0
1	0
1	0
1	0
1	0
1	0

Split 10	
Phase	Time
1	0
1	0
1	0
1	0
1	0
1	0
1	0
1	0

Notes

Times are in seconds unless otherwise noted.

When intersection uses the "Free" pattern, use Max Green times instead of Split times.

Appendix I:
Synchro Analysis Worksheets

HCM Unsignalized Intersection Capacity Analysis
1: Queen Street North & Matlock Ave 06/28/2023

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	30	20	955	40	15	550
Future Volume (Veh/h)	30	20	955	40	15	550
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	33	22	1038	43	16	598
Pedestrians	1					
Lane Width (m)	3.5					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type			TWLTL			None
Median storage veh)			2			
Upstream signal (m)			313			
pX, platoon unblocked	0.90	0.90			0.90	
vC, conflicting volume	1392	542			1082	
vC1, stage 1 conf vol	1060					
vC2, stage 2 conf vol	331					
vCu, unblocked vol	1209	263			864	
tC, single (s)	7.3	7.4			4.9	
tC, 2 stage (s)	6.3					
tF (s)	3.7	3.5			2.6	
p0 queue free %	88	96			97	
cM capacity (veh/h)	280	602			511	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	55	692	389	16	299	299
Volume Left	33	0	0	16	0	0
Volume Right	22	0	43	0	0	0
cSH	356	1700	1700	511	1700	1700
Volume to Capacity	0.15	0.41	0.23	0.03	0.18	0.18
Queue Length 95th (m)	4.3	0.0	0.0	0.8	0.0	0.0
Control Delay (s)	17.0	0.0	0.0	12.3	0.0	0.0
Lane LOS	C			B		
Approach Delay (s)	17.0	0.0		0.3		
Approach LOS	C					

Intersection Summary				
Average Delay	0.6			
Intersection Capacity Utilization	37.7%	ICU Level of Service		A
Analysis Period (min)	15			

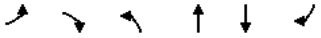
HCM Unsignalized Intersection Capacity Analysis
2: Queen Street North & 40 Queen St N Driveway/53 Queen St Driveway 06/28/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	0	0	0	0	995	0	0	580	0
Future Volume (Veh/h)	0	0	0	0	0	0	0	995	0	0	580	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	0	0	0	0	0	0	0	1131	0	0	659	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (m)								213				
pX, platoon unblocked	0.87	0.87		0.87	0.87	0.87				0.87		
vC, conflicting volume	1224	1790	330	1460	1790	566	659			1131		
vC1, stage 1 conf vol	659	659		1131	1131							
vC2, stage 2 conf vol	566	1131		330	659							
vCu, unblocked vol	960	1610	330	1231	1610	203	659			852		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	100	100	100	100			100		
cM capacity (veh/h)	383	275	672	265	275	706	939			692		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	0	0	0	754	377	0	439	220
Volume Left	0	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	0	0
cSH	1700	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.00	0.00	0.44	0.22	0.00	0.26	0.13
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	A	A						
Approach Delay (s)	0.0	0.0	0.0			0.0		
Approach LOS	A	A						

Intersection Summary				
Average Delay	0.0			
Intersection Capacity Utilization	30.8%	ICU Level of Service		A
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
3: Queen Street North & 40 Queen St S Driveway 06/28/2023

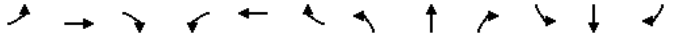


Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	995	580	0
Future Volume (Veh/h)	0	0	0	995	580	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	0	0	0	1144	667	0
Pedestrians	3					
Lane Width (m)	3.5					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (m)				186		
pX, platoon unblocked	0.86					
vC, conflicting volume	1242	336	670			
vC1, stage 1 conf vol	670					
vC2, stage 2 conf vol	572					
vCu, unblocked vol	966	336	670			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	426	664	927			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	0	0	572	572	445	222
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0
cSH	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.00	0.34	0.34	0.26	0.13
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	A					
Approach Delay (s)	0.0	0.0			0.0	
Approach LOS	A					

Intersection Summary				
Average Delay	0.0			
Intersection Capacity Utilization	30.8%	ICU Level of Service		A
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
4: Queen Street North & Petro Canada N Driveway/Existing Site Driveway 06/28/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	5	0	0	5	995	10	5	565	10
Future Volume (Veh/h)	0	0	0	5	0	0	5	995	10	5	565	10
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	0	0	0	6	0	0	6	1144	11	6	649	11
Pedestrians		3			6			1				
Lane Width (m)		3.7			3.7			3.6				
Walking Speed (m/s)		1.2			1.2			1.2				
Percent Blockage		0			1			0				
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (m)								159				
pX, platoon unblocked	0.86	0.86		0.86	0.86	0.86				0.86		
vC, conflicting volume	1254	1842	334	1505	1842	584	663			1161		
vC1, stage 1 conf vol	670	670		1168	1168							
vC2, stage 2 conf vol	584	1173		338	675							
vCu, unblocked vol	967	1653	334	1260	1653	188	663			860		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	98	100	100	99			99		
cM capacity (veh/h)	373	260	665	253	263	708	933			675		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	0	6	6	763	392	6	433	227
Volume Left	0	6	6	0	0	6	0	0
Volume Right	0	0	0	0	11	0	0	11
cSH	1700	253	933	1700	1700	675	1700	1700
Volume to Capacity	0.00	0.02	0.01	0.45	0.23	0.01	0.25	0.13
Queue Length 95th (m)	0.0	0.6	0.2	0.0	0.0	0.2	0.0	0.0
Control Delay (s)	0.0	19.6	8.9	0.0	0.0	10.4	0.0	0.0
Lane LOS	A	C	A			B		
Approach Delay (s)	0.0	19.6	0.0			0.1		
Approach LOS	A	C						

Intersection Summary				
Average Delay	0.1			
Intersection Capacity Utilization	38.2%	ICU Level of Service		A
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
5: Queen Street North & Petro Canada S Driveway

06/28/2023

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	5	0	1010	560	10
Future Volume (Veh/h)	0	5	0	1010	560	10
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	0	6	0	1148	636	11
Pedestrians	3			2		
Lane Width (m)	3.5			3.6		
Walking Speed (m/s)	1.2			1.2		
Percent Blockage	0			0		
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (m)				127		
pX, platoon unblocked	0.85					
vC, conflicting volume	1218	328	650			
vC1, stage 1 conf vol	644					
vC2, stage 2 conf vol	574					
vCu, unblocked vol	914	328	650			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	100			
cM capacity (veh/h)	441	670	943			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	6	0	574	574	424	223
Volume Left	0	0	0	0	0	0
Volume Right	6	0	0	0	0	11
cSH	670	1700	1700	1700	1700	1700
Volume to Capacity	0.01	0.00	0.34	0.34	0.25	0.13
Queue Length 95th (m)	0.2	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	10.4	0.0	0.0	0.0	0.0	0.0
Lane LOS	B					
Approach Delay (s)	10.4	0.0			0.0	
Approach LOS	B					

Intersection Summary				
Average Delay		0.0		
Intersection Capacity Utilization		38.6%	ICU Level of Service	A
Analysis Period (min)		15		

Timings
6: Queen Street South/Queen Street North & Britannia Rd West

06/28/2023

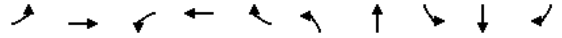
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	215	1535	80	610	325	95	470	140	285	140
Future Volume (vph)	215	1535	80	610	325	95	470	140	285	140
Turn Type	pm+pt	NA	pm+pt	NA	Perm	Perm	NA	pm+pt	NA	Perm
Protected Phases	5	2	1	6			4	3	8	
Permitted Phases	2		6		6	4		8		8
Detector Phase	5	2	1	6	6	4	4	3	8	8
Switch Phase										
Minimum Initial (s)	8.0	12.0	8.0	12.0	12.0	12.0	12.0	8.0	12.0	12.0
Minimum Split (s)	11.0	35.1	11.0	35.1	35.1	38.9	38.9	11.0	38.9	38.9
Total Split (s)	13.0	83.0	11.0	81.0	81.0	53.0	53.0	13.0	66.0	66.0
Total Split (%)	8.1%	51.9%	6.9%	50.6%	50.6%	33.1%	33.1%	8.1%	41.3%	41.3%
Yellow Time (s)	3.0	4.0	3.0	4.0	4.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	3.1	0.0	3.1	3.1	3.9	3.9	0.0	3.9	3.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	7.1	3.0	7.1	7.1	7.9	7.9	3.0	7.9	7.9
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		
Recall Mode	None	C-Max	None	C-Max	C-Max	None	None	None	None	None
Act Effct Green (s)	102.5	86.5	96.7	83.1	83.1	33.0	33.0	50.9	46.0	46.0
Actuated g/C Ratio	0.64	0.54	0.60	0.52	0.52	0.21	0.21	0.32	0.29	0.29
v/c Ratio	0.42	0.86	0.54	0.34	0.36	0.47	0.82	0.78	0.54	0.28
Control Delay	15.0	37.7	45.3	21.9	4.1	62.4	68.2	68.7	51.3	6.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.0	37.7	45.3	21.9	4.1	62.4	68.2	68.7	51.3	6.8
LOS	B	D	D	C	A	E	E	E	D	A
Approach Delay		35.1		18.0			67.4		44.6	
Approach LOS		D		B			E		D	

Intersection Summary			
Cycle Length: 160			
Actuated Cycle Length: 160			
Offset: 13 (8%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 120			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.86			
Intersection Signal Delay: 37.6		Intersection LOS: D	
Intersection Capacity Utilization 103.9%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 6: Queen Street South/Queen Street North & Britannia Rd West

Queues
6: Queen Street South/Queen Street North & Britannia Rd West

06/28/2023



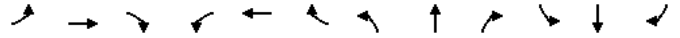
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	215	1635	80	610	325	95	595	140	285	140
v/c Ratio	0.42	0.86	0.54	0.34	0.36	0.47	0.82	0.78	0.54	0.28
Control Delay	15.0	37.7	45.3	21.9	4.1	62.4	68.2	68.7	51.3	6.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.0	37.7	45.3	21.9	4.1	62.4	68.2	68.7	51.3	6.8
Queue Length 50th (m)	27.9	236.6	10.9	62.4	12.8	28.2	97.8	34.9	80.7	0.0
Queue Length 95th (m)	46.4	#334.8	24.2	86.8	32.3	46.0	114.3	#56.0	104.9	16.2
Internal Link Dist (m)		110.7		83.1			135.0		103.4	
Turn Bay Length (m)	95.0		60.0		45.0	40.0		35.0		
Base Capacity (vph)	510	1910	147	1772	904	277	981	180	670	603
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.42	0.86	0.54	0.34	0.36	0.34	0.61	0.78	0.43	0.23

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
6: Queen Street South/Queen Street North & Britannia Rd West

06/28/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	215	1535	100	80	610	325	95	470	125	140	285	140
Future Volume (vph)	215	1535	100	80	610	325	95	470	125	140	285	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	3.0	7.1		3.0	7.1	7.1	7.9	7.9		3.0	7.9	7.9
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95		1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.96	1.00	0.99		1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	0.99	1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1745	3527		1700	3411	1481	1629	3430		1682	1847	1416
Flt Permitted	0.36	1.00		0.05	1.00	1.00	0.58	1.00		0.17	1.00	1.00
Satd. Flow (perm)	661	3527		86	3411	1481	986	3430		297	1847	1416
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	215	1535	100	80	610	325	95	470	125	140	285	140
RTOR Reduction (vph)	0	3	0	0	0	134	0	17	0	0	0	100
Lane Group Flow (vph)	215	1632	0	80	610	191	95	578	0	140	285	40
Confl. Peds. (#/hr)	14		24	24		14	14		18	18		14
Heavy Vehicles (%)	2%	2%	2%	5%	7%	4%	8%	2%	3%	6%	4%	9%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Perm	NA		pm+pt	NA	Perm
Protected Phases	5	2		1	6			4		3	8	
Permitted Phases	2			6		6	4			8		8
Actuated Green, G (s)	99.0	86.5		92.7	83.2	83.2	33.0	33.0		46.0	46.0	46.0
Effective Green, g (s)	99.0	86.5		92.7	83.2	83.2	33.0	33.0		46.0	46.0	46.0
Actuated g/C Ratio	0.62	0.54		0.58	0.52	0.52	0.21	0.21		0.29	0.29	0.29
Clearance Time (s)	3.0	7.1		3.0	7.1	7.1	7.9	7.9		3.0	7.9	7.9
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	495	1906		145	1773	770	203	707		171	531	407
v/s Ratio Prot	c0.03	c0.46		c0.03	0.18			0.17		c0.05	0.15	
v/s Ratio Perm	0.23			0.29		0.13	0.10			c0.18		0.03
v/c Ratio	0.43	0.86		0.55	0.34	0.25	0.47	0.82		0.82	0.54	0.10
Uniform Delay, d1	13.9	31.4		29.2	22.4	21.2	55.8	60.6		46.8	48.0	41.8
Progression Factor	1.00	1.00		1.30	0.90	0.71	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.6	5.2		4.3	0.5	0.7	1.7	7.3		25.3	1.0	0.1
Delay (s)	14.6	36.6		42.4	20.7	15.7	57.5	67.9		72.0	49.1	41.9
Level of Service	B	D		D	C	B	E	E		E	D	D
Approach Delay (s)		34.1			20.8			66.5			53.0	
Approach LOS		C			C			E			D	

Intersection Summary					
HCM 2000 Control Delay	38.8	HCM 2000 Level of Service	D		
HCM 2000 Volume to Capacity ratio	0.84				
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	21.0		
Intersection Capacity Utilization	103.9%	ICU Level of Service	G		
Analysis Period (min)	15				
c Critical Lane Group					

HCM Unsignalized Intersection Capacity Analysis
7: Arch Rd & Britannia Rd West

06/28/2023

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1795	5	10	1010	5	10
Future Volume (Veh/h)	1795	5	10	1010	5	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	1795	5	10	1010	5	10
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			TWLTL		
Median storage veh)				2		
Upstream signal (m)	107			182		
pX, platoon unblocked			0.60		0.62	0.60
vC, conflicting volume			1800		2322	900
vC1, stage 1 conf vol					1798	
vC2, stage 2 conf vol					525	
vCu, unblocked vol			989		1515	0
tC, single (s)			4.1		6.8	7.1
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.4
p0 queue free %			98		97	98
cM capacity (veh/h)			422		185	635

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	1197	603	10	505	505	15
Volume Left	0	0	10	0	0	5
Volume Right	0	5	0	0	0	10
cSH	1700	1700	422	1700	1700	351
Volume to Capacity	0.70	0.35	0.02	0.30	0.30	0.04
Queue Length 95th (m)	0.0	0.0	0.6	0.0	0.0	1.1
Control Delay (s)	0.0	0.0	13.7	0.0	0.0	15.7
Lane LOS			B			C
Approach Delay (s)	0.0		0.1			15.7
Approach LOS						C

Intersection Summary				
Average Delay	0.1			
Intersection Capacity Utilization	59.8%	ICU Level of Service		B
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
8: Earl St & Britannia Rd West

06/28/2023

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1805	0	5	1015	5	20
Future Volume (Veh/h)	1805	0	5	1015	5	20
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	1805	0	5	1015	5	20
Pedestrians					7	
Lane Width (m)					3.5	
Walking Speed (m/s)					1.2	
Percent Blockage					1	
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (m)	219			71		
pX, platoon unblocked			0.59		0.62	0.59
vC, conflicting volume			1812		2330	910
vC1, stage 1 conf vol					1812	
vC2, stage 2 conf vol					518	
vCu, unblocked vol			992		1475	0
tC, single (s)			5.4		6.8	7.0
tC, 2 stage (s)					5.8	
tF (s)			2.9		3.5	3.4
p0 queue free %			98		97	97
cM capacity (veh/h)			238		182	630

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	1203	602	5	508	508	25
Volume Left	0	0	5	0	0	5
Volume Right	0	0	0	0	0	20
cSH	1700	1700	238	1700	1700	422
Volume to Capacity	0.71	0.35	0.02	0.30	0.30	0.06
Queue Length 95th (m)	0.0	0.0	0.5	0.0	0.0	1.5
Control Delay (s)	0.0	0.0	20.4	0.0	0.0	14.1
Lane LOS			C			B
Approach Delay (s)	0.0		0.1			14.1
Approach LOS						B

Intersection Summary				
Average Delay	0.2			
Intersection Capacity Utilization	59.9%	ICU Level of Service		B
Analysis Period (min)	15			

Timings
9: Britannia Rd West & Ellesboro Dr

06/28/2023

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	30	1795	990	60	30
Future Volume (vph)	30	1795	990	60	30
Turn Type	Perm	NA	NA	Perm	Perm
Protected Phases		2	6		
Permitted Phases	2			8	8
Detector Phase	2	2	6	8	8
Switch Phase					
Minimum Initial (s)	8.0	8.0	8.0	13.0	13.0
Minimum Split (s)	37.1	37.1	37.1	36.0	36.0
Total Split (s)	115.0	115.0	115.0	45.0	45.0
Total Split (%)	71.9%	71.9%	71.9%	28.1%	28.1%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.1	2.1	2.1	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.0	6.0
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	C-Max	C-Max	C-Max	None	None
Act Effct Green (s)	139.5	139.5	139.5	13.4	13.4
Actuated g/C Ratio	0.87	0.87	0.87	0.08	0.08
v/c Ratio	0.07	0.58	0.36	0.40	0.20
Control Delay	1.1	1.7	2.9	77.8	23.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	1.1	1.7	2.9	77.8	23.8
LOS	A	A	A	E	C
Approach Delay		1.7	2.9	59.8	
Approach LOS		A	A	E	

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.58
Intersection Signal Delay: 3.9 — Intersection LOS: A
Intersection Capacity Utilization 75.2% — ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 9: Britannia Rd West & Ellesboro Dr

Queues
9: Britannia Rd West & Ellesboro Dr

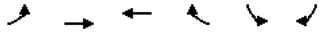
06/28/2023

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	30	1795	1060	60	30
v/c Ratio	0.07	0.58	0.36	0.40	0.20
Control Delay	1.1	1.7	2.9	77.8	23.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	1.1	1.7	2.9	77.8	23.8
Queue Length 50th (m)	0.7	27.4	34.0	19.5	0.0
Queue Length 95th (m)	m0.7	24.7	44.3	35.5	11.4
Internal Link Dist (m)		46.6	115.6	80.1	
Turn Bay Length (m)	45.0				15.0
Base Capacity (vph)	416	3120	2967	434	375
Starvation Cap Reductn	0	152	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.07	0.60	0.36	0.14	0.08

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
9: Britannia Rd West & Ellesboro Dr 06/28/2023



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	30	1795	990	70	60	30
Future Volume (vph)	30	1795	990	70	60	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.7	3.5	3.5	3.5
Total Lost time (s)	6.1	6.1	6.1		6.0	6.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00		1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1729	3579	3403		1782	1447
Flt Permitted	0.26	1.00	1.00		0.95	1.00
Satd. Flow (perm)	476	3579	3403		1782	1447
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	30	1795	990	70	60	30
RTOR Reduction (vph)	0	0	1	0	0	28
Lane Group Flow (vph)	30	1795	1059	0	60	2
Confl. Peds. (#/hr)	4			4	1	12
Heavy Vehicles (%)	3%	2%	6%	6%	0%	7%
Turn Type	Perm	NA	NA		Perm	Perm
Protected Phases		2	6			
Permitted Phases	2				8	8
Actuated Green, G (s)	137.1	137.1	137.1		10.8	10.8
Effective Green, g (s)	137.1	137.1	137.1		10.8	10.8
Actuated g/C Ratio	0.86	0.86	0.86		0.07	0.07
Clearance Time (s)	6.1	6.1	6.1		6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	407	3066	2915		120	97
v/s Ratio Prot		c0.50	0.31			
v/s Ratio Perm	0.06				c0.03	0.00
v/c Ratio	0.07	0.59	0.36		0.50	0.02
Uniform Delay, d1	1.7	3.3	2.4		72.0	69.7
Progression Factor	0.39	0.34	1.00		1.00	1.00
Incremental Delay, d2	0.2	0.5	0.4		3.3	0.1
Delay (s)	0.9	1.6	2.7		75.2	69.7
Level of Service	A	A	A		E	E
Approach Delay (s)		1.6	2.7		73.4	
Approach LOS		A	A		E	

Intersection Summary				
HCM 2000 Control Delay	4.1	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.58			
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	12.1	
Intersection Capacity Utilization	75.2%	ICU Level of Service	D	
Analysis Period (min)	15			
c Critical Lane Group				

HCM Unsignalized Intersection Capacity Analysis
1: Queen Street North & Matlock Ave 06/28/2023

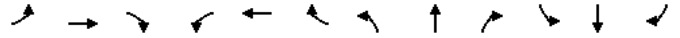
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	55	15	545	60	15	1050
Future Volume (Veh/h)	55	15	545	60	15	1050
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	60	16	592	65	16	1141
Pedestrians	6					1
Lane Width (m)	3.5					3.6
Walking Speed (m/s)	1.2					1.2
Percent Blockage	0					0
Right turn flare (veh)						
Median type			TWLTL			None
Median storage veh)			2			
Upstream signal (m)			313			
pX, platoon unblocked	0.99	0.99			0.99	
vC, conflicting volume	1233	336			663	
vC1, stage 1 conf vol	630					
vC2, stage 2 conf vol	602					
vCu, unblocked vol	1208	298			630	
tC, single (s)	7.0	6.9			4.4	
tC, 2 stage (s)	6.0					
tF (s)	3.6	3.3			2.4	
p0 queue free %	84	98			98	
cM capacity (veh/h)	368	690			849	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	76	395	262	16	570	570
Volume Left	60	0	0	16	0	0
Volume Right	16	0	65	0	0	0
cSH	408	1700	1700	849	1700	1700
Volume to Capacity	0.19	0.23	0.15	0.02	0.34	0.34
Queue Length 95th (m)	5.4	0.0	0.0	0.5	0.0	0.0
Control Delay (s)	15.8	0.0	0.0	9.3	0.0	0.0
Lane LOS	C			A		
Approach Delay (s)	15.8	0.0		0.1		
Approach LOS	C					

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	40.0%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
2: Queen Street North & 40 Queen St N Driveway/53 Queen St Driveway

06/28/2023



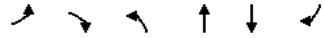
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	5	5	0	0	5	605	0	5	1100	0
Future Volume (Veh/h)	0	0	5	5	0	0	5	605	0	5	1100	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	0	0	5	5	0	0	5	665	0	5	1209	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (m)								213				
pX, platoon unblocked	0.95	0.95		0.95	0.95	0.95				0.95		
vC, conflicting volume	1562	1894	604	1294	1894	332	1209			665		
vC1, stage 1 conf vol	1219	1219		675	675							
vC2, stage 2 conf vol	342	675		620	1219							
vCu, unblocked vol	1482	1833	604	1201	1833	186	1209			537		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	99	99	100	100	99			99		
cM capacity (veh/h)	186	227	446	335	224	788	584			987		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	5	5	5	443	222	5	806	403
Volume Left	0	5	5	0	0	5	0	0
Volume Right	5	0	0	0	0	0	0	0
cSH	446	335	584	1700	1700	987	1700	1700
Volume to Capacity	0.01	0.01	0.01	0.26	0.13	0.01	0.47	0.24
Queue Length 95th (m)	0.3	0.4	0.2	0.0	0.0	0.1	0.0	0.0
Control Delay (s)	13.2	15.9	11.2	0.0	0.0	8.7	0.0	0.0
Lane LOS	B	C	B			A		
Approach Delay (s)	13.2	15.9	0.1			0.0		
Approach LOS	B	C						

Intersection Summary				
Average Delay	0.1			
Intersection Capacity Utilization	41.2%	ICU Level of Service	A	
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
3: Queen Street North & 40 Queen St S Driveway

06/28/2023

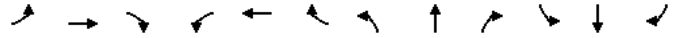


Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	5	0	605	1110	0
Future Volume (Veh/h)	5	5	0	605	1110	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	5	5	0	665	1220	0
Pedestrians	2					
Lane Width (m)	3.5					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (m)				186		
pX, platoon unblocked	0.94					
vC, conflicting volume	1554	612	1222			
vC1, stage 1 conf vol	1222					
vC2, stage 2 conf vol	332					
vCu, unblocked vol	1458	612	1222			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	98	99	100			
cM capacity (veh/h)	236	440	577			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	10	0	332	332	813	407
Volume Left	5	0	0	0	0	0
Volume Right	5	0	0	0	0	0
cSH	307	1700	1700	1700	1700	1700
Volume to Capacity	0.03	0.00	0.20	0.20	0.48	0.24
Queue Length 95th (m)	0.8	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	17.1	0.0	0.0	0.0	0.0	0.0
Lane LOS	C					
Approach Delay (s)	17.1	0.0			0.0	
Approach LOS	C					

Intersection Summary				
Average Delay	0.1			
Intersection Capacity Utilization	40.7%	ICU Level of Service	A	
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
4: Queen Street North & Petro Canada N Driveway/Existing Site Driveway 06/28/2023

