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Transportation Impact Study

PROPOSED RESIDENTIAL DEVELOPMENT – VIC 2

150 Rutledge Road,
MISSISSAUGA, ONTARIO

June, 2023
Project No: NT-21-284

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

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nexTrans CONSULTING ENGINEERS

NextEng Consulting Group Inc.

June 20, 2023

Attention: Michael Frustaglio

Kings Mill Homes Development Inc.
5332 Highway 7
Woodbridge, ON L4L 1T3

Re: Transportation Impact Study
Proposed Residential Development - Vic 2
150 Rutledge Road, City of Mississauga
Our Project No. NT-21-284

Nextrans Consulting Engineers (a Division of NextEng Consulting Group Inc.) is pleased to present the enclosed Transportation Impact Study for the above noted site in support of Zoning By-law Amendment application for a proposed residential development. The purposes of this Study are to address the City of Mississauga's comments and assess the current site plan.

The subject site is located at 150 Rutledge Road, in the City of Mississauga. The proposed development is generally bounded by Tannery Street to the south, Joymar Drive to the west, GO Line to the east and the existing wood lot to the north. The proposed development consists of a mid-rise building (10-storey) with 301 condominium residential dwelling units and four townhouse units, for a total of 305 residential dwelling units. The proposed development will provide a total of 344 vehicle parking spaces and 198 bicycle parking spaces (inclusive of Class A and Class B spaces). The proposed site access will be provided via Rutledge Road to accommodate the proposed development.

The Transportation Study, which is prepared in accordance with the approved terms of reference and consistent with the Transportation Study Guidelines, concludes that the proposed development can adequately be accommodated by the existing transportation network, excellent existing Mississauga MiWay Transit Services, the future GO Expansion Program by Metrolinx on the Milton GO Line, as well as the Transportation Demand Management measures and incentives recommended in this report.

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

Nextrans Consulting Engineers
A Division of NextEng Consulting Group Inc.

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Report Submission Record

Identification	Date	Description of issued and/or revision
Final Report	June 20, 2023	For Final Submission

CITY OF MISSISSAUGA COMMENTS

1. SUBMISSION REQUIREMENT: [TRAFFIC IMPACT STUDY REQUIRED] A Traffic Impact Study representative of the proposed land use and gross floor area is required. The study is to include a Transportation Demand Management component. The traffic consultant should provide a terms of reference to the City's Traffic Planning Section for review and receive confirmation prior to commencing of the study. The terms of reference can be addressed to Trans.Projects@mississauga.ca.

   [NOTE] The City of Mississauga has completed an update to our Transportation Impact Study (TIS) Guidelines. All TIS going forward shall conform to the new guidelines. The new TIS Guidelines can be found via the following link: https://www.mississauga.ca/publication/transportationimpact-study-terms-of-reference/. Appendix B - Pre-Study Consultation Checklist of the TIS Guideline shall be filled out and submitted to the City for review and comment, prior to commencing any TIS Report.

   Response: Noted. We will comply with future TIS studies.

2. SUBMISSION REQUIREMENT: [TRAFFIC OPERATIONS & SAFETY ASSESSMENT] An Operations and Safety Assessment is required for the site access and internal circulation. The assessment should include a review of:

   i. Pedestrian and vehicular sight line visibility with regard to ingress and egress;

      Response: Noted.

   ii. Detailed turning movements for the most constrained vehicles expected (e.g. access, dead end drive aisle, etc.);

      Response: Noted.

   iii. Gaps and queuing; and, (iv) Intersection capacity and level of service. ***[NOTE]*** The traffic consultant should provide a terms of reference to the City's Traffic Planning section for review and receive confirmation prior to commencing the study. The terms of reference can be addressed to Trans.Projects@mississauga.ca.

      Response: The terms of reference has been submitted and comments were addressed in both the previous TIS submission and this submission. The terms of reference are provided in **Appendix A**.

3. COMMENT: [SITE ACCESS]

   a. Site access should be relocated further north along the straight portion of Rutledge Road to ensure sufficient sight line and access spacing.

      Response: Based on our analysis, if the access is shifted further to the north along the straight portion of Rutledge Road, the sightline will be impacted significantly. Please see the **Figure E1** (City's request access location sight lines) and **Figure E2** (proposed development access location sight lines) below for more information.

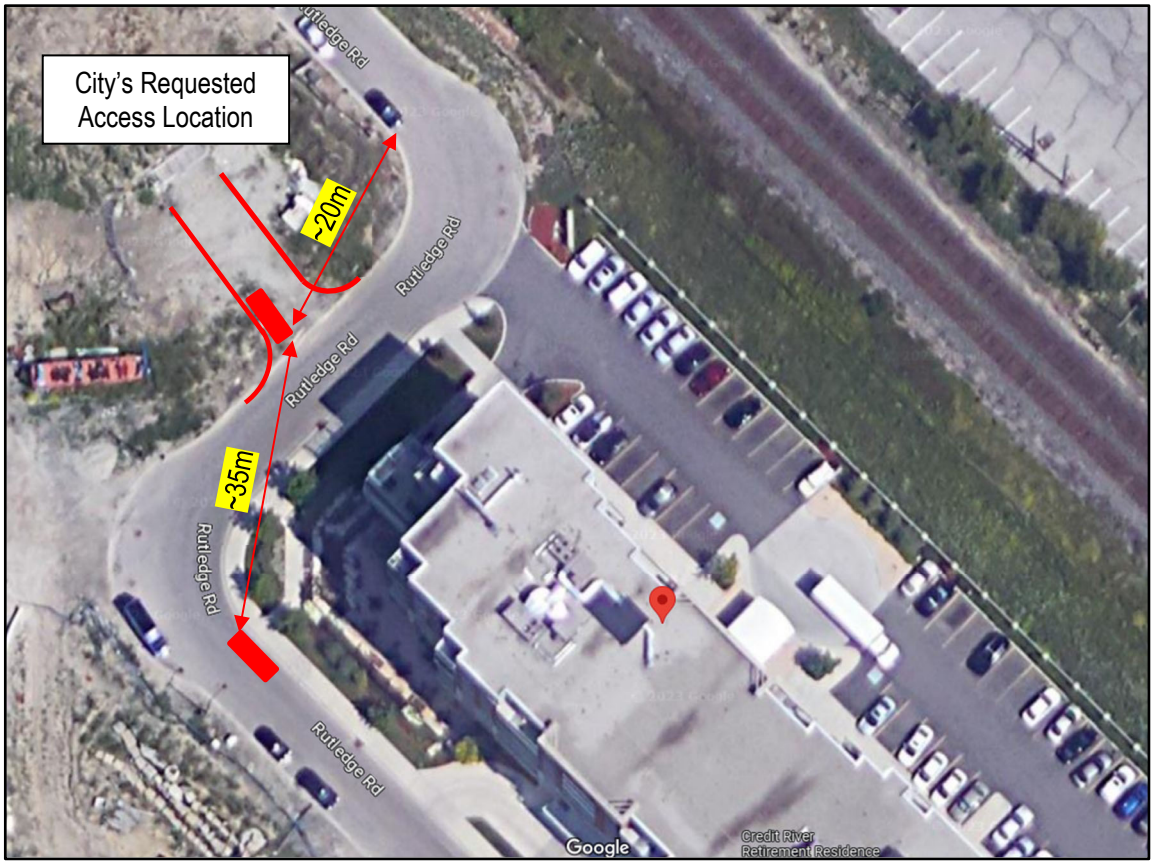
      Based on Table 9.9.4 of the 2017 TAC Manual, for the design speed of 50km/h (assumed 40km/h posted speed plus 10km/h), the required stopping sight distance 65m. For 40km/h design speed, the required stopping sight distance is 50km/h.

      However, based on our site visit and driving test, it is not possible to drive at 40km/h or 50km/h due to the bend in the road. The average comfortable speed is around 20km/h to 30km/h. Therefore, the current proposed access location is more appropriate and meets the stopping sight distance as indicated in Table 9.9.4 of the TAC Manual below.

Table 9.9.4: Design Intersection Sight Distance – Case B1, Left Turn From Stop

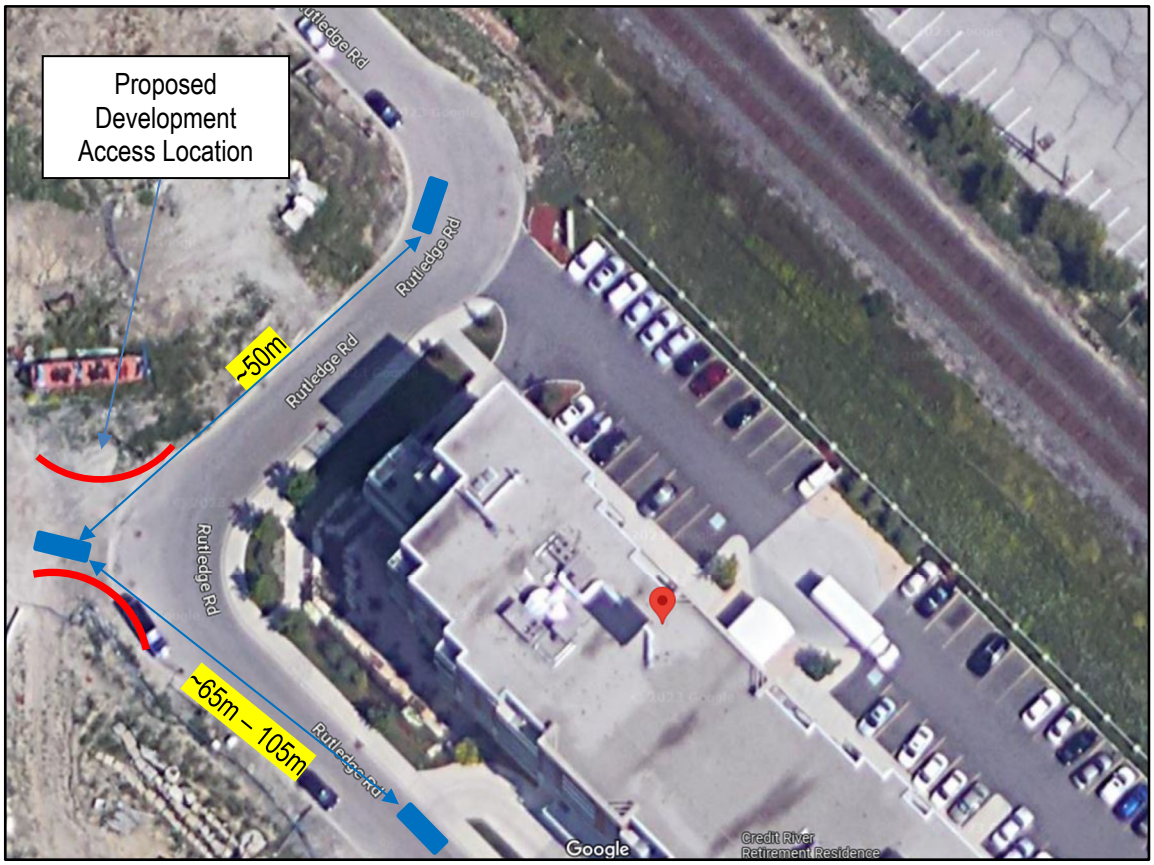
Design Speed (km/h)	Stopping Sight Distance (m)	Intersection Sight Distance for Passenger Cars	
		Calculated (m)	Design (m)
20	20	41.7	45
30	35	62.6	65
40	50	83.4	85
50	65	104.3	105
60	85	125.1	130
70	105	146.0	150
80	130	166.8	170
90	160	187.7	190
100	185	208.5	210
110	220	229.4	230
120	250	250.2	255
130	285	271.1	275

Figure E1 – City's Requested Access Location (Not Recommended)



Source: Google Map

Figure E2 – Proposed Development Access Location (Recommended)



Source: Google Map

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, noise walls etc.).

Response: Noted. No physical obstructions are located along the west side of Rutledge Road within the municipal boulevard space, as illustrated in **Figure E3** below.

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.

Response: Noted. The proposed access throat length is approximately 15m or two passenger car length from the end of the curb radius to the first internal conflict point. Please see **Figure E4** below for illustration.

d. The Owner shall provide for a sufficient corner clearance from the roadway to the access point.

Response: Noted. The corner clearance from the bend from Rutledge Road to the proposed access is calculated as follows:

Corner Clearance = 18m (corner clearance) + C (12m) + 18m (R) = 48m

As the TAC 2017 suggested minimum corner clearance is 9m (corner clearance) + 3m (C) + 5m (R) = 17m, the proposed access exceeds this requirement. Therefore, the proposed site access is appropriate.

Figure E4 – Sight Line Clearance Zone (No Obstruction Permitted)

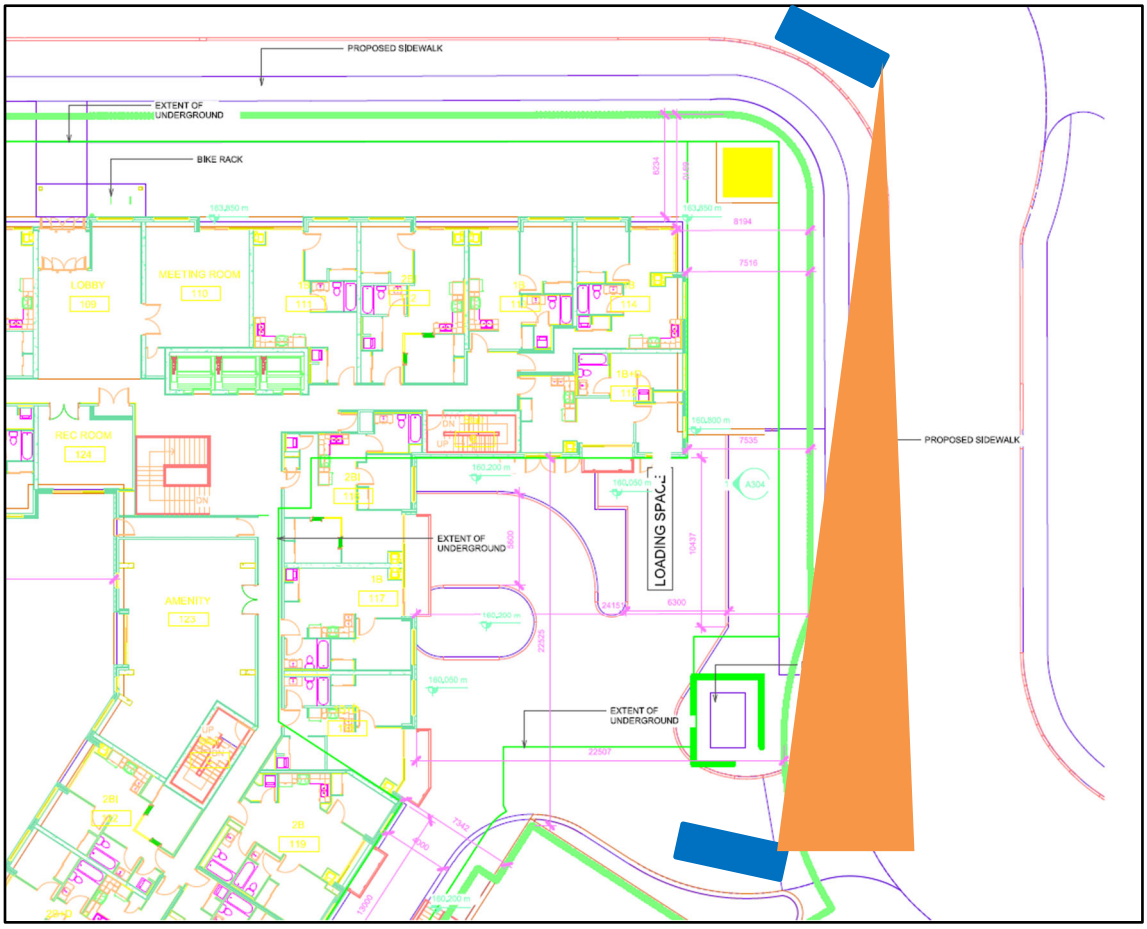
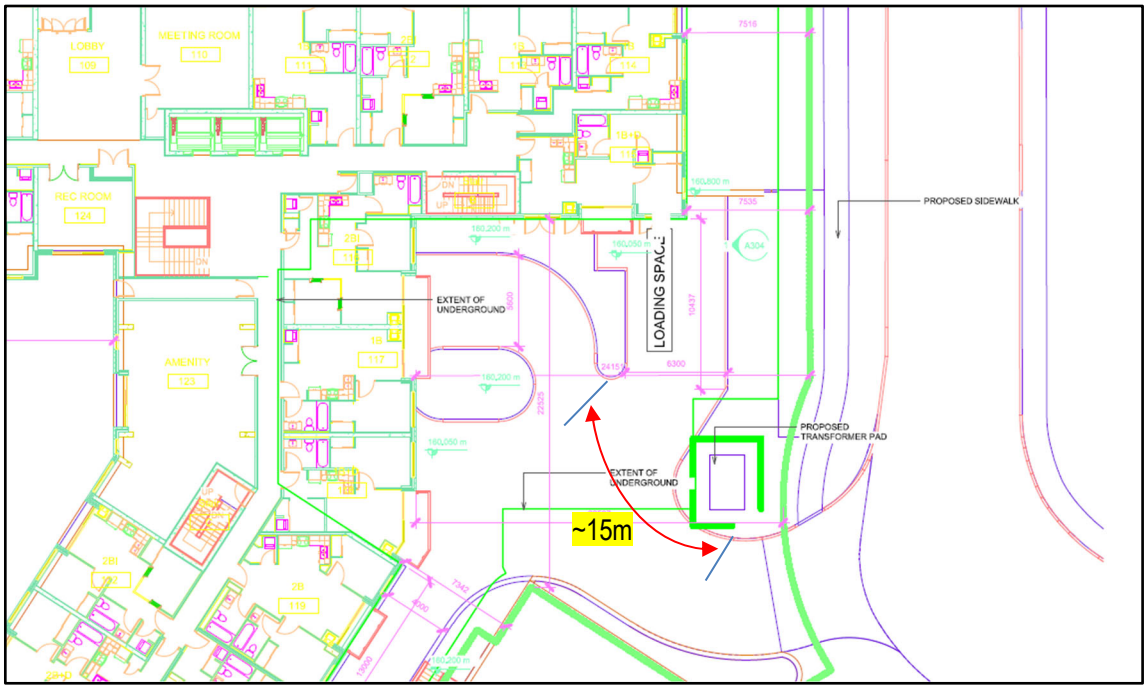


Figure E4 – Proposed Site Access Throat Length



4. COMMENT: [INTERNAL SITE CIRCULATION]

a. Turning movement diagrams will be required to depict the internal site circulation;

Response: The vehicle turning movements have been provided in Section 7 of this Study.

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

Response: Noted. The proposed additional measures are provided in Section 7 of this Study.

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

Response: Noted. The vehicle turning movements have been provided in Section 7 of this Study.

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

Response: Noted.

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

Response: Noted.

f. A turn around facility may be required as a result of the above in addition to providing sufficient snow storage for the proposed development.

Response: Noted.

5. COMMENT: [TRAFFIC NOTES]

i. All damaged or disturbed areas within the municipal right-of-way are to be reinstated at the Owner's expense.;

ii. All landscaping and grading within close proximity to the proposed access points is to be designed to ensure that adequate sight distances are available for all approaching and exiting motorists and pedestrians.;

iii. The portion of the driveway within the municipal boulevard is to be paved by the Owner.;

iv. Driveway accesses shall maintain a 1.5m setback from aboveground features such as utilities and trees;

v. Any above ground utilities located within 1.5m of a proposed access are to be relocated at the Owner's expense.;

vi. The cost for any/all road improvements required in support of this development application will be borne by the Owner;

vii. The Owner shall make satisfactory arrangements with the Transportation and Works Department for the design, construction and payment of all costs associated with works necessary to support access to this site.;

viii. Any access to internal servicing shall be provided internally through the site.;

ix. Details of the site-specific access configurations will be finalized in conjunction with the Site Plan review/approval process.

Response: Noted. These comments will be addressed as part of the revised site plan submission.

6. COMMENT: [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.

      Response: Noted. This comment has been addressed in Table 10 of the November, 2022 TIS. It is also addressed in Section 9 of this Study.

7. [PEDESTRIAN CONNECTIVITY] – Significant consideration must be given to pedestrian circulation and safety. Evaluate pedestrian desire lines and minimize vehicular and pedestrian conflicts to the extent possible. Provide multiple direct, convenient pedestrian connections to/from the building entrances from/to the municipal/private multi-use trails and sidewalks which minimize walking distances.

   Response: Noted.

8. This site is serviced by MiWay Routes 306 and 313.

   Response: Noted.

9. COMMENT: BICYCLE STORAGE LOCATION - Provide the location of the required short-term bicycle storage racks close to the main entrance, and a communal bicycle storage room, preferably on the ground floor, for the building occupants and visitors.

   Response: Noted. This comment will be addressed as part of the revised site plan submission.

EXECUTIVE SUMMARY

Nextrans Consulting Engineers (A Division of NextEng Consulting Group Inc.) was retained by Kings Mill Homes Development Inc. (the 'Client') to undertake a Transportation Impact Study in support of Zoning By-law Amendment application for a proposed residential development.

The subject site is located at 150 Rutledge Road, in the City of Mississauga. The proposed development is generally bounded by Tannery Street to the south, Joymar Drive to the west, GO Line to the east and the existing wood lot to the north.

A Study terms of reference has been submitted to the City of Mississauga. The Study terms of reference are included in Appendix A of this Study. This Study was prepared in consistent with both the study terms of reference and the City of Mississauga Traffic Impact Study Guidelines.

Proposed Development

The subject site is currently vacant. The proposed development consists of a mid-rise building (10-storey) with 301 condominium residential dwelling units and four townhouse units, for a total of 305 residential dwelling units.

Proposed Development Access

The subject is currently vacant and fronting onto Rutledge Road. Rutledge Road is a north-south local road that connects Tannery Street, along the west side of the rail corridor, to service the proposed development along the west side of the rail corridor.

The proposed site access will be provided directly onto Rutledge Road, at the southerly limit of the proposed development and at the first bend of the Rutledge Road.

Based on the findings of this Study, one inbound lane and one outbound lane with a total width of 7.0 m will be required for the proposed development access. A shared northbound left/through and westbound right/through are sufficient on Rutledge Road to accommodate the proposed development. Given that the access is located at the inner curb of Rutledge Road bend, sufficient access sightline is provided, similar to the existing access located at 175 Rutledge Road.