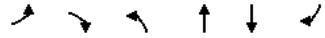


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	30	0	20	10	585	25	15	1090	10
Future Volume (Veh/h)	0	0	0	30	0	20	10	585	25	15	1090	10
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	0	0	0	33	0	22	11	643	27	16	1198	11
Pedestrians		2			28							
Lane Width (m)		3.7			3.7							
Walking Speed (m/s)		1.2			1.2							
Percent Blockage		0			2							
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (m)								159				
pX, platoon unblocked	0.92	0.92		0.92	0.92	0.92				0.92		
vC, conflicting volume	1603	1958	606	1338	1950	363	1211			698		
vC1, stage 1 conf vol	1238	1238		706	706							
vC2, stage 2 conf vol	366	720		631	1243							
vCu, unblocked vol	1485	1869	606	1197	1861	140	1211			503		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	90	100	97	98			98		
cM capacity (veh/h)	179	217	444	325	210	800	582			964		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	0	55	11	429	241	16	799	410
Volume Left	0	33	11	0	0	16	0	0
Volume Right	0	22	0	0	27	0	0	11
cSH	1700	427	582	1700	1700	964	1700	1700
Volume to Capacity	0.00	0.13	0.02	0.25	0.14	0.02	0.47	0.24
Queue Length 95th (m)	0.0	3.5	0.5	0.0	0.0	0.4	0.0	0.0
Control Delay (s)	0.0	14.7	11.3	0.0	0.0	8.8	0.0	0.0
Lane LOS	A	B	B			A		
Approach Delay (s)	0.0	14.7	0.2			0.1		
Approach LOS	A	B						

Intersection Summary				
Average Delay	0.5			
Intersection Capacity Utilization	40.5%	ICU Level of Service	A	
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
5: Queen Street North & Petro Canada S Driveway 06/28/2023



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	15	5	615	1120	0
Future Volume (Veh/h)	5	15	5	615	1120	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	5	16	5	676	1231	0
Pedestrians	2			4		
Lane Width (m)	3.5			3.6		
Walking Speed (m/s)	1.2			1.2		
Percent Blockage	0			0		
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (m)				127		
pX, platoon unblocked	0.91					
vC, conflicting volume	1581	622	1233			
vC1, stage 1 conf vol	1233					
vC2, stage 2 conf vol	348					
vCu, unblocked vol	1444	622	1233			
tC, single (s)	6.8	7.0	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.4	2.2			
p0 queue free %	98	96	99			
cM capacity (veh/h)	233	416	571			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	21	5	338	338	821	410
Volume Left	5	5	0	0	0	0
Volume Right	16	0	0	0	0	0
cSH	350	571	1700	1700	1700	1700
Volume to Capacity	0.06	0.01	0.20	0.20	0.48	0.24
Queue Length 95th (m)	1.5	0.2	0.0	0.0	0.0	0.0
Control Delay (s)	15.9	11.4	0.0	0.0	0.0	0.0
Lane LOS	C	B				
Approach Delay (s)	15.9	0.1			0.0	
Approach LOS	C					

Intersection Summary				
Average Delay	0.2			
Intersection Capacity Utilization	42.2%	ICU Level of Service	A	
Analysis Period (min)	15			

Timings
6: Queen Street South/Queen Street North & Britannia Rd West

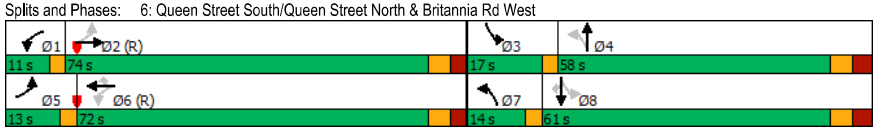
06/28/2023

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	145	925	140	1185	125	165	350	280	510	345
Future Volume (vph)	145	925	140	1185	125	165	350	280	510	345
Turn Type	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA	Perm
Protected Phases	5	2	1	6		7	4	3	8	
Permitted Phases	2		6		6	4		8		8
Detector Phase	5	2	1	6	6	7	4	3	8	8
Switch Phase										
Minimum Initial (s)	8.0	12.0	8.0	12.0	12.0	5.0	12.0	8.0	12.0	12.0
Minimum Split (s)	11.0	35.1	11.0	35.1	35.1	9.5	38.9	11.0	38.9	38.9
Total Split (s)	13.0	74.0	11.0	72.0	72.0	14.0	58.0	17.0	61.0	61.0
Total Split (%)	8.1%	46.3%	6.9%	45.0%	45.0%	8.8%	36.3%	10.6%	38.1%	38.1%
Yellow Time (s)	3.0	4.0	3.0	4.0	4.0	3.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	3.1	0.0	3.1	3.1	0.0	3.9	0.0	3.9	3.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	7.1	3.0	7.1	7.1	3.0	7.9	3.0	7.9	7.9
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	None	C-Max	C-Max	None	None	None	None	None
Act Effct Green (s)	86.5	71.2	83.2	69.6	69.6	60.2	44.3	66.2	47.3	47.3
Actuated g/C Ratio	0.54	0.44	0.52	0.44	0.44	0.38	0.28	0.41	0.30	0.30
v/c Ratio	0.71	0.70	0.62	0.76	0.18	0.88	0.50	0.80	0.90	0.63
Control Delay	40.5	39.1	32.0	38.8	9.6	72.0	45.7	51.3	73.4	32.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.5	39.1	32.0	38.8	9.6	72.0	45.7	51.3	73.4	32.9
LOS	D	D	C	D	A	E	D	D	E	C
Approach Delay		39.2		35.6			52.4		55.6	
Approach LOS		D		D			D		E	

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 13 (8%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.90
Intersection Signal Delay: 44.1 — Intersection LOS: D
Intersection Capacity Utilization 96.3% — ICU Level of Service F
Analysis Period (min) 15

Splits and Phases: 6: Queen Street South/Queen Street North & Britannia Rd West



Queues
6: Queen Street South/Queen Street North & Britannia Rd West

06/28/2023

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	145	1090	140	1185	125	165	490	280	510	345
v/c Ratio	0.71	0.70	0.62	0.76	0.18	0.88	0.50	0.80	0.90	0.63
Control Delay	40.5	39.1	32.0	38.8	9.6	72.0	45.7	51.3	73.4	32.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.5	39.1	32.0	38.8	9.6	72.0	45.7	51.3	73.4	32.9
Queue Length 50th (m)	23.8	159.1	15.2	184.5	7.8	34.9	66.4	63.9	162.5	60.1
Queue Length 95th (m)	#56.3	186.8	#26.2	215.7	14.6	#71.9	81.8	85.3	203.8	92.7
Internal Link Dist (m)		110.7		83.1			135.0		103.4	
Turn Bay Length (m)	95.0		60.0		45.0	40.0		35.0		
Base Capacity (vph)	205	1558	224	1555	706	188	1094	351	637	602
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.71	0.70	0.63	0.76	0.18	0.88	0.45	0.80	0.80	0.57

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
6: Queen Street South/Queen Street North & Britannia Rd West

06/28/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	145	925	165	140	1185	125	165	350	140	280	510	345
Future Volume (vph)	145	925	165	140	1185	125	165	350	140	280	510	345
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	3.0	7.1		3.0	7.1	7.1	3.0	7.9		3.0	7.9	7.9
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95		1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.97	1.00	0.99		1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1750	3484		1767	3579	1530	1785	3411		1760	1921	1538
Flt Permitted	0.10	1.00		0.14	1.00	1.00	0.11	1.00		0.33	1.00	1.00
Satd. Flow (perm)	176	3484		258	3579	1530	215	3411		609	1921	1538
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	145	925	165	140	1185	125	165	350	140	280	510	345
RTOR Reduction (vph)	0	9	0	0	0	42	0	28	0	0	0	97
Lane Group Flow (vph)	145	1081	0	140	1185	83	165	462	0	280	510	248
Confl. Peds. (#/hr)	12		9	9		12	10		24	24		10
Heavy Vehicles (%)	2%	2%	0%	1%	2%	1%	0%	1%	1%	1%	0%	1%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2			6		6	4			8		8
Actuated Green, G (s)	82.4	71.2		79.0	69.5	69.5	55.3	44.3		61.3	47.3	47.3
Effective Green, g (s)	82.4	71.2		79.0	69.5	69.5	55.3	44.3		61.3	47.3	47.3
Actuated g/C Ratio	0.52	0.45		0.49	0.43	0.43	0.35	0.28		0.38	0.30	0.30
Clearance Time (s)	3.0	7.1		3.0	7.1	7.1	3.0	7.9		3.0	7.9	7.9
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	200	1550		216	1554	664	182	944		334	567	454
v/s Ratio Prot	c0.05	0.31		0.04	c0.33		c0.06	0.14		c0.07	c0.27	
v/s Ratio Perm	0.32			0.28		0.05	0.25			0.25		0.16
v/c Ratio	0.72	0.70		0.65	0.76	0.13	0.91	0.49		0.84	0.90	0.55
Uniform Delay, d1	29.0	35.7		27.0	38.3	27.1	42.1	48.4		41.0	54.1	47.3
Progression Factor	1.00	1.00		0.99	0.90	0.71	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	12.3	2.6		5.8	3.2	0.3	40.9	0.4		16.6	17.0	1.3
Delay (s)	41.2	38.4		32.4	37.6	19.5	83.0	48.8		57.5	71.1	48.7
Level of Service	D	D		C	D	B	F	D		E	E	D
Approach Delay (s)		38.7			35.5			57.4			60.9	
Approach LOS		D			D			E			E	

Intersection Summary				
HCM 2000 Control Delay	46.0	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.83			
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	21.0	
Intersection Capacity Utilization	96.3%	ICU Level of Service	F	
Analysis Period (min)	15			
c Critical Lane Group				

HCM Unsignalized Intersection Capacity Analysis
7: Arch Rd & Britannia Rd West

06/28/2023

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1335	10	5	1450	0	10
Future Volume (Veh/h)	1335	10	5	1450	0	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	1335	10	5	1450	0	10
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			TWLTL		
Median storage veh)				2		
Upstream signal (m)	107			182		
pX, platoon unblocked			0.75		0.82	0.75
vC, conflicting volume			1345		2075	672
vC1, stage 1 conf vol					1340	
vC2, stage 2 conf vol					735	
vCu, unblocked vol			807		1155	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			99		100	99
cM capacity (veh/h)			624		287	823

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	890	455	5	725	725	10
Volume Left	0	0	5	0	0	0
Volume Right	0	10	0	0	0	10
cSH	1700	1700	624	1700	1700	823
Volume to Capacity	0.52	0.27	0.01	0.43	0.43	0.01
Queue Length 95th (m)	0.0	0.0	0.2	0.0	0.0	0.3
Control Delay (s)	0.0	0.0	10.8	0.0	0.0	9.4
Lane LOS			B			A
Approach Delay (s)	0.0		0.0			9.4
Approach LOS						A

Intersection Summary				
Average Delay	0.1			
Intersection Capacity Utilization	50.1%	ICU Level of Service		A
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
8: Earl St & Britannia Rd West

06/28/2023

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1340	5	5	1455	0	20
Future Volume (Veh/h)	1340	5	5	1455	0	20
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	1340	5	5	1455	0	20
Pedestrians					5	
Lane Width (m)					3.5	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (m)	219			71		
pX, platoon unblocked			0.76		0.83	0.76
vC, conflicting volume			1350		2085	678
vC1, stage 1 conf vol					1348	
vC2, stage 2 conf vol					738	
vCu, unblocked vol			835		1199	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			99		100	98
cM capacity (veh/h)			613		278	828

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	893	452	5	728	728	20
Volume Left	0	0	5	0	0	0
Volume Right	0	5	0	0	0	20
cSH	1700	1700	613	1700	1700	828
Volume to Capacity	0.53	0.27	0.01	0.43	0.43	0.02
Queue Length 95th (m)	0.0	0.0	0.2	0.0	0.0	0.6
Control Delay (s)	0.0	0.0	10.9	0.0	0.0	9.5
Lane LOS			B			A
Approach Delay (s)	0.0		0.0			9.5
Approach LOS						A

Intersection Summary				
Average Delay	0.1			
Intersection Capacity Utilization	50.2%	ICU Level of Service		A
Analysis Period (min)	15			

Timings
9: Britannia Rd West & Ellesboro Dr

06/28/2023

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	15	1345	1425	100	35
Future Volume (vph)	15	1345	1425	100	35
Turn Type	Perm	NA	NA	Perm	Perm
Protected Phases		2	6		
Permitted Phases	2			8	8
Detector Phase	2	2	6	8	8
Switch Phase					
Minimum Initial (s)	8.0	8.0	8.0	13.0	13.0
Minimum Split (s)	37.1	37.1	37.1	36.0	36.0
Total Split (s)	115.0	115.0	115.0	45.0	45.0
Total Split (%)	71.9%	71.9%	71.9%	28.1%	28.1%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.1	2.1	2.1	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.0	6.0
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	C-Max	C-Max	C-Max	None	None
Act Effct Green (s)	132.6	132.6	132.6	15.3	15.3
Actuated g/C Ratio	0.83	0.83	0.83	0.10	0.10
v/c Ratio	0.06	0.45	0.51	0.58	0.20
Control Delay	3.5	4.6	4.9	82.8	26.6
Queue Delay	0.0	0.1	0.0	0.0	0.0
Total Delay	3.5	4.6	4.9	82.8	26.6
LOS	A	A	A	F	C
Approach Delay		4.6	4.9	68.3	
Approach LOS		A	A	E	

Intersection Summary			
Cycle Length: 160			
Actuated Cycle Length: 160			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.58			
Intersection Signal Delay: 7.6		Intersection LOS: A	
Intersection Capacity Utilization 64.9%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 9: Britannia Rd West & Ellesboro Dr

Queues
9: Britannia Rd West & Ellesboro Dr

06/28/2023

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	15	1345	1500	100	35
v/c Ratio	0.06	0.45	0.51	0.58	0.20
Control Delay	3.5	4.6	4.9	82.8	26.6
Queue Delay	0.0	0.1	0.0	0.0	0.0
Total Delay	3.5	4.6	4.9	82.8	26.6
Queue Length 50th (m)	0.8	57.2	61.2	32.9	1.6
Queue Length 95th (m)	m1.1	59.3	89.3	52.4	13.2
Internal Link Dist (m)		46.6	115.6	80.1	
Turn Bay Length (m)	45.0				15.0
Base Capacity (vph)	237	2994	2968	435	393
Starvation Cap Reductn	0	437	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.06	0.53	0.51	0.23	0.09

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

HCM Signalized Intersection Capacity Analysis
9: Britannia Rd West & Ellesboro Dr

06/28/2023

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	15	1345	1425	75	100	35
Future Volume (vph)	15	1345	1425	75	100	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.7	3.5	3.5	3.5
Total Lost time (s)	6.1	6.1	6.1		6.0	6.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00		1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1783	3614	3583		1785	1520
Flt Permitted	0.15	1.00	1.00		0.95	1.00
Satd. Flow (perm)	288	3614	3583		1785	1520
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	15	1345	1425	75	100	35
RTOR Reduction (vph)	0	0	1	0	0	27
Lane Group Flow (vph)	15	1345	1499	0	100	8
Confl. Peds. (#/hr)	5			5		5
Heavy Vehicles (%)	0%	1%	1%	0%	0%	3%
Turn Type	Perm	NA	NA		Perm	Perm
Protected Phases		2	6			
Permitted Phases	2				8	8
Actuated Green, G (s)	132.6	132.6	132.6		15.3	15.3
Effective Green, g (s)	132.6	132.6	132.6		15.3	15.3
Actuated g/C Ratio	0.83	0.83	0.83		0.10	0.10
Clearance Time (s)	6.1	6.1	6.1		6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	238	2995	2969		170	145
v/s Ratio Prot		0.37	c0.42			
v/s Ratio Perm	0.05				c0.06	0.01
v/c Ratio	0.06	0.45	0.50		0.59	0.05
Uniform Delay, d1	2.5	3.7	4.0		69.3	65.8
Progression Factor	1.03	1.06	1.00		1.00	1.00
Incremental Delay, d2	0.4	0.4	0.6		5.1	0.2
Delay (s)	2.9	4.3	4.7		74.5	65.9
Level of Service	A	A	A		E	E
Approach Delay (s)		4.3	4.7		72.2	
Approach LOS		A	A		E	

Intersection Summary				
HCM 2000 Control Delay	7.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	12.1
Intersection Capacity Utilization	64.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

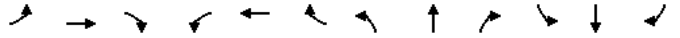
HCM Unsignalized Intersection Capacity Analysis
1: Queen Street North & Matlock Ave 06/28/2023

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	30	20	970	40	15	570
Future Volume (Veh/h)	30	20	970	40	15	570
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	33	22	1054	43	16	620
Pedestrians	1					
Lane Width (m)	3.5					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type			TWLTL			None
Median storage veh)			2			
Upstream signal (m)			313			
pX, platoon unblocked	0.89	0.89			0.89	
vC, conflicting volume	1418	550			1098	
vC1, stage 1 conf vol	1076					
vC2, stage 2 conf vol	342					
vCu, unblocked vol	1220	242			859	
tC, single (s)	7.3	7.4			4.9	
tC, 2 stage (s)	6.3					
tF (s)	3.7	3.5			2.6	
p0 queue free %	88	96			97	
cM capacity (veh/h)	278	616			508	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	55	703	394	16	310	310
Volume Left	33	0	0	16	0	0
Volume Right	22	0	43	0	0	0
cSH	356	1700	1700	508	1700	1700
Volume to Capacity	0.15	0.41	0.23	0.03	0.18	0.18
Queue Length 95th (m)	4.3	0.0	0.0	0.8	0.0	0.0
Control Delay (s)	17.0	0.0	0.0	12.3	0.0	0.0
Lane LOS	C			B		
Approach Delay (s)	17.0	0.0		0.3		
Approach LOS	C					

Intersection Summary				
Average Delay	0.6			
Intersection Capacity Utilization	38.1%	ICU Level of Service		A
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
2: Queen Street North & 40 Queen St N Driveway/53 Queen St Driveway 06/28/2023

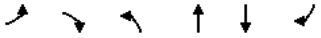


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	0	0	0	0	1010	0	0	600	0
Future Volume (Veh/h)	0	0	0	0	0	0	0	1010	0	0	600	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	0	0	0	0	0	0	0	1148	0	0	682	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (m)								213				
pX, platoon unblocked	0.86	0.86		0.86	0.86	0.86				0.86		
vC, conflicting volume	1256	1830	341	1489	1830	574	682			1148		
vC1, stage 1 conf vol	682	682		1148	1148							
vC2, stage 2 conf vol	574	1148		341	682							
vCu, unblocked vol	976	1642	341	1246	1642	184	682			851		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	100	100	100	100			100		
cM capacity (veh/h)	373	271	661	263	271	718	920			686		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	0	0	0	765	383	0	455	227
Volume Left	0	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	0	0
cSH	1700	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.00	0.00	0.45	0.23	0.00	0.27	0.13
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	A	A						
Approach Delay (s)	0.0	0.0	0.0			0.0		
Approach LOS	A	A						

Intersection Summary				
Average Delay	0.0			
Intersection Capacity Utilization	31.3%	ICU Level of Service		A
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
3: Queen Street North & 40 Queen St S Driveway 06/28/2023

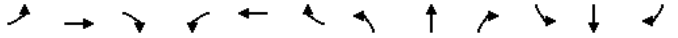


Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	1010	600	0
Future Volume (Veh/h)	0	0	0	1010	600	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	0	0	0	1161	690	0
Pedestrians	3					
Lane Width (m)	3.5					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (m)				186		
pX, platoon unblocked	0.86					
vC, conflicting volume	1274	348	693			
vC1, stage 1 conf vol	693					
vC2, stage 2 conf vol	580					
vCu, unblocked vol	983	348	693			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	417	652	909			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	0	0	580	580	460	230
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0
cSH	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.00	0.34	0.34	0.27	0.14
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	A					
Approach Delay (s)	0.0	0.0			0.0	
Approach LOS	A					

Intersection Summary				
Average Delay	0.0			
Intersection Capacity Utilization	31.3%	ICU Level of Service		A
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
4: Queen Street North & Petro Canada N Driveway/Existing Site Driveway 06/28/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	5	0	0	5	1010	10	5	585	10
Future Volume (Veh/h)	0	0	0	5	0	0	5	1010	10	5	585	10
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	0	0	0	6	0	0	6	1161	11	6	672	11
Pedestrians		3			6			1				
Lane Width (m)		3.7			3.7			3.6				
Walking Speed (m/s)		1.2			1.2			1.2				
Percent Blockage		0			1			0				
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (m)								159				
pX, platoon unblocked	0.85	0.85		0.85	0.85	0.85				0.85		
vC, conflicting volume	1285	1882	346	1534	1882	592	686			1178		
vC1, stage 1 conf vol	692	692		1184	1184							
vC2, stage 2 conf vol	592	1190		349	698							
vCu, unblocked vol	985	1687	346	1277	1687	170	686			859		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	98	100	100	99			99		
cM capacity (veh/h)	364	256	654	251	258	720	915			669		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	0	6	6	774	398	6	448	235
Volume Left	0	6	6	0	0	6	0	0
Volume Right	0	0	0	0	11	0	0	11
cSH	1700	251	915	1700	1700	669	1700	1700
Volume to Capacity	0.00	0.02	0.01	0.46	0.23	0.01	0.26	0.14
Queue Length 95th (m)	0.0	0.6	0.2	0.0	0.0	0.2	0.0	0.0
Control Delay (s)	0.0	19.7	9.0	0.0	0.0	10.4	0.0	0.0
Lane LOS	A	C	A			B		
Approach Delay (s)	0.0	19.7	0.0			0.1		
Approach LOS	A	C						

Intersection Summary				
Average Delay	0.1			
Intersection Capacity Utilization	38.6%	ICU Level of Service		A
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
5: Queen Street North & Petro Canada S Driveway

06/28/2023

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	5	0	1025	580	10
Future Volume (Veh/h)	0	5	0	1025	580	10
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	0	6	0	1165	659	11
Pedestrians	3			2		
Lane Width (m)	3.5			3.6		
Walking Speed (m/s)	1.2			1.2		
Percent Blockage	0			0		
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (m)				127		
pX, platoon unblocked	0.85					
vC, conflicting volume	1250	340	673			
vC1, stage 1 conf vol	668					
vC2, stage 2 conf vol	582					
vCu, unblocked vol	932	340	673			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	100			
cM capacity (veh/h)	431	659	925			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	6	0	582	582	439	231
Volume Left	0	0	0	0	0	0
Volume Right	6	0	0	0	0	11
cSH	659	1700	1700	1700	1700	1700
Volume to Capacity	0.01	0.00	0.34	0.34	0.26	0.14
Queue Length 95th (m)	0.2	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	10.5	0.0	0.0	0.0	0.0	0.0
Lane LOS	B					
Approach Delay (s)	10.5	0.0			0.0	
Approach LOS	B					

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	39.0%	ICU Level of Service	A
Analysis Period (min)	15		

Timings
6: Queen Street South/Queen Street North & Britannia Rd West

06/28/2023

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	215	1575	80	625	325	95	485	140	305	140
Future Volume (vph)	215	1575	80	625	325	95	485	140	305	140
Turn Type	pm+pt	NA	pm+pt	NA	Perm	Perm	NA	pm+pt	NA	Perm
Protected Phases	5	2	1	6			4	3	8	
Permitted Phases	2		6		6	4		8		8
Detector Phase	5	2	1	6	6	4	4	3	8	8
Switch Phase										
Minimum Initial (s)	8.0	12.0	8.0	12.0	12.0	12.0	12.0	8.0	12.0	12.0
Minimum Split (s)	11.0	35.1	11.0	35.1	35.1	38.9	38.9	11.0	38.9	38.9
Total Split (s)	19.0	92.0	11.0	84.0	84.0	41.0	41.0	16.0	57.0	57.0
Total Split (%)	11.9%	57.5%	6.9%	52.5%	52.5%	25.6%	25.6%	10.0%	35.6%	35.6%
Yellow Time (s)	3.0	4.0	3.0	4.0	4.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	3.1	0.0	3.1	3.1	3.9	3.9	0.0	3.9	3.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	7.1	3.0	7.1	7.1	7.9	7.9	3.0	7.9	7.9
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		
Recall Mode	None	C-Max	None	C-Max	C-Max	None	None	None	None	None
Act Effct Green (s)	102.1	87.3	94.1	82.0	82.0	31.2	31.2	51.6	46.7	46.7
Actuated g/C Ratio	0.64	0.55	0.59	0.51	0.51	0.20	0.20	0.32	0.29	0.29
v/c Ratio	0.43	0.87	0.61	0.36	0.36	0.50	0.89	0.74	0.57	0.27
Control Delay	15.1	37.9	52.2	22.4	4.4	66.6	77.1	62.6	52.3	7.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.1	37.9	52.2	22.4	4.4	66.6	77.1	62.6	52.3	7.1
LOS	B	D	D	C	A	E	E	E	D	A
Approach Delay		35.3		19.0			75.7		44.0	
Approach LOS		D		B			E		D	

Intersection Summary
Cycle Length: 160
Actuated Cycle Length: 160
Offset: 13 (8%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 130
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.89
Intersection Signal Delay: 39.3 Intersection LOS: D
Intersection Capacity Utilization 105.6% ICU Level of Service G
Analysis Period (min) 15

Splits and Phases: 6: Queen Street South/Queen Street North & Britannia Rd West

Queues
6: Queen Street South/Queen Street North & Britannia Rd West

06/28/2023

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	215	1675	80	625	325	95	610	140	305	140
v/c Ratio	0.43	0.87	0.61	0.36	0.36	0.50	0.89	0.74	0.57	0.27
Control Delay	15.1	37.9	52.2	22.4	4.4	66.6	77.1	62.6	52.3	7.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.1	37.9	52.2	22.4	4.4	66.6	77.1	62.6	52.3	7.1
Queue Length 50th (m)	29.5	256.7	8.2	67.1	18.6	28.3	101.6	34.0	85.2	0.0
Queue Length 95th (m)	42.8	294.3	#30.9	85.9	32.1	49.1	126.1	#54.2	117.9	16.9
Internal Link Dist (m)		110.7		83.1			135.0		103.4	
Turn Bay Length (m)	95.0		60.0		45.0	40.0		35.0		
Base Capacity (vph)	521	1927	132	1747	897	203	724	194	566	531
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.87	0.61	0.36	0.36	0.47	0.84	0.72	0.54	0.26

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
6: Queen Street South/Queen Street North & Britannia Rd West

06/28/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	215	1575	100	80	625	325	95	485	125	140	305	140
Future Volume (vph)	215	1575	100	80	625	325	95	485	125	140	305	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	3.0	7.1		3.0	7.1	7.1	7.9	7.9		3.0	7.9	7.9
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95		1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.96	1.00	0.99		1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	0.99	1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1746	3528		1700	3411	1481	1629	3434		1683	1847	1416
Flt Permitted	0.35	1.00		0.05	1.00	1.00	0.57	1.00		0.14	1.00	1.00
Satd. Flow (perm)	643	3528		87	3411	1481	985	3434		243	1847	1416
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	215	1575	100	80	625	325	95	485	125	140	305	140
RTOR Reduction (vph)	0	3	0	0	0	138	0	14	0	0	0	99
Lane Group Flow (vph)	215	1672	0	80	625	187	95	596	0	140	305	41
Confl. Peds. (#/hr)	14		24	24		14	14		18	18		14
Heavy Vehicles (%)	2%	2%	2%	5%	7%	4%	8%	2%	3%	6%	4%	9%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Perm	NA		pm+pt	NA	Perm
Protected Phases	5	2		1	6			4		3	8	
Permitted Phases	2			6		6	4			8		8
Actuated Green, G (s)	98.3	87.3		90.0	82.0	82.0	31.2	31.2		46.7	46.7	46.7
Effective Green, g (s)	98.3	87.3		90.0	82.0	82.0	31.2	31.2		46.7	46.7	46.7
Actuated g/C Ratio	0.61	0.55		0.56	0.51	0.51	0.19	0.19		0.29	0.29	0.29
Clearance Time (s)	3.0	7.1		3.0	7.1	7.1	7.9	7.9		3.0	7.9	7.9
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	486	1924		129	1748	759	192	669		183	539	413
v/s Ratio Prot	0.04	c0.47		c0.03	0.18			c0.17		c0.06	0.17	
v/s Ratio Perm	0.23			0.32		0.13	0.10			0.16		0.03
v/c Ratio	0.44	0.87		0.62	0.36	0.25	0.49	0.89		0.77	0.57	0.10
Uniform Delay, d1	14.3	31.4		30.3	23.3	21.8	57.4	62.7		45.8	48.1	41.3
Progression Factor	1.00	1.00		1.31	0.90	0.81	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.6	5.7		8.5	0.5	0.7	2.0	14.0		17.2	1.4	0.1
Delay (s)	15.0	37.1		48.2	21.5	18.4	59.4	76.7		63.0	49.4	41.4
Level of Service	B	D		D	C	B	E	E		E	D	D
Approach Delay (s)		34.6			22.6			74.4			50.8	
Approach LOS		C			C			E			D	

Intersection Summary

HCM 2000 Control Delay	40.6	HCM 2000 Level of Service		D	
HCM 2000 Volume to Capacity ratio	0.85				
Actuated Cycle Length (s)	160.0	Sum of lost time (s)		21.0	
Intersection Capacity Utilization	105.6%	ICU Level of Service		G	
Analysis Period (min)	15				
c Critical Lane Group					

HCM Unsignalized Intersection Capacity Analysis
7: Arch Rd & Britannia Rd West

06/28/2023

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1835	5	10	1025	5	10
Future Volume (Veh/h)	1835	5	10	1025	5	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	1835	5	10	1025	5	10
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			TWLTL		
Median storage veh)				2		
Upstream signal (m)	107			182		
pX, platoon unblocked			0.58		0.61	0.58
vC, conflicting volume			1840		2370	920
vC1, stage 1 conf vol					1838	
vC2, stage 2 conf vol					532	
vCu, unblocked vol			1006		1545	0
tC, single (s)			4.1		6.8	7.1
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.4
p0 queue free %			98		97	98
cM capacity (veh/h)			405		177	620

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	1223	617	10	512	512	15
Volume Left	0	0	10	0	0	5
Volume Right	0	5	0	0	0	10
cSH	1700	1700	405	1700	1700	338
Volume to Capacity	0.72	0.36	0.02	0.30	0.30	0.04
Queue Length 95th (m)	0.0	0.0	0.6	0.0	0.0	1.1
Control Delay (s)	0.0	0.0	14.1	0.0	0.0	16.1
Lane LOS			B			C
Approach Delay (s)	0.0		0.1			16.1
Approach LOS						C

Intersection Summary				
Average Delay	0.1			
Intersection Capacity Utilization	60.9%	ICU Level of Service		B
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
8: Earl St & Britannia Rd West

06/28/2023

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1845	0	5	1030	5	20
Future Volume (Veh/h)	1845	0	5	1030	5	20
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	1845	0	5	1030	5	20
Pedestrians					7	
Lane Width (m)					3.5	
Walking Speed (m/s)					1.2	
Percent Blockage					1	
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (m)	219			71		
pX, platoon unblocked			0.58		0.61	0.58
vC, conflicting volume			1852		2377	930
vC1, stage 1 conf vol					1852	
vC2, stage 2 conf vol					525	
vCu, unblocked vol			1007		1504	0
tC, single (s)			5.4		6.8	7.0
tC, 2 stage (s)					5.8	
tF (s)			2.9		3.5	3.4
p0 queue free %			98		97	97
cM capacity (veh/h)			228		174	614

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	1230	615	5	515	515	25
Volume Left	0	0	5	0	0	5
Volume Right	0	0	0	0	0	20
cSH	1700	1700	228	1700	1700	408
Volume to Capacity	0.72	0.36	0.02	0.30	0.30	0.06
Queue Length 95th (m)	0.0	0.0	0.5	0.0	0.0	1.6
Control Delay (s)	0.0	0.0	21.1	0.0	0.0	14.4
Lane LOS			C			B
Approach Delay (s)	0.0		0.1			14.4
Approach LOS						B

Intersection Summary				
Average Delay	0.2			
Intersection Capacity Utilization	61.0%	ICU Level of Service		B
Analysis Period (min)	15			

Timings
9: Britannia Rd West & Ellesboro Dr

06/28/2023

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	30	1835	1005	60	30
Future Volume (vph)	30	1835	1005	60	30
Turn Type	Perm	NA	NA	Perm	Perm
Protected Phases		2	6		
Permitted Phases	2			8	8
Detector Phase	2	2	6	8	8
Switch Phase					
Minimum Initial (s)	8.0	8.0	8.0	13.0	13.0
Minimum Split (s)	37.1	37.1	37.1	36.0	36.0
Total Split (s)	115.0	115.0	115.0	45.0	45.0
Total Split (%)	71.9%	71.9%	71.9%	28.1%	28.1%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.1	2.1	2.1	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.0	6.0
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	C-Max	C-Max	C-Max	None	None
Act Effct Green (s)	139.5	139.5	139.5	13.4	13.4
Actuated g/C Ratio	0.87	0.87	0.87	0.08	0.08
v/c Ratio	0.07	0.59	0.36	0.40	0.20
Control Delay	1.2	1.5	2.9	77.8	23.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	1.2	1.5	2.9	77.8	23.8
LOS	A	A	A	E	C
Approach Delay		1.5	2.9	59.8	
Approach LOS		A	A	E	

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.59
Intersection Signal Delay: 3.7 — Intersection LOS: A
Intersection Capacity Utilization 76.3% — ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 9: Britannia Rd West & Ellesboro Dr

Queues
9: Britannia Rd West & Ellesboro Dr

06/28/2023

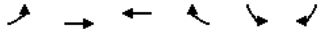
Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	30	1835	1075	60	30
v/c Ratio	0.07	0.59	0.36	0.40	0.20
Control Delay	1.2	1.5	2.9	77.8	23.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	1.2	1.5	2.9	77.8	23.8
Queue Length 50th (m)	0.7	24.1	34.7	19.5	0.0
Queue Length 95th (m)	m0.9	30.6	45.3	35.5	11.4
Internal Link Dist (m)		46.6	115.6	80.1	
Turn Bay Length (m)	45.0				15.0
Base Capacity (vph)	408	3120	2967	434	375
Starvation Cap Reductn	0	125	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.07	0.61	0.36	0.14	0.08

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
9: Britannia Rd West & Ellesboro Dr

06/28/2023



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	30	1835	1005	70	60	30
Future Volume (vph)	30	1835	1005	70	60	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.7	3.5	3.5	3.5
Total Lost time (s)	6.1	6.1	6.1		6.0	6.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00		1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1729	3579	3403		1782	1447
Flt Permitted	0.26	1.00	1.00		0.95	1.00
Satd. Flow (perm)	469	3579	3403		1782	1447
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	30	1835	1005	70	60	30
RTOR Reduction (vph)	0	0	1	0	0	28
Lane Group Flow (vph)	30	1835	1074	0	60	2
Confl. Peds. (#/hr)	4			4	1	12
Heavy Vehicles (%)	3%	2%	6%	6%	0%	7%
Turn Type	Perm	NA	NA		Perm	Perm
Protected Phases		2	6			
Permitted Phases	2				8	8
Actuated Green, G (s)	137.1	137.1	137.1		10.8	10.8
Effective Green, g (s)	137.1	137.1	137.1		10.8	10.8
Actuated g/C Ratio	0.86	0.86	0.86		0.07	0.07
Clearance Time (s)	6.1	6.1	6.1		6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	401	3066	2915		120	97
v/s Ratio Prot		c0.51	0.32			
v/s Ratio Perm	0.06				c0.03	0.00
v/c Ratio	0.07	0.60	0.37		0.50	0.02
Uniform Delay, d1	1.8	3.4	2.4		72.0	69.7
Progression Factor	0.44	0.28	1.00		1.00	1.00
Incremental Delay, d2	0.2	0.4	0.4		3.3	0.1
Delay (s)	1.0	1.4	2.8		75.2	69.7
Level of Service	A	A	A		E	E
Approach Delay (s)		1.4	2.8		73.4	
Approach LOS		A	A		E	

Intersection Summary				
HCM 2000 Control Delay	4.0	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.59			
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	12.1	
Intersection Capacity Utilization	76.3%	ICU Level of Service	D	
Analysis Period (min)	15			
c Critical Lane Group				

HCM Unsignalized Intersection Capacity Analysis
1: Queen Street North & Matlock Ave

06/28/2023

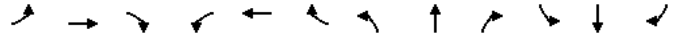
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	55	15	560	60	15	1070
Future Volume (Veh/h)	55	15	560	60	15	1070
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	60	16	609	65	16	1163
Pedestrians	6					1
Lane Width (m)	3.5					3.6
Walking Speed (m/s)	1.2					1.2
Percent Blockage	0					0
Right turn flare (veh)						
Median type			TWLTL			None
Median storage veh)			2			
Upstream signal (m)			313			
pX, platoon unblocked	0.97	0.97			0.97	
vC, conflicting volume	1261	344			680	
vC1, stage 1 conf vol	648					
vC2, stage 2 conf vol	614					
vCu, unblocked vol	1201	253			601	
tC, single (s)	7.0	6.9			4.4	
tC, 2 stage (s)	6.0					
tF (s)	3.6	3.3			2.4	
p0 queue free %	84	98			98	
cM capacity (veh/h)	368	724			855	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	76	406	268	16	582	582
Volume Left	60	0	0	16	0	0
Volume Right	16	0	65	0	0	0
cSH	411	1700	1700	855	1700	1700
Volume to Capacity	0.19	0.24	0.16	0.02	0.34	0.34
Queue Length 95th (m)	5.4	0.0	0.0	0.5	0.0	0.0
Control Delay (s)	15.7	0.0	0.0	9.3	0.0	0.0
Lane LOS	C			A		
Approach Delay (s)	15.7	0.0		0.1		
Approach LOS	C					

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	40.5%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
2: Queen Street North & 40 Queen St N Driveway/53 Queen St Driveway

06/28/2023



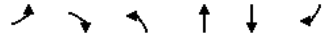
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	5	5	0	0	5	620	0	5	1120	0
Future Volume (Veh/h)	0	0	5	5	0	0	5	620	0	5	1120	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	0	0	5	5	0	0	5	681	0	5	1231	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (m)								213				
pX, platoon unblocked	0.93	0.93		0.93	0.93	0.93				0.93		
vC, conflicting volume	1592	1932	616	1322	1932	340	1231			681		
vC1, stage 1 conf vol	1241	1241		691	691							
vC2, stage 2 conf vol	350	691		630	1241							
vCu, unblocked vol	1489	1855	616	1200	1855	148	1231			513		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	99	99	100	100	99			99		
cM capacity (veh/h)	181	222	439	334	219	820	573			991		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	5	5	5	454	227	5	821	410
Volume Left	0	5	5	0	0	5	0	0
Volume Right	5	0	0	0	0	0	0	0
cSH	439	334	573	1700	1700	991	1700	1700
Volume to Capacity	0.01	0.01	0.01	0.27	0.13	0.01	0.48	0.24
Queue Length 95th (m)	0.3	0.4	0.2	0.0	0.0	0.1	0.0	0.0
Control Delay (s)	13.3	15.9	11.3	0.0	0.0	8.7	0.0	0.0
Lane LOS	B	C	B			A		
Approach Delay (s)	13.3	15.9	0.1			0.0		
Approach LOS	B	C						

Intersection Summary				
Average Delay	0.1			
Intersection Capacity Utilization	41.8%	ICU Level of Service	A	
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
3: Queen Street North & 40 Queen St S Driveway

06/28/2023

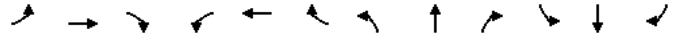


Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	5	0	620	1130	0
Future Volume (Veh/h)	5	5	0	620	1130	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	5	5	0	681	1242	0
Pedestrians	2					
Lane Width (m)	3.5					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (m)				186		
pX, platoon unblocked	0.92					
vC, conflicting volume	1584	623	1244			
vC1, stage 1 conf vol	1244					
vC2, stage 2 conf vol	340					
vCu, unblocked vol	1466	623	1244			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	98	99	100			
cM capacity (veh/h)	230	433	566			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	10	0	340	340	828	414
Volume Left	5	0	0	0	0	0
Volume Right	5	0	0	0	0	0
cSH	300	1700	1700	1700	1700	1700
Volume to Capacity	0.03	0.00	0.20	0.20	0.49	0.24
Queue Length 95th (m)	0.8	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	17.4	0.0	0.0	0.0	0.0	0.0
Lane LOS	C					
Approach Delay (s)	17.4	0.0			0.0	
Approach LOS	C					

Intersection Summary				
Average Delay	0.1			
Intersection Capacity Utilization	41.2%	ICU Level of Service	A	
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
4: Queen Street North & Petro Canada N Driveway/Existing Site Driveway 06/28/2023

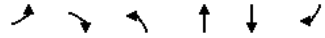


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	30	0	20	10	600	25	15	1110	10
Future Volume (Veh/h)	0	0	0	30	0	20	10	600	25	15	1110	10
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	0	0	0	33	0	22	11	659	27	16	1220	11
Pedestrians		2			28							
Lane Width (m)		3.7			3.7							
Walking Speed (m/s)		1.2			1.2							
Percent Blockage		0			2							
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (m)								159				
pX, platoon unblocked	0.91	0.91		0.91	0.91	0.91				0.91		
vC, conflicting volume	1633	1996	618	1364	1988	371	1233			714		
vC1, stage 1 conf vol	1260	1260		722	722							
vC2, stage 2 conf vol	374	736		642	1265							
vCu, unblocked vol	1495	1894	618	1200	1886	106	1233			484		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	90	100	97	98			98		
cM capacity (veh/h)	174	212	437	324	205	828	571			966		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	0	55	11	439	247	16	813	418
Volume Left	0	33	11	0	0	16	0	0
Volume Right	0	22	0	0	27	0	0	11
cSH	1700	428	571	1700	1700	966	1700	1700
Volume to Capacity	0.00	0.13	0.02	0.26	0.15	0.02	0.48	0.25
Queue Length 95th (m)	0.0	3.5	0.5	0.0	0.0	0.4	0.0	0.0
Control Delay (s)	0.0	14.7	11.4	0.0	0.0	8.8	0.0	0.0
Lane LOS	A	B	B			A		
Approach Delay (s)	0.0	14.7	0.2			0.1		
Approach LOS	A	B						

Intersection Summary				
Average Delay	0.5			
Intersection Capacity Utilization	41.0%	ICU Level of Service	A	
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
5: Queen Street North & Petro Canada S Driveway 06/28/2023



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	15	5	630	1140	0
Future Volume (Veh/h)	5	15	5	630	1140	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	5	16	5	692	1253	0
Pedestrians	2			4		
Lane Width (m)	3.5			3.6		
Walking Speed (m/s)	1.2			1.2		
Percent Blockage	0			0		
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (m)				127		
pX, platoon unblocked	0.90					
vC, conflicting volume	1611	632	1255			
vC1, stage 1 conf vol	1255					
vC2, stage 2 conf vol	356					
vCu, unblocked vol	1455	632	1255			
tC, single (s)	6.8	7.0	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.4	2.2			
p0 queue free %	98	96	99			
cM capacity (veh/h)	227	409	560			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	21	5	346	346	835	418
Volume Left	5	5	0	0	0	0
Volume Right	16	0	0	0	0	0
cSH	343	560	1700	1700	1700	1700
Volume to Capacity	0.06	0.01	0.20	0.20	0.49	0.25
Queue Length 95th (m)	1.6	0.2	0.0	0.0	0.0	0.0
Control Delay (s)	16.2	11.5	0.0	0.0	0.0	0.0
Lane LOS	C	B				
Approach Delay (s)	16.2	0.1			0.0	
Approach LOS	C					

Intersection Summary				
Average Delay	0.2			
Intersection Capacity Utilization	42.8%	ICU Level of Service	A	
Analysis Period (min)	15			

Timings
6: Queen Street South/Queen Street North & Britannia Rd West

06/28/2023

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	145	950	140	1215	125	165	365	280	530	345
Future Volume (vph)	145	950	140	1215	125	165	365	280	530	345
Turn Type	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA	Perm
Protected Phases	5	2	1	6		7	4	3	8	
Permitted Phases	2		6		6	4		8		8
Detector Phase	5	2	1	6	6	7	4	3	8	8
Switch Phase										
Minimum Initial (s)	8.0	12.0	8.0	12.0	12.0	5.0	12.0	8.0	12.0	12.0
Minimum Split (s)	11.0	35.1	11.0	35.1	35.1	9.5	38.9	11.0	38.9	38.9
Total Split (s)	15.0	71.0	14.0	70.0	70.0	15.0	47.0	28.0	60.0	60.0
Total Split (%)	9.4%	44.4%	8.8%	43.8%	43.8%	9.4%	29.4%	17.5%	37.5%	37.5%
Yellow Time (s)	3.0	4.0	3.0	4.0	4.0	3.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	3.1	0.0	3.1	3.1	0.0	3.9	0.0	3.9	3.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	7.1	3.0	7.1	7.1	3.0	7.9	3.0	7.9	7.9
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	None	C-Max	C-Max	None	None	None	None	None
Act Effct Green (s)	84.1	68.3	82.0	67.3	67.3	54.8	38.0	67.9	48.1	48.1
Actuated g/C Ratio	0.53	0.43	0.51	0.42	0.42	0.34	0.24	0.42	0.30	0.30
v/c Ratio	0.75	0.75	0.65	0.81	0.18	0.86	0.60	0.72	0.92	0.59
Control Delay	50.8	42.7	37.8	42.2	6.6	73.6	53.8	41.8	75.5	26.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.8	42.7	37.8	42.2	6.6	73.6	53.8	41.8	75.5	26.9
LOS	D	D	D	D	A	E	D	D	E	C
Approach Delay		43.6		38.8			58.7		52.8	
Approach LOS		D		D			E		D	

Intersection Summary		
Cycle Length: 160		
Actuated Cycle Length: 160		
Offset: 13 (8%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green		
Natural Cycle: 100		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.92		
Intersection Signal Delay: 46.6	Intersection LOS: D	
Intersection Capacity Utilization 97.8%	ICU Level of Service F	
Analysis Period (min) 15		

Splits and Phases: 6: Queen Street South/Queen Street North & Britannia Rd West

Queues
6: Queen Street South/Queen Street North & Britannia Rd West

06/28/2023

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	145	1115	140	1215	125	165	505	280	530	345
v/c Ratio	0.75	0.75	0.65	0.81	0.18	0.86	0.60	0.72	0.92	0.59
Control Delay	50.8	42.7	37.8	42.2	6.6	73.6	53.8	41.8	75.5	26.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.8	42.7	37.8	42.2	6.6	73.6	53.8	41.8	75.5	26.9
Queue Length 50th (m)	25.3	170.2	15.8	196.2	5.4	33.7	73.4	61.7	168.0	48.6
Queue Length 95th (m)	#60.2	199.6	35.0	228.2	10.7	#77.8	94.5	85.3	#226.3	82.5
Internal Link Dist (m)		110.7		83.1			135.0		103.4	
Turn Bay Length (m)	95.0		60.0		45.0	40.0		35.0		
Base Capacity (vph)	200	1496	221	1504	698	192	864	414	625	616
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.72	0.75	0.63	0.81	0.18	0.86	0.58	0.68	0.85	0.56

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

HCM Signalized Intersection Capacity Analysis
6: Queen Street South/Queen Street North & Britannia Rd West

06/28/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	145	950	165	140	1215	125	165	365	140	280	530	345
Future Volume (vph)	145	950	165	140	1215	125	165	365	140	280	530	345
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	3.0	7.1		3.0	7.1	7.1	3.0	7.9		3.0	7.9	7.9
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95		1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.97	1.00	0.99		1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1750	3486		1767	3579	1530	1784	3417		1761	1921	1538
Flt Permitted	0.08	1.00		0.12	1.00	1.00	0.12	1.00		0.28	1.00	1.00
Satd. Flow (perm)	145	3486		219	3579	1530	218	3417		522	1921	1538
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	145	950	165	140	1215	125	165	365	140	280	530	345
RTOR Reduction (vph)	0	9	0	0	0	55	0	25	0	0	0	119
Lane Group Flow (vph)	145	1106	0	140	1215	70	165	480	0	280	530	226
Confl. Peds. (#/hr)	12		9	9		12	10		24	24		10
Heavy Vehicles (%)	2%	2%	0%	1%	2%	1%	0%	1%	1%	1%	0%	1%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2			6		6	4			8		8
Actuated Green, G (s)	79.9	68.2		77.9	67.2	67.2	49.9	38.0		63.1	48.2	48.2
Effective Green, g (s)	79.9	68.2		77.9	67.2	67.2	49.9	38.0		63.1	48.2	48.2
Actuated g/C Ratio	0.50	0.43		0.49	0.42	0.42	0.31	0.24		0.39	0.30	0.30
Clearance Time (s)	3.0	7.1		3.0	7.1	7.1	3.0	7.9		3.0	7.9	7.9
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	189	1485		210	1503	642	184	811		377	578	463
v/s Ratio Prot	c0.06	0.32		0.04	c0.34		c0.07	0.14		c0.10	c0.28	
v/s Ratio Perm	0.33			0.28		0.05	0.21			0.19		0.15
v/c Ratio	0.77	0.75		0.67	0.81	0.11	0.90	0.59		0.74	0.92	0.49
Uniform Delay, d1	31.6	38.6		28.7	40.7	28.2	44.9	54.1		36.1	54.0	45.8
Progression Factor	1.00	1.00		1.22	0.90	0.66	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	16.9	3.4		6.8	4.2	0.3	38.4	1.2		7.7	19.4	0.8
Delay (s)	48.4	42.0		41.9	41.0	18.9	83.2	55.3		43.8	73.3	46.6
Level of Service	D	D		D	D	B	F	E		D	E	D
Approach Delay (s)		42.8			39.2			62.2			58.2	
Approach LOS		D			D			E			E	

Intersection Summary				
HCM 2000 Control Delay	48.4	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.85			
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	21.0	
Intersection Capacity Utilization	97.8%	ICU Level of Service	F	
Analysis Period (min)	15			
c Critical Lane Group				

HCM Unsignalized Intersection Capacity Analysis
7: Arch Rd & Britannia Rd West

06/28/2023

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1360	10	5	1480	0	10
Future Volume (Veh/h)	1360	10	5	1480	0	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	1360	10	5	1480	0	10
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			TWLTL		
Median storage veh)				2		
Upstream signal (m)	107			182		
pX, platoon unblocked			0.74		0.81	0.74
vC, conflicting volume			1370		2115	685
vC1, stage 1 conf vol					1365	
vC2, stage 2 conf vol					750	
vCu, unblocked vol			790		1141	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			99		100	99
cM capacity (veh/h)			619		286	804

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	907	463	5	740	740	10
Volume Left	0	0	5	0	0	0
Volume Right	0	10	0	0	0	10
cSH	1700	1700	619	1700	1700	804
Volume to Capacity	0.53	0.27	0.01	0.44	0.44	0.01
Queue Length 95th (m)	0.0	0.0	0.2	0.0	0.0	0.3
Control Delay (s)	0.0	0.0	10.9	0.0	0.0	9.5
Lane LOS			B			A
Approach Delay (s)	0.0		0.0			9.5
Approach LOS						A

Intersection Summary				
Average Delay	0.1			
Intersection Capacity Utilization	50.9%	ICU Level of Service		A
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
8: Earl St & Britannia Rd West

06/28/2023

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1365	5	5	1485	0	20
Future Volume (Veh/h)	1365	5	5	1485	0	20
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	1365	5	5	1485	0	20
Pedestrians					5	
Lane Width (m)					3.5	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (m)	219			71		
pX, platoon unblocked			0.74		0.81	0.74
vC, conflicting volume			1375		2125	690
vC1, stage 1 conf vol					1372	
vC2, stage 2 conf vol					752	
vCu, unblocked vol			817		1189	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			99		100	98
cM capacity (veh/h)			608		277	809