The analysis indicates that the proposed site access is expected to operate at acceptable levels of service with minimum queues or delays.

Capacity Analysis

The analysis indicates that the proposed development is expected to generate:

- 121 total two-way auto trips (28 inbound and 93 outbound) and 118 total two-way auto trips (72 inbound and 46 outbound) during the AM and PM peak hours, respectively; and
- 46 total two-way transit trips (23 inbound and 23 outbound) and 29 total two-way transit trips (15 inbound and 14 outbound) during the AM and PM peak hours, respectively.

Auto Mode Assessment

Based on the intersection capacity analysis, under the existing, future background and future total traffic conditions, all intersections considered in the study area are expected to operate at acceptable levels of service. No improvements are identified or required under this horizon year.

Under the future background and future total conditions, the southbound left turn from Joymar Drive to Thomas Street is expected to operate with slightly higher delay due to the heavy through volumes on Thomas Street. However, this is a

typical condition for any unsignalized intersection from a side street onto a major collector road. The signal warrant analysis indicates that this intersection is not numerically warranted based on OTM Book 12 (Justification 7).

It should be noted that the proposed development only add maximum of 4-5 second to the critical movement delay, which is negligible. No improvements beyond the improvements are required for this horizon year to accommodate the proposed development.

Active Transportation Mode Assessment

Walking

As indicated in the previous section of this Study, the area is currently well-serviced by a sufficient network of sidewalks, with sidewalks are available on both sides of Tannery Street, Joymar Drive and Queen Street S. Sidewalks are also available on the east side of Rutledge Road and Broadway Street. In addition, sidewalks are reasonably maintained therefore no improvements are required at this time.

As part of the proposed development, continuous sidewalk will be provided along the west side of Rutledge Road along the frontage of the proposed development. The sidewalk width and design are similar to the existing sidewalks on the east side of Rutledge Road, and as per the City's design standards.

Cycling

Under the existing conditions, there is no dedicated bike lane in the immediate vicinity of the proposed development. Bike lanes are available as part of Queen Street, south of Ontario Street to Britannia Road W, and south of Erin Centre Boulevard. Bike lanes are also available on Bristol Road W, Erin Centre Boulevard and Tenth Line.

Based on this assessment, the existing cycling network can be improved in the future as part of the City of Mississauga 2018 Cycling Master recommendations. This will encourage existing and future residents to use these facilities instead of driving single-occupant-vehicles. The implementation of these plans is beyond the scope of this Study.

Transit Mode Assessment

The analysis indicates that the proposed development is expected to generate 46 total two-way transit trips (23 inbound and 23 outbound) and 29 total two-way transit trips (15 inbound and 14 outbound) during the AM and PM peak hours, respectively.

As indicated, the subject site is located approximately 450 metres (or 6-minute walk) from the bus stops for Mississauga Transit (MiWay) Bus Routes 44 and 306, and approximately 300 metres (or 4-minute walk) from the bus stops for Mississauga Transit (MiWay) Bus Routes 306 and 313. The proposed development is also located less than 900 m (about 13-minute walk) from the existing Streetsville GO Train/GO Bus station.

Based on Nextrans review of the existing Mississauga Transit and GO Transit operating schedule, as well as the context of the study area, it is indicated that the area currently has excellent transit service. The existing Mississauga Transit has excellent service frequency that connect residents to various transit routes and stations in the City of Mississauga.

The assessment indicates that there is an excellent transit service in the area and there is no noticeable constraint in the system at this time. In addition, with the future GO Service Expansion (formerly Regional Express Rail) all-day two-way and 15-minute service along Milton GO Line, as well as the future LRT on Hurontario Street, there will an increase in public ridership in the future. This has been documented in several Metrolinx reports and studies.

Vehicle Parking Review

Based on the City of Mississauga Zoning By-law vehicle parking requirement, the proposed development is required to provide a total of 339 vehicle parking spaces for both resident and visitor. This includes 279 residential vehicle parking spaces and 60 visitor vehicle parking spaces.

The proposed development will also require to provide a minimum of 3 accessible spaces and 60 EV ready parking spaces.

The proposed development will provide a total of 344 vehicle parking spaces, including 60 visitor and 284 vehicle parking spaces for resident. These parking spaces also include barrier free parking spaces. This meets the City's Zoning By-law requirement.

Bicycle Parking Review

Based on the City of Mississauga Zoning By-law, the proposed development is required and will provide a minimum of 198 bicycle parking spaces, including 15 Class B (short-term spaces) and 183 Class A (long-term spaces) bicycle parking spaces for resident and visitor.

Nextrans also recommends that the proposed development provides one bicycle repair station on-site, at convenient location where residents can easily have access to.

The analysis indicates that the proposed bicycle parking supply by the proposed development will encourage residents to take active mode of transportation to work, school and discretionary trips instead of driving private vehicles.

Transportation Demand Management Measures and Incentives

The TDM measures and incentives related to the proposed development have been assessed and recommended in Section 9 of this report to support active transportation and transit, to meet the objectives and requirements of the City of Mississauga sustainable transportation objectives.

Loading Requirement

Under Section 3.1.4.5 of the City of Mississauga current Zoning By-law, one loading space per apartment building containing a minimum of 30 dwelling units. The proposed development provides one loading space to be located at the south-east of the site, east of the main site access. The loading space dimensions are: 3.5 m width x 9.0 m length. AutoTURN software was used (garbage truck) to generate vehicular turning templates to confirm and demonstrate the accessibility for the proposed on-site loading space.

Study Conclusions and Recommendations

Based on the Study assessment, the following recommendations are provided:

- The City approves the proposed development application as the proposed development is expected to have negligible impact on the existing roadway network and intersections;
- The proposed development provides sidewalk on Rutledge Road, along the frontage of the site;
- The proposed development meets the City's requirements on bicycle parking spaces on-site;
- The proposed development provides one publicly accessible bicycle repair station;
- The proposed development access configuration includes: one inbound lane and one outbound lane, one shared westbound through/right and one shared northbound through/right on Rutledge Road; and
- No additional physical improvements for the area road network and intersections to accommodate the proposed improvements.

TABLE OF CONTENTS

1.0 INTRODUCTION 13
2.0 EXISTING TRAFFIC CONDITIONS 14
2.1. Existing Road Network 14
2.2. Existing Active Transportation Network Assessment 15
2.3. Existing Mississauga Transit and GO Transit Service Assessment 16
2.3. Existing Traffic Volumes 17
2.4. Existing Traffic Assessment 19
3.0 TRANSPORTATION PLANNING CONTEXT IN THE AREA 19
3.1. Land Use Context 19
3.2. Transportation Planning Context 19
3.3. Streetsville District 20
4.0 FUTURE BACKGROUND CONDITIONS 20
4.1. Analysis Horizon 20
4.2. Future Background Corridor Growth 20
4.3. Background Development Applications 21
4.4. Future Background Traffic Assessment 23
5.0 SITE TRAFFIC 23
5.1. Proposed Development 23
5.2. Modes of Travel Assessment in the Area 23
5.3. Site Trip Generation 24
5.4. Site Trip Distribution and Assignment 24
6.0 FUTURE TOTAL TRAFFIC CONDITIONS 25
6.1. Future Total Traffic Assessment for Auto Mode 25
6.2. Signal Warrant Analysis 26
6.3. Active Transportation Assessment 27
6.4. Transit Mode Assessment 28
7.0 SITE PLAN REVIEW 29
7.1. Loading Requirement 29
7.2. Solid Waste Management 29
7.3. Waste Management Operation 29
7.4. Proposed Development Access 30
7.5. Sight Line Analysis 30
7.6. Traffic Calming and Community Concerns 32
7.7. Internal Site Circulation 33
8.0 PARKING ASSESSMENT 33
9.0 BICYCLE PARKING 34
10.0 TRANSPORTATION DEMAND MANAGEMENT 35
11.0 CONCLUSIONS / FINDINGS 36
11.1. Study Summary and Conclusions 36
11.2. Study Recommendations 37

LIST OF FIGURES

Figure 1 – Proposed Development Location
Figure 2 – Proposed Site Plan
Figure 3 – Existing Lane Configuration and Traffic Control
Figure 4 – Existing Cycling Network in the Study Area (Mississauga Cycling Map 2021)
Figure 5 – Existing Mississauga MiWay Weekday System Map
Figure 6 – Existing Traffic Volumes
Figure 7 – Existing Traffic Volumes with Adjustments (2022 Conditions)
Figure 8 – 2027 Corridor Background Traffic Growth
Figure 9 – Background Development Traffic Volumes
Figure 10 – 2027 Future Background Traffic Volumes
Figure 11 – Site Traffic Volumes
Figure 12 – 2027 Future Total Traffic Volumes
Figure 13 – Proposed Bike Repair Station
Figure 14 – Waste Collection Schedule
Figure 15 – City's Requested Access Location (Not Recommended)
Figure 16 – Proposed Development Access Location (Recommended)
Figure 17 – Sight Line Clearance Zone (No Obstruction Permitted)
Figure 18 – Internal Circulation
Figure 19 – Map of Parking Precincts
Figure 20 – AutoTURN Analysis (TAC - MSU)
Figure 21 – AutoTURN Analysis (Garbage Truck)

LIST OF TABLES

Table 1 – Existing Levels of Service
Table 2 – Background Developments in the Area
Table 4 – 2027 Future Background Levels of Service
Table 4 – Modal Split based on 2016 TTS Data for Traffic Zones
Table 7 – Site Trip Generation
Table 6 – Trip Distribution for Residential Component
Table 7 – Site Trip Distribution
Table 8 – 2027 Future Total Levels of Service
Table 9 – City of Mississauga Zoning By-law Vehicle Parking Requirements
Table 10 – Bicycle Parking Space Requirements

APPENDICES

Appendix A – Terms of Reference and Comments

Appendix B – Existing Traffic Data

Appendix C – Existing Traffic Level of Service Calculations

Appendix D – Background Development Traffic Volumes and Growth Rates

Appendix E – Future Background Traffic Level of Service Calculations

Appendix F – 2016 Transportation Tomorrow Survey (TTS) Data Analysis

Appendix G – Future Total Traffic Level of Service Calculations

Appendix H – Signal Warrant Analysis

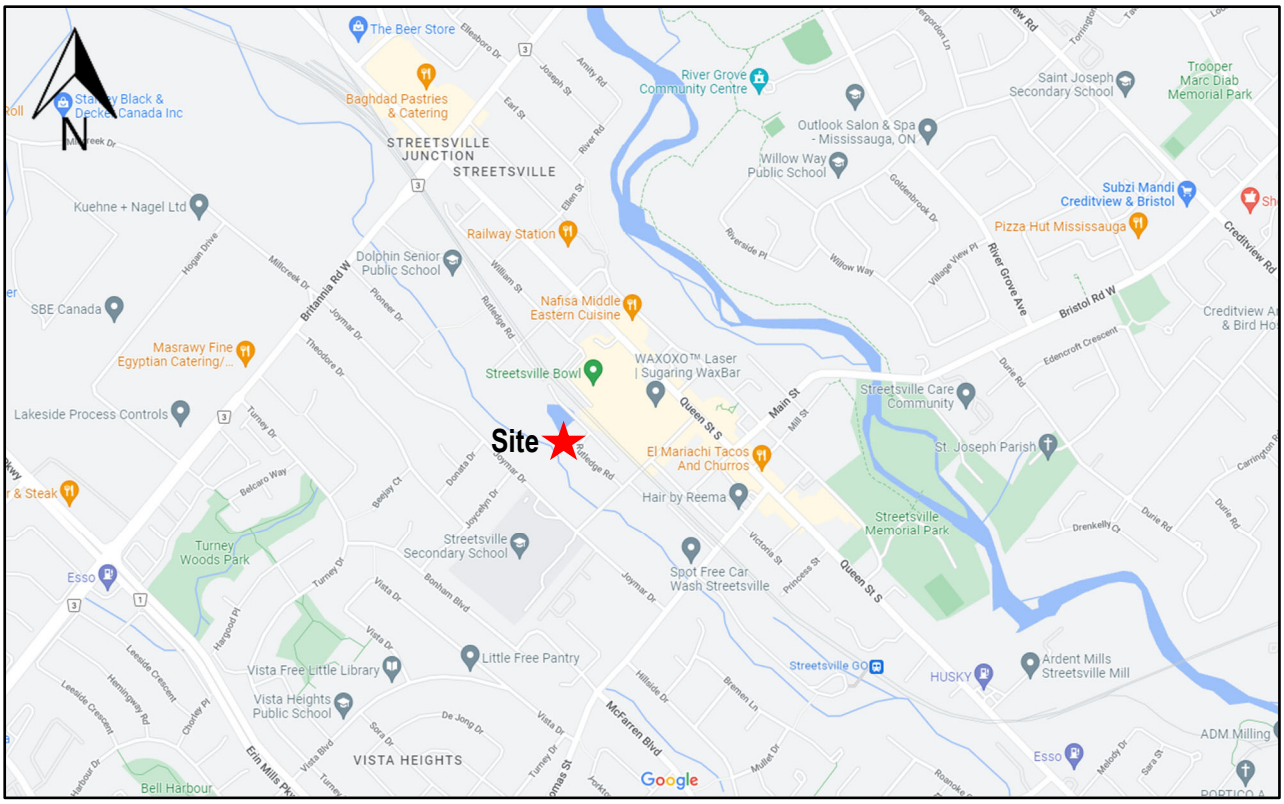
1.0 INTRODUCTION

Nextrans Consulting Engineers (A Division of NextEng Consulting Group Inc.) was retained by Kings Mill Homes Development Inc. (the 'Client') to undertake a Transportation Impact Study in support of Zoning By-law Amendment application for a proposed residential development.

The subject site is located at 150 Rutledge Road, in the City of Mississauga. The proposed development is generally bounded by Tannery Street to the south, Joymar Drive to the west, GO Line to the east and the existing wood lot to the north. The location of the proposed development is illustrated in **Figure 1**.

A Study terms of reference has been submitted to the City of Mississauga. The Study terms of reference are included in Appendix A of this Study. This Study is prepared consistent with both the study terms of reference and the City of Mississauga Traffic Impact Study Guidelines. The Study terms of reference are included in **Appendix A** of this Study.

Figure 1 – Proposed Development Location



Source: Google Map

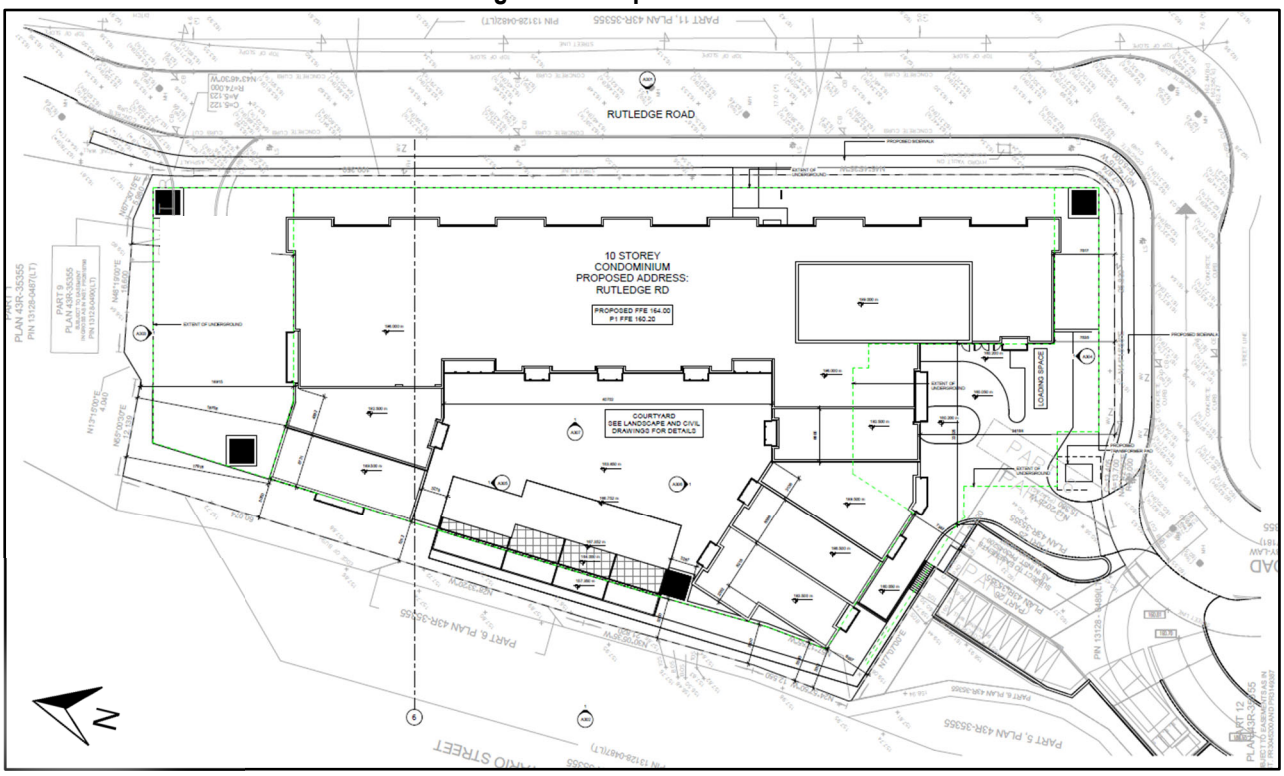
The subject site is currently vacant. The proposed development consists of a mid-rise building (10-storey) with 301 condominium residential dwelling units and four townhouse units, for a total of 305 residential dwelling units.

The subject is currently vacant and fronting onto Rutledge Road. Rutledge Road is a north-south local road that connects Tannery Street, along the west side of the rail corridor, to service the proposed development along the west side of the rail corridor.

The proposed site access will be provided directly onto Rutledge Road, at the southerly limit of the proposed development and at the first bend of the Rutledge Road.

The proposed development will provide a total of 344 vehicle parking spaces (including barrier free space) and 198 bicycle parking spaces to accommodate the proposed development. **Figure 2** illustrates the proposed site plan.

Figure 2 – Proposed Site Plan



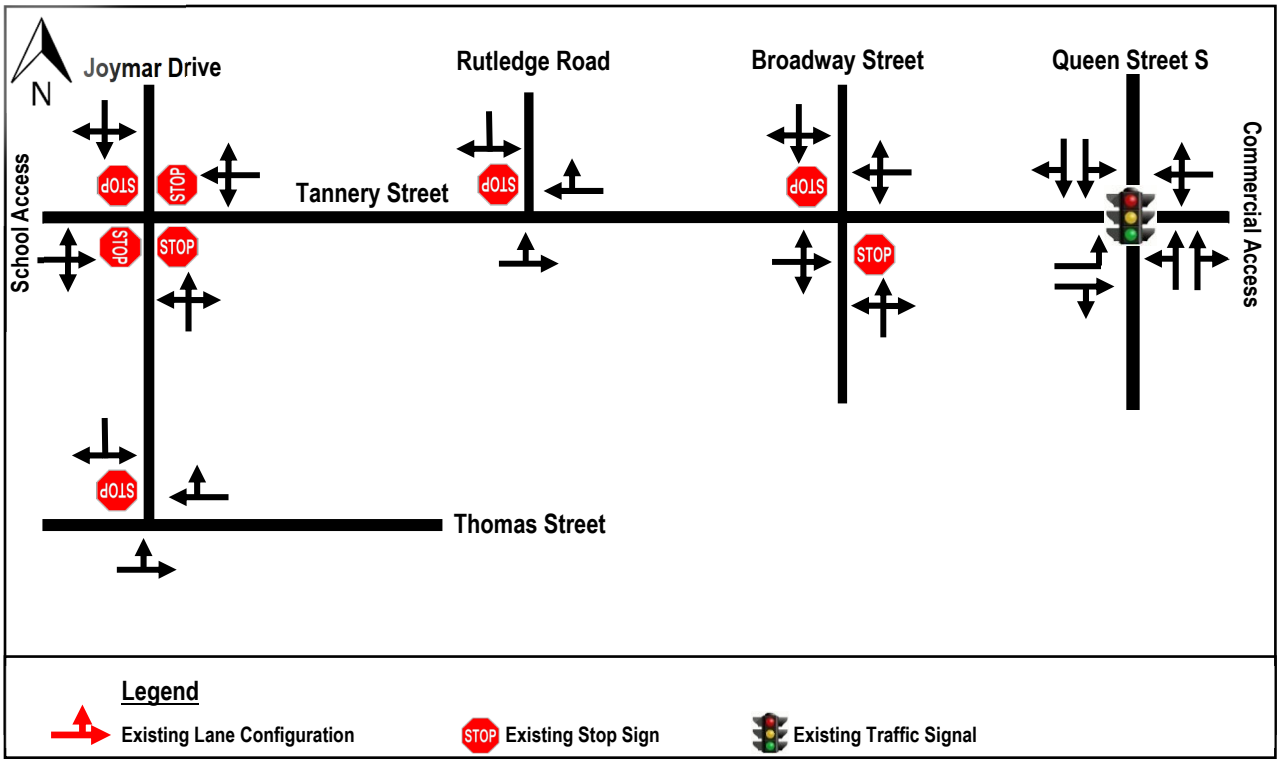
2.0 EXISTING TRAFFIC CONDITIONS

2.1. Existing Road Network

The existing road network, lane configuration and existing traffic control for the study area are shown in **Figure 3** (Existing Lane Configurations). The details area described below:

- **Rutledge Road:** is north-south local road under the City of Mississauga jurisdiction. It generally has two general purpose lanes.
- **Tannery Street**: is an east-west minor collector road under the City of Mississauga jurisdiction. It has two general purpose lanes.
- **Queen Street S** is a north-south major collector under the City of Mississauga jurisdiction. It generally has a four-lane cross-section (with on-street parking) and has turning lanes at the major intersections. It maintains a posted speed limit of 40 km/h near the subject site.
- **Broadway Street**: is a north-south local road under the City of Mississauga jurisdiction. It has two general purpose lanes and maintains a posted speed limit of 40 km/h near the subject site.
- **Joymar Drive**: is a north-south minor collector road under the City of Mississauga jurisdiction. It has two general purpose lanes and maintains a posted speed limit of 40 km/h near the subject site.
- **Crumbie Street**: is a north-south local road under the City of Mississauga jurisdiction. It has two general purpose lanes and maintains a posted speed limit of 40 km/h near the subject site.
- **Thomas Street**: is an east-west major collector road under the City of Mississauga jurisdiction. It has four general purpose lanes and maintains a posted speed limit of 50 km/h near the subject site.