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	910	460	5	742	742	20
Volume Left	0	0	5	0	0	0
Volume Right	0	5	0	0	0	20
cSH	1700	1700	608	1700	1700	809
Volume to Capacity	0.54	0.27	0.01	0.44	0.44	0.02
Queue Length 95th (m)	0.0	0.0	0.2	0.0	0.0	0.6
Control Delay (s)	0.0	0.0	11.0	0.0	0.0	9.6
Lane LOS			B			A
Approach Delay (s)	0.0		0.0			9.6
Approach LOS						A

Intersection Summary				
Average Delay	0.1			
Intersection Capacity Utilization	51.0%	ICU Level of Service		A
Analysis Period (min)	15			

Timings
9: Britannia Rd West & Ellesboro Dr

06/28/2023

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	15	1370	1455	100	35
Future Volume (vph)	15	1370	1455	100	35
Turn Type	Perm	NA	NA	Perm	Perm
Protected Phases		2	6		
Permitted Phases	2			8	8
Detector Phase	2	2	6	8	8
Switch Phase					
Minimum Initial (s)	8.0	8.0	8.0	13.0	13.0
Minimum Split (s)	37.1	37.1	37.1	36.0	36.0
Total Split (s)	115.0	115.0	115.0	45.0	45.0
Total Split (%)	71.9%	71.9%	71.9%	28.1%	28.1%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.1	2.1	2.1	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.0	6.0
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	C-Max	C-Max	C-Max	None	None
Act Effct Green (s)	132.6	132.6	132.6	15.3	15.3
Actuated g/C Ratio	0.83	0.83	0.83	0.10	0.10
v/c Ratio	0.07	0.46	0.51	0.58	0.20
Control Delay	3.2	3.8	5.0	82.8	26.6
Queue Delay	0.0	0.1	0.0	0.0	0.0
Total Delay	3.2	3.9	5.0	82.8	26.6
LOS	A	A	A	F	C
Approach Delay		3.9	5.0	68.3	
Approach LOS		A	A	E	

Intersection Summary			
Cycle Length: 160			
Actuated Cycle Length: 160			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.58			
Intersection Signal Delay: 7.3		Intersection LOS: A	
Intersection Capacity Utilization 65.7%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 9: Britannia Rd West & Ellesboro Dr

Queues
9: Britannia Rd West & Ellesboro Dr

06/28/2023

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	15	1370	1530	100	35
v/c Ratio	0.07	0.46	0.51	0.58	0.20
Control Delay	3.2	3.8	5.0	82.8	26.6
Queue Delay	0.0	0.1	0.0	0.0	0.0
Total Delay	3.2	3.9	5.0	82.8	26.6
Queue Length 50th (m)	0.6	42.4	63.4	32.9	1.6
Queue Length 95th (m)	m1.1	55.0	92.3	52.4	13.2
Internal Link Dist (m)		46.6	115.6	80.1	
Turn Bay Length (m)	45.0				15.0
Base Capacity (vph)	230	2994	2971	435	393
Starvation Cap Reductn	0	448	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.07	0.54	0.51	0.23	0.09

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

HCM Signalized Intersection Capacity Analysis
9: Britannia Rd West & Ellesboro Dr

06/28/2023

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	15	1370	1455	75	100	35
Future Volume (vph)	15	1370	1455	75	100	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.7	3.5	3.5	3.5
Total Lost time (s)	6.1	6.1	6.1		6.0	6.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00		1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1783	3614	3583		1785	1520
Flt Permitted	0.15	1.00	1.00		0.95	1.00
Satd. Flow (perm)	277	3614	3583		1785	1520
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	15	1370	1455	75	100	35
RTOR Reduction (vph)	0	0	1	0	0	27
Lane Group Flow (vph)	15	1370	1529	0	100	8
Confl. Peds. (#/hr)	5			5		5
Heavy Vehicles (%)	0%	1%	1%	0%	0%	3%
Turn Type	Perm	NA	NA		Perm	Perm
Protected Phases		2	6			
Permitted Phases	2				8	8
Actuated Green, G (s)	132.6	132.6	132.6		15.3	15.3
Effective Green, g (s)	132.6	132.6	132.6		15.3	15.3
Actuated g/C Ratio	0.83	0.83	0.83		0.10	0.10
Clearance Time (s)	6.1	6.1	6.1		6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	229	2995	2969		170	145
v/s Ratio Prot		0.38	c0.43			
v/s Ratio Perm	0.05				c0.06	0.01
v/c Ratio	0.07	0.46	0.51		0.59	0.05
Uniform Delay, d1	2.5	3.8	4.1		69.3	65.8
Progression Factor	0.92	0.86	1.00		1.00	1.00
Incremental Delay, d2	0.4	0.4	0.6		5.1	0.2
Delay (s)	2.7	3.6	4.7		74.5	65.9
Level of Service	A	A	A		E	E
Approach Delay (s)		3.6	4.7		72.2	
Approach LOS		A	A		E	

Intersection Summary			
HCM 2000 Control Delay	7.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	12.1
Intersection Capacity Utilization	65.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

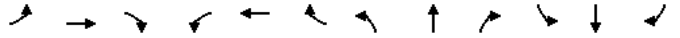
HCM Unsignalized Intersection Capacity Analysis
1: Queen Street North & Matlock Ave 06/28/2023

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	30	20	1000	40	15	580
Future Volume (Veh/h)	30	20	1000	40	15	580
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	33	22	1087	43	16	630
Pedestrians	1					
Lane Width (m)	3.5					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type			TWLTL			None
Median storage veh)			2			
Upstream signal (m)			313			
pX, platoon unblocked	0.89	0.89			0.89	
vC, conflicting volume	1456	566			1131	
vC1, stage 1 conf vol	1110					
vC2, stage 2 conf vol	347					
vCu, unblocked vol	1267	268			902	
tC, single (s)	7.3	7.4			4.9	
tC, 2 stage (s)	6.3					
tF (s)	3.7	3.5			2.6	
p0 queue free %	88	96			97	
cM capacity (veh/h)	264	592			488	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	55	725	405	16	315	315
Volume Left	33	0	0	16	0	0
Volume Right	22	0	43	0	0	0
cSH	340	1700	1700	488	1700	1700
Volume to Capacity	0.16	0.43	0.24	0.03	0.19	0.19
Queue Length 95th (m)	4.6	0.0	0.0	0.8	0.0	0.0
Control Delay (s)	17.6	0.0	0.0	12.6	0.0	0.0
Lane LOS	C			B		
Approach Delay (s)	17.6	0.0		0.3		
Approach LOS	C					

Intersection Summary				
Average Delay	0.6			
Intersection Capacity Utilization	38.9%	ICU Level of Service		A
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
2: Queen Street North & 40 Queen St N Driveway/53 Queen St Driveway 06/28/2023



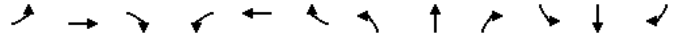
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	0	0	0	0	1040	0	0	610	0
Future Volume (Veh/h)	0	0	0	0	0	0	0	1040	0	0	610	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	0	0	0	0	0	0	0	1182	0	0	693	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (m)								213				
pX, platoon unblocked	0.86	0.86		0.86	0.86	0.86				0.86		
vC, conflicting volume	1284	1875	346	1528	1875	591	693			1182		
vC1, stage 1 conf vol	693	693		1182	1182							
vC2, stage 2 conf vol	591	1182		346	693							
vCu, unblocked vol	1011	1696	346	1294	1696	207	693			892		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	100	100	100	100			100		
cM capacity (veh/h)	365	261	655	249	261	694	912			663		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	0	0	0	788	394	0	462	231
Volume Left	0	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	0	0
cSH	1700	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.00	0.00	0.46	0.23	0.00	0.27	0.14
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	A	A						
Approach Delay (s)	0.0	0.0	0.0			0.0		
Approach LOS	A	A						

Intersection Summary				
Average Delay	0.0			
Intersection Capacity Utilization	32.1%	ICU Level of Service		A
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
3: Queen Street North & 40 Queen St S Driveway/Proposed Site Driveway

06/28/2023



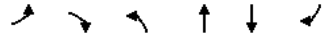
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	60	0	30	0	1010	30	15	595	0
Future Volume (Veh/h)	0	0	0	60	0	30	0	1010	30	15	595	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	0	0	0	69	0	34	0	1161	34	17	684	0
Pedestrians		3										
Lane Width (m)		3.7										
Walking Speed (m/s)		1.2										
Percent Blockage		0										
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (m)								186				
pX, platoon unblocked	0.85	0.85		0.85	0.85	0.85				0.85		
vC, conflicting volume	1336	1916	345	1554	1899	598	687			1195		
vC1, stage 1 conf vol	721	721		1178	1178							
vC2, stage 2 conf vol	614	1195		376	721							
vCu, unblocked vol	1049	1729	345	1305	1709	184	687			884		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	73	100	95	100			97		
cM capacity (veh/h)	338	246	655	253	258	711	914			660		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	0	103	0	774	421	17	456	228
Volume Left	0	69	0	0	0	17	0	0
Volume Right	0	34	0	0	34	0	0	0
cSH	1700	321	1700	1700	1700	660	1700	1700
Volume to Capacity	0.00	0.32	0.00	0.46	0.25	0.03	0.27	0.13
Queue Length 95th (m)	0.0	10.8	0.0	0.0	0.0	0.6	0.0	0.0
Control Delay (s)	0.0	21.4	0.0	0.0	0.0	10.6	0.0	0.0
Lane LOS	A	C				B		
Approach Delay (s)	0.0	21.4	0.0			0.3		
Approach LOS	A	C						

Intersection Summary				
Average Delay	1.2			
Intersection Capacity Utilization	40.7%	ICU Level of Service	A	
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
4: Queen Street North & Petro Canada N Driveway

06/28/2023



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	5	1040	645	10
Future Volume (Veh/h)	0	0	5	1040	645	10
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	0	0	6	1195	741	11
Pedestrians	3			1		
Lane Width (m)	0.0			3.6		
Walking Speed (m/s)	1.2			1.2		
Percent Blockage	0			0		
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (m)				159		
pX, platoon unblocked	0.85					
vC, conflicting volume	1359	380	755			
vC1, stage 1 conf vol	750					
vC2, stage 2 conf vol	610					
vCu, unblocked vol	1068	380	755			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	99			
cM capacity (veh/h)	390	623	865			

Direction, Lane #	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	6	598	598	494	258
Volume Left	6	0	0	0	0
Volume Right	0	0	0	0	11
cSH	865	1700	1700	1700	1700
Volume to Capacity	0.01	0.35	0.35	0.29	0.15
Queue Length 95th (m)	0.2	0.0	0.0	0.0	0.0
Control Delay (s)	9.2	0.0	0.0	0.0	0.0
Lane LOS	A				
Approach Delay (s)	0.0			0.0	
Approach LOS					

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	39.1%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
5: Queen Street North & Petro Canada S Driveway

06/28/2023

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	5	0	1045	635	10
Future Volume (Veh/h)	0	5	0	1045	635	10
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	0	6	0	1188	722	11
Pedestrians	3			2		
Lane Width (m)	3.5			3.6		
Walking Speed (m/s)	1.2			1.2		
Percent Blockage	0			0		
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (m)				127		
pX, platoon unblocked	0.84					
vC, conflicting volume	1324	372	736			
vC1, stage 1 conf vol	730					
vC2, stage 2 conf vol	594					
vCu, unblocked vol	1016	372	736			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	100			
cM capacity (veh/h)	402	629	877			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	6	0	594	594	481	252
Volume Left	0	0	0	0	0	0
Volume Right	6	0	0	0	0	11
cSH	629	1700	1700	1700	1700	1700
Volume to Capacity	0.01	0.00	0.35	0.35	0.28	0.15
Queue Length 95th (m)	0.2	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	10.8	0.0	0.0	0.0	0.0	0.0
Lane LOS	B					
Approach Delay (s)	10.8	0.0			0.0	
Approach LOS	B					

Intersection Summary				
Average Delay		0.0		
Intersection Capacity Utilization		39.5%	ICU Level of Service	A
Analysis Period (min)		15		

Timings
6: Queen Street South/Queen Street North & Britannia Rd West

06/28/2023

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	225	1575	80	625	330	95	490	155	330	155
Future Volume (vph)	225	1575	80	625	330	95	490	155	330	155
Turn Type	pm+pt	NA	pm+pt	NA	Perm	Perm	NA	pm+pt	NA	Perm
Protected Phases	5	2	1	6			4	3	8	
Permitted Phases	2		6		6	4		8		8
Detector Phase	5	2	1	6	6	4	4	3	8	8
Switch Phase										
Minimum Initial (s)	8.0	12.0	8.0	12.0	12.0	12.0	12.0	8.0	12.0	12.0
Minimum Split (s)	11.0	35.1	11.0	35.1	35.1	38.9	38.9	11.0	38.9	38.9
Total Split (s)	19.0	92.0	11.0	84.0	84.0	41.0	41.0	16.0	57.0	57.0
Total Split (%)	11.9%	57.5%	6.9%	52.5%	52.5%	25.6%	25.6%	10.0%	35.6%	35.6%
Yellow Time (s)	3.0	4.0	3.0	4.0	4.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	3.1	0.0	3.1	3.1	3.9	3.9	0.0	3.9	3.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	7.1	3.0	7.1	7.1	7.9	7.9	3.0	7.9	7.9
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		
Recall Mode	None	C-Max	None	C-Max	C-Max	None	None	None	None	None
Act Effct Green (s)	101.8	86.9	93.3	81.2	81.2	31.3	31.3	52.0	47.1	47.1
Actuated g/C Ratio	0.64	0.54	0.58	0.51	0.51	0.20	0.20	0.32	0.29	0.29
v/c Ratio	0.45	0.87	0.61	0.36	0.37	0.53	0.90	0.81	0.61	0.30
Control Delay	15.5	38.3	56.8	22.7	3.5	69.2	77.3	70.3	53.6	7.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.5	38.3	56.8	22.7	3.5	69.2	77.3	70.3	53.6	7.0
LOS	B	D	E	C	A	E	E	E	D	A
Approach Delay		35.6		19.2			76.2		46.4	
Approach LOS		D		B			E		D	

Intersection Summary			
Cycle Length: 160			
Actuated Cycle Length: 160			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 130			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.90			
Intersection Signal Delay: 40.0		Intersection LOS: D	
Intersection Capacity Utilization 106.5%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 6: Queen Street South/Queen Street North & Britannia Rd West

Queues
6: Queen Street South/Queen Street North & Britannia Rd West

06/28/2023

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	225	1675	80	625	330	95	615	155	330	155
v/c Ratio	0.45	0.87	0.61	0.36	0.37	0.53	0.90	0.81	0.61	0.30
Control Delay	15.5	38.3	56.8	22.7	3.5	69.2	77.3	70.3	53.6	7.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.5	38.3	56.8	22.7	3.5	69.2	77.3	70.3	53.6	7.0
Queue Length 50th (m)	31.0	256.7	12.2	67.5	4.5	28.5	102.6	38.0	93.7	0.0
Queue Length 95th (m)	44.9	294.3	#34.0	85.9	14.9	49.8	#127.8	#67.5	128.7	17.7
Internal Link Dist (m)		110.7		83.1			135.0		103.4	
Turn Bay Length (m)	95.0		60.0		45.0	40.0		35.0		
Base Capacity (vph)	516	1919	131	1731	893	188	725	194	566	541
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.44	0.87	0.61	0.36	0.37	0.51	0.85	0.80	0.58	0.29

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
6: Queen Street South/Queen Street North & Britannia Rd West

06/28/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	225	1575	100	80	625	330	95	490	125	155	330	155
Future Volume (vph)	225	1575	100	80	625	330	95	490	125	155	330	155
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	3.0	7.1		3.0	7.1	7.1	7.9	7.9		3.0	7.9	7.9
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95		1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.96	1.00	0.99		1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	0.99	1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1746	3528		1700	3411	1481	1631	3435		1683	1847	1416
Flt Permitted	0.35	1.00		0.05	1.00	1.00	0.53	1.00		0.13	1.00	1.00
Satd. Flow (perm)	640	3528		88	3411	1481	913	3435		238	1847	1416
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	225	1575	100	80	625	330	95	490	125	155	330	155
RTOR Reduction (vph)	0	3	0	0	0	142	0	14	0	0	0	109
Lane Group Flow (vph)	225	1672	0	80	625	188	95	601	0	155	330	46
Confl. Peds. (#/hr)	14		24	24		14	14		18	18		14
Heavy Vehicles (%)	2%	2%	2%	5%	7%	4%	8%	2%	3%	6%	4%	9%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Perm	NA		pm+pt	NA	Perm
Protected Phases	5	2		1	6			4		3	8	
Permitted Phases	2			6		6	4			8		8
Actuated Green, G (s)	97.9	86.9		89.2	81.2	81.2	31.3	31.3		47.1	47.1	47.1
Effective Green, g (s)	97.9	86.9		89.2	81.2	81.2	31.3	31.3		47.1	47.1	47.1
Actuated g/C Ratio	0.61	0.54		0.56	0.51	0.51	0.20	0.20		0.29	0.29	0.29
Clearance Time (s)	3.0	7.1		3.0	7.1	7.1	7.9	7.9		3.0	7.9	7.9
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	486	1916		129	1731	751	178	671		185	543	416
v/s Ratio Prot	0.04	c0.47		c0.03	0.18			0.17		c0.07	0.18	
v/s Ratio Perm	0.24			0.31		0.13	0.10			c0.18		0.03
v/c Ratio	0.46	0.87		0.62	0.36	0.25	0.53	0.89		0.84	0.61	0.11
Uniform Delay, d1	14.6	31.7		30.5	23.8	22.2	57.8	62.7		46.0	48.5	41.2
Progression Factor	1.00	1.00		1.47	0.90	0.59	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.7	5.8		8.5	0.6	0.8	3.1	14.4		26.8	1.9	0.1
Delay (s)	15.3	37.6		53.3	22.0	13.9	60.9	77.2		72.8	50.4	41.3
Level of Service	B	D		D	C	B	E	E		E	D	D
Approach Delay (s)		35.0			21.8			75.0			53.6	
Approach LOS		C			C			E			D	

Intersection Summary

HCM 2000 Control Delay	41.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	106.5%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
7: Arch Rd & Britannia Rd West

06/28/2023

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1850	5	10	1030	5	10
Future Volume (Veh/h)	1850	5	10	1030	5	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	1850	5	10	1030	5	10
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			TWLTL		
Median storage veh)				2		
Upstream signal (m)	107			182		
pX, platoon unblocked			0.58		0.61	0.58
vC, conflicting volume			1855		2388	928
vC1, stage 1 conf vol					1852	
vC2, stage 2 conf vol					535	
vCu, unblocked vol			1024		1565	0
tC, single (s)			4.1		6.8	7.1
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.4
p0 queue free %			97		97	98
cM capacity (veh/h)			397		173	617

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	1233	622	10	515	515	15
Volume Left	0	0	10	0	0	5
Volume Right	0	5	0	0	0	10
cSH	1700	1700	397	1700	1700	333
Volume to Capacity	0.73	0.37	0.03	0.30	0.30	0.05
Queue Length 95th (m)	0.0	0.0	0.6	0.0	0.0	1.1
Control Delay (s)	0.0	0.0	14.3	0.0	0.0	16.3
Lane LOS			B			C
Approach Delay (s)	0.0		0.1			16.3
Approach LOS						C

Intersection Summary				
Average Delay	0.1			
Intersection Capacity Utilization	61.3%	ICU Level of Service		B
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
8: Earl St & Britannia Rd West

06/28/2023

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1860	0	5	1035	5	20
Future Volume (Veh/h)	1860	0	5	1035	5	20
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	1860	0	5	1035	5	20
Pedestrians					7	
Lane Width (m)					3.5	
Walking Speed (m/s)					1.2	
Percent Blockage					1	
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (m)	219			71		
pX, platoon unblocked			0.57		0.61	0.57
vC, conflicting volume			1867		2394	937
vC1, stage 1 conf vol					1867	
vC2, stage 2 conf vol					528	
vCu, unblocked vol			1025		1524	0
tC, single (s)			5.4		6.8	7.0
tC, 2 stage (s)					5.8	
tF (s)			2.9		3.5	3.4
p0 queue free %			98		97	97
cM capacity (veh/h)			223		170	611

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	1240	620	5	518	518	25
Volume Left	0	0	5	0	0	5
Volume Right	0	0	0	0	0	20
cSH	1700	1700	223	1700	1700	402
Volume to Capacity	0.73	0.36	0.02	0.30	0.30	0.06
Queue Length 95th (m)	0.0	0.0	0.6	0.0	0.0	1.6
Control Delay (s)	0.0	0.0	21.5	0.0	0.0	14.5
Lane LOS			C			B
Approach Delay (s)	0.0		0.1			14.5
Approach LOS						B

Intersection Summary				
Average Delay	0.2			
Intersection Capacity Utilization	61.4%	ICU Level of Service		B
Analysis Period (min)	15			

Timings
9: Britannia Rd West & Ellesboro Dr

06/28/2023

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	30	1850	1010	60	30
Future Volume (vph)	30	1850	1010	60	30
Turn Type	Perm	NA	NA	Perm	Perm
Protected Phases		2	6		
Permitted Phases	2			8	8
Detector Phase	2	2	6	8	8
Switch Phase					
Minimum Initial (s)	8.0	8.0	8.0	13.0	13.0
Minimum Split (s)	37.1	37.1	37.1	36.0	36.0
Total Split (s)	115.0	115.0	115.0	45.0	45.0
Total Split (%)	71.9%	71.9%	71.9%	28.1%	28.1%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.1	2.1	2.1	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.0	6.0
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	C-Max	C-Max	C-Max	None	None
Act Effct Green (s)	139.5	139.5	139.5	13.4	13.4
Actuated g/C Ratio	0.87	0.87	0.87	0.08	0.08
v/c Ratio	0.07	0.59	0.36	0.40	0.20
Control Delay	1.4	1.7	2.9	77.8	23.8
Queue Delay	0.0	0.1	0.0	0.0	0.0
Total Delay	1.4	1.8	2.9	77.8	23.8
LOS	A	A	A	E	C
Approach Delay		1.8	2.9	59.8	
Approach LOS		A	A	E	

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.59
Intersection Signal Delay: 3.9 — Intersection LOS: A
Intersection Capacity Utilization 76.7% — ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 9: Britannia Rd West & Ellesboro Dr

Queues
9: Britannia Rd West & Ellesboro Dr

06/28/2023

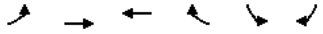
Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	30	1850	1080	60	30
v/c Ratio	0.07	0.59	0.36	0.40	0.20
Control Delay	1.4	1.7	2.9	77.8	23.8
Queue Delay	0.0	0.1	0.0	0.0	0.0
Total Delay	1.4	1.8	2.9	77.8	23.8
Queue Length 50th (m)	0.7	28.8	34.8	19.5	0.0
Queue Length 95th (m)	m0.9	32.6	45.4	35.5	11.4
Internal Link Dist (m)		46.6	115.6	80.1	
Turn Bay Length (m)	45.0				15.0
Base Capacity (vph)	406	3120	2967	434	375
Starvation Cap Reductn	0	313	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.07	0.66	0.36	0.14	0.08

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
9: Britannia Rd West & Ellesboro Dr

06/28/2023



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	30	1850	1010	70	60	30
Future Volume (vph)	30	1850	1010	70	60	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.7	3.5	3.5	3.5
Total Lost time (s)	6.1	6.1	6.1		6.0	6.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00		1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1729	3579	3403		1782	1447
Flt Permitted	0.26	1.00	1.00		0.95	1.00
Satd. Flow (perm)	466	3579	3403		1782	1447
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	30	1850	1010	70	60	30
RTOR Reduction (vph)	0	0	1	0	0	28
Lane Group Flow (vph)	30	1850	1079	0	60	2
Confl. Peds. (#/hr)	4			4	1	12
Heavy Vehicles (%)	3%	2%	6%	6%	0%	7%
Turn Type	Perm	NA	NA		Perm	Perm
Protected Phases		2	6			
Permitted Phases	2				8	8
Actuated Green, G (s)	137.1	137.1	137.1		10.8	10.8
Effective Green, g (s)	137.1	137.1	137.1		10.8	10.8
Actuated g/C Ratio	0.86	0.86	0.86		0.07	0.07
Clearance Time (s)	6.1	6.1	6.1		6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	399	3066	2915		120	97
v/s Ratio Prot		c0.52	0.32			
v/s Ratio Perm	0.06				c0.03	0.00
v/c Ratio	0.08	0.60	0.37		0.50	0.02
Uniform Delay, d1	1.8	3.4	2.4		72.0	69.7
Progression Factor	0.53	0.34	1.00		1.00	1.00
Incremental Delay, d2	0.2	0.4	0.4		3.3	0.1
Delay (s)	1.1	1.6	2.8		75.2	69.7
Level of Service	A	A	A		E	E
Approach Delay (s)		1.6	2.8		73.4	
Approach LOS		A	A		E	

Intersection Summary				
HCM 2000 Control Delay	4.1	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.60			
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	12.1	
Intersection Capacity Utilization	76.7%	ICU Level of Service	D	
Analysis Period (min)	15			
c Critical Lane Group				

HCM Unsignalized Intersection Capacity Analysis
1: Queen Street North & Matlock Ave

06/28/2023

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	55	15	575	60	15	1095
Future Volume (Veh/h)	55	15	575	60	15	1095
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	60	16	625	65	16	1190
Pedestrians	6					1
Lane Width (m)	3.5					3.6
Walking Speed (m/s)	1.2					1.2
Percent Blockage	0					0
Right turn flare (veh)						
Median type			TWLTL			None
Median storage veh)			2			
Upstream signal (m)			313			
pX, platoon unblocked	1.00	1.00			1.00	
vC, conflicting volume	1290	352			696	
vC1, stage 1 conf vol	664					
vC2, stage 2 conf vol	627					
vCu, unblocked vol	1283	340			685	
tC, single (s)	7.0	6.9			4.4	
tC, 2 stage (s)	6.0					
tF (s)	3.6	3.3			2.4	
p0 queue free %	83	98			98	
cM capacity (veh/h)	349	655			814	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	76	417	273	16	595	595
Volume Left	60	0	0	16	0	0
Volume Right	16	0	65	0	0	0
cSH	387	1700	1700	814	1700	1700
Volume to Capacity	0.20	0.25	0.16	0.02	0.35	0.35
Queue Length 95th (m)	5.8	0.0	0.0	0.5	0.0	0.0
Control Delay (s)	16.5	0.0	0.0	9.5	0.0	0.0
Lane LOS	C			A		
Approach Delay (s)	16.5	0.0		0.1		
Approach LOS	C					

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	41.2%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
2: Queen Street North & 40 Queen St N Driveway/53 Queen St Driveway

06/28/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	5	5	0	0	5	635	0	5	1145	0
Future Volume (Veh/h)	0	0	5	5	0	0	5	635	0	5	1145	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	0	0	5	5	0	0	5	698	0	5	1258	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (m)								213				
pX, platoon unblocked	0.95	0.95		0.95	0.95	0.95				0.95		
vC, conflicting volume	1627	1976	629	1352	1976	349	1258			698		
vC1, stage 1 conf vol	1268	1268		708	708							
vC2, stage 2 conf vol	359	708		644	1268							
vCu, unblocked vol	1551	1920	629	1261	1920	203	1258			571		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	99	98	100	100	99			99		
cM capacity (veh/h)	174	214	430	319	211	768	560			959		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	5	5	5	465	233	5	839	419
Volume Left	0	5	5	0	0	5	0	0
Volume Right	5	0	0	0	0	0	0	0
cSH	430	319	560	1700	1700	959	1700	1700
Volume to Capacity	0.01	0.02	0.01	0.27	0.14	0.01	0.49	0.25
Queue Length 95th (m)	0.3	0.4	0.2	0.0	0.0	0.1	0.0	0.0
Control Delay (s)	13.5	16.5	11.5	0.0	0.0	8.8	0.0	0.0
Lane LOS	B	C	B			A		
Approach Delay (s)	13.5	16.5	0.1			0.0		
Approach LOS	B	C						

Intersection Summary				
Average Delay	0.1			
Intersection Capacity Utilization	42.5%	ICU Level of Service	A	
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
3: Queen Street North & 40 Queen St S Driveway/Proposed Site Driveway

06/28/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	0	5	60	0	35	0	600	80	40	1115	0
Future Volume (Veh/h)	5	0	5	60	0	35	0	600	80	40	1115	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	5	0	5	66	0	38	0	659	88	44	1225	0
Pedestrians		2										
Lane Width (m)		3.7										
Walking Speed (m/s)		1.2										
Percent Blockage		0										
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (m)								186				
pX, platoon unblocked	0.90	0.90		0.90	0.90	0.90				0.90		
vC, conflicting volume	1682	2062	614	1408	2018	374	1227			747		
vC1, stage 1 conf vol	1315	1315		703	703							
vC2, stage 2 conf vol	368	747		706	1315							
vCu, unblocked vol	1544	1963	614	1241	1914	96	1227			509		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	97	100	99	79	100	96	100			95		
cM capacity (veh/h)	156	196	439	312	201	857	574			964		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	10	104	0	439	308	44	817	408
Volume Left	5	66	0	0	0	44	0	0
Volume Right	5	38	0	0	88	0	0	0
cSH	230	407	1700	1700	1700	964	1700	1700
Volume to Capacity	0.04	0.26	0.00	0.26	0.18	0.05	0.48	0.24
Queue Length 95th (m)	1.1	8.0	0.0	0.0	0.0	1.1	0.0	0.0
Control Delay (s)	21.3	16.9	0.0	0.0	0.0	8.9	0.0	0.0
Lane LOS	C	C				A		
Approach Delay (s)	21.3	16.9	0.0			0.3		
Approach LOS	C	C						

Intersection Summary				
Average Delay	1.1			
Intersection Capacity Utilization	47.4%	ICU Level of Service	A	
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
4: Queen Street North & Petro Canada N Driveway

06/28/2023

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	10	680	1170	10
Future Volume (Veh/h)	0	0	10	680	1170	10
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	0	0	11	747	1286	11
Pedestrians	2					
Lane Width (m)	0.0					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (m)				159		
pX, platoon unblocked	0.90					
vC, conflicting volume	1689	650	1299			
vC1, stage 1 conf vol	1294					
vC2, stage 2 conf vol	396					
vCu, unblocked vol	1541	650	1299			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	98			
cM capacity (veh/h)	216	416	540			

Direction, Lane #	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	11	374	374	857	440
Volume Left	11	0	0	0	0
Volume Right	0	0	0	0	11
cSH	540	1700	1700	1700	1700
Volume to Capacity	0.02	0.22	0.22	0.50	0.26
Queue Length 95th (m)	0.5	0.0	0.0	0.0	0.0
Control Delay (s)	11.8	0.0	0.0	0.0	0.0
Lane LOS	B				
Approach Delay (s)	0.2			0.0	
Approach LOS					

Intersection Summary				
Average Delay	0.1			
Intersection Capacity Utilization	36.0%	ICU Level of Service		A
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
5: Queen Street North & Petro Canada S Driveway

06/28/2023

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	15	5	685	1170	0
Future Volume (Veh/h)	5	15	5	685	1170	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	5	16	5	753	1286	0
Pedestrians	2			4		
Lane Width (m)	3.5			3.6		
Walking Speed (m/s)	1.2			1.2		
Percent Blockage	0			0		
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (m)				127		
pX, platoon unblocked	0.89					
vC, conflicting volume	1674	649	1288			
vC1, stage 1 conf vol	1288					
vC2, stage 2 conf vol	386					
vCu, unblocked vol	1511	649	1288			
tC, single (s)	6.8	7.0	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.4	2.2			
p0 queue free %	98	96	99			
cM capacity (veh/h)	218	399	544			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	21	5	376	376	857	429
Volume Left	5	5	0	0	0	0
Volume Right	16	0	0	0	0	0
cSH	333	544	1700	1700	1700	1700
Volume to Capacity	0.06	0.01	0.22	0.22	0.50	0.25
Queue Length 95th (m)	1.6	0.2	0.0	0.0	0.0	0.0
Control Delay (s)	16.5	11.7	0.0	0.0	0.0	0.0
Lane LOS	C	B				
Approach Delay (s)	16.5	0.1			0.0	
Approach LOS	C					

Intersection Summary				
Average Delay	0.2			
Intersection Capacity Utilization	43.6%	ICU Level of Service		A
Analysis Period (min)	15			

Timings
6: Queen Street South/Queen Street North & Britannia Rd West

06/28/2023

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	155	950	140	1215	145	165	390	285	545	355
Future Volume (vph)	155	950	140	1215	145	165	390	285	545	355
Turn Type	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA	Perm
Protected Phases	5	2	1	6		7	4	3	8	
Permitted Phases	2		6		6	4		8		8
Detector Phase	5	2	1	6	6	7	4	3	8	8
Switch Phase										
Minimum Initial (s)	8.0	12.0	8.0	12.0	12.0	5.0	12.0	8.0	12.0	12.0
Minimum Split (s)	11.0	35.1	11.0	35.1	35.1	9.5	38.9	11.0	38.9	38.9
Total Split (s)	15.0	71.0	14.0	70.0	70.0	15.0	47.0	28.0	60.0	60.0
Total Split (%)	9.4%	44.4%	8.8%	43.8%	43.8%	9.4%	29.4%	17.5%	37.5%	37.5%
Yellow Time (s)	3.0	4.0	3.0	4.0	4.0	3.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	3.1	0.0	3.1	3.1	0.0	3.9	0.0	3.9	3.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	7.1	3.0	7.1	7.1	3.0	7.9	3.0	7.9	7.9
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	None	C-Max	C-Max	None	None	None	None	None
Act Effct Green (s)	83.6	67.5	80.5	65.9	65.9	55.9	39.0	69.0	49.1	49.1
Actuated g/C Ratio	0.52	0.42	0.50	0.41	0.41	0.35	0.24	0.43	0.31	0.31
v/c Ratio	0.82	0.75	0.67	0.82	0.21	0.88	0.62	0.74	0.93	0.60
Control Delay	62.9	43.4	39.6	43.5	8.7	79.1	54.1	42.4	76.0	27.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.9	43.4	39.6	43.5	8.7	79.1	54.1	42.4	76.0	27.9
LOS	E	D	D	D	A	E	D	D	E	C
Approach Delay		45.8		39.8			60.1		53.5	
Approach LOS		D		D			E		D	

Intersection Summary		
Cycle Length: 160		
Actuated Cycle Length: 160		
Offset: 13 (8%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green		
Natural Cycle: 100		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.93		
Intersection Signal Delay: 48.0	Intersection LOS: D	
Intersection Capacity Utilization 99.2%	ICU Level of Service F	
Analysis Period (min) 15		

Splits and Phases: 6: Queen Street South/Queen Street North & Britannia Rd West

Queues
6: Queen Street South/Queen Street North & Britannia Rd West

06/28/2023

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	155	1115	140	1215	145	165	530	285	545	355
v/c Ratio	0.82	0.75	0.67	0.82	0.21	0.88	0.62	0.74	0.93	0.60
Control Delay	62.9	43.4	39.6	43.5	8.7	79.1	54.1	42.4	76.0	27.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.9	43.4	39.6	43.5	8.7	79.1	54.1	42.4	76.0	27.9
Queue Length 50th (m)	31.6	170.2	15.8	196.4	7.5	35.0	77.4	62.0	172.4	51.8
Queue Length 95th (m)	#72.6	199.6	35.3	228.2	14.2	#82.1	100.3	86.8	#236.7	87.6
Internal Link Dist (m)		110.7		83.1			135.0		103.4	
Turn Bay Length (m)	95.0		60.0		45.0	40.0		35.0		
Base Capacity (vph)	193	1479	215	1474	686	187	871	411	625	614
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.80	0.75	0.65	0.82	0.21	0.88	0.61	0.69	0.87	0.58

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

HCM Signalized Intersection Capacity Analysis
6: Queen Street South/Queen Street North & Britannia Rd West

06/28/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	155	950	165	140	1215	145	165	390	140	285	545	355
Future Volume (vph)	155	950	165	140	1215	145	165	390	140	285	545	355
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	3.0	7.1		3.0	7.1	7.1	3.0	7.9		3.0	7.9	7.9
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95		1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.97	1.00	0.99		1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1750	3486		1767	3579	1530	1785	3426		1762	1921	1538
Flt Permitted	0.07	1.00		0.12	1.00	1.00	0.10	1.00		0.27	1.00	1.00
Satd. Flow (perm)	133	3486		215	3579	1530	196	3426		497	1921	1538
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	155	950	165	140	1215	145	165	390	140	285	545	355
RTOR Reduction (vph)	0	9	0	0	0	56	0	23	0	0	0	117
Lane Group Flow (vph)	155	1106	0	140	1215	89	165	507	0	285	545	238
Confl. Peds. (#/hr)	12		9	9		12	10		24	24		10
Heavy Vehicles (%)	2%	2%	0%	1%	2%	1%	0%	1%	1%	1%	0%	1%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2			6		6	4			8		8
Actuated Green, G (s)	79.5	67.5		76.3	65.9	65.9	51.0	39.0		64.1	49.1	49.1
Effective Green, g (s)	79.5	67.5		76.3	65.9	65.9	51.0	39.0		64.1	49.1	49.1
Actuated g/C Ratio	0.50	0.42		0.48	0.41	0.41	0.32	0.24		0.40	0.31	0.31
Clearance Time (s)	3.0	7.1		3.0	7.1	7.1	3.0	7.9		3.0	7.9	7.9
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	187	1470		203	1474	630	181	835		373	589	471
v/s Ratio Prot	c0.06	0.32		0.04	0.34		c0.07	0.15		c0.11	c0.28	
v/s Ratio Perm	c0.35			0.28		0.06	0.22			0.20		0.15
v/c Ratio	0.83	0.75		0.69	0.82	0.14	0.91	0.61		0.76	0.93	0.51
Uniform Delay, d1	37.8	39.2		29.5	41.9	29.4	44.4	53.7		35.7	53.7	45.5
Progression Factor	1.00	1.00		1.22	0.90	0.68	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	25.0	3.6		8.2	4.7	0.4	42.5	1.3		9.0	20.5	0.9
Delay (s)	62.9	42.8		44.3	42.6	20.5	86.9	55.0		44.7	74.2	46.3
Level of Service	E	D		D	D	C	F	D		D	E	D
Approach Delay (s)		45.2			40.6			62.5			58.7	
Approach LOS		D			D			E			E	

Intersection Summary				
HCM 2000 Control Delay	49.8	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.88			
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	21.0	
Intersection Capacity Utilization	99.2%	ICU Level of Service	F	
Analysis Period (min)	15			
c Critical Lane Group				

HCM Unsignalized Intersection Capacity Analysis
7: Arch Rd & Britannia Rd West

06/28/2023

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1365	10	5	1500	0	10
Future Volume (Veh/h)	1365	10	5	1500	0	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	1365	10	5	1500	0	10
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			TWLTL		
Median storage veh)				2		
Upstream signal (m)	107			182		
pX, platoon unblocked			0.74		0.81	0.74
vC, conflicting volume			1375		2130	688
vC1, stage 1 conf vol					1370	
vC2, stage 2 conf vol					760	
vCu, unblocked vol			790		1139	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			99		100	99
cM capacity (veh/h)			617		286	802

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	910	465	5	750	750	10
Volume Left	0	0	5	0	0	0
Volume Right	0	10	0	0	0	10
cSH	1700	1700	617	1700	1700	802
Volume to Capacity	0.54	0.27	0.01	0.44	0.44	0.01
Queue Length 95th (m)	0.0	0.0	0.2	0.0	0.0	0.3
Control Delay (s)	0.0	0.0	10.9	0.0	0.0	9.5
Lane LOS			B			A
Approach Delay (s)	0.0		0.0			9.5
Approach LOS						A

Intersection Summary				
Average Delay	0.1			
Intersection Capacity Utilization	51.5%	ICU Level of Service		A
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
8: Earl St & Britannia Rd West

06/28/2023

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1370	5	5	1505	0	20
Future Volume (Veh/h)	1370	5	5	1505	0	20
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	1370	5	5	1505	0	20
Pedestrians					5	
Lane Width (m)					3.5	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (m)	219			71		
pX, platoon unblocked			0.74		0.81	0.74
vC, conflicting volume			1380		2140	692
vC1, stage 1 conf vol					1378	
vC2, stage 2 conf vol					762	
vCu, unblocked vol			817		1188	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			99		100	98
cM capacity (veh/h)			606		276	806

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	913	462	5	752	752	20
Volume Left	0	0	5	0	0	0
Volume Right	0	5	0	0	0	20
cSH	1700	1700	606	1700	1700	806
Volume to Capacity	0.54	0.27	0.01	0.44	0.44	0.02
Queue Length 95th (m)	0.0	0.0	0.2	0.0	0.0	0.6
Control Delay (s)	0.0	0.0	11.0	0.0	0.0	9.6
Lane LOS			B			A
Approach Delay (s)	0.0		0.0			9.6
Approach LOS						A

Intersection Summary				
Average Delay	0.1			
Intersection Capacity Utilization	51.6%	ICU Level of Service		A
Analysis Period (min)	15			

Timings
9: Britannia Rd West & Ellesboro Dr

06/28/2023

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	15	1375	1475	100	35
Future Volume (vph)	15	1375	1475	100	35
Turn Type	Perm	NA	NA	Perm	Perm
Protected Phases		2	6		
Permitted Phases	2			8	8
Detector Phase	2	2	6	8	8
Switch Phase					
Minimum Initial (s)	8.0	8.0	8.0	13.0	13.0
Minimum Split (s)	37.1	37.1	37.1	36.0	36.0
Total Split (s)	115.0	115.0	115.0	45.0	45.0
Total Split (%)	71.9%	71.9%	71.9%	28.1%	28.1%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.1	2.1	2.1	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.0	6.0
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	C-Max	C-Max	C-Max	None	None
Act Effct Green (s)	132.6	132.6	132.6	15.3	15.3
Actuated g/C Ratio	0.83	0.83	0.83	0.10	0.10
v/c Ratio	0.07	0.46	0.52	0.58	0.20
Control Delay	3.3	3.8	5.0	82.8	26.6
Queue Delay	0.0	0.1	0.0	0.0	0.0
Total Delay	3.3	3.9	5.0	82.8	26.6
LOS	A	A	A	F	C
Approach Delay		3.9	5.0	68.3	
Approach LOS		A	A	E	

Intersection Summary			
Cycle Length: 160			
Actuated Cycle Length: 160			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.58			
Intersection Signal Delay: 7.3		Intersection LOS: A	
Intersection Capacity Utilization 66.3%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 9: Britannia Rd West & Ellesboro Dr

Queues
9: Britannia Rd West & Ellesboro Dr

06/28/2023

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	15	1375	1550	100	35
v/c Ratio	0.07	0.46	0.52	0.58	0.20
Control Delay	3.3	3.8	5.0	82.8	26.6
Queue Delay	0.0	0.1	0.0	0.0	0.0
Total Delay	3.3	3.9	5.0	82.8	26.6
Queue Length 50th (m)	0.6	42.3	64.9	32.9	1.6
Queue Length 95th (m)	m1.0	55.2	94.4	52.4	13.2
Internal Link Dist (m)		46.6	115.6	80.1	
Turn Bay Length (m)	45.0				15.0
Base Capacity (vph)	224	2994	2971	435	393
Starvation Cap Reductn	0	448	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.07	0.54	0.52	0.23	0.09

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
9: Britannia Rd West & Ellesboro Dr

06/28/2023

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	15	1375	1475	75	100	35
Future Volume (vph)	15	1375	1475	75	100	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.7	3.5	3.5	3.5
Total Lost time (s)	6.1	6.1	6.1		6.0	6.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00		1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1783	3614	3584		1785	1520
Flt Permitted	0.14	1.00	1.00		0.95	1.00
Satd. Flow (perm)	271	3614	3584		1785	1520
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	15	1375	1475	75	100	35
RTOR Reduction (vph)	0	0	1	0	0	27
Lane Group Flow (vph)	15	1375	1549	0	100	8
Confl. Peds. (#/hr)	5			5		5
Heavy Vehicles (%)	0%	1%	1%	0%	0%	3%
Turn Type	Perm	NA	NA		Perm	Perm
Protected Phases		2	6			
Permitted Phases	2				8	8
Actuated Green, G (s)	132.6	132.6	132.6		15.3	15.3
Effective Green, g (s)	132.6	132.6	132.6		15.3	15.3
Actuated g/C Ratio	0.83	0.83	0.83		0.10	0.10
Clearance Time (s)	6.1	6.1	6.1		6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	224	2995	2970		170	145
v/s Ratio Prot		0.38	c0.43			
v/s Ratio Perm	0.06				c0.06	0.01
v/c Ratio	0.07	0.46	0.52		0.59	0.05
Uniform Delay, d1	2.5	3.8	4.1		69.3	65.8
Progression Factor	0.92	0.86	1.00		1.00	1.00
Incremental Delay, d2	0.4	0.4	0.7		5.1	0.2
Delay (s)	2.7	3.6	4.8		74.5	65.9
Level of Service	A	A	A		E	E
Approach Delay (s)		3.6	4.8		72.2	
Approach LOS		A	A		E	

Intersection Summary

HCM 2000 Control Delay	7.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	12.1
Intersection Capacity Utilization	66.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
1: Queen Street North & Matlock Ave

06/28/2023

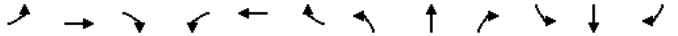
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	30	20	985	40	15	595
Future Volume (Veh/h)	30	20	985	40	15	595
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	33	22	1071	43	16	647
Pedestrians	1					
Lane Width (m)	3.5					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type			TWLTL			None
Median storage veh)			2			
Upstream signal (m)			313			
pX, platoon unblocked	0.89	0.89			0.89	
vC, conflicting volume	1449	558			1115	
vC1, stage 1 conf vol	1094					
vC2, stage 2 conf vol	356					
vCu, unblocked vol	1249	243			872	
tC, single (s)	7.3	7.4			4.9	
tC, 2 stage (s)	6.3					
tF (s)	3.7	3.5			2.6	
p0 queue free %	88	96			97	
cM capacity (veh/h)	272	612			500	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	55	714	400	16	324	324
Volume Left	33	0	0	16	0	0
Volume Right	22	0	43	0	0	0
cSH	350	1700	1700	500	1700	1700
Volume to Capacity	0.16	0.42	0.24	0.03	0.19	0.19
Queue Length 95th (m)	4.4	0.0	0.0	0.8	0.0	0.0
Control Delay (s)	17.2	0.0	0.0	12.4	0.0	0.0
Lane LOS	C			B		
Approach Delay (s)	17.2	0.0		0.3		
Approach LOS	C					

Intersection Summary				
Average Delay	0.6			
Intersection Capacity Utilization	38.5%	ICU Level of Service		A
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
2: Queen Street North & 40 Queen St N Driveway/53 Queen St Driveway

06/28/2023

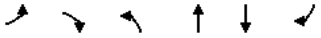


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	0	0	0	0	1025	0	0	625	0
Future Volume (Veh/h)	0	0	0	0	0	0	0	1025	0	0	625	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	0	0	0	0	0	0	0	1165	0	0	710	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (m)								213				
pX, platoon unblocked	0.86	0.86		0.86	0.86	0.86				0.86		
vC, conflicting volume	1292	1875	355	1520	1875	582	710			1165		
vC1, stage 1 conf vol	710	710		1165	1165							
vC2, stage 2 conf vol	582	1165		355	710							
vCu, unblocked vol	1014	1692	355	1279	1692	189	710			866		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	100	100	100	100			100		
cM capacity (veh/h)	360	264	647	256	264	712	899			676		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	0	0	0	777	388	0	473	237
Volume Left	0	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	0	0
cSH	1700	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.00	0.00	0.46	0.23	0.00	0.28	0.14
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	A	A						
Approach Delay (s)	0.0	0.0	0.0			0.0		
Approach LOS	A	A						

Intersection Summary				
Average Delay	0.0			
Intersection Capacity Utilization	31.7%	ICU Level of Service		A
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
3: Queen Street North & 40 Queen St S Driveway 06/28/2023

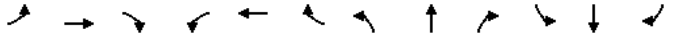


Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	1025	625	0
Future Volume (Veh/h)	0	0	0	1025	625	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	0	0	0	1178	718	0
Pedestrians	3					
Lane Width (m)	3.5					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (m)				186		
pX, platoon unblocked	0.85					
vC, conflicting volume	1310	362	721			
vC1, stage 1 conf vol	721					
vC2, stage 2 conf vol	589					
vCu, unblocked vol	1022	362	721			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	404	639	888			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	0	0	589	589	479	239
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0
cSH	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.00	0.35	0.35	0.28	0.14
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	A					
Approach Delay (s)	0.0	0.0			0.0	
Approach LOS	A					

Intersection Summary				
Average Delay	0.0			
Intersection Capacity Utilization	31.7%	ICU Level of Service		A
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
4: Queen Street North & Petro Canada N Driveway/Existing Site Driveway 06/28/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	5	0	0	5	1025	10	5	610	10
Future Volume (Veh/h)	0	0	0	5	0	0	5	1025	10	5	610	10
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	0	0	0	6	0	0	6	1178	11	6	701	11
Pedestrians		3			6			1				
Lane Width (m)		3.7			3.7			3.6				
Walking Speed (m/s)		1.2			1.2			1.2				
Percent Blockage		0			1			0				
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (m)								159				
pX, platoon unblocked	0.85	0.85		0.85	0.85	0.85				0.85		
vC, conflicting volume	1322	1928	360	1565	1928	600	715			1195		
vC1, stage 1 conf vol	722	722		1202	1202							
vC2, stage 2 conf vol	601	1207		364	727							
vCu, unblocked vol	1026	1739	360	1311	1739	176	715			876		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	98	100	100	99			99		
cM capacity (veh/h)	350	249	640	244	251	713	892			659		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	0	6	6	785	404	6	467	245
Volume Left	0	6	6	0	0	6	0	0
Volume Right	0	0	0	0	11	0	0	11
cSH	1700	244	892	1700	1700	659	1700	1700
Volume to Capacity	0.00	0.02	0.01	0.46	0.24	0.01	0.27	0.14
Queue Length 95th (m)	0.0	0.6	0.2	0.0	0.0	0.2	0.0	0.0
Control Delay (s)	0.0	20.1	9.1	0.0	0.0	10.5	0.0	0.0
Lane LOS	A	C	A			B		
Approach Delay (s)	0.0	20.1	0.0			0.1		
Approach LOS	A	C						

Intersection Summary				
Average Delay	0.1			
Intersection Capacity Utilization	39.0%	ICU Level of Service		A
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
5: Queen Street North & Petro Canada S Driveway