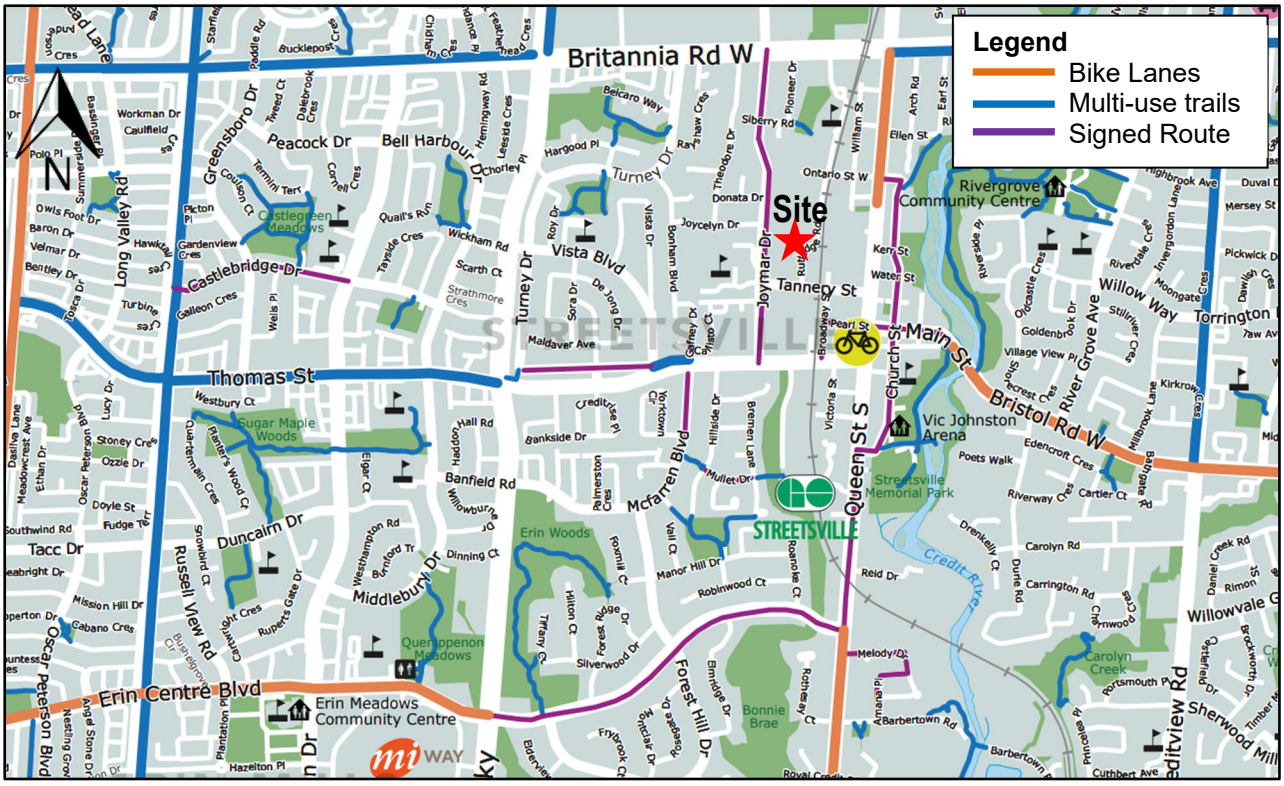
Figure 3 – Existing Lane Configuration and Traffic Control



2.2. Existing Active Transportation Network Assessment

Figure 4 illustrates the existing active transportation network in the study area.

Figure 4 – Existing Cycling Network in the Study Area (Mississauga Cycling Map 2021)



Walking

The area is currently well-serviced by a sufficient network of sidewalks, with sidewalks are available on both sides of Tannery Street, Joymar Drive and Queen Street S. Sidewalks are also available on the east side of Rutledge Road and Broadway Street. In addition, sidewalks are reasonably maintained therefore no improvements are required at this time.

As part of this Study, recommendations will be provided to ensure that sidewalks are available to accommodate the proposed development.

Cycling

Under the existing conditions, there is no dedicated bike lane in the immediate vicinity of the proposed development. Bike lanes are available as part of Queen Street, south of Ontario Street to Britannia Road W, and south of Erin Centre Boulevard. Bike lanes are also available on Bristol Road W, Erin Centre Boulevard and Tenth Line.

Based on this assessment, the existing cycling network can be improved in the future as part of the City of Mississauga 2018 Cycling Master recommendations. This will encourage existing and future residents to use these facilities instead of driving single-occupant-vehicles. The implementation of these plans is beyond the scope of this Study.

2.3. Existing Mississauga Transit and GO Transit Service Assessment

The area is currently well-served by the existing Mississauga Transit (MiWay) network, based on the following information:

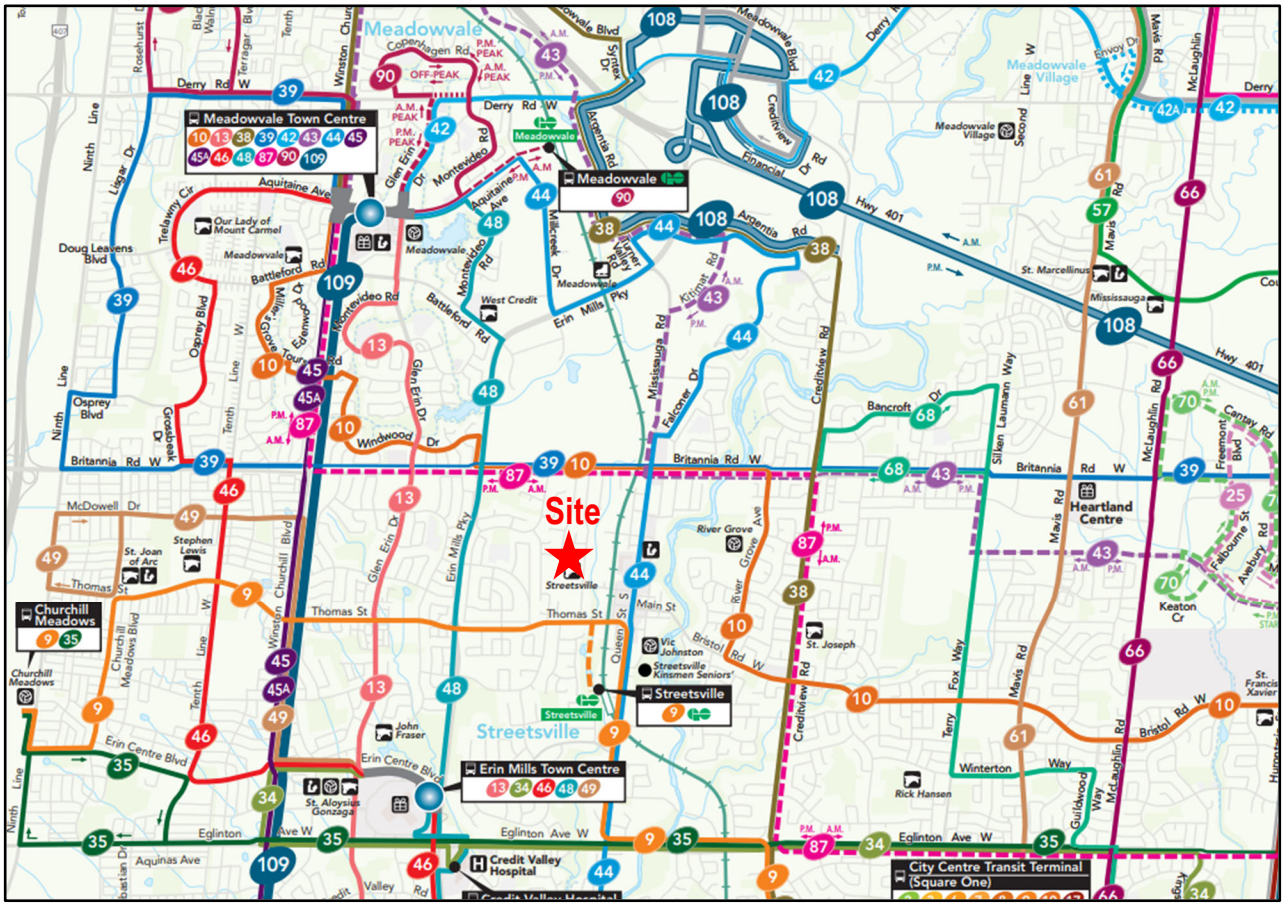
- The proposed development is located approximately 450 metres (or 6-minute walk) from the bus stops for Mississauga Transit (MiWay) Bus Routes 44 and 306.
- The proposed development is located approximately 300 metres (or 4-minute walk) from the bus stops for Mississauga Transit (MiWay) Bus Routes 306 and 313.
- The proposed development is also located less than 900 m (about 13-minute walk) from the existing Streetsville GO Train/GO Bus station.
- Route 44 Mississauga Road operates 7 days a week and provides service between University of Toronto Mississauga Campus to Meadowvale Town Centre.
- Route 306 Streetsville Secondary-Terry Fox (High School Special) operates Monday to Friday and provides service between Winterton Way/Mavis Road to Streetsville Secondary School.
- Route 313 Streetsville Secondary-Meadowvale (High School Special) operates Monday to Friday and provides service between Joymar Drive/Tannery Street to Meadowvale Town Centre.
- The Streetsville GO Station is serviced by the Milton Line GO Train between Union Station and Milton. There are 25 train services at this station during the day (5:15 AM to 12:58 AM). Bicycle racks are available at this location.
- There are also four GO Buses service this station during the morning and afternoon peak periods.

Figure 5 illustrates the existing Mississauga MiWay system map.

Based on Nextrans review of the existing Mississauga Transit and GO Transit operating schedule, as well as the context of the study area, it is indicated that the area currently has excellent transit service. The existing Mississauga Transit has excellent service frequency that connect residents to various transit routes and stations in the City of Mississauga.

The assessment indicates that there is an excellent transit service in the area and there is no noticeable constraint in the system at this time. In addition, with the future GO Service Expansion (formerly Regional Express Rail) all-day two-way and 15-minute service along Milton GO Line, as well as the future LRT on Hurontario Street, there will an increase in public ridership in the future. This has been documented in several Metrolinx reports and studies.

Figure 5 – Existing Mississauga MiWay Weekday System Map



Source: Mississauga Transit Website

2.3. Existing Traffic Volumes

Existing traffic volumes at the study area intersections were obtained from Spectrum for the following three intersections in the study area:

- Queen Street S at Tannery Street (signalized) – Count date Tuesday March 22, 2022
- Tannery Street at Rutledge Road (Unsignalized) – Count date Tuesday March 22, 2022
- Tannery Street at Broadway Street (Unsignalized) – Count date Tuesday February 5, 2019
- Tannery Street at Joymar Drive (Unsignalized) – Count date Tuesday February 5, 2019
- Thomas Street at Joymar Drive (Unsignalized) – Count date Tuesday February 5, 2019

The turning movement counts data were conducted during the morning (7:00 a.m. to 10:00 a.m.) and afternoon (4:00 p.m. to 7:00 p.m.) peak periods for all area intersections. It should be noted that the two intersection counts in February 5, 2019 are pre-pandemic counts. For the purposes of this assessment, the through traffic volumes are balanced along Tannery Street with the highest through traffic volumes. The turning movement volumes were also balanced using the existing distribution of the turning movement percentage. This is conservative for the purposes of this assessment.

The 2022 conditions were estimated based on the growth rates outlined in Section 4 of this Study, based on the previously provided growth rate by the City. It be noted that the growth may be higher than rates provided by the City due to volume balancing, which is conservative. Turning movement counts are summarized in **Appendix B**. The existing volumes are illustrated in **Figure 6**, with the adjusted and balance traffic volumes are illustrated in **Figure 7.**

Figure 6 – Existing Traffic Volumes

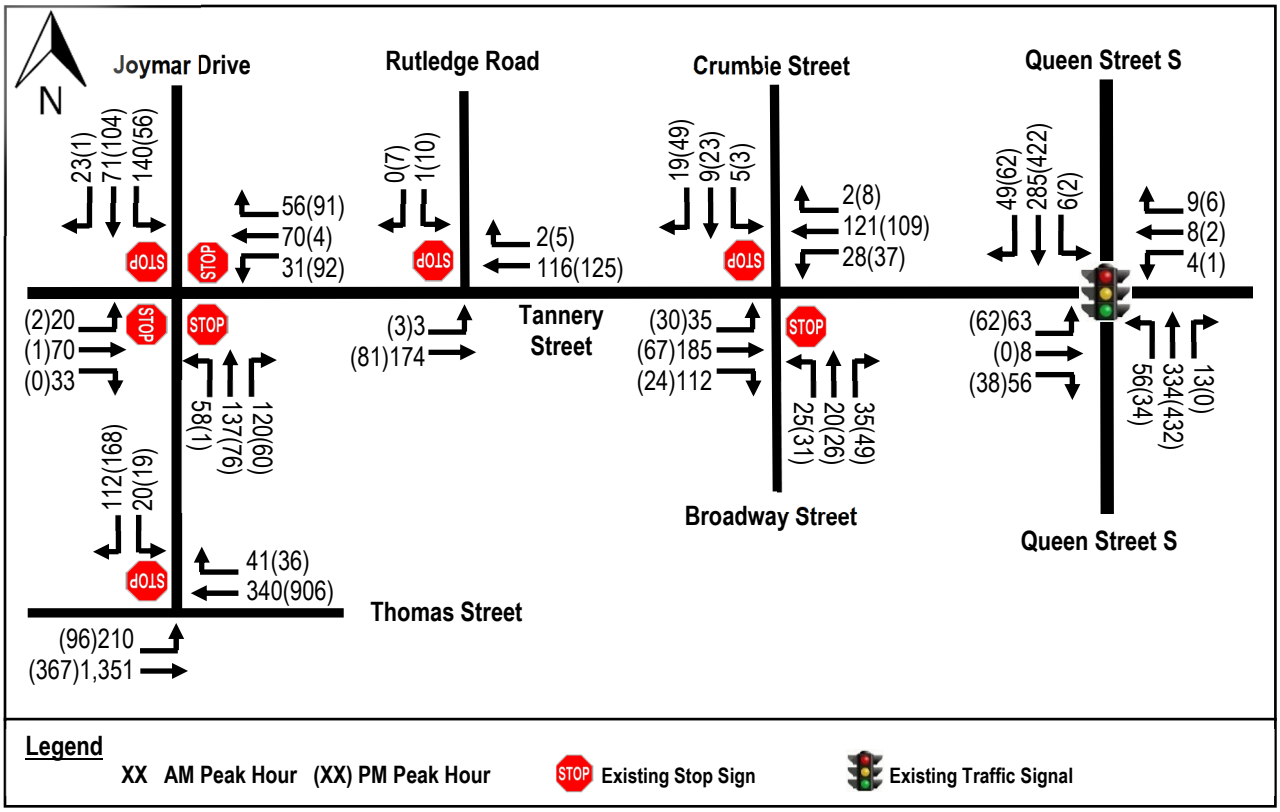
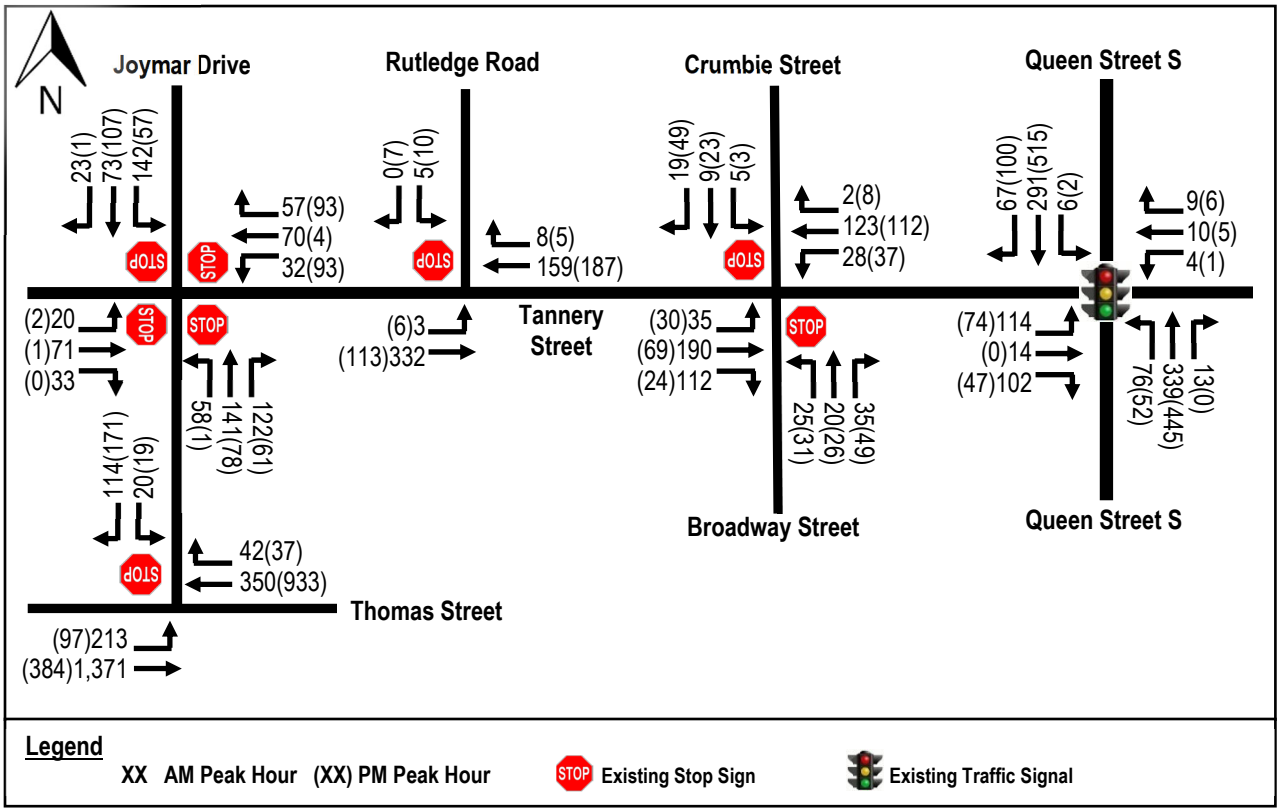


Figure 7 – Existing Traffic Volumes with Adjustments (2022 Conditions)



2.4. Existing Traffic Assessment

The existing volumes in **Figure 6** were analyzed using Synchro Version 11 software. It should be noted that the printouts for unsignalized intersections are based on HCM 2000 outputs and the results for signalized intersections are based on Synchro Lanes, Volumes and Timings so that queues and more detailed information are provided.

The detailed results are provided in **Appendix C** and summarized in **Table 1**. The analysis reflects the existing signal timing plans provided by the City of Mississauga.

Table 1 – Existing Levels of Service

Intersection	Key Movement	Weekday AM Peak Hour			Weekday PM Peak Hour			Available Storage (m)
		LOS (v/c)	Delay (s)	Queue 95th (m)	LOS (v/c)	Delay (s)	Queue 95th (m)	
Queen Street S/ Tannery Street (Signalized)	**Overall**	**B (0.58)**	**12**		**A (0.49)**	**6**		
	EB – L	D (0.58)	50	40	D (0.49)	54	32	~30
	EB – TR	B (0.37)	12	18	A (0.11)	0	0	~170
	WB – LTR	C (0.09)	24	10	C (0.06)	29	7	~40
	NB – LTR	A (0.22)	5	23	A (0.23)	3	24	~200
	SB – LTR	A (0.17)	4	17	A (0.26)	3	27	~200
Tannery Street/ Joymar Drive (Unsignalized)	EB – LTR	B (0.22)	10	--	A (0.00)	8	--	~40
	WB – LTR	B (0.27)	11	--	A (0.27)	9	--	~170
	NB – LTR	B (0.49)	13	--	A (0.19)	9	--	~300
	SB – LTR	B (0.39)	12	--	A (0.25)	9	--	~170
Thomas Street/ Joymar Drive (Unsignalized)	EB – TL	A (0.22)	5	7	A (0.17)	6	5	~140
	WB – TR	A (0.16)	0	0	A (0.41)	0	0	~120
	SB – LR	D (0.56)	34	25	D (0.61)	31	31	~300
Tannery Street/ Broadway Street (Unsignalized)	EB – LTR	A (0.03)	1	1	A (0.02)	2	1	~50
	WB – LTR	A (0.03)	2	1	A (0.03)	2	1	~170
	NB – LTR	C (0.21)	15	6	B (0.17)	12	5	~290
	SB – LTR	B (0.08)	13	2	B (0.11)	11	3	~60
Tannery Street/ Rutledge Road (Unsignalized)	EB – TL	A (0.01)	0	0	A (0.01)	0	0	~170
	WB – TR	A (0.19)	0	0	A (0.14)	0	0	~100
	SB – LR	C (0.03)	19	1	B (0.03)	11	1	~50

Based on the intersection capacity analysis, under the existing traffic conditions, all intersections considered in the study area are currently operating at acceptable levels of service. No improvements are identified or required under the existing traffic conditions.

3.0 TRANSPORTATION PLANNING CONTEXT IN THE AREA

3.1. Land Use Context

A comprehensive review of the area indicates that there are wide range of land uses and facilities available within 500 m walking distance (5 to 7-minutes walk) to Queen Street S and existing shopping centre, which includes: grocery stores, pharmacy, banks, restaurants and other retail/commercial offices.

The areas surrounding the Streetsville District are slowing developing into a more dense and compact land uses such as mid-rise development and compact low-rise (townhouse and duplex).

3.2. Transportation Planning Context

As indicated in Section 2, the subject site is located approximately 450 metres (or 6-minute walk) from the bus stops for Mississauga Transit (MiWay) Bus Routes 44 and 306, and approximately 300 metres (or 4-minute walk) from the bus stops for Mississauga Transit (MiWay) Bus Routes 306 and 313. The proposed development is also located less than 900 m (about 13-minute walk) from the existing Streetsville GO Train/GO Bus station.

The assessment indicates that the area is currently servicing by excellent existing land use, transportation network and transit network. This will encourage other modes of transportation such as walking, cycling and public transit.

3.3. Streetsville District

Based on the information obtained in the Section 4.32 Streetsville District Policies of Mississauga Plan, the Streetsville District has developed around the historic settlement of the village of Streetsville, located south of Britannia Road West, between the Credit River and Mullet Creek. The Streetsville area is unique in Mississauga as it retains the distinct character of a rural Ontario town from the early 19th century.