06/28/2023

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	5	0	1040	605	10
Future Volume (Veh/h)	0	5	0	1040	605	10
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	0	6	0	1182	688	11
Pedestrians	3			2		
Lane Width (m)	3.5			3.6		
Walking Speed (m/s)	1.2			1.2		
Percent Blockage	0			0		
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (m)				127		
pX, platoon unblocked	0.84					
vC, conflicting volume	1288	354	702			
vC1, stage 1 conf vol	696					
vC2, stage 2 conf vol	591					
vCu, unblocked vol	973	354	702			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	100			
cM capacity (veh/h)	417	645	902			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	6	0	591	591	459	240
Volume Left	0	0	0	0	0	0
Volume Right	6	0	0	0	0	11
cSH	645	1700	1700	1700	1700	1700
Volume to Capacity	0.01	0.00	0.35	0.35	0.27	0.14
Queue Length 95th (m)	0.2	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	10.6	0.0	0.0	0.0	0.0	0.0
Lane LOS	B					
Approach Delay (s)	10.6	0.0			0.0	
Approach LOS	B					

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	39.4%	ICU Level of Service	A
Analysis Period (min)	15		

Timings
6: Queen Street South/Queen Street North & Britannia Rd West

06/28/2023

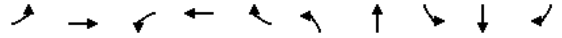
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	215	1615	80	640	325	95	500	140	330	140
Future Volume (vph)	215	1615	80	640	325	95	500	140	330	140
Turn Type	pm+pt	NA	pm+pt	NA	Perm	Perm	NA	pm+pt	NA	Perm
Protected Phases	5	2	1	6			4	3	8	
Permitted Phases	2		6		6	4		8		8
Detector Phase	5	2	1	6	6	4	4	3	8	8
Switch Phase										
Minimum Initial (s)	8.0	12.0	8.0	12.0	12.0	12.0	12.0	8.0	12.0	12.0
Minimum Split (s)	11.0	35.1	11.0	35.1	35.1	38.9	38.9	11.0	38.9	38.9
Total Split (s)	13.0	83.0	11.0	81.0	81.0	53.0	53.0	13.0	66.0	66.0
Total Split (%)	8.1%	51.9%	6.9%	50.6%	50.6%	33.1%	33.1%	8.1%	41.3%	41.3%
Yellow Time (s)	3.0	4.0	3.0	4.0	4.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	3.1	0.0	3.1	3.1	3.9	3.9	0.0	3.9	3.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	7.1	3.0	7.1	7.1	7.9	7.9	3.0	7.9	7.9
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		
Recall Mode	None	C-Max	None	C-Max	C-Max	None	None	None	None	None
Act Effct Green (s)	101.2	85.4	95.2	81.9	81.9	34.4	34.4	52.3	47.4	47.4
Actuated g/C Ratio	0.63	0.53	0.60	0.51	0.51	0.22	0.22	0.33	0.30	0.30
v/c Ratio	0.44	0.91	0.56	0.37	0.37	0.53	0.83	0.79	0.60	0.27
Control Delay	16.0	42.5	45.0	22.8	4.8	65.5	67.9	68.9	52.7	6.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.0	42.5	45.0	22.8	4.8	65.5	67.9	68.9	52.7	6.6
LOS	B	D	D	C	A	E	E	E	D	A
Approach Delay		39.5		18.9			67.6		45.8	
Approach LOS		D		B			E		D	

Intersection Summary			
Cycle Length: 160			
Actuated Cycle Length: 160			
Offset: 13 (8%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 130			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.91			
Intersection Signal Delay: 40.1		Intersection LOS: D	
Intersection Capacity Utilization 107.6%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 6: Queen Street South/Queen Street North & Britannia Rd West

Queues
6: Queen Street South/Queen Street North & Britannia Rd West

06/28/2023



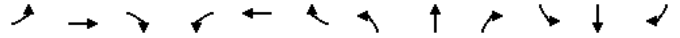
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	215	1715	80	640	325	95	625	140	330	140
v/c Ratio	0.44	0.91	0.56	0.37	0.37	0.53	0.83	0.79	0.60	0.27
Control Delay	16.0	42.5	45.0	22.8	4.8	65.5	67.9	68.9	52.7	6.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.0	42.5	45.0	22.8	4.8	65.5	67.9	68.9	52.7	6.6
Queue Length 50th (m)	28.6	264.6	10.1	67.4	16.6	28.4	103.3	34.5	95.0	0.0
Queue Length 95th (m)	47.5	#363.7	24.7	91.4	34.1	46.9	119.7	#56.3	121.3	16.0
Internal Link Dist (m)		110.7		83.1			135.0		103.4	
Turn Bay Length (m)	95.0		60.0		45.0	40.0		35.0		
Base Capacity (vph)	485	1886	144	1746	888	237	982	178	670	603
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.44	0.91	0.56	0.37	0.37	0.40	0.64	0.79	0.49	0.23

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
6: Queen Street South/Queen Street North & Britannia Rd West

06/28/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	215	1615	100	80	640	325	95	500	125	140	330	140
Future Volume (vph)	215	1615	100	80	640	325	95	500	125	140	330	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	3.0	7.1		3.0	7.1	7.1	7.9	7.9		3.0	7.9	7.9
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95		1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.96	1.00	0.99		1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	0.99	1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1746	3529		1700	3411	1481	1632	3437		1683	1847	1416
Flt Permitted	0.34	1.00		0.05	1.00	1.00	0.49	1.00		0.16	1.00	1.00
Satd. Flow (perm)	629	3529		87	3411	1481	842	3437		279	1847	1416
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	215	1615	100	80	640	325	95	500	125	140	330	140
RTOR Reduction (vph)	0	2	0	0	0	130	0	15	0	0	0	99
Lane Group Flow (vph)	215	1713	0	80	640	195	95	610	0	140	330	41
Confl. Peds. (#/hr)	14		24	24		14	14		18	18		14
Heavy Vehicles (%)	2%	2%	2%	5%	7%	4%	8%	2%	3%	6%	4%	9%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Perm	NA		pm+pt	NA	Perm
Protected Phases	5	2		1	6			4		3	8	
Permitted Phases	2			6		6	4			8		8
Actuated Green, G (s)	97.6	85.4		91.1	81.9	81.9	34.4	34.4		47.4	47.4	47.4
Effective Green, g (s)	97.6	85.4		91.1	81.9	81.9	34.4	34.4		47.4	47.4	47.4
Actuated g/C Ratio	0.61	0.53		0.57	0.51	0.51	0.21	0.21		0.30	0.30	0.30
Clearance Time (s)	3.0	7.1		3.0	7.1	7.1	7.9	7.9		3.0	7.9	7.9
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	472	1883		142	1746	758	181	738		170	547	419
v/s Ratio Prot	c0.04	c0.49		c0.03	0.19			0.18		c0.05	0.18	
v/s Ratio Perm	0.24			0.29		0.13	0.11			c0.19		0.03
v/c Ratio	0.46	0.91		0.56	0.37	0.26	0.52	0.83		0.82	0.60	0.10
Uniform Delay, d1	14.7	33.8		31.7	23.5	21.9	55.6	60.0		45.7	48.2	40.8
Progression Factor	1.00	1.00		1.27	0.90	0.71	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.7	8.0		4.8	0.6	0.8	2.7	7.6		26.4	1.9	0.1
Delay (s)	15.4	41.8		45.1	21.8	16.4	58.3	67.5		72.1	50.1	40.9
Level of Service	B	D		D	C	B	E	E		E	D	D
Approach Delay (s)		38.9			21.9			66.3			53.1	
Approach LOS		D			C			E			D	

Intersection Summary				
HCM 2000 Control Delay	41.3	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.88			
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	21.0	
Intersection Capacity Utilization	107.6%	ICU Level of Service	G	
Analysis Period (min)	15			
c Critical Lane Group				

HCM Unsignalized Intersection Capacity Analysis
7: Arch Rd & Britannia Rd West

06/28/2023

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1875	5	10	1040	5	10
Future Volume (Veh/h)	1875	5	10	1040	5	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	1875	5	10	1040	5	10
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			TWLTL		
Median storage veh)				2		
Upstream signal (m)	107			182		
pX, platoon unblocked			0.55		0.58	0.55
vC, conflicting volume			1880		2418	940
vC1, stage 1 conf vol					1878	
vC2, stage 2 conf vol					540	
vCu, unblocked vol			964		1537	0
tC, single (s)			4.1		6.8	7.1
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.4
p0 queue free %			97		97	98
cM capacity (veh/h)			397		176	586

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	1250	630	10	520	520	15
Volume Left	0	0	10	0	0	5
Volume Right	0	5	0	0	0	10
cSH	1700	1700	397	1700	1700	330
Volume to Capacity	0.74	0.37	0.03	0.31	0.31	0.05
Queue Length 95th (m)	0.0	0.0	0.6	0.0	0.0	1.1
Control Delay (s)	0.0	0.0	14.3	0.0	0.0	16.4
Lane LOS			B			C
Approach Delay (s)	0.0		0.1			16.4
Approach LOS						C

Intersection Summary				
Average Delay	0.1			
Intersection Capacity Utilization	62.0%	ICU Level of Service		B
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
8: Earl St & Britannia Rd West

06/28/2023

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1885	0	5	1045	5	20
Future Volume (Veh/h)	1885	0	5	1045	5	20
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	1885	0	5	1045	5	20
Pedestrians					7	
Lane Width (m)					3.5	
Walking Speed (m/s)					1.2	
Percent Blockage					1	
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (m)	219			71		
pX, platoon unblocked			0.54		0.58	0.54
vC, conflicting volume			1892		2424	950
vC1, stage 1 conf vol					1892	
vC2, stage 2 conf vol					532	
vCu, unblocked vol			961		1492	0
tC, single (s)			5.4		6.8	7.0
tC, 2 stage (s)					5.8	
tF (s)			2.9		3.5	3.4
p0 queue free %			98		97	97
cM capacity (veh/h)			227		174	579

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	1257	628	5	522	522	25
Volume Left	0	0	5	0	0	5
Volume Right	0	0	0	0	0	20
cSH	1700	1700	227	1700	1700	395
Volume to Capacity	0.74	0.37	0.02	0.31	0.31	0.06
Queue Length 95th (m)	0.0	0.0	0.5	0.0	0.0	1.6
Control Delay (s)	0.0	0.0	21.2	0.0	0.0	14.7
Lane LOS			C			B
Approach Delay (s)	0.0		0.1			14.7
Approach LOS						B

Intersection Summary				
Average Delay	0.2			
Intersection Capacity Utilization	62.1%	ICU Level of Service		B
Analysis Period (min)	15			

Timings
9: Britannia Rd West & Ellesboro Dr

06/28/2023

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	30	1875	1020	60	30
Future Volume (vph)	30	1875	1020	60	30
Turn Type	Perm	NA	NA	Perm	Perm
Protected Phases		2	6		
Permitted Phases	2			8	8
Detector Phase	2	2	6	8	8
Switch Phase					
Minimum Initial (s)	8.0	8.0	8.0	13.0	13.0
Minimum Split (s)	37.1	37.1	37.1	36.0	36.0
Total Split (s)	115.0	115.0	115.0	45.0	45.0
Total Split (%)	71.9%	71.9%	71.9%	28.1%	28.1%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.1	2.1	2.1	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.0	6.0
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	C-Max	C-Max	C-Max	None	None
Act Effct Green (s)	139.5	139.5	139.5	13.4	13.4
Actuated g/C Ratio	0.87	0.87	0.87	0.08	0.08
v/c Ratio	0.07	0.60	0.37	0.40	0.20
Control Delay	1.0	2.3	2.9	77.8	23.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	1.0	2.3	2.9	77.8	23.8
LOS	A	A	A	E	C
Approach Delay		2.3	2.9	59.8	
Approach LOS		A	A	E	

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.60
Intersection Signal Delay: 4.2 — Intersection LOS: A
Intersection Capacity Utilization 77.4% — ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 9: Britannia Rd West & Ellesboro Dr

Queues
9: Britannia Rd West & Ellesboro Dr

06/28/2023

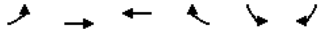
Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	30	1875	1090	60	30
v/c Ratio	0.07	0.60	0.37	0.40	0.20
Control Delay	1.0	2.3	2.9	77.8	23.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	1.0	2.3	2.9	77.8	23.8
Queue Length 50th (m)	0.6	26.8	35.4	19.5	0.0
Queue Length 95th (m)	m0.7	24.4	46.0	35.5	11.4
Internal Link Dist (m)		46.6	115.6	80.1	
Turn Bay Length (m)	45.0				15.0
Base Capacity (vph)	401	3120	2967	434	375
Starvation Cap Reductn	0	147	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.07	0.63	0.37	0.14	0.08

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
9: Britannia Rd West & Ellesboro Dr

06/28/2023



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	30	1875	1020	70	60	30
Future Volume (vph)	30	1875	1020	70	60	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.7	3.5	3.5	3.5
Total Lost time (s)	6.1	6.1	6.1		6.0	6.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00		1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1729	3579	3404		1782	1447
Flt Permitted	0.25	1.00	1.00		0.95	1.00
Satd. Flow (perm)	461	3579	3404		1782	1447
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	30	1875	1020	70	60	30
RTOR Reduction (vph)	0	0	1	0	0	28
Lane Group Flow (vph)	30	1875	1089	0	60	2
Confl. Peds. (#/hr)	4			4	1	12
Heavy Vehicles (%)	3%	2%	6%	6%	0%	7%
Turn Type	Perm	NA	NA		Perm	Perm
Protected Phases		2	6			
Permitted Phases	2				8	8
Actuated Green, G (s)	137.1	137.1	137.1		10.8	10.8
Effective Green, g (s)	137.1	137.1	137.1		10.8	10.8
Actuated g/C Ratio	0.86	0.86	0.86		0.07	0.07
Clearance Time (s)	6.1	6.1	6.1		6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	395	3066	2916		120	97
v/s Ratio Prot		c0.52	0.32			
v/s Ratio Perm	0.07				c0.03	0.00
v/c Ratio	0.08	0.61	0.37		0.50	0.02
Uniform Delay, d1	1.8	3.4	2.4		72.0	69.7
Progression Factor	0.37	0.49	1.00		1.00	1.00
Incremental Delay, d2	0.2	0.4	0.4		3.3	0.1
Delay (s)	0.8	2.1	2.8		75.2	69.7
Level of Service	A	A	A		E	E
Approach Delay (s)		2.1	2.8		73.4	
Approach LOS		A	A		E	

Intersection Summary				
HCM 2000 Control Delay	4.4	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.60			
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	12.1	
Intersection Capacity Utilization	77.4%	ICU Level of Service	D	
Analysis Period (min)	15			
c Critical Lane Group				

HCM Unsignalized Intersection Capacity Analysis
1: Queen Street North & Matlock Ave

06/28/2023

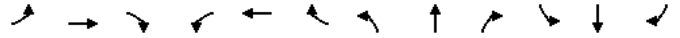
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	55	15	570	60	15	1080
Future Volume (Veh/h)	55	15	570	60	15	1080
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	60	16	620	65	16	1174
Pedestrians	6					1
Lane Width (m)	3.5					3.6
Walking Speed (m/s)	1.2					1.2
Percent Blockage	0					0
Right turn flare (veh)						
Median type			TWLTL			None
Median storage veh)			2			
Upstream signal (m)			313			
pX, platoon unblocked	0.97	0.97			0.97	
vC, conflicting volume	1278	350			691	
vC1, stage 1 conf vol	658					
vC2, stage 2 conf vol	619					
vCu, unblocked vol	1223	266			619	
tC, single (s)	7.0	6.9			4.4	
tC, 2 stage (s)	6.0					
tF (s)	3.6	3.3			2.4	
p0 queue free %	83	98			98	
cM capacity (veh/h)	363	711			844	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	76	413	272	16	587	587
Volume Left	60	0	0	16	0	0
Volume Right	16	0	65	0	0	0
cSH	404	1700	1700	844	1700	1700
Volume to Capacity	0.19	0.24	0.16	0.02	0.35	0.35
Queue Length 95th (m)	5.5	0.0	0.0	0.5	0.0	0.0
Control Delay (s)	16.0	0.0	0.0	9.4	0.0	0.0
Lane LOS	C			A		
Approach Delay (s)	16.0	0.0		0.1		
Approach LOS	C					

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	40.8%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
2: Queen Street North & 40 Queen St N Driveway/53 Queen St Driveway

06/28/2023



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	5	5	0	0	5	630	0	5	1130	0
Future Volume (Veh/h)	0	0	5	5	0	0	5	630	0	5	1130	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	0	0	5	5	0	0	5	692	0	5	1242	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (m)								213				
pX, platoon unblocked	0.94	0.94		0.94	0.94	0.94				0.94		
vC, conflicting volume	1608	1954	621	1338	1954	346	1242			692		
vC1, stage 1 conf vol	1252	1252		702	702							
vC2, stage 2 conf vol	356	702		636	1252							
vCu, unblocked vol	1513	1883	621	1224	1883	165	1242			534		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	99	98	100	100	99			99		
cM capacity (veh/h)	178	219	435	328	216	802	568			977		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	5	5	5	461	231	5	828	414
Volume Left	0	5	5	0	0	5	0	0
Volume Right	5	0	0	0	0	0	0	0
cSH	435	328	568	1700	1700	977	1700	1700
Volume to Capacity	0.01	0.02	0.01	0.27	0.14	0.01	0.49	0.24
Queue Length 95th (m)	0.3	0.4	0.2	0.0	0.0	0.1	0.0	0.0
Control Delay (s)	13.4	16.1	11.4	0.0	0.0	8.7	0.0	0.0
Lane LOS	B	C	B			A		
Approach Delay (s)	13.4	16.1	0.1			0.0		
Approach LOS	B	C						

Intersection Summary				
Average Delay	0.1			
Intersection Capacity Utilization	42.1%	ICU Level of Service	A	
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
3: Queen Street North & 40 Queen St S Driveway

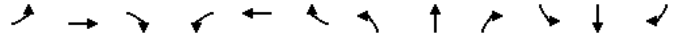
06/28/2023

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	5	0	630	1140	0
Future Volume (Veh/h)	5	5	0	630	1140	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	5	5	0	692	1253	0
Pedestrians	2					
Lane Width (m)	3.5					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (m)				186		
pX, platoon unblocked	0.93					
vC, conflicting volume	1601	628	1255			
vC1, stage 1 conf vol	1255					
vC2, stage 2 conf vol	346					
vCu, unblocked vol	1491	628	1255			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	98	99	100			
cM capacity (veh/h)	226	430	560			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	10	0	346	346	835	418
Volume Left	5	0	0	0	0	0
Volume Right	5	0	0	0	0	0
cSH	297	1700	1700	1700	1700	1700
Volume to Capacity	0.03	0.00	0.20	0.20	0.49	0.25
Queue Length 95th (m)	0.8	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	17.6	0.0	0.0	0.0	0.0	0.0
Lane LOS	C					
Approach Delay (s)	17.6	0.0			0.0	
Approach LOS	C					

Intersection Summary				
Average Delay	0.1			
Intersection Capacity Utilization	41.5%	ICU Level of Service	A	
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
4: Queen Street North & Petro Canada N Driveway/Existing Site Driveway 06/28/2023

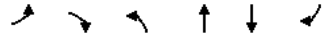


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	30	0	20	10	610	25	15	1120	10
Future Volume (Veh/h)	0	0	0	30	0	20	10	610	25	15	1120	10
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	0	0	0	33	0	22	11	670	27	16	1231	11
Pedestrians		2			28							
Lane Width (m)		3.7			3.7							
Walking Speed (m/s)		1.2			1.2							
Percent Blockage		0			2							
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (m)								159				
pX, platoon unblocked	0.91	0.91		0.91	0.91	0.91				0.91		
vC, conflicting volume	1650	2018	623	1381	2010	376	1244			725		
vC1, stage 1 conf vol	1270	1270		734	734							
vC2, stage 2 conf vol	379	747		648	1276							
vCu, unblocked vol	1521	1924	623	1227	1915	127	1244			509		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	90	100	97	98			98		
cM capacity (veh/h)	171	209	433	317	202	807	566			951		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	0	55	11	447	250	16	821	421
Volume Left	0	33	11	0	0	16	0	0
Volume Right	0	22	0	0	27	0	0	11
cSH	1700	419	566	1700	1700	951	1700	1700
Volume to Capacity	0.00	0.13	0.02	0.26	0.15	0.02	0.48	0.25
Queue Length 95th (m)	0.0	3.6	0.5	0.0	0.0	0.4	0.0	0.0
Control Delay (s)	0.0	14.9	11.5	0.0	0.0	8.9	0.0	0.0
Lane LOS	A	B	B			A		
Approach Delay (s)	0.0	14.9	0.2			0.1		
Approach LOS	A	B						

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

HCM Unsignalized Intersection Capacity Analysis
5: Queen Street North & Petro Canada S Driveway 06/28/2023



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	15	5	640	1150	0
Future Volume (Veh/h)	5	15	5	640	1150	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	5	16	5	703	1264	0
Pedestrians	2			4		
Lane Width (m)	3.5			3.6		
Walking Speed (m/s)	1.2			1.2		
Percent Blockage	0			0		
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (m)				127		
pX, platoon unblocked	0.90					
vC, conflicting volume	1628	638	1266			
vC1, stage 1 conf vol	1266					
vC2, stage 2 conf vol	362					
vCu, unblocked vol	1482	638	1266			
tC, single (s)	6.8	7.0	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.4	2.2			
p0 queue free %	98	96	99			
cM capacity (veh/h)	224	405	555			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	21	5	352	352	843	421
Volume Left	5	5	0	0	0	0
Volume Right	16	0	0	0	0	0
cSH	340	555	1700	1700	1700	1700
Volume to Capacity	0.06	0.01	0.21	0.21	0.50	0.25
Queue Length 95th (m)	1.6	0.2	0.0	0.0	0.0	0.0
Control Delay (s)	16.3	11.5	0.0	0.0	0.0	0.0
Lane LOS	C	B				
Approach Delay (s)	16.3	0.1			0.0	
Approach LOS	C					

Intersection Summary				
Average Delay	0.2			
Intersection Capacity Utilization	43.0%	ICU Level of Service	A	
Analysis Period (min)	15			

Timings
6: Queen Street South/Queen Street North & Britannia Rd West

06/28/2023

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	145	970	140	1245	125	165	375	280	540	345
Future Volume (vph)	145	970	140	1245	125	165	375	280	540	345
Turn Type	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA	Perm
Protected Phases	5	2	1	6		7	4	3	8	
Permitted Phases	2		6		6	4		8		8
Detector Phase	5	2	1	6	6	7	4	3	8	8
Switch Phase										
Minimum Initial (s)	8.0	12.0	8.0	12.0	12.0	5.0	12.0	8.0	12.0	12.0
Minimum Split (s)	11.0	35.1	11.0	35.1	35.1	9.5	38.9	11.0	38.9	38.9
Total Split (s)	13.0	74.0	11.0	72.0	72.0	14.0	58.0	17.0	61.0	61.0
Total Split (%)	8.1%	46.3%	6.9%	45.0%	45.0%	8.8%	36.3%	10.6%	38.1%	38.1%
Yellow Time (s)	3.0	4.0	3.0	4.0	4.0	3.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	3.1	0.0	3.1	3.1	0.0	3.9	0.0	3.9	3.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	7.1	3.0	7.1	7.1	3.0	7.9	3.0	7.9	7.9
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	None	C-Max	C-Max	None	None	None	None	None
Act Effct Green (s)	85.1	69.8	80.8	67.6	67.6	62.0	46.1	68.0	49.1	49.1
Actuated g/C Ratio	0.53	0.44	0.50	0.42	0.42	0.39	0.29	0.42	0.31	0.31
v/c Ratio	0.80	0.74	0.70	0.82	0.18	0.92	0.51	0.80	0.92	0.61
Control Delay	59.4	41.4	40.6	42.4	9.7	84.4	45.5	50.3	74.4	32.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.4	41.4	40.6	42.4	9.7	84.4	45.5	50.3	74.4	32.5
LOS	E	D	D	D	A	F	D	D	E	C
Approach Delay		43.4		39.5			54.9		56.2	
Approach LOS		D		D			D		E	

Intersection Summary		
Cycle Length: 160		
Actuated Cycle Length: 160		
Offset: 13 (8%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green		
Natural Cycle: 100		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.92		
Intersection Signal Delay: 47.1	Intersection LOS: D	
Intersection Capacity Utilization 99.2%	ICU Level of Service F	
Analysis Period (min) 15		

Splits and Phases: 6: Queen Street South/Queen Street North & Britannia Rd West

Queues
6: Queen Street South/Queen Street North & Britannia Rd West

06/28/2023

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	145	1135	140	1245	125	165	515	280	540	345
v/c Ratio	0.80	0.74	0.70	0.82	0.18	0.92	0.51	0.80	0.92	0.61
Control Delay	59.4	41.4	40.6	42.4	9.7	84.4	45.5	50.3	74.4	32.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	59.4	41.4	40.6	42.4	9.7	84.4	45.5	50.3	74.4	32.5
Queue Length 50th (m)	28.1	169.0	15.9	199.2	7.6	34.2	69.0	61.4	170.1	59.6
Queue Length 95th (m)	#71.4	198.1	#32.7	231.2	13.8	#80.7	87.1	#87.0	#229.1	94.4
Internal Link Dist (m)		110.7		83.1			135.0		103.4	
Turn Bay Length (m)	95.0		60.0		45.0	40.0		35.0		
Base Capacity (vph)	182	1529	199	1512	689	179	1094	351	637	599
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.80	0.74	0.70	0.82	0.18	0.92	0.47	0.80	0.85	0.58

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

HCM Signalized Intersection Capacity Analysis
6: Queen Street South/Queen Street North & Britannia Rd West

06/28/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	145	970	165	140	1245	125	165	375	140	280	540	345
Future Volume (vph)	145	970	165	140	1245	125	165	375	140	280	540	345
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	3.0	7.1		3.0	7.1	7.1	3.0	7.9		3.0	7.9	7.9
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95		1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.97	1.00	0.99		1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1750	3487		1767	3579	1530	1785	3421		1760	1921	1538
Flt Permitted	0.07	1.00		0.12	1.00	1.00	0.10	1.00		0.32	1.00	1.00
Satd. Flow (perm)	129	3487		221	3579	1530	179	3421		589	1921	1538
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	145	970	165	140	1245	125	165	375	140	280	540	345
RTOR Reduction (vph)	0	8	0	0	0	43	0	25	0	0	0	92
Lane Group Flow (vph)	145	1127	0	140	1245	82	165	490	0	280	540	253
Confl. Peds. (#/hr)	12		9	9		12	10		24	24		10
Heavy Vehicles (%)	2%	2%	0%	1%	2%	1%	0%	1%	1%	1%	0%	1%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2			6		6	4			8		8
Actuated Green, G (s)	81.1	69.8		76.7	67.6	67.6	57.1	46.1		63.1	49.1	49.1
Effective Green, g (s)	81.1	69.8		76.7	67.6	67.6	57.1	46.1		63.1	49.1	49.1
Actuated g/C Ratio	0.51	0.44		0.48	0.42	0.42	0.36	0.29		0.39	0.31	0.31
Clearance Time (s)	3.0	7.1		3.0	7.1	7.1	3.0	7.9		3.0	7.9	7.9
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	179	1521		193	1512	646	174	985		334	589	471
v/s Ratio Prot	c0.06	0.32		0.04	0.35		c0.07	0.14		c0.07	c0.28	
v/s Ratio Perm	c0.35			0.30		0.05	0.27			0.26		0.16
v/c Ratio	0.81	0.74		0.73	0.82	0.13	0.95	0.50		0.84	0.92	0.54
Uniform Delay, d1	36.3	37.6		29.2	40.9	28.2	41.6	47.3		39.7	53.5	46.0
Progression Factor	1.00	1.00		1.09	0.90	0.71	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	23.4	3.3		11.2	4.6	0.4	52.6	0.4		16.6	19.1	1.2
Delay (s)	59.8	40.8		43.0	41.4	20.3	94.2	47.7		56.3	72.6	47.2
Level of Service	E	D		D	D	C	F	D		E	E	D
Approach Delay (s)		43.0			39.8			59.0			61.1	
Approach LOS		D			D			E			E	

Intersection Summary				
HCM 2000 Control Delay	48.9	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.88			
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	21.0	
Intersection Capacity Utilization	99.2%	ICU Level of Service	F	
Analysis Period (min)	15			
c Critical Lane Group				

HCM Unsignalized Intersection Capacity Analysis
7: Arch Rd & Britannia Rd West

06/28/2023

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1380	10	5	1510	0	10
Future Volume (Veh/h)	1380	10	5	1510	0	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	1380	10	5	1510	0	10
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			TWLTL		
Median storage veh)				2		
Upstream signal (m)	107			182		
pX, platoon unblocked			0.73		0.81	0.73
vC, conflicting volume			1390		2150	695
vC1, stage 1 conf vol					1385	
vC2, stage 2 conf vol					765	
vCu, unblocked vol			809		1154	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			99		100	99
cM capacity (veh/h)			607		280	802

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	920	470	5	755	755	10
Volume Left	0	0	5	0	0	0
Volume Right	0	10	0	0	0	10
cSH	1700	1700	607	1700	1700	802
Volume to Capacity	0.54	0.28	0.01	0.44	0.44	0.01
Queue Length 95th (m)	0.0	0.0	0.2	0.0	0.0	0.3
Control Delay (s)	0.0	0.0	11.0	0.0	0.0	9.5
Lane LOS			B			A
Approach Delay (s)	0.0		0.0			9.5
Approach LOS						A

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	51.7%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
8: Earl St & Britannia Rd West

06/28/2023

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1385	5	5	1515	0	20
Future Volume (Veh/h)	1385	5	5	1515	0	20
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	1385	5	5	1515	0	20
Pedestrians					5	
Lane Width (m)					3.5	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (m)	219			71		
pX, platoon unblocked			0.74		0.81	0.74
vC, conflicting volume			1395		2160	700
vC1, stage 1 conf vol					1392	
vC2, stage 2 conf vol					768	
vCu, unblocked vol			835		1203	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			99		100	98
cM capacity (veh/h)			596		271	806

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	923	467	5	758	758	20
Volume Left	0	0	5	0	0	0
Volume Right	0	5	0	0	0	20
cSH	1700	1700	596	1700	1700	806
Volume to Capacity	0.54	0.27	0.01	0.45	0.45	0.02
Queue Length 95th (m)	0.0	0.0	0.2	0.0	0.0	0.6
Control Delay (s)	0.0	0.0	11.1	0.0	0.0	9.6
Lane LOS			B			A
Approach Delay (s)	0.0		0.0			9.6
Approach LOS						A

Intersection Summary				
Average Delay	0.1			
Intersection Capacity Utilization	51.9%	ICU Level of Service		A
Analysis Period (min)	15			

Timings
9: Britannia Rd West & Ellesboro Dr

06/28/2023

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	15	1390	1485	100	35
Future Volume (vph)	15	1390	1485	100	35
Turn Type	Perm	NA	NA	Perm	Perm
Protected Phases		2	6		
Permitted Phases	2			8	8
Detector Phase	2	2	6	8	8
Switch Phase					
Minimum Initial (s)	8.0	8.0	8.0	13.0	13.0
Minimum Split (s)	37.1	37.1	37.1	36.0	36.0
Total Split (s)	115.0	115.0	115.0	45.0	45.0
Total Split (%)	71.9%	71.9%	71.9%	28.1%	28.1%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.1	2.1	2.1	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.0	6.0
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	C-Max	C-Max	C-Max	None	None
Act Effct Green (s)	132.6	132.6	132.6	15.3	15.3
Actuated g/C Ratio	0.83	0.83	0.83	0.10	0.10
v/c Ratio	0.07	0.46	0.53	0.58	0.20
Control Delay	3.4	4.3	5.0	82.8	26.6
Queue Delay	0.0	0.1	0.0	0.0	0.0
Total Delay	3.4	4.4	5.0	82.8	26.6
LOS	A	A	A	F	C
Approach Delay		4.4	5.0	68.3	
Approach LOS		A	A	E	

Intersection Summary			
Cycle Length: 160			
Actuated Cycle Length: 160			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.58			
Intersection Signal Delay: 7.5		Intersection LOS: A	
Intersection Capacity Utilization 66.6%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 9: Britannia Rd West & Ellesboro Dr

Queues
9: Britannia Rd West & Ellesboro Dr

06/28/2023

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	15	1390	1560	100	35
v/c Ratio	0.07	0.46	0.53	0.58	0.20
Control Delay	3.4	4.3	5.0	82.8	26.6
Queue Delay	0.0	0.1	0.0	0.0	0.0
Total Delay	3.4	4.4	5.0	82.8	26.6
Queue Length 50th (m)	0.8	55.6	65.5	32.9	1.6
Queue Length 95th (m)	m1.1	59.4	95.5	52.4	13.2
Internal Link Dist (m)		46.6	115.6	80.1	
Turn Bay Length (m)	45.0				15.0
Base Capacity (vph)	221	2994	2971	435	393
Starvation Cap Reductn	0	429	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.07	0.54	0.53	0.23	0.09

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
9: Britannia Rd West & Ellesboro Dr

06/28/2023

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	15	1390	1485	75	100	35
Future Volume (vph)	15	1390	1485	75	100	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.7	3.5	3.5	3.5
Total Lost time (s)	6.1	6.1	6.1		6.0	6.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00		1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1783	3614	3584		1785	1520
Flt Permitted	0.14	1.00	1.00		0.95	1.00
Satd. Flow (perm)	267	3614	3584		1785	1520
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	15	1390	1485	75	100	35
RTOR Reduction (vph)	0	0	1	0	0	27
Lane Group Flow (vph)	15	1390	1559	0	100	8
Confl. Peds. (#/hr)	5			5		5
Heavy Vehicles (%)	0%	1%	1%	0%	0%	3%
Turn Type	Perm	NA	NA		Perm	Perm
Protected Phases		2	6			
Permitted Phases	2				8	8
Actuated Green, G (s)	132.6	132.6	132.6		15.3	15.3
Effective Green, g (s)	132.6	132.6	132.6		15.3	15.3
Actuated g/C Ratio	0.83	0.83	0.83		0.10	0.10
Clearance Time (s)	6.1	6.1	6.1		6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	221	2995	2970		170	145
v/s Ratio Prot		0.38	c0.43			
v/s Ratio Perm	0.06				c0.06	0.01
v/c Ratio	0.07	0.46	0.52		0.59	0.05
Uniform Delay, d1	2.5	3.8	4.2		69.3	65.8
Progression Factor	0.97	0.99	1.00		1.00	1.00
Incremental Delay, d2	0.4	0.4	0.7		5.1	0.2
Delay (s)	2.8	4.1	4.8		74.5	65.9
Level of Service	A	A	A		E	E
Approach Delay (s)		4.1	4.8		72.2	
Approach LOS		A	A		E	

Intersection Summary			
HCM 2000 Control Delay	7.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	12.1
Intersection Capacity Utilization	66.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
1: Queen Street North & Matlock Ave

06/28/2023

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	30	20	1015	40	15	605
Future Volume (Veh/h)	30	20	1015	40	15	605
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	33	22	1103	43	16	658
Pedestrians	1					
Lane Width (m)	3.5					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type			TWLTL			None
Median storage veh)			2			
Upstream signal (m)			313			
pX, platoon unblocked	0.89	0.89			0.89	
vC, conflicting volume	1486	574			1147	
vC1, stage 1 conf vol	1126					
vC2, stage 2 conf vol	361					
vCu, unblocked vol	1298	271			916	
tC, single (s)	7.3	7.4			4.9	
tC, 2 stage (s)	6.3					
tF (s)	3.7	3.5			2.6	
p0 queue free %	87	96			97	
cM capacity (veh/h)	259	588			480	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	55	735	411	16	329	329
Volume Left	33	0	0	16	0	0
Volume Right	22	0	43	0	0	0
cSH	333	1700	1700	480	1700	1700
Volume to Capacity	0.17	0.43	0.24	0.03	0.19	0.19
Queue Length 95th (m)	4.7	0.0	0.0	0.8	0.0	0.0
Control Delay (s)	17.9	0.0	0.0	12.8	0.0	0.0
Lane LOS	C			B		
Approach Delay (s)	17.9	0.0		0.3		
Approach LOS	C					

Intersection Summary				
Average Delay	0.6			
Intersection Capacity Utilization	39.3%	ICU Level of Service		A
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
2: Queen Street North & 40 Queen St N Driveway/53 Queen St Driveway

06/28/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	0	0	0	0	1055	0	0	635	0
Future Volume (Veh/h)	0	0	0	0	0	0	0	1055	0	0	635	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	0	0	0	0	0	0	0	1199	0	0	722	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (m)								213				
pX, platoon unblocked	0.86	0.86		0.86	0.86	0.86				0.86		
vC, conflicting volume	1322	1921	361	1560	1921	600	722			1199		
vC1, stage 1 conf vol	722	722		1199	1199							
vC2, stage 2 conf vol	600	1199		361	722							
vCu, unblocked vol	1051	1747	361	1328	1747	213	722			909		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	100	100	100	100			100		
cM capacity (veh/h)	352	254	641	242	254	688	889			652		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	0	0	0	799	400	0	481	241
Volume Left	0	0	0	0	0	0	0	0
Volume Right	0	0	0	0	0	0	0	0
cSH	1700	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.00	0.00	0.00	0.47	0.24	0.00	0.28	0.14
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	A	A						
Approach Delay (s)	0.0	0.0	0.0			0.0		
Approach LOS	A	A						

Intersection Summary				
Average Delay	0.0			
Intersection Capacity Utilization	32.5%	ICU Level of Service		A
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
3: Queen Street North & 40 Queen St S Driveway/Proposed Site Driveway 06/28/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	60	0	30	0	1025	30	15	620	0
Future Volume (Veh/h)	0	0	0	60	0	30	0	1025	30	15	620	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	0	0	0	69	0	34	0	1178	34	17	713	0
Pedestrians		3										
Lane Width (m)		3.7										
Walking Speed (m/s)		1.2										
Percent Blockage		0										
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (m)								186				
pX, platoon unblocked	0.85	0.85		0.85	0.85	0.85				0.85		
vC, conflicting volume	1373	1962	360	1586	1945	606	716			1212		
vC1, stage 1 conf vol	750	750		1195	1195							
vC2, stage 2 conf vol	623	1212		390	750							
vCu, unblocked vol	1090	1782	360	1340	1762	190	716			901		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	72	100	95	100			97		
cM capacity (veh/h)	325	239	641	246	251	704	892			650		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	0	103	0	785	427	17	475	238
Volume Left	0	69	0	0	0	17	0	0
Volume Right	0	34	0	0	34	0	0	0
cSH	1700	313	1700	1700	1700	650	1700	1700
Volume to Capacity	0.00	0.33	0.00	0.46	0.25	0.03	0.28	0.14
Queue Length 95th (m)	0.0	11.2	0.0	0.0	0.0	0.6	0.0	0.0
Control Delay (s)	0.0	22.0	0.0	0.0	0.0	10.7	0.0	0.0
Lane LOS	A	C				B		
Approach Delay (s)	0.0	22.0	0.0			0.2		
Approach LOS	A	C						

Intersection Summary				
Average Delay	1.2			
Intersection Capacity Utilization	41.1%	ICU Level of Service	A	
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
4: Queen Street North & Petro Canada N Driveway 06/28/2023

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	5	1055	670	10
Future Volume (Veh/h)	0	0	5	1055	670	10
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	0	0	6	1213	770	11
Pedestrians	3			1		
Lane Width (m)	0.0			3.6		
Walking Speed (m/s)	1.2			1.2		
Percent Blockage	0			0		
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (m)				159		
pX, platoon unblocked	0.85					
vC, conflicting volume	1397	394	784			
vC1, stage 1 conf vol	778					
vC2, stage 2 conf vol	618					
vCu, unblocked vol	1110	394	784			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	99			
cM capacity (veh/h)	377	610	843			

Direction, Lane #	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	6	606	606	513	268
Volume Left	6	0	0	0	0
Volume Right	0	0	0	0	11
cSH	843	1700	1700	1700	1700
Volume to Capacity	0.01	0.36	0.36	0.30	0.16
Queue Length 95th (m)	0.2	0.0	0.0	0.0	0.0
Control Delay (s)	9.3	0.0	0.0	0.0	0.0
Lane LOS	A				
Approach Delay (s)	0.0			0.0	
Approach LOS					

Intersection Summary				
Average Delay	0.0			
Intersection Capacity Utilization	39.5%	ICU Level of Service	A	
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
5: Queen Street North & Petro Canada S Driveway

06/28/2023

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	5	0	1060	660	10
Future Volume (Veh/h)	0	5	0	1060	660	10
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	0	6	0	1205	750	11
Pedestrians	3			2		
Lane Width (m)	3.5			3.6		
Walking Speed (m/s)	1.2			1.2		
Percent Blockage	0			0		
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (m)				127		
pX, platoon unblocked	0.84					
vC, conflicting volume	1361	386	764			
vC1, stage 1 conf vol	758					
vC2, stage 2 conf vol	602					
vCu, unblocked vol	1057	386	764			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	100			
cM capacity (veh/h)	389	616	856			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	6	0	602	602	500	261
Volume Left	0	0	0	0	0	0
Volume Right	6	0	0	0	0	11
cSH	616	1700	1700	1700	1700	1700
Volume to Capacity	0.01	0.00	0.35	0.35	0.29	0.15
Queue Length 95th (m)	0.2	0.0	0.0	0.0	0.0	0.0
Control Delay (s)	10.9	0.0	0.0	0.0	0.0	0.0
Lane LOS	B					
Approach Delay (s)	10.9	0.0			0.0	
Approach LOS	B					

Intersection Summary			
Average Delay		0.0	
Intersection Capacity Utilization		39.9%	ICU Level of Service A
Analysis Period (min)		15	

Timings
6: Queen Street South/Queen Street North & Britannia Rd West

06/28/2023

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	225	1615	80	640	330	95	505	155	355	155
Future Volume (vph)	225	1615	80	640	330	95	505	155	355	155
Turn Type	pm+pt	NA	pm+pt	NA	Perm	Perm	NA	pm+pt	NA	Perm
Protected Phases	5	2	1	6			4	3	8	
Permitted Phases	2		6		6	4		8		8
Detector Phase	5	2	1	6	6	4	4	3	8	8
Switch Phase										
Minimum Initial (s)	8.0	12.0	8.0	12.0	12.0	12.0	12.0	8.0	12.0	12.0
Minimum Split (s)	11.0	35.1	11.0	35.1	35.1	38.9	38.9	11.0	38.9	38.9
Total Split (s)	13.0	83.0	11.0	81.0	81.0	53.0	53.0	13.0	66.0	66.0
Total Split (%)	8.1%	51.9%	6.9%	50.6%	50.6%	33.1%	33.1%	8.1%	41.3%	41.3%
Yellow Time (s)	3.0	4.0	3.0	4.0	4.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	3.1	0.0	3.1	3.1	3.9	3.9	0.0	3.9	3.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	7.1	3.0	7.1	7.1	7.9	7.9	3.0	7.9	7.9
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		
Recall Mode	None	C-Max	None	C-Max	C-Max	None	None	None	None	None
Act Effct Green (s)	100.9	85.1	94.4	81.2	81.2	34.8	34.8	52.7	47.8	47.8
Actuated g/C Ratio	0.63	0.53	0.59	0.51	0.51	0.22	0.22	0.33	0.30	0.30
v/c Ratio	0.46	0.91	0.56	0.37	0.37	0.58	0.83	0.87	0.64	0.29
Control Delay	16.6	43.0	52.6	23.1	4.4	69.1	67.4	80.9	54.0	6.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.6	43.0	52.6	23.1	4.4	69.1	67.4	80.9	54.0	6.5
LOS	B	D	D	C	A	E	E	F	D	A
Approach Delay		39.9		19.5			67.7		49.2	
Approach LOS		D		B			E		D	

Intersection Summary		
Cycle Length: 160		
Actuated Cycle Length: 160		
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green		
Natural Cycle: 130		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.91		
Intersection Signal Delay: 41.0	Intersection LOS: D	
Intersection Capacity Utilization 108.4%	ICU Level of Service G	
Analysis Period (min) 15		

Splits and Phases: 6: Queen Street South/Queen Street North & Britannia Rd West

Queues
6: Queen Street South/Queen Street North & Britannia Rd West

06/28/2023

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	225	1715	80	640	330	95	630	155	355	155
v/c Ratio	0.46	0.91	0.56	0.37	0.37	0.58	0.83	0.87	0.64	0.29
Control Delay	16.6	43.0	52.6	23.1	4.4	69.1	67.4	80.9	54.0	6.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.6	43.0	52.6	23.1	4.4	69.1	67.4	80.9	54.0	6.5
Queue Length 50th (m)	30.3	265.8	12.0	62.7	6.8	28.7	104.1	38.4	103.6	0.0
Queue Length 95th (m)	50.1	#363.7	32.6	91.4	18.2	47.9	120.4	#59.6	131.1	16.6
Internal Link Dist (m)		472.2		83.1			306.0		103.4	
Turn Bay Length (m)	95.0		60.0		45.0	40.0		35.0		
Base Capacity (vph)	485	1878	143	1731	885	215	982	179	670	612
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.46	0.91	0.56	0.37	0.37	0.44	0.64	0.87	0.53	0.25

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
6: Queen Street South/Queen Street North & Britannia Rd West

06/28/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	225	1615	100	80	640	330	95	505	125	155	355	155
Future Volume (vph)	225	1615	100	80	640	330	95	505	125	155	355	155
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	3.0	7.1		3.0	7.1	7.1	7.9	7.9		3.0	7.9	7.9
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95		1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.96	1.00	0.99		1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	0.99	1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1746	3529		1700	3411	1481	1633	3438		1683	1847	1416
Flt Permitted	0.34	1.00		0.05	1.00	1.00	0.44	1.00		0.16	1.00	1.00
Satd. Flow (perm)	626	3529		88	3411	1481	763	3438		279	1847	1416
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	225	1615	100	80	640	330	95	505	125	155	355	155
RTOR Reduction (vph)	0	2	0	0	0	133	0	15	0	0	0	109
Lane Group Flow (vph)	225	1713	0	80	640	197	95	615	0	155	355	46
Confl. Peds. (#/hr)	14		24	24		14	14		18	18		14
Heavy Vehicles (%)	2%	2%	2%	5%	7%	4%	8%	2%	3%	6%	4%	9%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Perm	NA		pm+pt	NA	Perm
Protected Phases	5	2		1	6			4		3	8	
Permitted Phases	2			6		6	4			8		8
Actuated Green, G (s)	97.2	85.1		90.3	81.2	81.2	34.8	34.8		47.8	47.8	47.8
Effective Green, g (s)	97.2	85.1		90.3	81.2	81.2	34.8	34.8		47.8	47.8	47.8
Actuated g/C Ratio	0.61	0.53		0.56	0.51	0.51	0.22	0.22		0.30	0.30	0.30
Clearance Time (s)	3.0	7.1		3.0	7.1	7.1	7.9	7.9		3.0	7.9	7.9
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	471	1876		141	1731	751	165	747		171	551	423
v/s Ratio Prot	c0.04	c0.49		c0.03	0.19			0.18		c0.06	0.19	
v/s Ratio Perm	0.25			0.29		0.13	0.12			c0.21		0.03
v/c Ratio	0.48	0.91		0.57	0.37	0.26	0.58	0.82		0.91	0.64	0.11
Uniform Delay, d1	15.0	34.1		31.9	23.9	22.4	56.0	59.7		48.1	48.7	40.7
Progression Factor	1.00	1.00		1.55	0.90	0.63	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.8	8.3		4.9	0.6	0.8	4.8	7.3		42.6	2.6	0.1
Delay (s)	15.8	42.4		54.2	22.1	15.0	60.8	67.0		90.7	51.3	40.8
Level of Service	B	D		D	C	B	E	E		F	D	D
Approach Delay (s)		39.3			22.3			66.2			58.0	
Approach LOS		D			C			E			E	

Intersection Summary				
HCM 2000 Control Delay	42.5	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.91			
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	21.0	
Intersection Capacity Utilization	108.4%	ICU Level of Service	G	
Analysis Period (min)	15			
c Critical Lane Group				

HCM Unsignalized Intersection Capacity Analysis
7: Arch Rd & Britannia Rd West

06/28/2023

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1890	5	10	1045	5	10
Future Volume (Veh/h)	1890	5	10	1045	5	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	1890	5	10	1045	5	10
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			TWLTL		
Median storage veh)				2		
Upstream signal (m)	107			182		
pX, platoon unblocked			0.55		0.58	0.55
vC, conflicting volume			1895		2435	948
vC1, stage 1 conf vol					1892	
vC2, stage 2 conf vol					542	
vCu, unblocked vol			985		1559	0
tC, single (s)			4.1		6.8	7.1
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.4
p0 queue free %			97		97	98
cM capacity (veh/h)			389		171	584

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	1260	635	10	522	522	15
Volume Left	0	0	10	0	0	5
Volume Right	0	5	0	0	0	10
cSH	1700	1700	389	1700	1700	324
Volume to Capacity	0.74	0.37	0.03	0.31	0.31	0.05
Queue Length 95th (m)	0.0	0.0	0.6	0.0	0.0	1.2
Control Delay (s)	0.0	0.0	14.5	0.0	0.0	16.6
Lane LOS			B			C
Approach Delay (s)	0.0		0.1			16.6
Approach LOS						C

Intersection Summary				
Average Delay	0.1			
Intersection Capacity Utilization	62.4%	ICU Level of Service		B
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
8: Earl St & Britannia Rd West

06/28/2023

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1900	0	5	1050	5	20
Future Volume (Veh/h)	1900	0	5	1050	5	20
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	1900	0	5	1050	5	20
Pedestrians					7	
Lane Width (m)					3.5	
Walking Speed (m/s)					1.2	
Percent Blockage					1	
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (m)	219			71		
pX, platoon unblocked			0.54		0.57	0.54
vC, conflicting volume			1907		2442	957
vC1, stage 1 conf vol					1907	
vC2, stage 2 conf vol					535	
vCu, unblocked vol			982		1515	0
tC, single (s)			5.4		6.8	7.0
tC, 2 stage (s)					5.8	
tF (s)			2.9		3.5	3.4
p0 queue free %			98		97	97
cM capacity (veh/h)			221		169	577

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	1267	633	5	525	525	25
Volume Left	0	0	5	0	0	5
Volume Right	0	0	0	0	0	20
cSH	1700	1700	221	1700	1700	389
Volume to Capacity	0.75	0.37	0.02	0.31	0.31	0.06
Queue Length 95th (m)	0.0	0.0	0.6	0.0	0.0	1.6
Control Delay (s)	0.0	0.0	21.7	0.0	0.0	14.9
Lane LOS			C			B
Approach Delay (s)	0.0		0.1			14.9
Approach LOS						B

Intersection Summary				
Average Delay	0.2			
Intersection Capacity Utilization	62.5%	ICU Level of Service		B
Analysis Period (min)	15			

Timings
9: Britannia Rd West & Ellesboro Dr

06/28/2023

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	30	1890	1025	60	30
Future Volume (vph)	30	1890	1025	60	30
Turn Type	Perm	NA	NA	Perm	Perm
Protected Phases		2	6		
Permitted Phases	2			8	8
Detector Phase	2	2	6	8	8
Switch Phase					
Minimum Initial (s)	8.0	8.0	8.0	13.0	13.0
Minimum Split (s)	37.1	37.1	37.1	36.0	36.0
Total Split (s)	115.0	115.0	115.0	45.0	45.0
Total Split (%)	71.9%	71.9%	71.9%	28.1%	28.1%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.1	2.1	2.1	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.0	6.0
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	C-Max	C-Max	C-Max	None	None
Act Effct Green (s)	139.5	139.5	139.5	13.4	13.4
Actuated g/C Ratio	0.87	0.87	0.87	0.08	0.08
v/c Ratio	0.07	0.61	0.37	0.40	0.20
Control Delay	1.2	2.0	2.9	77.8	23.8
Queue Delay	0.0	0.1	0.0	0.0	0.0
Total Delay	1.2	2.1	2.9	77.8	23.8
LOS	A	A	A	E	C
Approach Delay		2.1	2.9	59.8	
Approach LOS		A	A	E	