There are over ninety listed heritage properties in Streetsville area with many of which are designated. Heritage buildings are prominent along Queen Street South, some as original retail commercial structures, others as residential dwellings which have been converted to retail commercial and office uses.

Queen Street South/Mississauga Road is also designated as a Scenic Route. The transportation system in the district includes Britannia Road West as the main east-west arterial road and Queen Street South and Queen Street North as the main north-south major collector road. The arterial roads and several of the major collector roads have public bus transit service. In addition to bus transit, there is a GO Transit commuter rail station located on Thomas Street.

For the reasons noted above, there are limited or no opportunities to widen Queen Street S and other local streets within the Streetsville district. The area surrounding the Streetsville district will be developed to provide housing to the area but relies on the existing and future transit system and improvements in the area, such as the two-way all-day service and 15-minute frequency along the Milton GO Line.

4.0 FUTURE BACKGROUND CONDITIONS

4.1. Analysis Horizon

For the purposes of this assessment, a five-year horizon (2022 to 2027) has been carried out for the study analysis. This is consistent with the City of Mississauga Traffic Impact Study Guidelines, the approved study terms of reference and background studies conducted in the area.

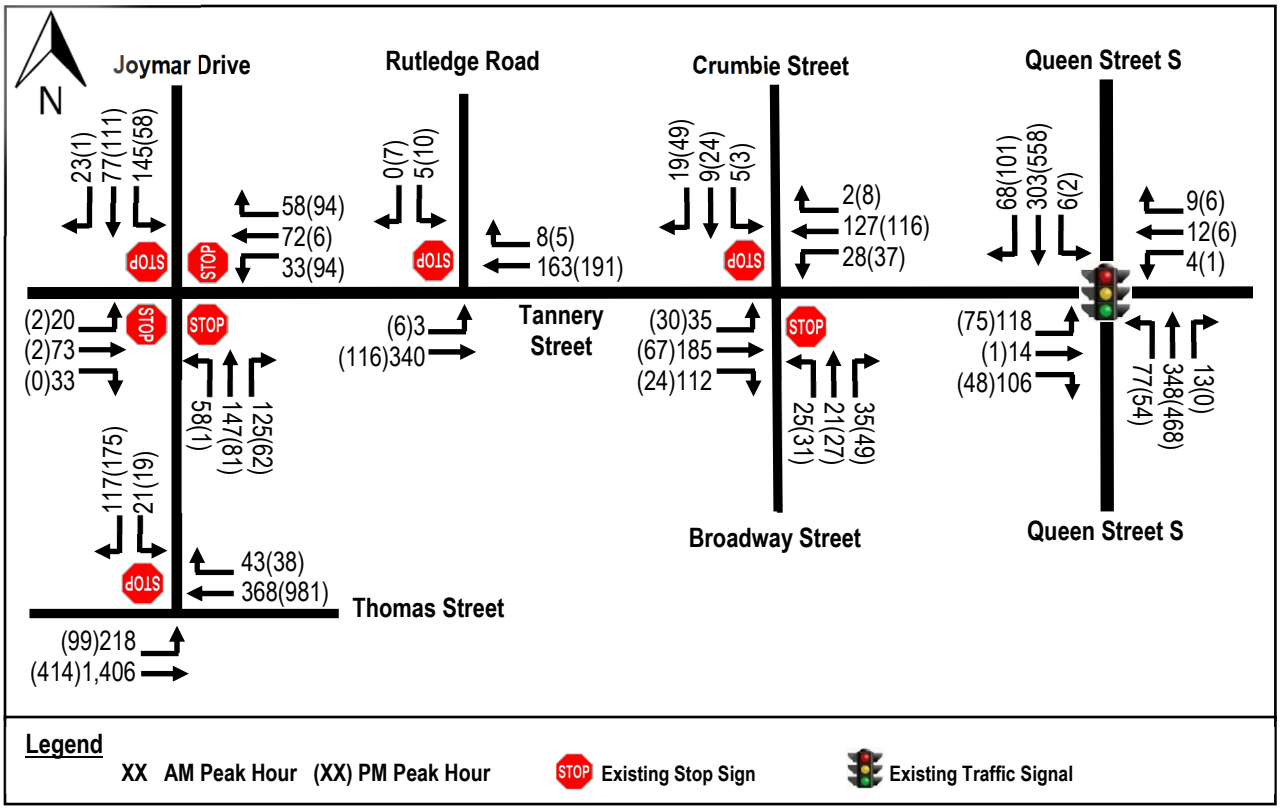
4.2. Future Background Corridor Growth

The anticipated growth rates provided by the City are summarized below:

- Joymar Drive and Tannery Street: 0.5% per annum
- Queen Street: 0.5% per annum for NB and 1.5% per annum for SB during the morning peak and 0.5% per annum for NB and 0.5% per annum for SB during the afternoon peak
- Thomas Street: 0.5% per annum for EB and 0.5% per annum for WB during the morning peak and 0.5% per annum for EB and 0.0% per annum for WB during the afternoon peak

The corridor background traffic growth is illustrated in **Figure 8**. It should be noted that all growth is adjusted from 2022 to 2027, with the compounded growth rate provided above. It also be noted that the growth may be higher than indicated above rates due to volume balancing, which is conservative.

Figure 8 – 2027 Corridor Background Traffic Growth



4.3. Background Development Applications

A full review of active developments within the study area was conducted based on the information extracted from the City of Mississauga Development Portal. **Table 2** below summarizes the background developments in the area.

It should be noted that there are other minor rezoning and minor variance applications that are not included in the analysis due to low site generated traffic volumes. Some of the developments are also under construction and the growth rates are capture these background traffic volumes.

Table 2 – Background Developments in the Area

Proposed Development Location	Development Descriptions	Trip Generation and Sources
66 Thomas Street	239 residential dwelling units	C.F. Crozier & Associates Inc. TIS – July, 2019
51 and 57 Tannery Street	155 stacked townhouse units	LEA TIS – June, 2018
86 Thomas Street	10 back-to-back townhouse units	Nextrans TIS – June, 2020

For the purposes of this assessment, the background development traffic volumes were extracted from the respective Transportation Impact Studies noted above (**Appendix D**).

Figure 9 illustrates the background development site generated traffic volumes in the study area, where appropriate, with **Figure 10** illustrating the future background traffic volumes (existing balance + background traffic growth + background development traffic volumes).

Figure 9 – Background Development Traffic Volumes

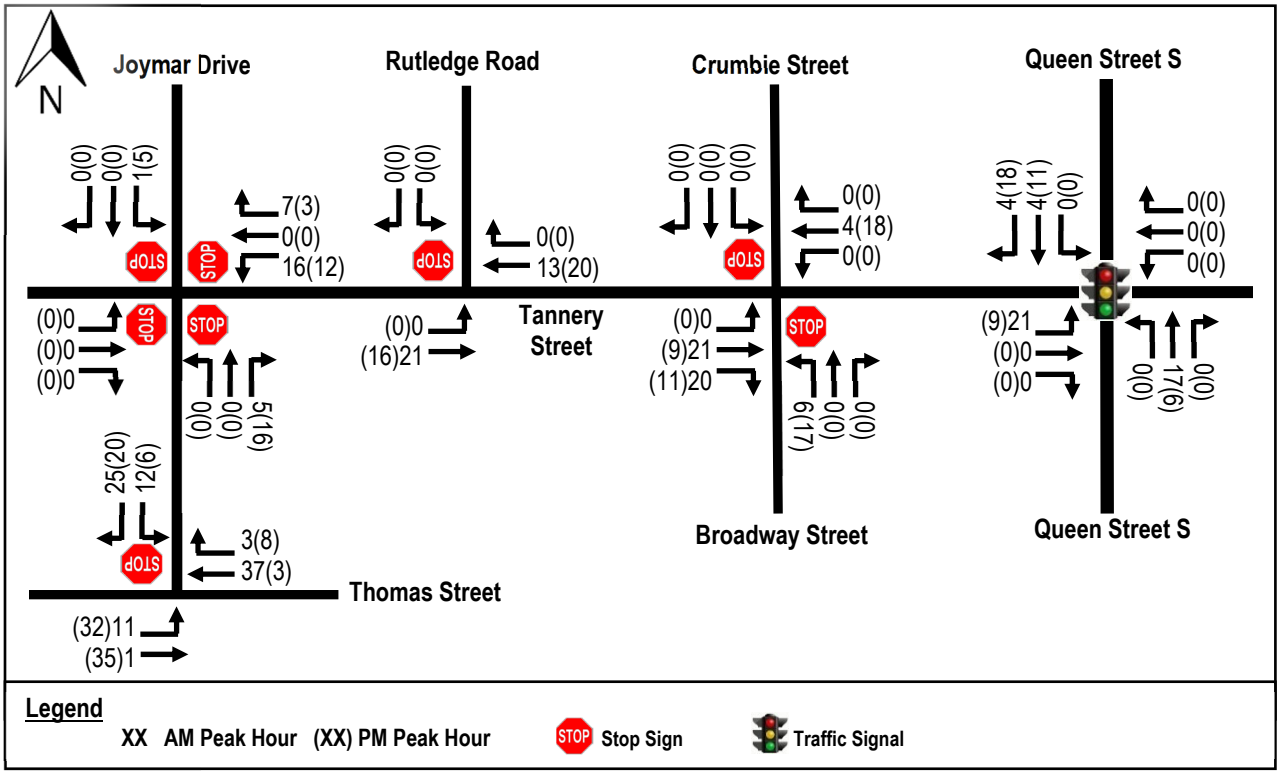
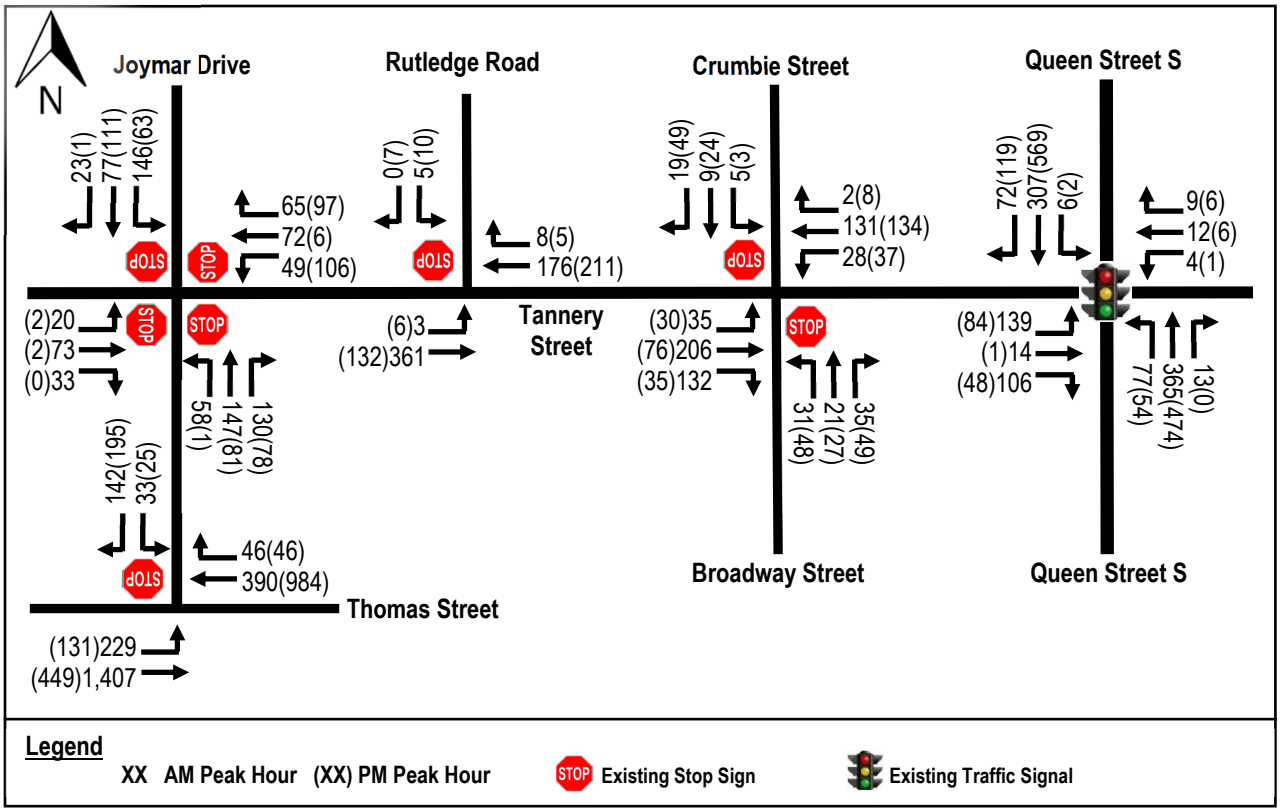


Figure 10 – 2027 Future Background Traffic Volumes



4.4. Future Background Traffic Assessment

The estimated future background traffic volumes are illustrated in **Figure 9**, and were analyzed using Synchro Version 11 software. The detailed calculations are provided in **Appendix E** and summarized in **Table 4**.

Table 3 – 2027 Future Background Levels of Service

Intersection	Key Movement	Weekday AM Peak Hour			Weekday PM Peak Hour			Available Storage (m)
		LOS (v/c)	Delay (s)	Queue 95th (m)	LOS (v/c)	Delay (s)	Queue 95th (m)	
Queen Street S/ Tannery Street (Signalized)	**Overall**	**B (0.65)**	**12**		**A (0.53)**	**7**		
	EB – L	D (0.65)	52	47	D (0.53)	55	36	~30
	EB – TR	B (0.35)	11	17	A (0.12)	1	0	~170
	WB – LTR	C (0.09)	24	10	C (0.07)	29	8	~40
	NB – LTR	A (0.24)	5	26	A (0.26)	4	27	~200
	SB – LTR	A (0.18)	4	18	A (0.29)	4	33	~200
Tannery Street/ Joymar Drive (Unsignalized)	EB – LTR	B (0.23)	11	--	A (0.01)	8	--	~40
	WB – LTR	B (0.33)	12	--	A (0.30)	10	--	~170
	NB – LTR	B (0.53)	14	--	A (0.23)	9	--	~300
	SB – LTR	B (0.42)	13	--	A (0.26)	10	--	~170
Thomas Street/ Joymar Drive (Unsignalized)	EB – TL	A (0.21)	5	7	A (0.20)	7	6	~140
	WB – TR	A (0.16)	0	0	A (0.39)	0	0	~120
	SB – LR	E (0.69)	45	37	E (0.71)	39	40	~300
Tannery Street/ Broadway Street (Unsignalized)	EB – LTR	A (0.03)	1	1	A (0.02)	2	1	~50
	WB – LTR	A (0.03)	2	1	A (0.03)	2	1	~170
	NB – LTR	C (0.25)	17	8	B (0.22)	13	7	~290
	SB – LTR	B (0.08)	13	2	B (0.12)	11	3	~60
Tannery Street/ Rutledge Road (Unsignalized)	EB – TL	A (0.01)	0	0	A (0.01)	0	0	~170
	WB – TR	A (0.20)	0	0	A (0.16)	0	0	~100
	SB – LR	C (0.04)	21	1	B (0.03)	11	1	~50

Based on the intersection capacity analysis, under the background traffic conditions, all intersections considered in the study area are expected to operate at acceptable levels of service. No improvements are identified or required under this horizon year.

The southbound left turn from Joymar Drive to Thomas Street is expected to operate with slightly higher delay due to the heavy through volumes on Thomas Street. However, this is a typical condition for any unsignalized intersection from a side street onto a major collector road. Nextrans will provide a signal warrant analysis under the future total conditions.

5.0 SITE TRAFFIC

5.1. Proposed Development

As indicated, the proposed development consists of a mid-rise building (10-storey) with 305 residential dwelling units (including four townhouse units). Given a small amount of townhouse units, for the purpose of site trip assessment, the 4 townhouse units will be treated as mid-rise units.

The 2016 Transportation Tomorrow Survey (TTS) and the *Trip Generation Manual, 11th Edition* published by the Institute of Transportation Engineers (ITE) and information was reviewed to estimate the trip distribution and site trip generation for the proposed development.

5.2. Modes of Travel Assessment in the Area

Table 4 summarizes the travel mode split information based on the review of the 2016 Transportation Tomorrow Survey data for Traffic Zones 3715, 3718 and 3836. The 2016 TTS data extraction is included in **Appendix E**.

Table 4 – Modal Split based on 2016 TTS Data for Traffic Zones

Time	Trips Made by Traffic Zones				
	Auto Driver	Auto Passenger	Transit	Cycle	Walk
AM Peak Period (6:00Am – 9:00AM)	68%	14%	12%	0%	6%
PM Peak Period (4:00PM – 7:00PM)	73%	16%	8%	1%	2%

Based on the information above, the non-auto mode of transportation (transit + walking + carpooling) accounts for 32% during the morning peak period and 27% during the afternoon peak period. Although this is a great trend, however, the auto driver mode is still very high, which is not sustainable and does not meet the sustainable objective of the City Official Plan policies and directions. In addition, there is none or very little bicycle trips, despite there are existing cycling facilities.

5.3. Site Trip Generation

The trip generation forecasts were undertaken using the information contained in the *Trip Generation Manual, 11th Edition* published by the Institute of Transportation Engineers (ITE). For the purposes of this assessment, the ITE Land Use Code (LUC) 221 "Multifamily Housing (Mid-Rise) Not Close to Rail Transit General Urban/Suburban" fitted curve equations has been utilized for the proposed development. To be conservative, no modal split has been assumed for the proposed development. As indicated, given a small amount of townhouse units, for the purpose of site trip assessment, the 4 townhouse units will be treated as mid-rise units. The site trip generation is summarized in **Table 7**, with the associated ITE excerpts are included in **Appendix B**.

Table 5 – Site Trip Generation

ITE Land Use	Magnitude (units)	Parameters		Morning Peak Hour			Afternoon Peak Hour		
				In	Out	Total	In	Out	Total
Multifamily Housing (Mid-Rise) LUC 221 Not Close to Rail Transit	305 units	Vehicle Trips	Trip Rates AM Peak T = 0.44*(X) - 11.61 PM Peak T = 0.39*(X) + 0.34	0.09	0.31	0.40	0.24	0.15	0.39
			New Auto Trips	**28**	**93**	**121**	**72**	**46**	**118**
		Transit Trip	Trip Rates AM Peak T = 0.16*(X) - 2.42 PM Peak T = 0.10*(X) - 1.27	0.07	0.06	0.13	0.06	0.06	0.12
			New Non-Auto Trips	**23**	**23**	**46**	**15**	**14**	**29**

The analysis indicates that the proposed development is expected to generate:

- 121 total two-way auto trips (28 inbound and 93 outbound) and 118 total two-way auto trips (72 inbound and 46 outbound) during the AM and PM peak hours, respectively; and
- 46 total two-way transit trips (23 inbound and 23 outbound) and 29 total two-way transit trips (15 inbound and 14 outbound) during the AM and PM peak hours, respectively.

5.4. Site Trip Distribution and Assignment

The 2016 Transportation Tomorrow Survey (TTS) data was reviewed for Traffic Zones 3715, 3718 and 3836 in order to estimate the general trip distribution for the proposed development. **Table 6** summarizes the planning district/traffic zones distribution based on the 2016 TTS data, with **Table 7** summarizing the site trip assignment based on the 2016 TTS data and the existing traffic turning movement counts at the McLaughlin Road/Navigator Drive intersection.

Table 6 – Trip Distribution for Residential Component

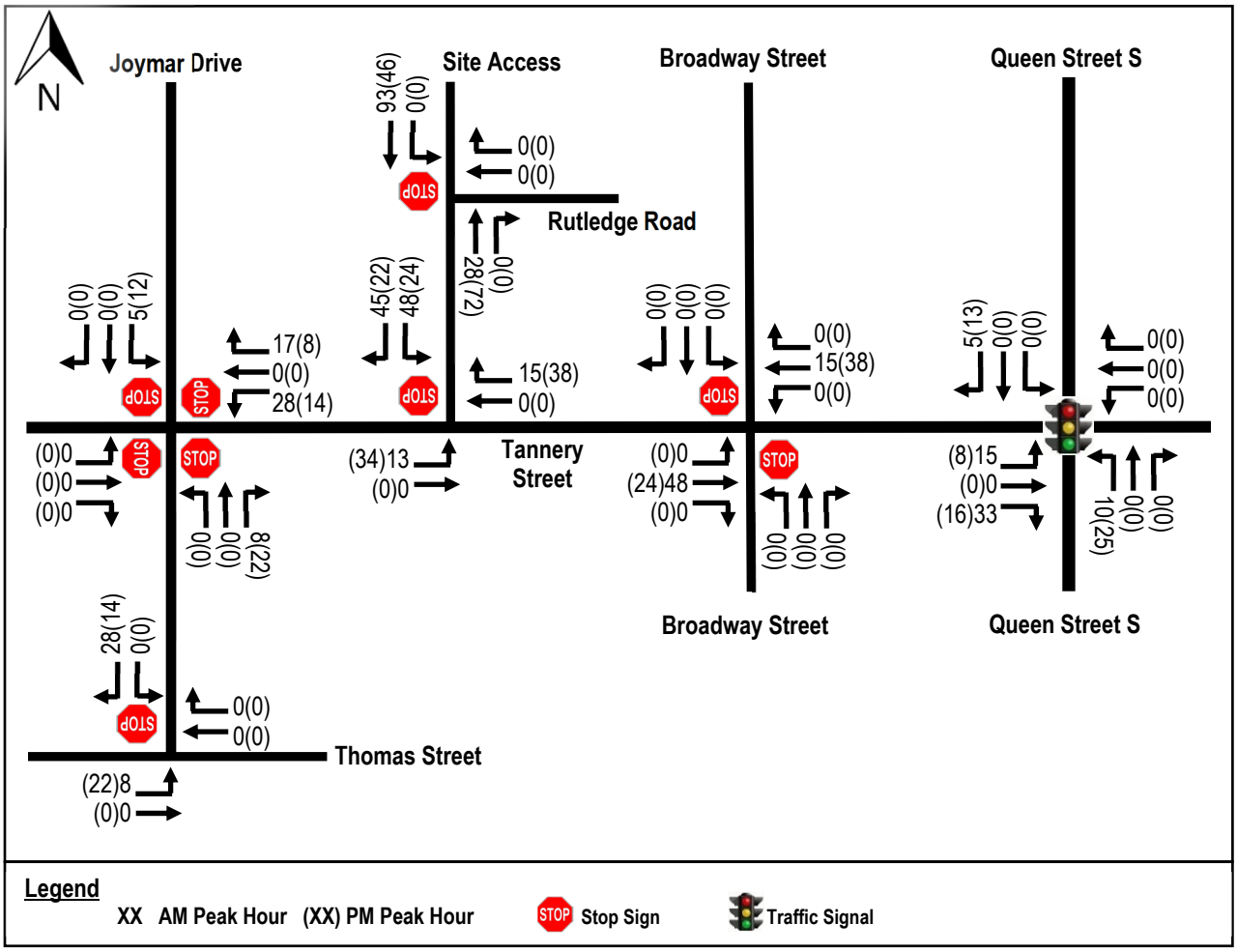
Mode	Mississauga	Toronto	Brampton	Caledon	York Region	Halton	Durham	Total
Auto	75%	8%	5%	0%	3%	9%	0%	100%

Table 7 – Site Trip Distribution

Direction	Percentage
North (via Joymar/Queen Street S/Mississauga Road)	10%
South (via Joymar/Queen Street S/Mississauga Road)	25%
East (via Bristol Rd W/Eglinton/Hwy 403)	35%
West (via Bristol Rd W/Eglinton/Hwy 403)	30%

Figure 10 illustrates the proposed development generated traffic volumes. It should be noted that the auto site trip distribution and assignment have been taken into consideration the 2016 TTS information, existing turning movements at the intersections and intersection operations.

Figure 11 – Site Traffic Volumes



6.0 FUTURE TOTAL TRAFFIC CONDITIONS

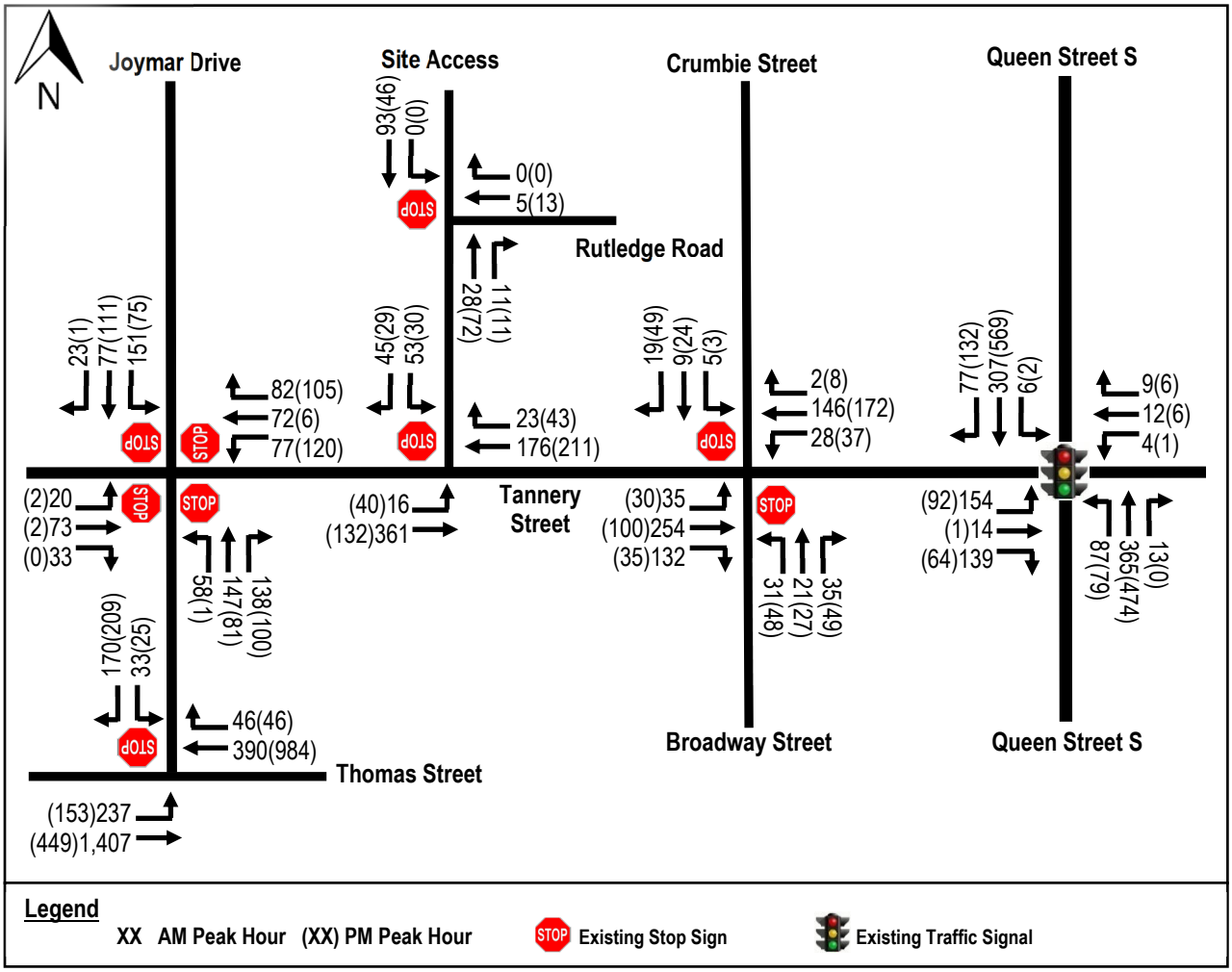
6.1. Future Total Traffic Assessment for Auto Mode

The estimated future total traffic volumes (future background traffic volumes plus site generated traffic volumes) are illustrated in **Figure 12**, and were analyzed using Synchro Version 11 software. The detailed calculations are provided in **Appendix G** and summarized in **Table 8**.

Based on the intersection capacity analysis, under the future total traffic conditions, all intersections considered in the study area are expected to operate at acceptable levels of service. No improvements are identified or required under this horizon year.

Similar to the future background conditions, the southbound left turn from Joymar Drive to Thomas Street is expected to operate with slightly higher delay due to the heavy through volumes on Thomas Street. However, this is a typical condition for any unsignalized intersection from a side street onto a major collector road. The signal warrant analysis and results are outlined in the section below.

Figure 12 – 2027 Future Total Traffic Volumes



6.2. Signal Warrant Analysis

Nextrans has conducted a traffic signal warrant analysis for the Thomas Street/Joymar Drive intersection based on the 2027 future forecast volumes and Justification 7 of the Ontario Traffic Manual Book 12. The traffic signal warrant analysis as outlined in **Appendix H** indicates that traffic signals are not numerically warranted at this intersection due to low traffic volumes and T-intersection configuration under the 2027 traffic conditions.

Therefore, a traffic signal is not recommended at this time due to the following reasons:

- An unwarranted traffic signal may cause unnecessary delay, especially during the off-peak period. Even with no cars, on one direction of the intersection, the other direction still turns red and delay other vehicles;

- There are risk of vehicles running red light when a traffic signal is not expected or under-utilized due to aggressive driving; and
- There are capital costs and maintenance costs associated with traffic signal, therefore, signal should only be installed when warranted and necessary.

Based on the intersection capacity analysis, the proposed development has minimum or negligible impact to this intersection. Therefore, the proposed development is not responsible for installation of an unwarranted traffic signal.

Table 8 – 2027 Future Total Levels of Service

Intersection	Key Movement	Weekday AM Peak Hour			Weekday PM Peak Hour			Available Storage (m)
		LOS (v/c)	Delay (s)	Queue 95th (m)	LOS (v/c)	Delay (s)	Queue 95th (m)	
Queen Street S/ Tannery Street (Signalized)	**Overall**	**B (0.69)**	**12**		**A (0.55)**	**8**		
	EB – L	D (0.69)	53	51	E (0.55)	55	38	~30
	EB – TR	B (0.41)	10	19	B (0.26)	12	13	~170
	WB – LTR	C (0.09)	23	10	C (0.06)	29	7	~40
	NB – LTR	A (0.26)	6	26	A (0.31)	5	31	~200
	SB – LTR	A (0.18)	4	18	A (0.31)	4	35	~200
Tannery Street/ Joymar Drive (Unsignalized)	EB – LTR	B (0.24)	11	--	A (0.01)	8	--	~40
	WB – LTR	B (0.41)	13	--	B (0.34)	10	--	~170
	NB – LTR	B (0.57)	15	--	A (0.26)	9	--	~300
	SB – LTR	B (0.45)	14	--	A (0.29)	10	--	~170
Thomas Street/ Joymar Drive (Unsignalized)	EB – TL	A (0.22)	5	7	A (0.24)	8	7	~140
	WB – TR	A (0.16)	0	0	A (0.39)	0	0	~120
	SB – LR	E (0.75)	48	44	E (0.77)	47	48	~300
Tannery Street/ Broadway Street (Unsignalized)	EB – LTR	A (0.03)	1	1	A (0.02)	2	1	~50
	WB – LTR	A (0.03)	2	1	A (0.03)	2	1	~170
	NB – LTR	C (0.28)	18	9	B (0.24)	14	8	~290
	SB – LTR	B (0.09)	14	2	B (0.12)	11	3	~60
Tannery Street/ Rutledge Road (Unsignalized)	EB – TL	A (0.03)	1	1	A (0.04)	2	1	~170
	WB – TR	A (0.22)	0	0	A (0.18)	0	0	~100
	SB – LR	D (0.60)	33	29	B (0.13)	12	4	~50
Rutledge Road/ Site Access (Unsignalized)	WB – TR	A (0.00)	7	0	A (0.01)	7	0	~50
	NB – TR	A (0.05)	9	1	A (0.11)	10	3	~50
	SB – TL	A (0.12)	10	3	A (0.06)	10	2	~20

6.3. Active Transportation Assessment

Walking

As indicated in the previous section of this Study, the area is currently well-serviced by a sufficient network of sidewalks, with sidewalks are available on both sides of Tannery Street, Joymar Drive and Queen Street S. Sidewalks are also available on the east side of Rutledge Road and Broadway Street. In addition, sidewalks are reasonably maintained therefore no improvements are required at this time.

As part of the proposed development, continuous sidewalk will be provided along the west side of Rutledge Road along the frontage of the proposed development. The sidewalk width and design are similar to the existing sidewalks on the east side of Rutledge Road, and as per the City's design standards.

Cycling

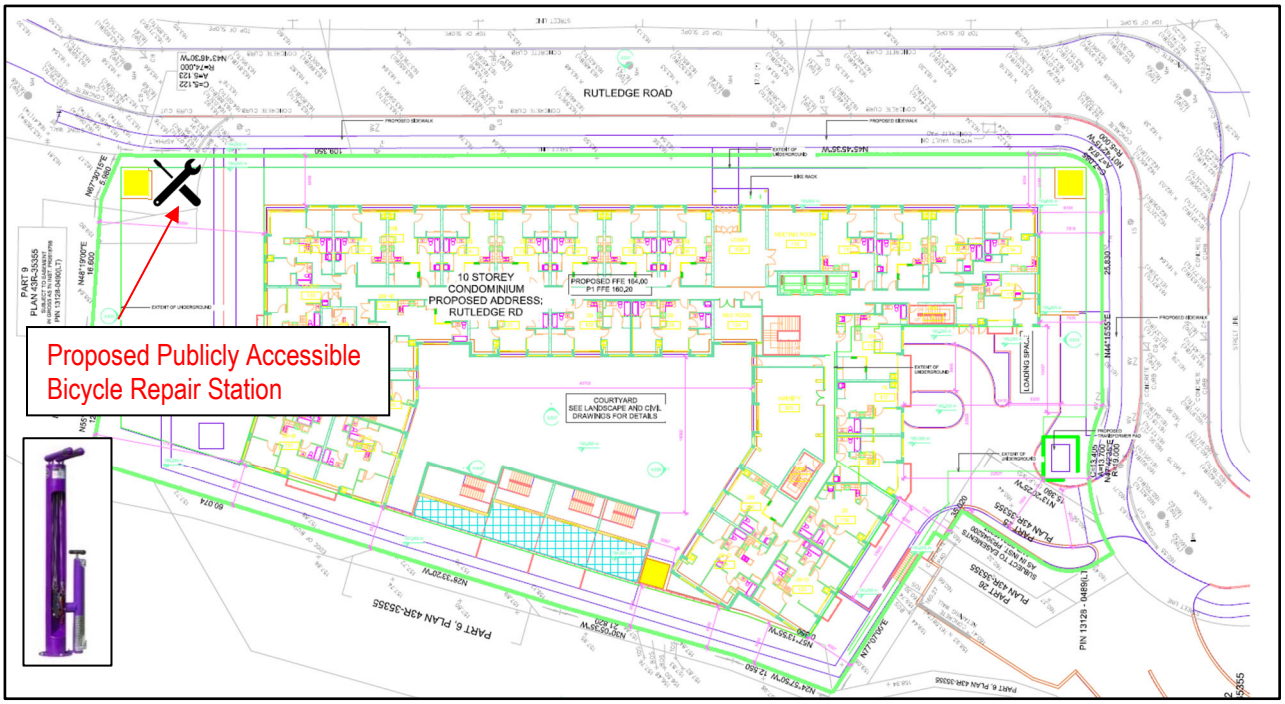
Under the existing conditions, there is no dedicated bike lane in the immediate vicinity of the proposed development. Bike lanes are available as part of Queen Street, south of Ontario Street to Britannia Road W, and south of Erin Centre Boulevard. Bike lanes are also available on Bristol Road W, Erin Centre Boulevard and Tenth Line.

Based on this assessment, the existing cycling network can be improved in the future as part of the City of Mississauga 2018 Cycling Master recommendations. This will encourage existing and future residents to use these facilities instead of driving single-occupant-vehicles. The implementation of these plans is beyond the scope of this Study.

As part of the proposed development, a total of 181 bicycle parking spaces will be provided. This provision will encourage residents to use more active modes of transportation rather than driving private vehicles, which is costly due to ownership and gas costs.

To support TDM measures, it is recommended that the proposed development provide one publicly accessible bike repair station. The proposed location is illustrated in **Figure 13** below.

Figure 13 – Proposed Bike Repair Station



6.4. Transit Mode Assessment

The analysis indicates that the proposed development is expected to generate 46 total two-way transit trips (23 inbound and 23 outbound) and 29 total two-way transit trips (15 inbound and 14 outbound) during the AM and PM peak hours, respectively. As indicated, the subject site is located approximately 450 metres (or 6-minute walk) from the bus stops for Mississauga Transit (MiWay) Bus Routes 44 and 306, and approximately 300 metres (or 4-minute walk) from the bus stops for Mississauga Transit (MiWay) Bus Routes 306 and 313. The proposed development is also located less than 900 m (about 13-minute walk) from the existing Streetsville GO Train/GO Bus station.

Based on Nextrans review of the existing Mississauga Transit and GO Transit operating schedule, as well as the context of the study area, it is indicated that the area currently has excellent transit service. The existing Mississauga Transit has excellent service frequency that connect residents to various transit routes and stations in the City of Mississauga.

The assessment indicates that there is an excellent transit service in the area and there is no noticeable constraint in the system at this time. In addition, with the future GO Service Expansion (formerly Regional Express Rail) all-day two-way and 15-minute service along Milton GO Line, as well as the future LRT on Hurontario Street, there will an increase in public ridership in the future. This has been documented in several Metrolinx reports and studies.

7.0 SITE PLAN REVIEW

7.1. Loading Requirement

Under Section 3.1.4.5 of the City of Mississauga current Zoning By-law, one loading space per apartment building containing a minimum of 30 dwelling units. The proposed development provides one loading space to be located at the south-east of the site, east of the main site access. The loading space dimensions are: 3.5 m width x 9.0 m length. AutoTURN software was used (garbage truck) to generate vehicular turning templates to confirm and demonstrate the accessibility for the proposed on-site loading space. The turning movement templates are illustrated in **Figures 20** and **21**.

7.2. Solid Waste Management

Nextrans has reviewed the existing garbage pick up schedule for the area, as well as the Waste Management Plan for Official Plan Amendment/Rezoning Applications guidelines from Region of Peel website (www.peel.ca). **Figure 14** summarizes the current waste pick-up schedule for the area. Based on the current solid waste pick-up schedule, garbage and recycling pick-up occurs on alternate Tuesday of the weeks. Organics waste will be picked up every Tuesday of the week.

Figure 14 – Waste Collection Schedule

Sun	Mon	Tue	Wed	Thu	Fri	Sat
30	31	1 Garbage Organics Yard Waste	2	3	4	5
6	7	8 Recycling Organics Yard Waste	9	10	11 Remembranc..	12
13	14	15 Garbage Organics Yard Waste	16	17	18	19
20	21	22 Recycling Organics Yard Waste	23	24	25	26
27	28	29 Garbage Organics Yard Waste	30	1	2	3
4	5	6 Recycling Organics Yard Waste	7	8	9	10

7.3. Waste Management Operation

On the garbage pick-up day, garbage bins will be moved from the garbage storage area to the garbage staging area. Garbage truck with front-end loader will make a right turn or left turn into the site driveway from Rutledge Road and make a right turn into the garbage loading area. Once garbage has been picked up, garbage truck will be backing into the area between the driveway and the ramp, and then exit the site in forward motion.

For recycling and regular garbage pick up, garbage truck will make right turn or left turn into the site from Rutledge Road. Garbage truck will move forward into the court yard area and then backing into the garbage loading space. When the

operation is completed, garbage truck will exit the site in a forward motion directly from the loading area. It is anticipated that building management staff will assist the garbage operation while the servicing vehicles are on-site.

7.4. Proposed Development Access

The subject is currently vacant and fronting onto Rutledge Road. Rutledge Road is a north-south local road that connects Tannery Street, along the west side of the rail corridor, to service the proposed development along the west side of the rail corridor.

The proposed site access will be provided directly onto Rutledge Road, at the southerly limit of the proposed development and at the first bend of the Rutledge Road.

Based on the findings of this Study, one inbound lane and one outbound lane with a total width of 7.0 m will be required for the proposed development access. A shared northbound left/through and westbound right/through are sufficient on Rutledge Road to accommodate the proposed development. Given that the access is located at the inner curb of Rutledge Road bend, sufficient access sightline is provided, similar to the existing access located at 175 Rutledge Road. The analysis indicates that the proposed site access is expected to operate at acceptable levels of service with minimum queues or delays.

7.5. Sight Line Analysis

The City has requested that sight line analysis be undertaken for the proposed access, as well as a potential shift of the driveway to the north at the parallel portion of Rutledge Road. Based on our analysis, if the access is shifted further to the north along the straight portion of Rutledge Road, the sightline will be impacted significantly. Please see the **Figure 15** (City's request access location sight lines) and **Figure 16** (proposed development access location sight lines) below for more information.

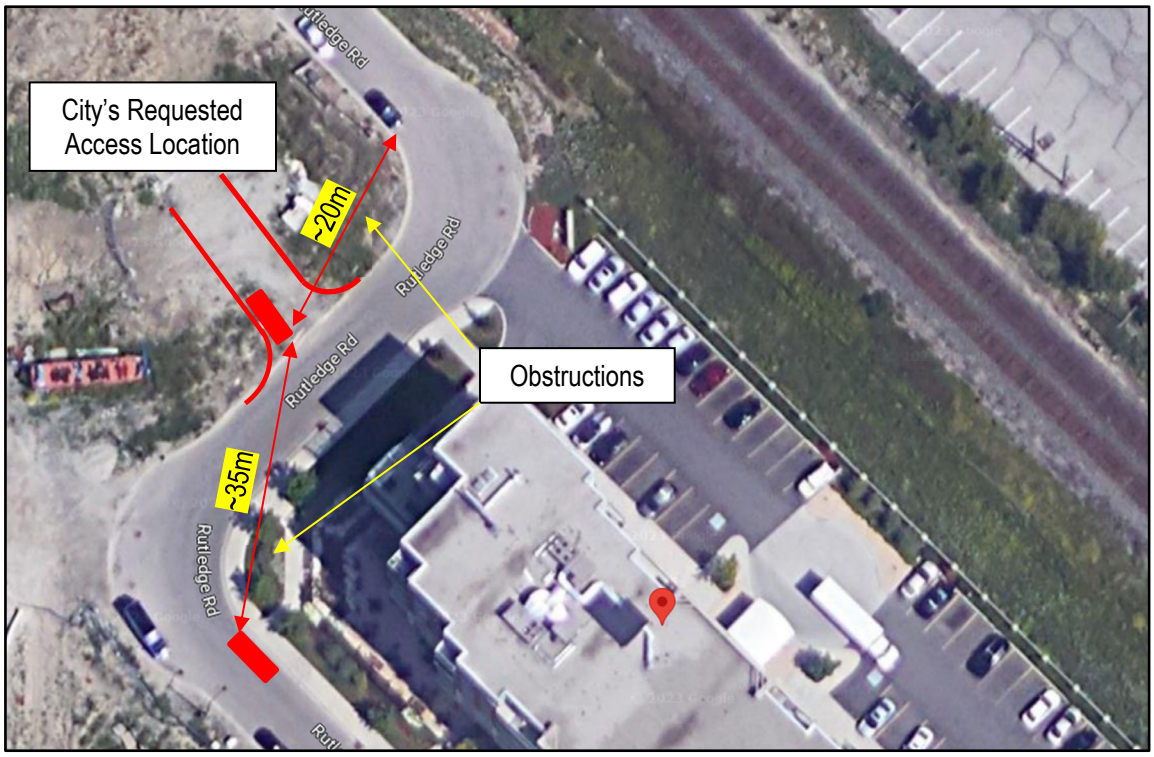
Based on Table 9.9.4 of the 2017 TAC Manual, for the design speed of 50km/h (assumed 40km/h posted speed plus 10km/h), the required stopping sight distance is 65m. For 40km/h design speed, the required stopping sight distance is 50km/h.

However, based on our site visit and driving test, it is not possible to drive at 40km/h or 50km/h due to the bend in the road. The average comfortable speed is around 20km/h to 30km/h. Therefore, the current proposed access location is more appropriate and meets the required stopping sight distance as indicated in Table 9.9.4 of the TAC Manual below.