Intersection Summary

Cycle Length: 160
Actuated Cycle Length: 160
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.61
Intersection Signal Delay: 4.1 — Intersection LOS: A
Intersection Capacity Utilization 77.8% — ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 9: Britannia Rd West & Ellesboro Dr

Queues
9: Britannia Rd West & Ellesboro Dr

06/28/2023

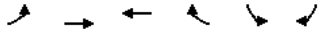
Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	30	1890	1095	60	30
v/c Ratio	0.07	0.61	0.37	0.40	0.20
Control Delay	1.2	2.0	2.9	77.8	23.8
Queue Delay	0.0	0.1	0.0	0.0	0.0
Total Delay	1.2	2.1	2.9	77.8	23.8
Queue Length 50th (m)	0.6	27.8	35.6	19.5	0.0
Queue Length 95th (m)	m0.7	27.3	46.3	35.5	11.4
Internal Link Dist (m)		46.6	115.6	80.1	
Turn Bay Length (m)	45.0				15.0
Base Capacity (vph)	400	3120	2968	434	375
Starvation Cap Reductn	0	344	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.07	0.68	0.37	0.14	0.08

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
9: Britannia Rd West & Ellesboro Dr

06/28/2023

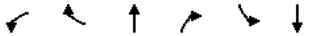


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	30	1890	1025	70	60	30
Future Volume (vph)	30	1890	1025	70	60	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.7	3.5	3.5	3.5
Total Lost time (s)	6.1	6.1	6.1		6.0	6.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00		1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1729	3579	3404		1782	1447
Flt Permitted	0.25	1.00	1.00		0.95	1.00
Satd. Flow (perm)	458	3579	3404		1782	1447
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	30	1890	1025	70	60	30
RTOR Reduction (vph)	0	0	1	0	0	28
Lane Group Flow (vph)	30	1890	1094	0	60	2
Confl. Peds. (#/hr)	4			4	1	12
Heavy Vehicles (%)	3%	2%	6%	6%	0%	7%
Turn Type	Perm	NA	NA		Perm	Perm
Protected Phases		2	6			
Permitted Phases	2				8	8
Actuated Green, G (s)	137.1	137.1	137.1		10.8	10.8
Effective Green, g (s)	137.1	137.1	137.1		10.8	10.8
Actuated g/C Ratio	0.86	0.86	0.86		0.07	0.07
Clearance Time (s)	6.1	6.1	6.1		6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	392	3066	2916		120	97
v/s Ratio Prot		c0.53	0.32			
v/s Ratio Perm	0.07				c0.03	0.00
v/c Ratio	0.08	0.62	0.38		0.50	0.02
Uniform Delay, d1	1.8	3.5	2.4		72.0	69.7
Progression Factor	0.42	0.42	1.00		1.00	1.00
Incremental Delay, d2	0.2	0.4	0.4		3.3	0.1
Delay (s)	0.9	1.9	2.8		75.2	69.7
Level of Service	A	A	A		E	E
Approach Delay (s)		1.9	2.8		73.4	
Approach LOS		A	A		E	

Intersection Summary				
HCM 2000 Control Delay	4.3	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.61			
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	12.1	
Intersection Capacity Utilization	77.8%	ICU Level of Service	D	
Analysis Period (min)	15			
c Critical Lane Group				

HCM Unsignalized Intersection Capacity Analysis
1: Queen Street North & Matlock Ave

06/28/2023



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	55	15	585	60	15	1105
Future Volume (Veh/h)	55	15	585	60	15	1105
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	60	16	636	65	16	1201
Pedestrians	6					1
Lane Width (m)	3.5					3.6
Walking Speed (m/s)	1.2					1.2
Percent Blockage	0					0
Right turn flare (veh)						
Median type			TWLTL			None
Median storage veh)			2			
Upstream signal (m)			313			
pX, platoon unblocked	0.99	0.99			0.99	
vC, conflicting volume	1307	358			707	
vC1, stage 1 conf vol	674					
vC2, stage 2 conf vol	632					
vCu, unblocked vol	1298	344			695	
tC, single (s)	7.0	6.9			4.4	
tC, 2 stage (s)	6.0					
tF (s)	3.6	3.3			2.4	
p0 queue free %	83	98			98	
cM capacity (veh/h)	345	651			807	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	76	424	277	16	600	600
Volume Left	60	0	0	16	0	0
Volume Right	16	0	65	0	0	0
cSH	383	1700	1700	807	1700	1700
Volume to Capacity	0.20	0.25	0.16	0.02	0.35	0.35
Queue Length 95th (m)	5.8	0.0	0.0	0.5	0.0	0.0
Control Delay (s)	16.7	0.0	0.0	9.6	0.0	0.0
Lane LOS	C			A		
Approach Delay (s)	16.7	0.0		0.1		
Approach LOS	C					

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	41.5%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
2: Queen Street North & 40 Queen St N Driveway/53 Queen St Driveway

06/28/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	5	5	0	0	5	645	0	5	1155	0
Future Volume (Veh/h)	0	0	5	5	0	0	5	645	0	5	1155	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	0	0	5	5	0	0	5	709	0	5	1269	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (m)								213				
pX, platoon unblocked	0.95	0.95		0.95	0.95	0.95				0.95		
vC, conflicting volume	1644	1998	634	1368	1998	354	1269			709		
vC1, stage 1 conf vol	1279	1279		719	719							
vC2, stage 2 conf vol	364	719		650	1279							
vCu, unblocked vol	1572	1945	634	1282	1945	215	1269			588		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	99	98	100	100	99			99		
cM capacity (veh/h)	171	211	426	314	208	756	554			947		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	5	5	5	473	236	5	846	423
Volume Left	0	5	5	0	0	5	0	0
Volume Right	5	0	0	0	0	0	0	0
cSH	426	314	554	1700	1700	947	1700	1700
Volume to Capacity	0.01	0.02	0.01	0.28	0.14	0.01	0.50	0.25
Queue Length 95th (m)	0.3	0.4	0.2	0.0	0.0	0.1	0.0	0.0
Control Delay (s)	13.5	16.6	11.6	0.0	0.0	8.8	0.0	0.0
Lane LOS	B	C	B			A		
Approach Delay (s)	13.5	16.6	0.1			0.0		
Approach LOS	B	C						

Intersection Summary				
Average Delay	0.1			
Intersection Capacity Utilization	42.7%	ICU Level of Service	A	
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
3: Queen Street North & 40 Queen St S Driveway/Proposed Site Driveway

06/28/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	0	5	60	0	35	0	610	80	40	1125	0
Future Volume (Veh/h)	5	0	5	60	0	35	0	610	80	40	1125	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	5	0	5	66	0	38	0	670	88	44	1236	0
Pedestrians		2										
Lane Width (m)		3.7										
Walking Speed (m/s)		1.2										
Percent Blockage		0										
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (m)								186				
pX, platoon unblocked	0.91	0.91		0.91	0.91	0.91				0.91		
vC, conflicting volume	1699	2084	620	1425	2040	379	1238			758		
vC1, stage 1 conf vol	1326	1326		714	714							
vC2, stage 2 conf vol	373	758		711	1326							
vCu, unblocked vol	1570	1993	620	1269	1945	119	1238			536		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.5							
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	97	100	99	78	100	95	100			95		
cM capacity (veh/h)	154	193	435	307	198	834	569			949		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	10	104	0	447	311	44	824	412
Volume Left	5	66	0	0	0	44	0	0
Volume Right	5	38	0	0	88	0	0	0
cSH	227	399	1700	1700	1700	949	1700	1700
Volume to Capacity	0.04	0.26	0.00	0.26	0.18	0.05	0.48	0.24
Queue Length 95th (m)	1.1	8.2	0.0	0.0	0.0	1.2	0.0	0.0
Control Delay (s)	21.6	17.2	0.0	0.0	0.0	9.0	0.0	0.0
Lane LOS	C	C				A		
Approach Delay (s)	21.6	17.2	0.0			0.3		
Approach LOS	C	C						

Intersection Summary				
Average Delay	1.1			
Intersection Capacity Utilization	47.4%	ICU Level of Service	A	
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
4: Queen Street North & Petro Canada N Driveway

06/28/2023

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	10	690	1180	10
Future Volume (Veh/h)	0	0	10	690	1180	10
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	0	0	11	758	1297	11
Pedestrians	2					
Lane Width (m)	0.0					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (m)				159		
pX, platoon unblocked	0.90					
vC, conflicting volume	1706	656	1310			
vC1, stage 1 conf vol	1304					
vC2, stage 2 conf vol	401					
vCu, unblocked vol	1568	656	1310			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	98			
cM capacity (veh/h)	213	413	535			

Direction, Lane #	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	11	379	379	865	443
Volume Left	11	0	0	0	0
Volume Right	0	0	0	0	11
cSH	535	1700	1700	1700	1700
Volume to Capacity	0.02	0.22	0.22	0.51	0.26
Queue Length 95th (m)	0.5	0.0	0.0	0.0	0.0
Control Delay (s)	11.9	0.0	0.0	0.0	0.0
Lane LOS	B				
Approach Delay (s)	0.2			0.0	
Approach LOS					

Intersection Summary				
Average Delay	0.1			
Intersection Capacity Utilization	36.3%	ICU Level of Service		A
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
5: Queen Street North & Petro Canada S Driveway

06/28/2023

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	15	5	695	1180	0
Future Volume (Veh/h)	5	15	5	695	1180	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	5	16	5	764	1297	0
Pedestrians	2			4		
Lane Width (m)	3.5			3.6		
Walking Speed (m/s)	1.2			1.2		
Percent Blockage	0			0		
Right turn flare (veh)						
Median type				TWLTL	TWLTL	
Median storage veh)				2	2	
Upstream signal (m)				127		
pX, platoon unblocked	0.90					
vC, conflicting volume	1691	654	1299			
vC1, stage 1 conf vol	1299					
vC2, stage 2 conf vol	392					
vCu, unblocked vol	1539	654	1299			
tC, single (s)	6.8	7.0	4.1			
tC, 2 stage (s)	5.8					
tF (s)	3.5	3.4	2.2			
p0 queue free %	98	96	99			
cM capacity (veh/h)	215	395	539			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	21	5	382	382	865	432
Volume Left	5	5	0	0	0	0
Volume Right	16	0	0	0	0	0
cSH	329	539	1700	1700	1700	1700
Volume to Capacity	0.06	0.01	0.22	0.22	0.51	0.25
Queue Length 95th (m)	1.6	0.2	0.0	0.0	0.0	0.0
Control Delay (s)	16.7	11.7	0.0	0.0	0.0	0.0
Lane LOS	C	B				
Approach Delay (s)	16.7	0.1			0.0	
Approach LOS	C					

Intersection Summary				
Average Delay	0.2			
Intersection Capacity Utilization	43.9%	ICU Level of Service		A
Analysis Period (min)	15			

Timings
6: Queen Street South/Queen Street North & Britannia Rd West

06/28/2023

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	155	970	140	1245	145	165	400	285	555	355
Future Volume (vph)	155	970	140	1245	145	165	400	285	555	355
Turn Type	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA	Perm
Protected Phases	5	2	1	6		7	4	3	8	
Permitted Phases	2		6		6	4		8		8
Detector Phase	5	2	1	6	6	7	4	3	8	8
Switch Phase										
Minimum Initial (s)	8.0	12.0	8.0	12.0	12.0	5.0	12.0	8.0	12.0	12.0
Minimum Split (s)	11.0	35.1	11.0	35.1	35.1	9.5	38.9	11.0	38.9	38.9
Total Split (s)	13.0	74.0	11.0	72.0	72.0	14.0	58.0	17.0	61.0	61.0
Total Split (%)	8.1%	46.3%	6.9%	45.0%	45.0%	8.8%	36.3%	10.6%	38.1%	38.1%
Yellow Time (s)	3.0	4.0	3.0	4.0	4.0	3.0	4.0	3.0	4.0	4.0
All-Red Time (s)	0.0	3.1	0.0	3.1	3.1	0.0	3.9	0.0	3.9	3.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	7.1	3.0	7.1	7.1	3.0	7.9	3.0	7.9	7.9
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	None	C-Max	C-Max	None	None	None	None	None
Act Effct Green (s)	84.5	69.1	79.2	66.2	66.2	62.9	47.0	68.9	50.0	50.0
Actuated g/C Ratio	0.53	0.43	0.50	0.41	0.41	0.39	0.29	0.43	0.31	0.31
v/c Ratio	0.85	0.75	0.72	0.84	0.21	0.94	0.52	0.83	0.93	0.62
Control Delay	70.6	42.0	43.1	44.0	11.7	91.4	45.8	52.8	75.1	33.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	70.6	42.0	43.1	44.0	11.7	91.4	45.8	52.8	75.1	33.3
LOS	E	D	D	D	B	F	D	D	E	C
Approach Delay		45.4		40.8			56.5		57.4	
Approach LOS		D		D			E		E	

Intersection Summary		
Cycle Length: 160		
Actuated Cycle Length: 160		
Offset: 13 (8%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green		
Natural Cycle: 100		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.94		
Intersection Signal Delay: 48.6	Intersection LOS: D	
Intersection Capacity Utilization 100.5%	ICU Level of Service G	
Analysis Period (min) 15		

Splits and Phases: 6: Queen Street South/Queen Street North & Britannia Rd West

Queues
6: Queen Street South/Queen Street North & Britannia Rd West

06/28/2023

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	155	1135	140	1245	145	165	540	285	555	355
v/c Ratio	0.85	0.75	0.72	0.84	0.21	0.94	0.52	0.83	0.93	0.62
Control Delay	70.6	42.0	43.1	44.0	11.7	91.4	45.8	52.8	75.1	33.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	70.6	42.0	43.1	44.0	11.7	91.4	45.8	52.8	75.1	33.3
Queue Length 50th (m)	34.0	169.0	16.7	199.5	11.6	36.0	73.0	62.0	175.1	62.7
Queue Length 95th (m)	#83.3	198.1	#33.3	231.5	20.6	#84.6	92.2	#94.4	#240.1	99.1
Internal Link Dist (m)		110.7		83.1			135.0		103.4	
Turn Bay Length (m)	95.0		60.0		45.0	40.0		35.0		
Base Capacity (vph)	182	1513	194	1479	675	175	1095	345	637	598
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.85	0.75	0.72	0.84	0.21	0.94	0.49	0.83	0.87	0.59

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

HCM Signalized Intersection Capacity Analysis
6: Queen Street South/Queen Street North & Britannia Rd West

06/28/2023

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	155	970	165	140	1245	145	165	400	140	285	555	355
Future Volume (vph)	155	970	165	140	1245	145	165	400	140	285	555	355
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	3.0	7.1		3.0	7.1	7.1	3.0	7.9		3.0	7.9	7.9
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95		1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.97	1.00	0.99		1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1750	3487		1767	3579	1530	1785	3430		1761	1921	1538
Flt Permitted	0.06	1.00		0.12	1.00	1.00	0.09	1.00		0.30	1.00	1.00
Satd. Flow (perm)	117	3487		219	3579	1530	162	3430		563	1921	1538
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	155	970	165	140	1245	145	165	400	140	285	555	355
RTOR Reduction (vph)	0	9	0	0	0	43	0	23	0	0	0	91
Lane Group Flow (vph)	155	1126	0	140	1245	102	165	517	0	285	555	264
Confl. Peds. (#/hr)	12		9	9		12	10		24	24		10
Heavy Vehicles (%)	2%	2%	0%	1%	2%	1%	0%	1%	1%	1%	0%	1%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2			6		6	4			8		8
Actuated Green, G (s)	80.9	69.1		75.1	66.2	66.2	58.0	47.0		64.0	50.0	50.0
Effective Green, g (s)	80.9	69.1		75.1	66.2	66.2	58.0	47.0		64.0	50.0	50.0
Actuated g/C Ratio	0.51	0.43		0.47	0.41	0.41	0.36	0.29		0.40	0.31	0.31
Clearance Time (s)	3.0	7.1		3.0	7.1	7.1	3.0	7.9		3.0	7.9	7.9
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	179	1505		188	1480	633	170	1007		330	600	480
v/s Ratio Prot	c0.06	0.32		0.04	0.35		c0.07	0.15		c0.08	c0.29	
v/s Ratio Perm	c0.37			0.31		0.07	0.29			0.27		0.17
v/c Ratio	0.87	0.75		0.74	0.84	0.16	0.97	0.51		0.86	0.93	0.55
Uniform Delay, d1	42.4	38.2		30.0	42.2	29.5	42.1	47.0		39.8	53.2	45.7
Progression Factor	1.00	1.00		1.11	0.90	0.74	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	32.7	3.5		12.9	5.2	0.5	60.1	0.4		20.2	20.2	1.4
Delay (s)	75.1	41.6		46.2	43.2	22.2	102.2	47.4		60.0	73.4	47.0
Level of Service	E	D		D	D	C	F	D		E	E	D
Approach Delay (s)		45.6			41.5			60.3			62.4	
Approach LOS		D			D			E			E	

Intersection Summary				
HCM 2000 Control Delay	50.7	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.92			
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	21.0	
Intersection Capacity Utilization	100.5%	ICU Level of Service	G	
Analysis Period (min)	15			
c Critical Lane Group				

HCM Unsignalized Intersection Capacity Analysis
7: Arch Rd & Britannia Rd West

06/28/2023

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1385	10	5	1530	0	10
Future Volume (Veh/h)	1385	10	5	1530	0	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	1385	10	5	1530	0	10
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			TWLTL		
Median storage veh)				2		
Upstream signal (m)	107			182		
pX, platoon unblocked			0.73		0.81	0.73
vC, conflicting volume			1395		2165	698
vC1, stage 1 conf vol					1390	
vC2, stage 2 conf vol					775	
vCu, unblocked vol			809		1151	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			99		100	99
cM capacity (veh/h)			605		279	799

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	923	472	5	765	765	10
Volume Left	0	0	5	0	0	0
Volume Right	0	10	0	0	0	10
cSH	1700	1700	605	1700	1700	799
Volume to Capacity	0.54	0.28	0.01	0.45	0.45	0.01
Queue Length 95th (m)	0.0	0.0	0.2	0.0	0.0	0.3
Control Delay (s)	0.0	0.0	11.0	0.0	0.0	9.6
Lane LOS			B			A
Approach Delay (s)	0.0		0.0			9.6
Approach LOS						A

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	52.3%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
8: Earl St & Britannia Rd West

06/28/2023

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1390	5	5	1535	0	20
Future Volume (Veh/h)	1390	5	5	1535	0	20
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	1390	5	5	1535	0	20
Pedestrians					5	
Lane Width (m)					3.5	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (m)	219			71		
pX, platoon unblocked			0.74		0.81	0.74
vC, conflicting volume			1400		2175	702
vC1, stage 1 conf vol					1398	
vC2, stage 2 conf vol					778	
vCu, unblocked vol			836		1202	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			99		100	98
cM capacity (veh/h)			594		270	803

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	927	468	5	768	768	20
Volume Left	0	0	5	0	0	0
Volume Right	0	5	0	0	0	20
cSH	1700	1700	594	1700	1700	803
Volume to Capacity	0.55	0.28	0.01	0.45	0.45	0.02
Queue Length 95th (m)	0.0	0.0	0.2	0.0	0.0	0.6
Control Delay (s)	0.0	0.0	11.1	0.0	0.0	9.6
Lane LOS			B			A
Approach Delay (s)	0.0		0.0			9.6
Approach LOS						A

Intersection Summary				
Average Delay	0.1			
Intersection Capacity Utilization	52.4%	ICU Level of Service		A
Analysis Period (min)	15			

Timings
9: Britannia Rd West & Ellesboro Dr

06/28/2023

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	15	1395	1505	100	35
Future Volume (vph)	15	1395	1505	100	35
Turn Type	Perm	NA	NA	Perm	Perm
Protected Phases		2	6		
Permitted Phases	2			8	8
Detector Phase	2	2	6	8	8
Switch Phase					
Minimum Initial (s)	8.0	8.0	8.0	13.0	13.0
Minimum Split (s)	37.1	37.1	37.1	36.0	36.0
Total Split (s)	115.0	115.0	115.0	45.0	45.0
Total Split (%)	71.9%	71.9%	71.9%	28.1%	28.1%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.1	2.1	2.1	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.0	6.0
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	C-Max	C-Max	C-Max	None	None
Act Effct Green (s)	132.6	132.6	132.6	15.3	15.3
Actuated g/C Ratio	0.83	0.83	0.83	0.10	0.10
v/c Ratio	0.07	0.47	0.53	0.58	0.20
Control Delay	3.4	4.3	5.1	82.8	26.6
Queue Delay	0.0	0.1	0.0	0.0	0.0
Total Delay	3.4	4.4	5.1	82.8	26.6
LOS	A	A	A	F	C
Approach Delay		4.4	5.1	68.3	
Approach LOS		A	A	E	

Intersection Summary			
Cycle Length: 160			
Actuated Cycle Length: 160			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.58			
Intersection Signal Delay: 7.5		Intersection LOS: A	
Intersection Capacity Utilization 67.1%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 9: Britannia Rd West & Ellesboro Dr

Queues
9: Britannia Rd West & Ellesboro Dr

06/28/2023

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	15	1395	1580	100	35
v/c Ratio	0.07	0.47	0.53	0.58	0.20
Control Delay	3.4	4.3	5.1	82.8	26.6
Queue Delay	0.0	0.1	0.0	0.0	0.0
Total Delay	3.4	4.4	5.1	82.8	26.6
Queue Length 50th (m)	0.8	56.0	67.1	32.9	1.6
Queue Length 95th (m)	m1.1	60.4	97.7	52.4	13.2
Internal Link Dist (m)		46.6	115.6	80.1	
Turn Bay Length (m)	45.0				15.0
Base Capacity (vph)	216	2994	2971	435	393
Starvation Cap Reductn	0	429	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.07	0.54	0.53	0.23	0.09

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
9: Britannia Rd West & Ellesboro Dr

06/28/2023

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	15	1395	1505	75	100	35
Future Volume (vph)	15	1395	1505	75	100	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.7	3.5	3.5	3.5
Total Lost time (s)	6.1	6.1	6.1		6.0	6.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00		1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1783	3614	3584		1785	1520
Flt Permitted	0.14	1.00	1.00		0.95	1.00
Satd. Flow (perm)	261	3614	3584		1785	1520
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	15	1395	1505	75	100	35
RTOR Reduction (vph)	0	0	1	0	0	27
Lane Group Flow (vph)	15	1395	1579	0	100	8
Confl. Peds. (#/hr)	5			5		5
Heavy Vehicles (%)	0%	1%	1%	0%	0%	3%
Turn Type	Perm	NA	NA		Perm	Perm
Protected Phases		2	6			
Permitted Phases	2				8	8
Actuated Green, G (s)	132.6	132.6	132.6		15.3	15.3
Effective Green, g (s)	132.6	132.6	132.6		15.3	15.3
Actuated g/C Ratio	0.83	0.83	0.83		0.10	0.10
Clearance Time (s)	6.1	6.1	6.1		6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	216	2995	2970		170	145
v/s Ratio Prot		0.39	c0.44			
v/s Ratio Perm	0.06				c0.06	0.01
v/c Ratio	0.07	0.47	0.53		0.59	0.05
Uniform Delay, d1	2.5	3.8	4.2		69.3	65.8
Progression Factor	0.97	0.98	1.00		1.00	1.00
Incremental Delay, d2	0.4	0.4	0.7		5.1	0.2
Delay (s)	2.8	4.1	4.9		74.5	65.9
Level of Service	A	A	A		E	E
Approach Delay (s)		4.1	4.9		72.2	
Approach LOS		A	A		E	

Intersection Summary

HCM 2000 Control Delay	7.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	12.1
Intersection Capacity Utilization	67.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Appendix J:
Signal Warrant – Justification 7 (OTM Book 12)

OTM BOOK 12, JUSTIFICATION 7 – SUMMARY

EXISTING CONDITIONS

Justification	Description	Minimum Requirement 2 or more lanes		Compliance		
				Sectional		Entire %
		Free Flow	Restr. Flow	Numerical	%	
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	900	1350	837.5	62%	**12%**
	B. Vehicle volume, along minor streets (average hour)	180	255	30	12%	
2. Delay to cross traffic	A. Vehicle volume, major street (average hour)	900	1350	807.5	60%	**12%**
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	180	255	30.5	12%	
**Note: Thresholds increased by 50% due to "T intersection".*						

2031 FUTURE BACKGROUND CONDITIONS

Justification	Description	Minimum Requirement 2 or more lanes		Compliance		
				Sectional		Entire %
		Free Flow	Restr. Flow	Numerical	%	
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	900	1350	870	64%	**12%**
	B. Vehicle volume, along minor streets (average hour)	180	255	30	12%	
2. Delay to cross traffic	A. Vehicle volume, major street (average hour)	900	1350	840	62%	**12%**
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	180	255	30.5	12%	
**Note: Thresholds increased by 50% due to "T intersection".*						

2031 FUTURE TOTAL CONDITIONS

Justification	Description	Minimum Requirement 2 or more lanes		Compliance		
				Sectional		Entire %
		Free Flow	Restr. Flow	Numerical	%	
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	900	1350	890	66%	**12%**
	B. Vehicle volume, along minor streets (average hour)	180	255	30	12%	
2. Delay to cross traffic	A. Vehicle volume, major street (average hour)	900	1350	860	64%	**12%**
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	180	255	30.5	12%	
**Note: Thresholds increased by 50% due to "T intersection".*						