Table 9.9.4: Design Intersection Sight Distance – Case B1, Left Turn From Stop

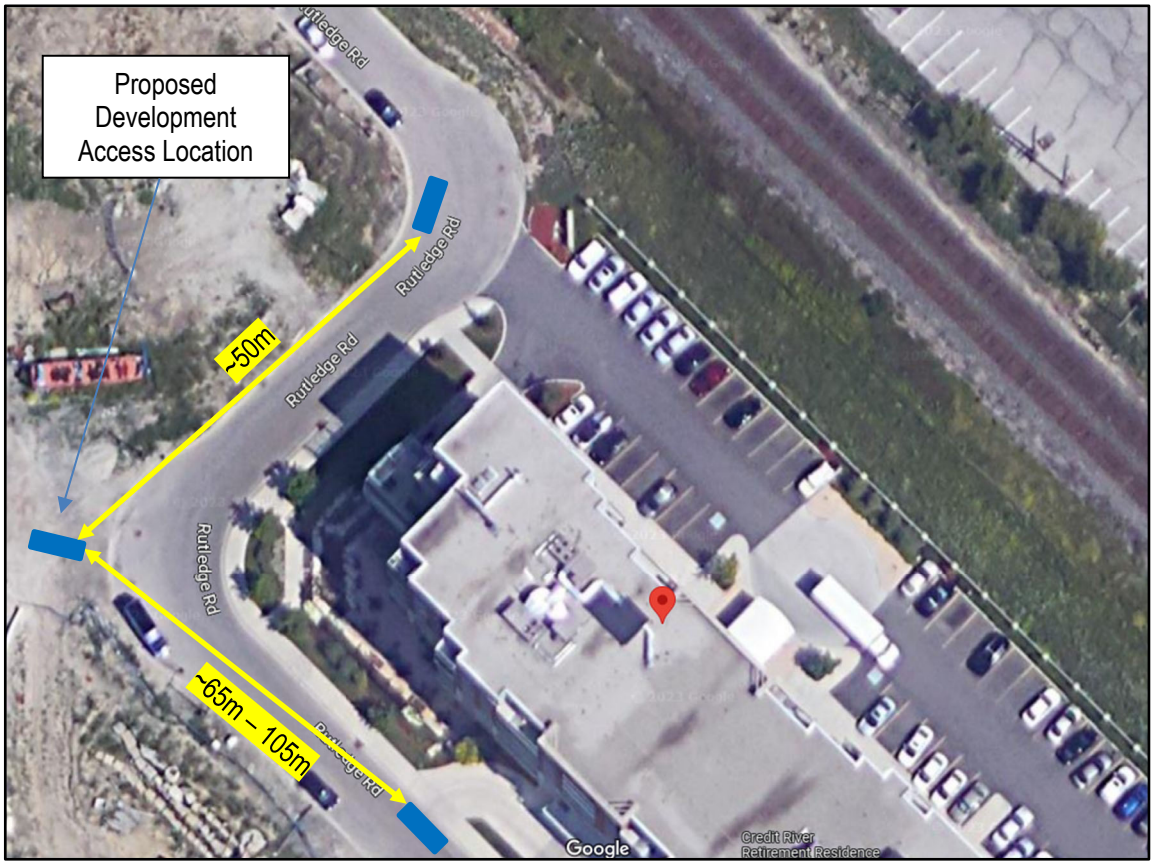
Design Speed (km/h)	Stopping Sight Distance (m)	Intersection Sight Distance for Passenger Cars	
		Calculated (m)	Design (m)
20	20	41.7	45
30	35	62.6	65
40	50	83.4	85
50	65	104.3	105
60	85	125.1	130
70	105	146.0	150
80	130	166.8	170
90	160	187.7	190
100	185	208.5	210
110	220	229.4	230
120	250	250.2	255
130	285	271.1	275

Figure 15 – City's Requested Access Location (Not Recommended)



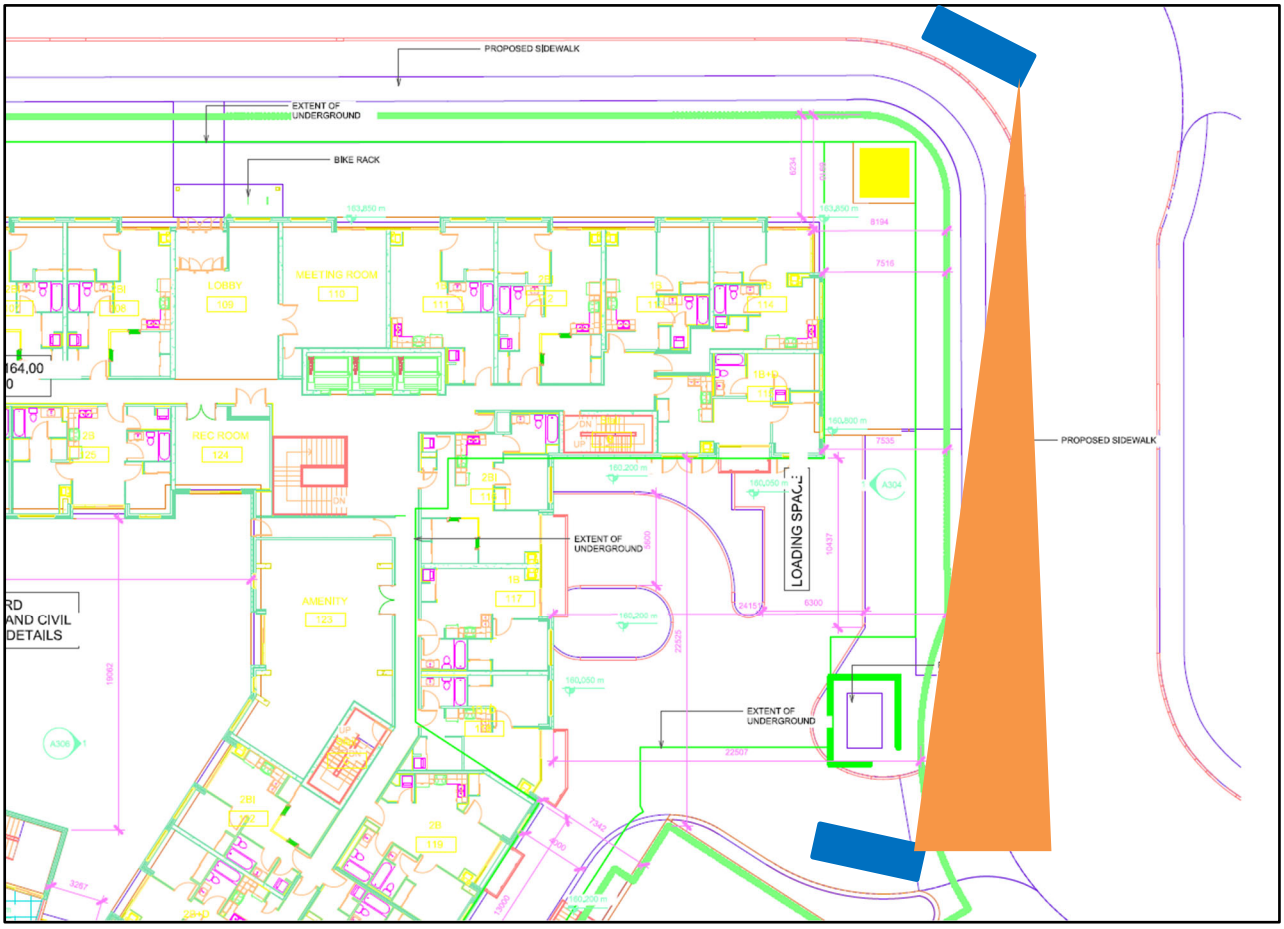
Source: Google Map

Figure 16 – Proposed Development Access Location (Recommended)



Source: Google Map

Figure 17 – Sight Line Clearance Zone (No Obstruction Permitted)



7.6. Traffic Calming and Community Concerns

As indicated in Section 2 of this Study, Rutledge Road is a north-south local road under the jurisdiction of the City of Mississauga. Based on Nextrans' review and site visit, Rutledge Road current pavement width is approximately 7.0 m, (edge of pavement to edge of pavement). It only allows a 3.5m width per lane, which is narrower than a typical subdivision road. Rutledge Road also has several bends in the vicinity of the subject site. Rutledge Road will also be stop-controlled at Tannery Street. For these reasons, traffic calming measures are not required at this time. However, in the future, if there is a speeding issue, speed humps can be installed on Rutledge Road, between Tannery Street and south of the first bend.

Tannery Street is an east-west minor collector road under the jurisdiction of the City of Mississauga. Based on Nextrans' review and site visit, Rutledge Road current pavement width is approximately 7.0 m (edge of pavement to edge of pavement). It only allows a 3.5m width per lane, which is narrower than a typical minor collector road. Given that Tannery Street meets Joymar Drive and Queen Street S as T-intersections, there are limited distance for speeding. In addition, Tannery Street also has at grade rail crossing, it will also deter drivers from speeding through this area.

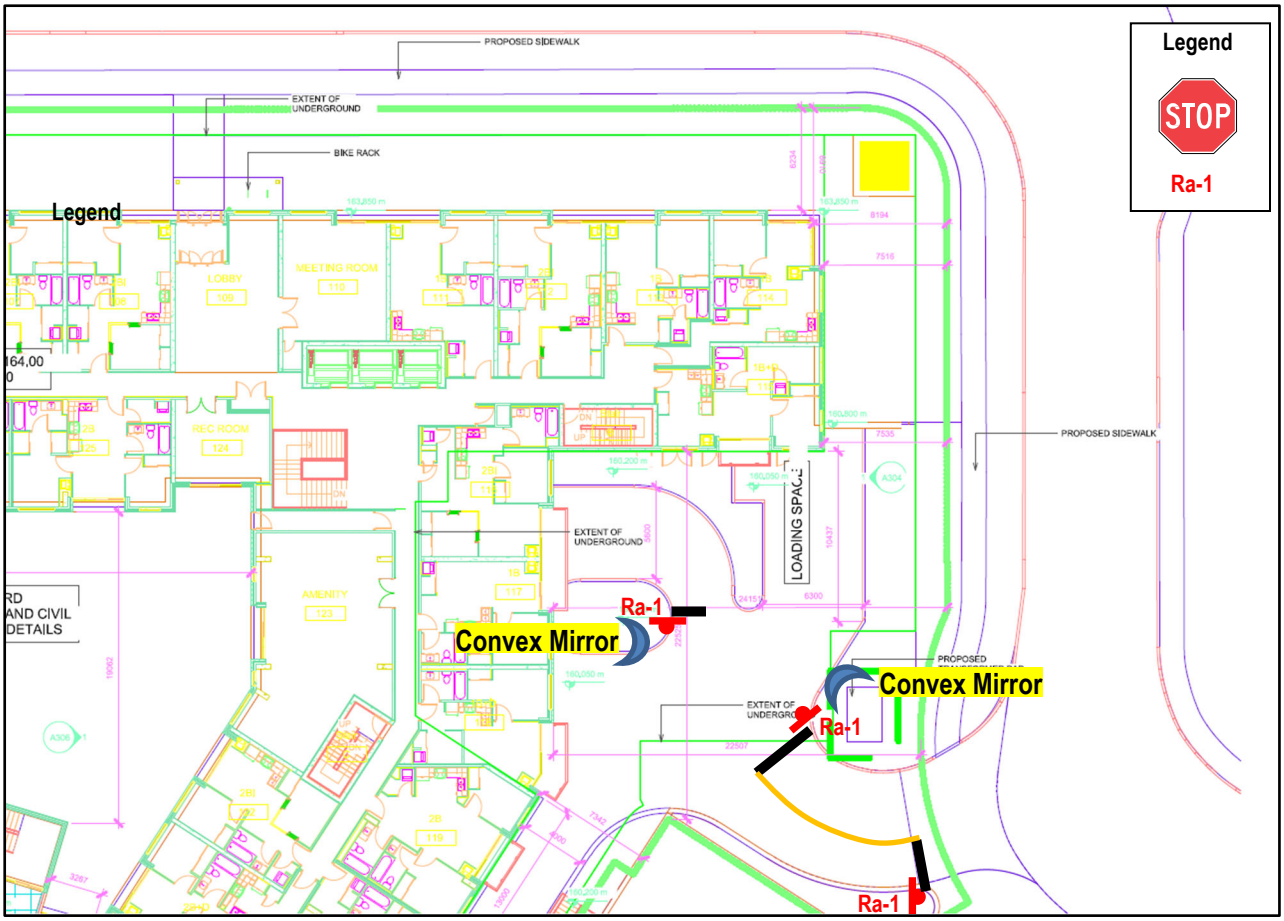
Given the context of the area, the analysis indicates that no traffic calming measures are required at this time. However, it is suggested that the City consider providing ladder crossing (as per OTM Book 15) at the intersection of Tannery Street and Joymar Drive.

7.7. Internal Site Circulation

To ensure safe operation and minimize internal conflicts, the following mitigation measures are provided:

- Stop sign to be installed at the proposed site access at Rutledge Road;
- Stop sign at the underground parking exit; and
- Convex mirrors to be installed to help truck movements

Figure 18 – Internal Circulation



8.0 PARKING ASSESSMENT

The City of Mississauga Council has recently approved the new vehicle parking rate amendment to the existing Zoning By-law No. 0225-2007. The proposed development is located within Precinct 2, with the blended rates of 0.9 space/unit for resident and 0.20 spaces/unit for visitor/ground related non-residential use, for the proposed condominium apartment land use category.

Table 9 below summarizes the vehicle parking requirements for the newly approved City of Mississauga Zoning By-law amendment, with the Precinct Map illustrated in **Figure 19**.

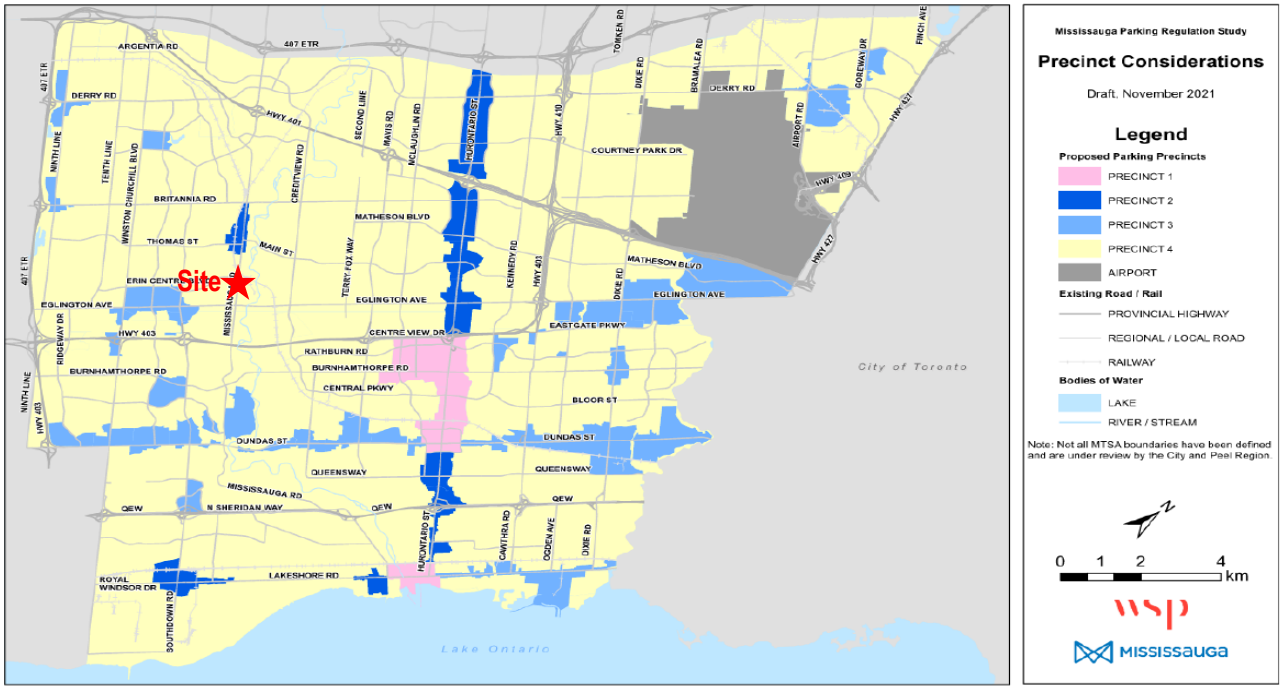
Table 9 – City of Mississauga Zoning By-law Vehicle Parking Requirements

Unit Type	No. of Unit	Parking Rates	Parking Requirement
Mid-Rise Residential	301 units	0.90 spaces/unit	271 spaces
Townhouse Residential	4 units	2.0 spaces/unit	8 spaces
Visitor	301 units	0.20 spaces/unit for visitor	60 spaces
Total			***339 spaces***
Accessible Parking Requirements			
Total no. of required visitor parking spaces	1-12 13-100	1 space 4% of the total	1 space 2 spaces
Total accessible parking requirements			***3 spaces***
Electric Vehicle Ready Parking Spaces			
Resident Parking	20% of the total required resident parking spaces		54 spaces
Visitor Parking	10% of the total required visitor parking spaces		6 spaces
Total EV ready parking space requirements			***60 spaces***

Based on the City of Mississauga Zoning By-law vehicle parking requirement, the proposed development is required to provide a total of 339 vehicle parking spaces for both resident and visitor, as well as the townhouse component. This includes 279 residential vehicle parking spaces and 60 visitor vehicle parking spaces. The proposed development will also require to provide a minimum of 3 accessible spaces and 60 EV ready parking spaces.

The proposed development will provide a total of 344 vehicle parking spaces, including 60 visitor and 284 vehicle parking spaces for resident. These parking spaces also include barrier free parking spaces. This meets the City's Zoning By-law requirement.

Figure 19 – Map of Parking Precincts



9.0 BICYCLE PARKING

Table 10 summarizes the City of Mississauga Zoning By-law bicycle parking requirement (Table 3.1.6.5.1) for the proposed development to support TDM and active transportation.

Table 10 – Bicycle Parking Space Requirements

Land Use	No. of Unit / GFA	Short Term		Long Term		Total
		Rates	Spaces	Rates	Spaces	
Residential	305 units	0.05 spaces/unit	15	0.60 spaces/unit	183	198

Based on the assessment above, the proposed development is required and will provide a minimum of 198 bicycle parking spaces, including 15 Class B (short-term spaces) and 183 Class A (long-term spaces) bicycle parking spaces for resident and visitor.

Nextrans also recommends that the proposed development provides one bicycle repair station on-site, at convenient location where residents can easily have access to. This will address the TDM requirement indicated by the City of Mississauga.

The analysis indicates that the proposed bicycle parking supply by the proposed development will encourage residents to take active mode of transportation to work, school and discretionary trips instead of driving private vehicles.

10.0 TRANSPORTATION DEMAND MANAGEMENT

Transportation Demand Management (TDM) is a co-ordinated series of actions aimed at maximizing the people moving capability of the transportation system. Intended to reduce single-occupant auto use, potential TDM measures include: TDM supportive land use, bicycle and pedestrian programs and facilities, public transit improvements, preferential treatments for buses and ridesharing, where appropriate.

As indicated, the subject site is located approximately 450 metres (or 6-minute walk) from the bus stops for Mississauga Transit (MiWay) Bus Routes 44 and 306, and approximately 300 metres (or 4-minute walk) from the bus stops for Mississauga Transit (MiWay) Bus Routes 306 and 313. The proposed development is also located less than 900 m (about 13-minute walk) from the existing Streetsville GO Train/GO Bus station.

The proposed development is also located less than 10-minute walk to the existing retail/commercials areas along Streetsville District and near-by shopping centres, as well as short cycling distance or transit to schools, community parks and community centre.

The following TDM incentives are recommended for the proposed residential development, based on Nextrans' review of the City of Mississauga Cycling Master Plan, Moving Mississauga Report and the Region of Peel TDM Strategy:

- Provide sidewalks on the west side of Rutledge Road along the frontage of the proposed development;
- Provide direct shared pedestrian/bicycle connections from the proposed development to Rutledge Road;
- Provide bicycle parking spaces as per the City's requirement;
- Provide one publicly accessible bicycle repair station on-site;
- Provide information package for new residents in a form of a Letter or electronic communication such as emails or website. The information package includes Mississauga MiWay bus route schedules and community and cycling maps, as well as GO Transit schedules; and
- Provide pre-load PRESTO Cards with the starting value of $50 (inclusive of the registration fee) to the residents on demand basis. This will help the future residents to consider taking Mississauga MiWay Transit/GO Transit as an alternative mode of transportation. The pre-loaded PRESTO Cards can be distributed in conjunction with the Information Package at the time of purchase or at occupancy.

11.0 CONCLUSIONS / FINDINGS

11.1. Study Summary and Conclusions

The findings and conclusions of the analysis are as follows:

- The analysis indicates that the proposed development is expected to generate:
    - 121 total two-way auto trips (28 inbound and 93 outbound) and 118 total two-way auto trips (72 inbound and 46 outbound) during the AM and PM peak hours, respectively; and
    - 46 total two-way transit trips (23 inbound and 23 outbound) and 29 total two-way transit trips (15 inbound and 14 outbound) during the AM and PM peak hours, respectively.

- Based on the intersection capacity analysis, under the existing, future background and future total traffic conditions, all intersections considered in the study area are expected to operate at acceptable levels of service. No improvements are identified or required under this horizon year.

  Under the future background and future total conditions, the southbound left turn from Joymar Drive to Thomas Street is expected to operate with slightly higher delay due to the heavy through volumes on Thomas Street. However, this is a typical condition for any unsignalized intersection from a side street onto a major collector road. The signal warrant analysis indicates that this intersection is not numerically warranted based on OTM Book 12 (Justification 7).

  It should be noted that the proposed development only add maximum of 4-5 second to the critical movement delay, which is negligible. No improvements beyond the improvements are required for this horizon year to accommodate the proposed development.

  It should be noted that the proposed development only add maximum of one second to the critical movement delay, which is negligible. No improvements beyond the improvements identified in the Hurontario LRT are required for this horizon year to accommodate the proposed development.

- The assessment indicates that there is an excellent transit service in the area and there is no noticeable constraint in the system at this time. In addition, with the future GO Service Expansion (formerly Regional Express Rail) all-day two-way and 15-minute service along Milton GO Line, as well as the future LRT on Hurontario Street, there will an increase in public ridership in the future. This has been documented in several Metrolinx reports and studies.

- Based on the City of Mississauga Zoning By-law vehicle parking requirement, the proposed development is required to provide a total of 339 vehicle parking spaces for both resident and visitor. This includes 279 residential vehicle parking spaces and 60 visitor vehicle parking spaces. The proposed development will also require to provide a minimum of 3 accessible spaces and 60 EV ready parking spaces.

  The proposed development will provide a total of 344 vehicle parking spaces, including 60 visitor and 284 vehicle parking spaces for resident. These parking spaces also include barrier free parking spaces. This meets the City's Zoning By-law requirement.

- Based on the City of Mississauga Zoning By-law, the proposed development is required and will provide a minimum of 198 bicycle parking spaces, including 15 Class B (short-term spaces) and 183 Class A (long-term spaces) bicycle parking spaces for resident and visitor.

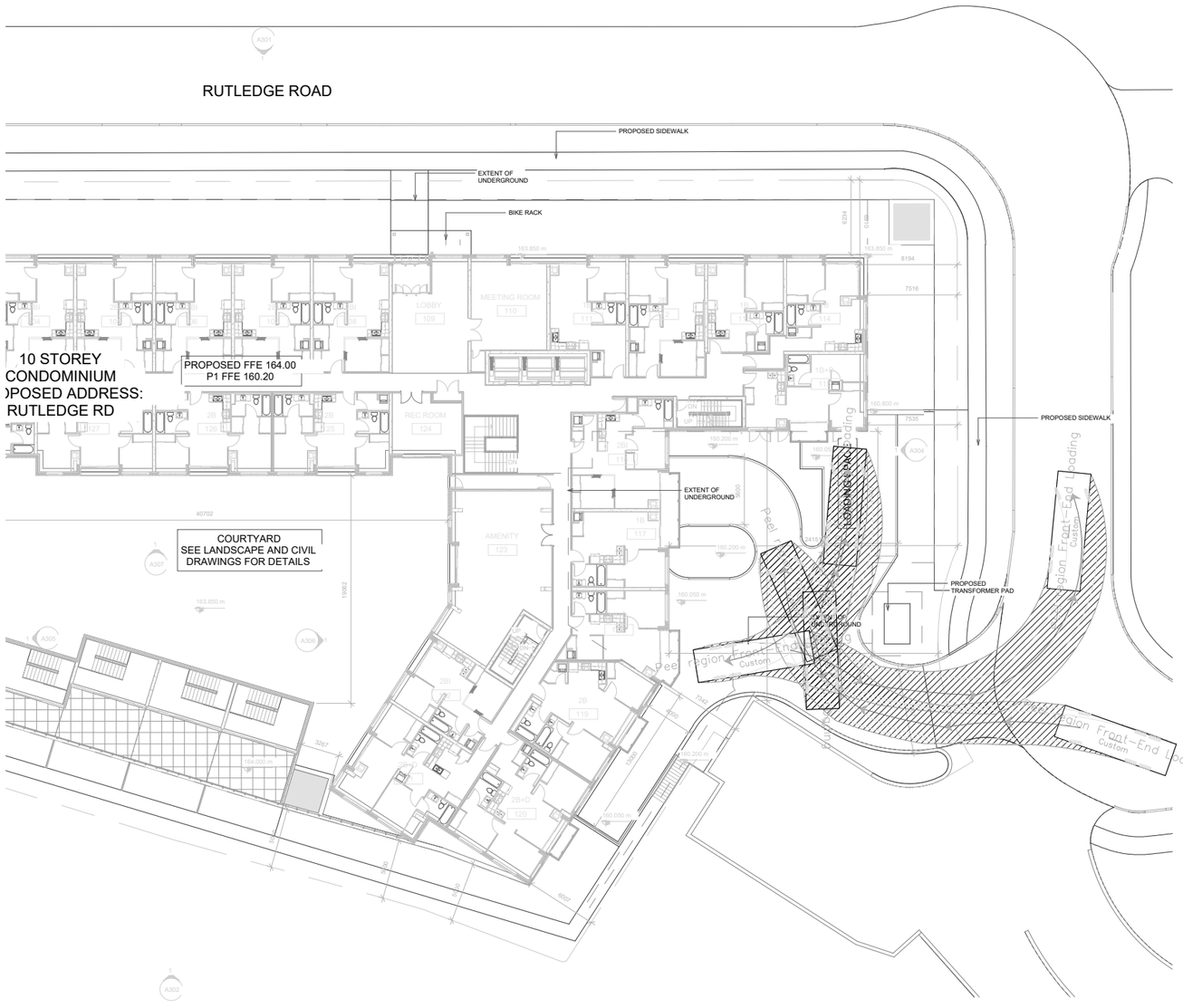
  Nextrans also recommends that the proposed development provides one bicycle repair station on-site, at convenient location where residents can easily have access to. The analysis indicates that the proposed bicycle parking supply by the proposed development will encourage residents to take active mode of transportation to work, school and discretionary trips instead of driving private vehicles.

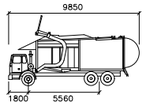
- Under Section 3.1.4.5 of the City of Mississauga current Zoning By-law, one loading space per apartment building containing a minimum of 30 dwelling units. The proposed development provides one loading space to be located at the south-east of the site, east of the main site access. The loading space dimensions are: 3.5 m width x 9.0 m length. AutoTURN software was used (garbage truck) to generate vehicular turning templates to confirm and demonstrate the accessibility for the proposed on-site loading space.

11.2. Study Recommendations

Based on the Study assessment, the following recommendations are provided:

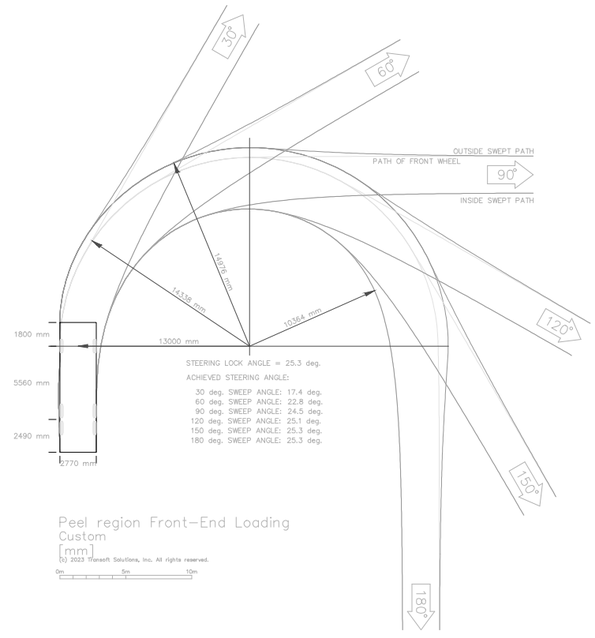
- The City approves the proposed development application as the proposed development is expected to have negligible impact on the existing roadway network and intersections;
- The proposed development provides sidewalk on Rutledge Road, along the frontage of the site;
- The proposed development meets the City's requirements on bicycle parking spaces on-site;
- The proposed development provides one publicly accessible bicycle repair station;
- The proposed development access configuration includes: one inbound lane and one outbound lane, one shared westbound through/right and one shared northbound through/right on Rutledge Road; and
- No additional physical improvements for the area road network and intersections to accommodate the proposed improvements.





Peel region Front-End Loading

	mm
Width	: 2770
Track	: 2770
Lock to Lock Time	: 6.0
Steering Angle	: 25.3



KEY PLAN

BENCHMARK

REVISONS

NO	REVISION	DATE	BY

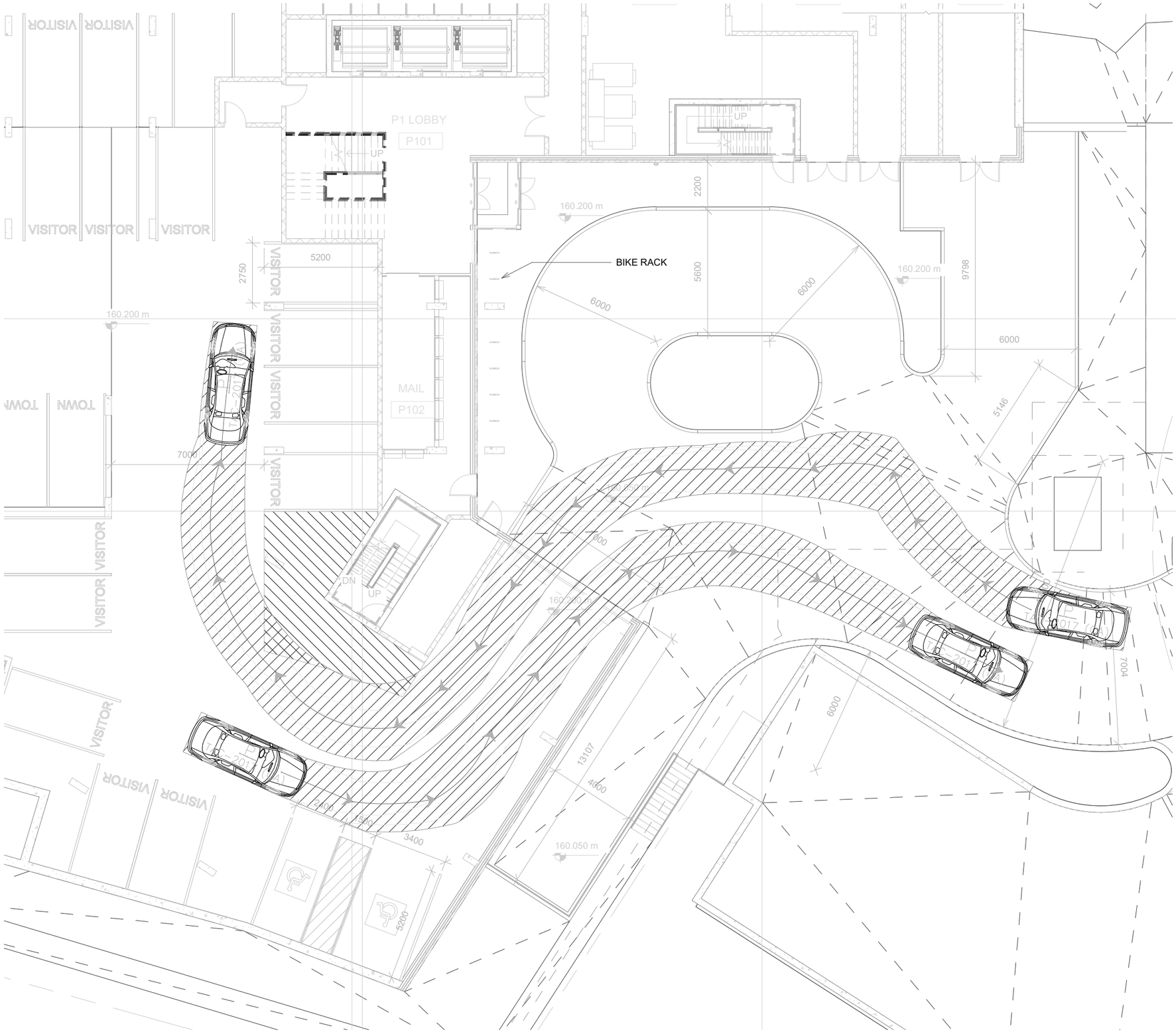
STAMP

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

PROJECT NAME:
Residential Development
150 Rutledge Road
City of Mississauga

DRAWING TITLE:
AutoTURN Analysis
Peel Region
Garbage Truck Front-End

DESIGN BY: K.A.	DATE: June 16, 2023
CHECKED BY: R.P.	PROJECT NO. NT-21-254
DRAWN BY: K.A.	
SCALE: NTS	DRAWING NO. Figure 20



KEY PLAN

BENCHMARK

REVISONS

NO	REVISION	DATE	BY

STAMP

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

PROJECT NAME:
Residential Development
180 Rutledger Road
City of Misissauga

DRAWING TITLE:
AutoTURN Analysis
P TAC-2017

DESIGN BY: K.A.	DATE: June 27, 2023
CHECKED BY: R.P.	PROJECT NO. NT-21-284
DRAWN BY: K.A.	
SCALE: NTS	DRAWING NO. Figure 21

Appendix A
Terms of Reference

From: Bo Yu <BoYang.Yu@mississauga.ca>
Sent: Thursday, November 24, 2022 5:21:21 PM
To: Sam Nguyen <sam@nextrans.ca>
Cc: Trans Projects <Trans.Projects@mississauga.ca>
Subject: RE: 150 Rutledge Road - TOR

Hi Sam,

Thank you for providing a TIS Terms of Reference for the proposed development at 150 Rutledge Road. Please see my comments below in green:

Should you have any questions, please feel free to contact me.

Regards,

Bo

Bo Yang Yu, C.Tech
Traffic Planning Technologist
T 905-615-3200 ext. 4784
boyang.yu@mississauga.ca

City of Mississauga | Transportation & Works Department
201 City Centre Drive, Suite 800 | Mississauga ON | L5B 2T4

From: Sam Nguyen <sam@nextrans.ca>
Sent: Monday, November 21, 2022 9:27 AM
To: Bo Yu <BoYang.Yu@mississauga.ca>
Subject: 150 Rutledge Road - TOR
Importance: High

Hi Boyang,

Nextrans has been retained to undertake a TIS to support the proposed development located at 150 Rutledge Road, in the City of Mississauga. The proposed scope of work is provided below. Please provide your comments before Friday of this week if possible.

1. The Traffic Impact Study will comply with the City of Mississauga Traffic Impact Study Guidelines
2. The Traffic Impact Study will be signed and stamped by a Professional Engineer
3. Study Area intersection:
    a. Rutledge Road at Tannery Street (Unsignalized)
    b. Queen Street S at Tannery Street (Signalized)
    c. Tannery Street at Broadway Street

d. Site Accesses
e. Tannery Street at Joymar Dr
f. Joymar Drive at Thomas St

4. Horizon Year
    a. Analysis horizon year - 5-years from the date of the report
2. Background Developments and Growth Rate
    a. Obtain growth rate from the City/Region Please contact Tyler Xuereb from Transportation Planning Section (tyler.xuereb@mississauga.ca, Ext. 4783) to confirm growth rates for the study area roadways.
    b. Background developments:
        - Will include active development applications on the City's development website All in-stream and recently approved background developments within approximately 1km from the subject site must be included. Any developments proposed in the area for background traffic: http://www.mississauga.ca/portal/residents/developmentinformation
4. Trip Generation
    a. ITE Trip Generation Manual 11th Edition (close to rail transit for auto and transit trips)
5. Trip Distribution
    a. Extract 2016 TTS data based on the surrounding traffic zones where appropriate
5. Future Total Assessment
        - The following tasks will be conducted for the future total conditions:
        - Future Total Traffic Assessment for Auto Mode
        - Future Transit Mode Assessment
        - Future Active Transportation Mode Assessment
        - Proposed Access and Operation/Safety Assessment
            - Ensure that the site access(es) conform to all TAC standards (e.g. corner clearances, clear throat lengths, veh & ped sight line distances for ingress/egress, proximity/alignment to other driveways/roads, etc.); Provide confirmation and technical justification of whether the site access location and design is safe for all roadway users and why.
            Please look to reduce vehicular and pedestrian conflicts points and provide any mitigation and recommendation measure as necessary to ensure pedestrian safety.
        - Loading Requirement and Assessment
        - Vehicular and Bicycle Parking Assessment
        - Internal Site Circulation (if necessary)
        - On-Site Circulation & Garbage Loading
            - Truck Access and Circulation (AutoTurn Swept-Path Analysis) - ensure 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. On separate plans, illustrate truck turning movements with one continuous path with AutoTURN and insert the design vehicles on the plan. The site must be able to accommodate the largest design vehicles which will be accessing the property. An evaluation of the parking areas and ramps using a PTAC design vehicle should also be included. Trucks must be able to enter the site in a forward motion, turnaround on private property, and exit the site in a forward motion.
7. Transit, Active Transportation and TDM
    a. Conduct a review of the existing and proposed future transit network in the area. Based on these findings, appropriate recommendations will be provided to ensure adequate walking distances to/from the proposed development to transit stations/stops.
    b. Review the existing and proposed future active transportation network in the area. Based on these findings, Nextrans will identify missing gaps and additional interconnections and connections from the proposed development to adjacent land uses, the City and the Region's facilities, as well as to transition stations/stops.

c. A Transportation Demand Management (TDM) assessment will be undertaken to identify specific measures and programs to reduce single-occupant-vehicle trips to/from the proposed development. These TDM measures and programs may include but not limited to, Carpooling, Auto Share, Bike racks, Parking management strategies, etc. The TDM report will be completed and included as part of this Study for submission purposes submitted in accordance with the City and the Region requirements.

8. Parking Justification Study (if required)
   Contact the Planning Section (ParkingStudy.Review@mississauga.ca) to confirm the terms of reference for the Parking Study.
9. Additional comments
   - The Traffic Impact Study is to include a section for Community Impacts. Any traffic related impacts on the existing community and comments from the public through the planning approvals process shall be addressed in this section.
   - Please note signal timing plans for signalized intersections can be obtained from Jim Kartsomanis (Jim.Kartsomanis@mississauga.ca, Ext. 3964).
   - With respect to traffic data collection, it is the City's preference to use available counts conducted pre COVID-19. In order to grow traffic volumes to existing 2022 levels, please obtain historical traffic data counts and utilize regression analysis to determine appropriate growth rates. The report must thoroughly justify all proposed growth rates and the methodology utilized to calculate them. Furthermore, all background work to calculate the growth rates must be appended to the report in a format that is easily verifiable to the reviewer.

Sam (Trang) Nguyen
Transportation Analyst

o: 905-503-2563 ext. 207
e: sam@nextrans.ca
w: www.nextrans.ca

NexTrans Consulting Engineers
A Division of NextEng Consulting Group Inc.
520 Industrial Parkway South, Suite 201
Aurora ON L4G 6W8

From: Tyler Xuereb <Tyler.Xuereb@mississauga.ca>
Sent: November 25, 2022 11:53 AM
To: Sam Nguyen <sam@nextrans.ca>
Subject: RE: 20 Thomas Street TIS terms of reference

Hi Sam,

Below are the recommended growth rates to be used along Thomas Street and Queen Street. These rates are compounded annually from existing to 2027.

Thomas Street

	Compounded Annual Growth from Existing to 2027	
	EB	WB
AM Peak	0.5%	0.5%
PM Peak	0.5%	0.5%

Queen Street

	Compounded Annual Growth from Existing to 2027	
	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

Appendix B
Existing Traffic Data and Signal Timing Plans

Land Use: 221
Multifamily Housing (Mid-Rise)

Description

Mid-rise multifamily housing includes apartments and condominiums located in a building that has between four and 10 floors of living space. Access to individual dwelling units is through an outside building entrance, a lobby, elevator, and a set of hallways.

Multifamily housing (low-rise) (Land Use 220), multifamily housing (high-rise) (Land Use 222), off-campus student apartment (mid-rise) (Land Use 226), and mid-rise residential with ground-floor commercial (Land Use 231) are related land uses.

Land Use Subcategory

Data are presented for two subcategories for this land use: (1) not close to rail transit and (2) close to rail transit. A site is considered close to rail transit if the walking distance between the residential site entrance and the closest rail transit station entrance is ½ mile or less.

Additional Data

For the six sites for which both the number of residents and the number of occupied dwelling units were available, there were an average of 2.5 residents per occupied dwelling unit.

For the five sites for which the numbers of both total dwelling units and occupied dwelling units were available, an average of 96 percent of the total dwelling units were occupied.

The technical appendices provide supporting information on time-of-day distributions for this land use. The appendices can be accessed through either the ITETripGen web app or the trip generation resource page on the ITE website (https://www.ite.org/technical-resources/topics/trip-and-parking-generation/).

It is expected that the number of bedrooms and number of residents are likely correlated to the trips generated by a residential site. To assist in future analysis, trip generation studies of all multifamily housing should attempt to obtain information on occupancy rate and on the mix of residential unit sizes (i.e., number of units by number of bedrooms at the site complex).

The sites were surveyed in the 1990s, the 2000s, the 2010s, and the 2020s in Alberta (CAN), California, District of Columbia, Florida, Georgia, Illinois, Maryland, Massachusetts, Minnesota, Montana, New Jersey, New York, Ontario (CAN), Oregon, Utah, and Virginia.

Source Numbers

168, 188, 204, 305, 306, 321, 818, 857, 862, 866, 901, 904, 910, 949, 951, 959, 963, 964, 966, 967, 969, 970, 1004, 1014, 1022, 1023, 1025, 1031, 1032, 1035, 1047, 1056, 1057, 1058, 1071, 1076

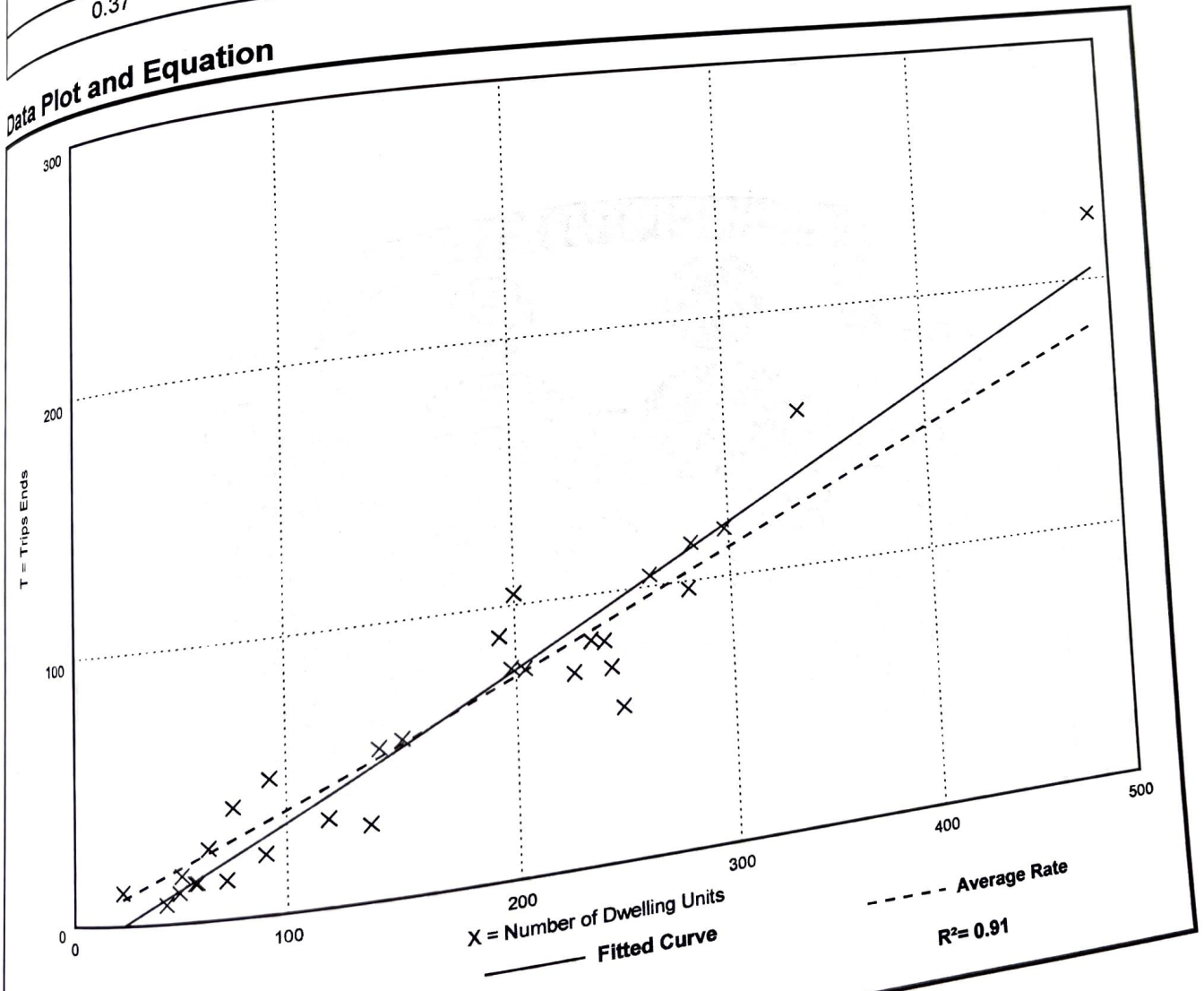
Multifamily Housing (Mid-Rise) Not Close to Rail Transit (221)

Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: General Urban/Suburban
Number of Studies: 30
Avg. Num. of Dwelling Units: 173
Directional Distribution: 23% entering, 77% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.37	0.15 - 0.53	0.09

Data Plot and Equation



X Study Site

Fitted Curve Equation: T = 0.44(X) - 11.61

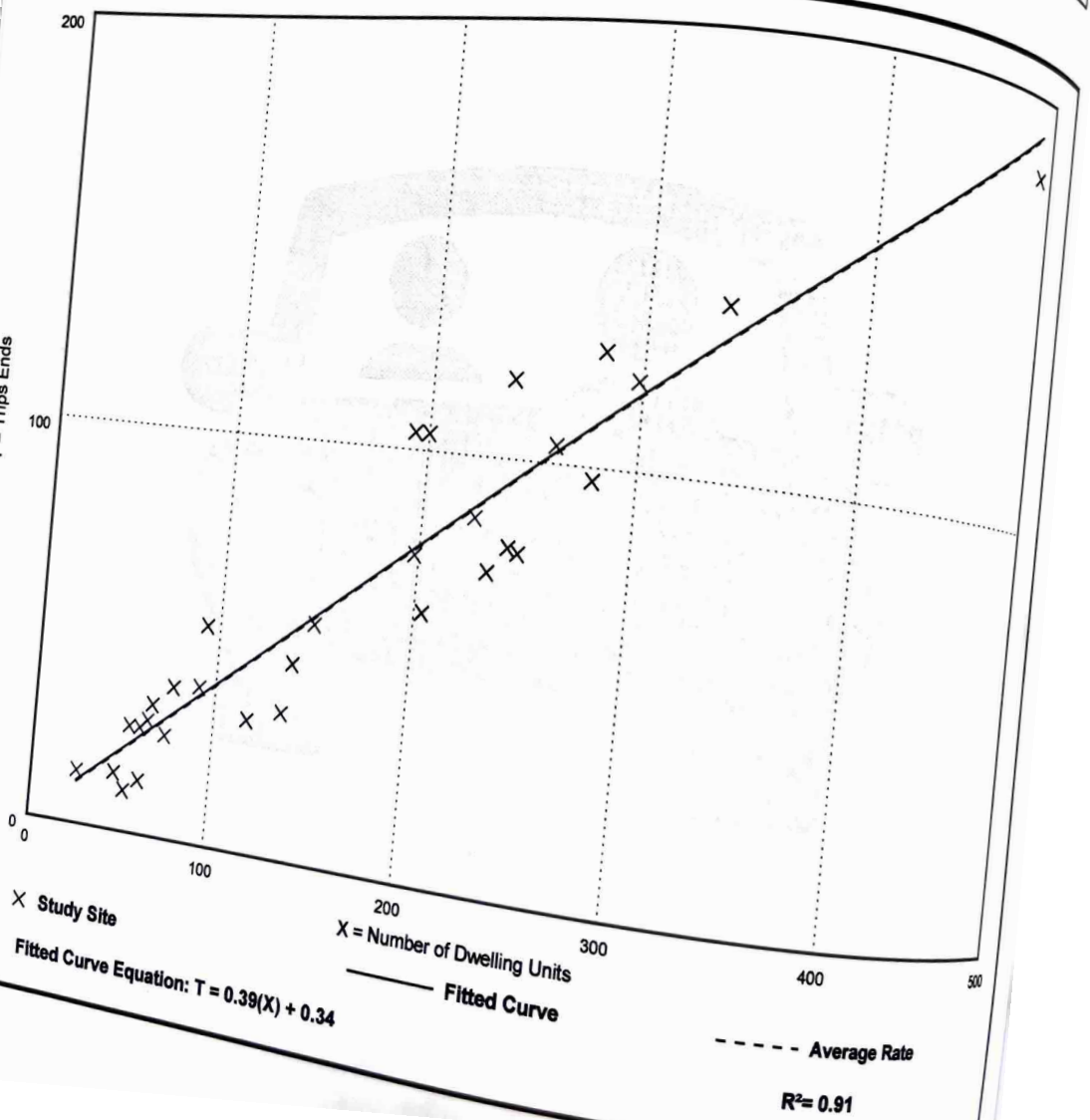
Multifamily Housing (Mid-Rise) Not Close to Rail Transit (221)

Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: General Urban/Suburban
Number of Studies: 31
Avg. Num. of Dwelling Units: 169
Directional Distribution: 61% entering, 39% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.39	0.19 - 0.57	0.08

Data Plot and Equation



Fitted Curve Equation: T = 0.39(X) + 0.34

R^2= 0.91

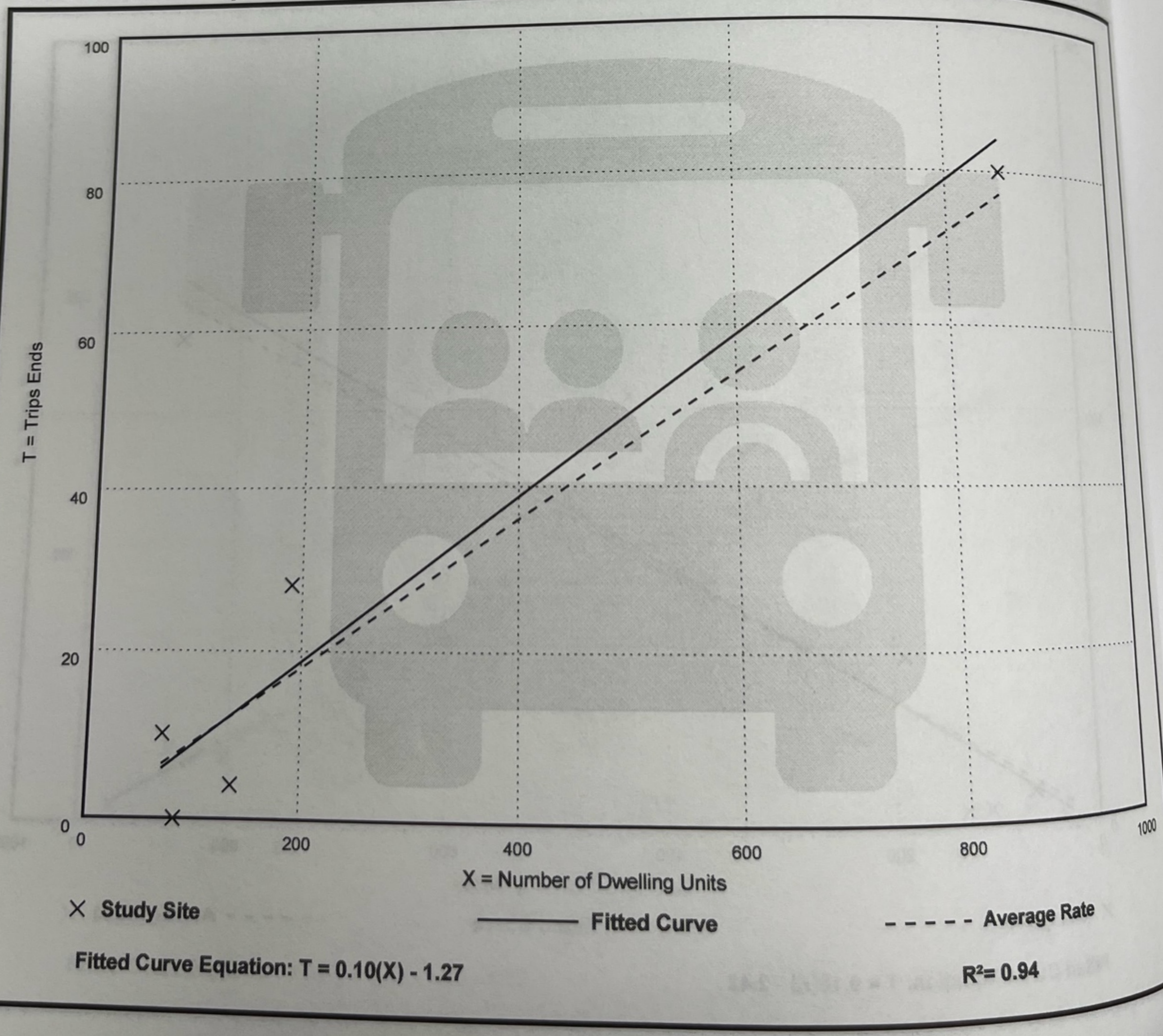
Multifamily Housing (Mid-Rise)
Not Close to Rail Transit (221)

Transit Trip Ends vs: Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: Dense Multi-Use Urban
Number of Studies: 5
Avg. Num. of Dwelling Units: 267
Directional Distribution: Not Available

Transit Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.09	0.00 - 0.15	0.04

Data Plot and Equation



Fitted Curve Equation: T = 0.10(X) - 1.27

R^2= 0.94

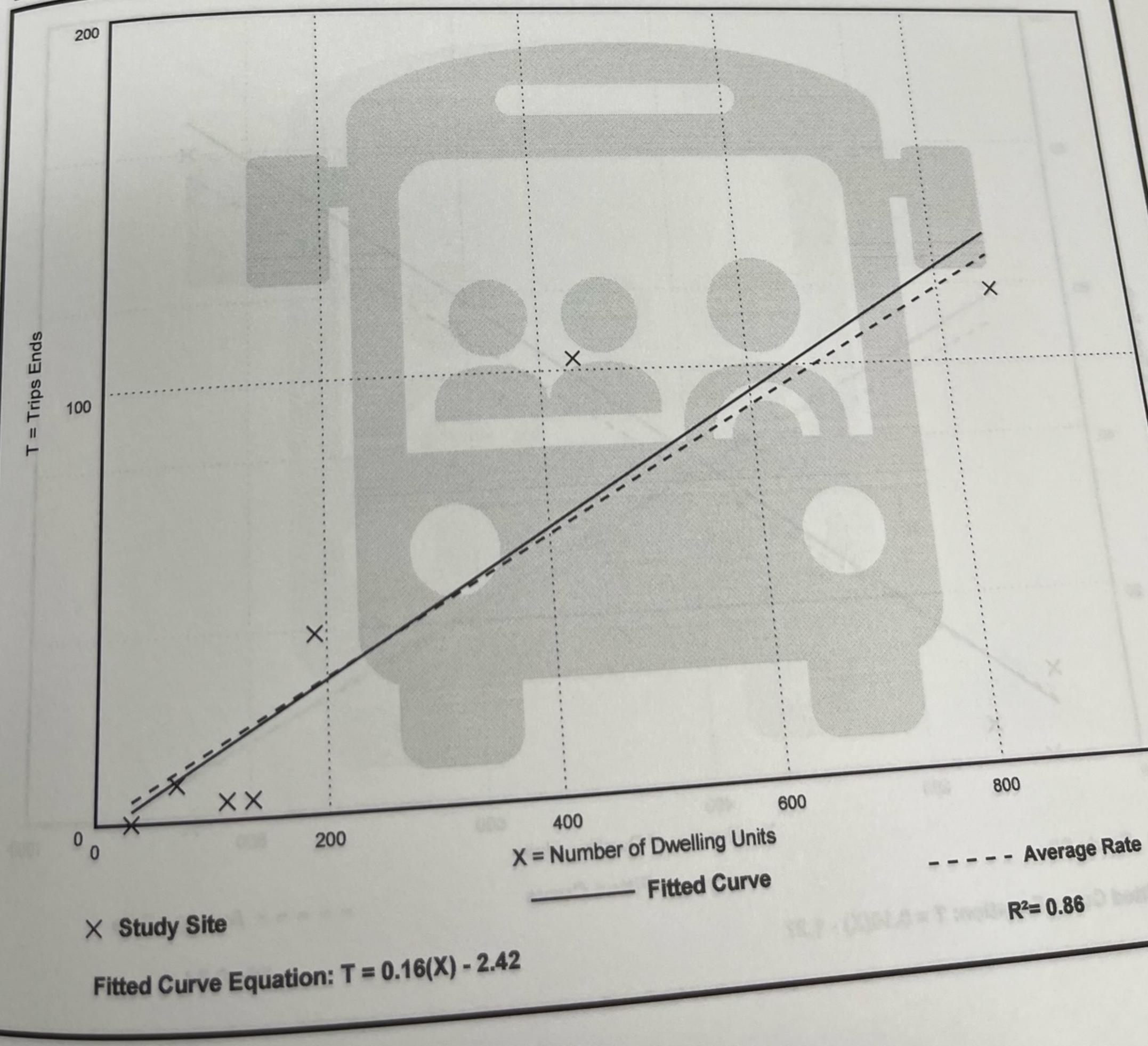
Multifamily Housing (Mid-Rise)
Not Close to Rail Transit (221)

Transit Trip Ends vs: Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: Dense Multi-Use Urban
Number of Studies: 7
Avg. Num. of Dwelling Units: 262
Directional Distribution: Not Available

Transit Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.15	0.00 - 0.24	0.07

Data Plot and Equation



Fitted Curve Equation: T = 0.16(X) - 2.42

Dense Multi-Use Urban and Center City C

District: Mississauga **ID:** 3806 **Location:** QUEEN STREET N @ Tannery Street

Phase	Units	1	2	3	4	5	6	7	8
Walk	Sec	0	10	0	10	0	10	0	10
Ped Clear	Sec	0	12	0	11	0	12	0	11
Min Green	Sec	0	10	0	10	0	10	0	10
Passage	Sec	3.0	3.0	0.0	3.0	2.0	3.0	3.0	3.0
Maximum 1	Sec	0	30	0	20	0	30	0	20
Maximum 2	Sec	0	30	0	20	0	30	0	20
Yellow Change	Sec	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Red Clearance	Sec	0.0	3.0	0.0	3.0	0.0	3.0	0.0	3.0
Red Revert	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Added Initial	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max Initial	Sec	0	0	0	0	0	0	0	0
Time Before	Sec	0	0	0	0	0	0	0	0
Cars Before	Veh	0	0	0	0	0	0	0	0
Time To Reduce	Sec	0	0	0	0	0	0	0	0
Reduce By	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min Gap	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dynamic Max Limit	Sec	0	0	0	0	0	0	0	0
Dynamic Max Step	Sec	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
[P2] Start Up	Enum	other	redClear	other	phaseNotOn	phaseNotOn	redClear	other	phaseNotOn
[P2] Options	Bit	Non Lock Det	Enabled Non-Actuated 1 Max Veh Recall Ped Recall Dual Entry Act Rest In Walk	Non Lock Det	Enabled Non Lock Det Dual Entry	Non Lock Det	Enabled Non-Actuated 1 Max Veh Recall Ped Recall Dual Entry Act Rest In Walk	Non Lock Det	Enabled Non Lock Det Dual Entry
[P2] Ring	Ring	0	1	0	1	0	2	0	2
[P2] Concurrency	Phase (,)	()	(6)	()	(8)	()	(2)	()	(4)

Coord Pattern	Units	1	2	3	4	5	6	7	8
Cycle Time	Sec	100	70	110	0	0	0	0	0
Offset	Sec	84	48	37	0	0	0	0	0
Split	Split	1	2	3	4	5	6	7	8
Sequence	Sequence	1	1	1	1	1	1	1	1

Coord Split	Units	1	2	3	4	5	6	7	8
Split 1 - Mode	Enum	none	none	none	none	none	none	none	none
Split 1 - Time	Sec	0	66	0	34	0	66	0	34
Split 1 - Coord	Enum	false	true	false	false	false	true	false	false
Split 2 - Mode	Enum	none	none	none	none	none	none	none	none
Split 2 - Time	Sec	0	43	0	27	0	43	0	27
Split 2 - Coord	Enum	false	true	false	false	false	true	false	false
Split 3 - Mode	Enum	none	none	none	none	none	none	none	none
Split 3 - Time	Sec	0	83	0	27	0	83	0	27
Split 3 - Coord	Enum	false	true	false	false	false	true	false	false

TB Schedule	Units	1	2	3	4	5	6	7	8
Month	Bit	JFMAMJJASON -	JFMAMJJASON -	JFMAMJJASON -	J----------	-F---------	---A--------	----M-------	------J-----
Day of Week	Bit	-MTWTF-	S------	------S	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS
Day of Month	Bit	12345678901234 56789012345678 901	1234567890123 4567890123456 78901	12345678901234 56789012345678 901	1---------- -------	----------7------- -------	---------0---------- --------	----------8------ -------	1---------- -------
Day Plan	Number	1	3	2	3	3	3	3	3

TB Schedule	Units	9	10	11	12	13	14	15	16
Month	Bit	-------A----	--------S---	---------O--	----------D	----------D	----------D	0	0
Day of Week	Bit	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS	SMTWTFS
Day of Month	Bit	--3---------- ------	------7---------- -------	----------2---------- ------	---------- 5------	---------- --8---	---------- 4-------	0	0
Day Plan	Number	3	3	3	3	3	3	0	0

TB Dayplan	Units	1	2	3	4	5	6	7	8
Plan 1 Hour	Hour	0	7	9	16	18	21	3	0
Plan 1 Minute	Min	0	0	0	0	30	30	0	0
Plan 1 Action	Number	8	1	2	3	2	8	7	0
Plan 2 Hour	Hour	0	9	21	3	0	0	0	0
Plan 2 Minute	Min	0	0	30	0	0	0	0	0
Plan 2 Action	Number	8	2	8	7	0	0	0	0
Plan 3 Hour	Hour	0	10	18	3	0	0	0	0
Plan 3 Minute	Min	0	0	30	0	0	0	0	0
Plan 3 Action	Number	8	2	8	7	0	0	0	0

TB Action	Units	1	2	3	4	5	6	7	8
Pattern	Enum	Pattern 1	Pattern 2	Pattern 3	Pattern 4	Pattern 5	Pattern 6	Free	Free
Aux. Functions	Bit	0	0	0	0	0	0	0	0
Spec. Functions	Bit	0	0	0	0	0	0	0	0

NexTrans
SUITE 204 15260 YONGE ST
AURORA ONTARIO, L4G 1N4
CANADA

Turning Movement Count (1 . TANNERY ST & RUTLEDGE RD)

Start Time	N Approach RUTLEDGE RD					E Approach TANNERY ST					W Approach TANNERY ST					Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	UTurn E:E	Peds E:	Approach Total	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total		
07:00:00	0	0	0	0	0	0	11	0	1	11	7	0	0	0	7	18	
07:15:00	0	1	0	3	1	2	8	0	1	10	5	1	0	0	6	17	
07:30:00	0	0	0	7	0	0	16	0	0	16	8	0	0	0	8	24	
07:45:00	0	0	0	14	0	0	28	0	1	28	39	1	0	1	40	68	127
08:00:00	0	0	0	13	0	1	59	0	1	60	84	0	0	0	84	144	253
08:15:00	0	1	0	4	1	0	15	0	0	15	31	2	0	0	33	49	285
08:30:00	0	0	0	3	0	1	14	0	1	15	20	0	0	0	20	35	296
08:45:00	0	4	0	2	4	1	17	0	0	18	19	3	0	0	22	44	272
09:00:00	0	0	0	4	0	1	26	0	0	27	17	2	0	0	19	46	174
09:15:00	1	1	0	3	2	3	12	0	0	15	17	1	0	0	18	35	160
09:30:00	0	2	0	2	2	1	9	1	0	11	8	1	0	0	9	22	147
09:45:00	0	1	0	4	1	2	11	0	1	13	20	1	0	0	21	35	138
BREAK																	
16:00:00	3	2	0	5	5	1	19	0	0	20	24	0	0	0	24	49	
16:15:00	5	1	0	5	6	2	25	0	0	27	17	0	0	0	17	50	
16:30:00	0	1	0	5	1	0	26	0	1	26	16	1	0	0	17	44	
16:45:00	1	0	0	3	1	2	38	0	0	40	30	0	0	0	30	71	214
17:00:00	2	4	0	5	6	2	28	0	0	30	19	1	0	0	20	56	221
17:15:00	2	2	0	4	4	1	30	0	1	31	16	2	0	0	18	53	224
17:30:00	2	4	0	0	6	0	29	0	0	29	16	0	0	0	16	51	231
17:45:00	1	0	0	6	1	3	21	0	2	24	14	2	0	0	16	41	201
18:00:00	1	2	0	8	3	0	19	0	0	19	18	2	0	0	20	42	187
18:15:00	1	3	0	9	4	2	24	0	0	26	22	1	0	2	23	53	187
18:30:00	1	1	0	8	2	0	34	0	0	34	15	2	0	0	17	53	189
18:45:00	0	0	0	2	0	1	20	0	0	21	8	0	0	0	8	29	177
Grand Total	20	30	0	119	50	26	539	1	10	566	490	23	0	3	513	**1129**	-
Approach%	40%	60%	0%		-	4.6%	95.2%	0.2%		-	95.5%	4.5%	0%		-	**-**	-
Totals %	1.8%	2.7%	0%		4.4%	2.3%	47.7%	0.1%		50.1%	43.4%	2%	0%		45.4%	**-**	-
Heavy	1	2	0		-	2	5	0		-	9	1	0		-	**-**	-
Heavy %	5%	6.7%	0%		-	7.7%	0.9%	0%		-	1.8%	4.3%	0%		-	**-**	-
Bicycles	-	-	-		-	-	-	-		-	-	-	-		-	**-**	-
Bicycle %	-	-	-		-	-	-	-		-	-	-	-		-	**-**	-

NexTrans
SUITE 204 15260 YONGE ST
AURORA ONTARIO, L4G 1N4
CANADA

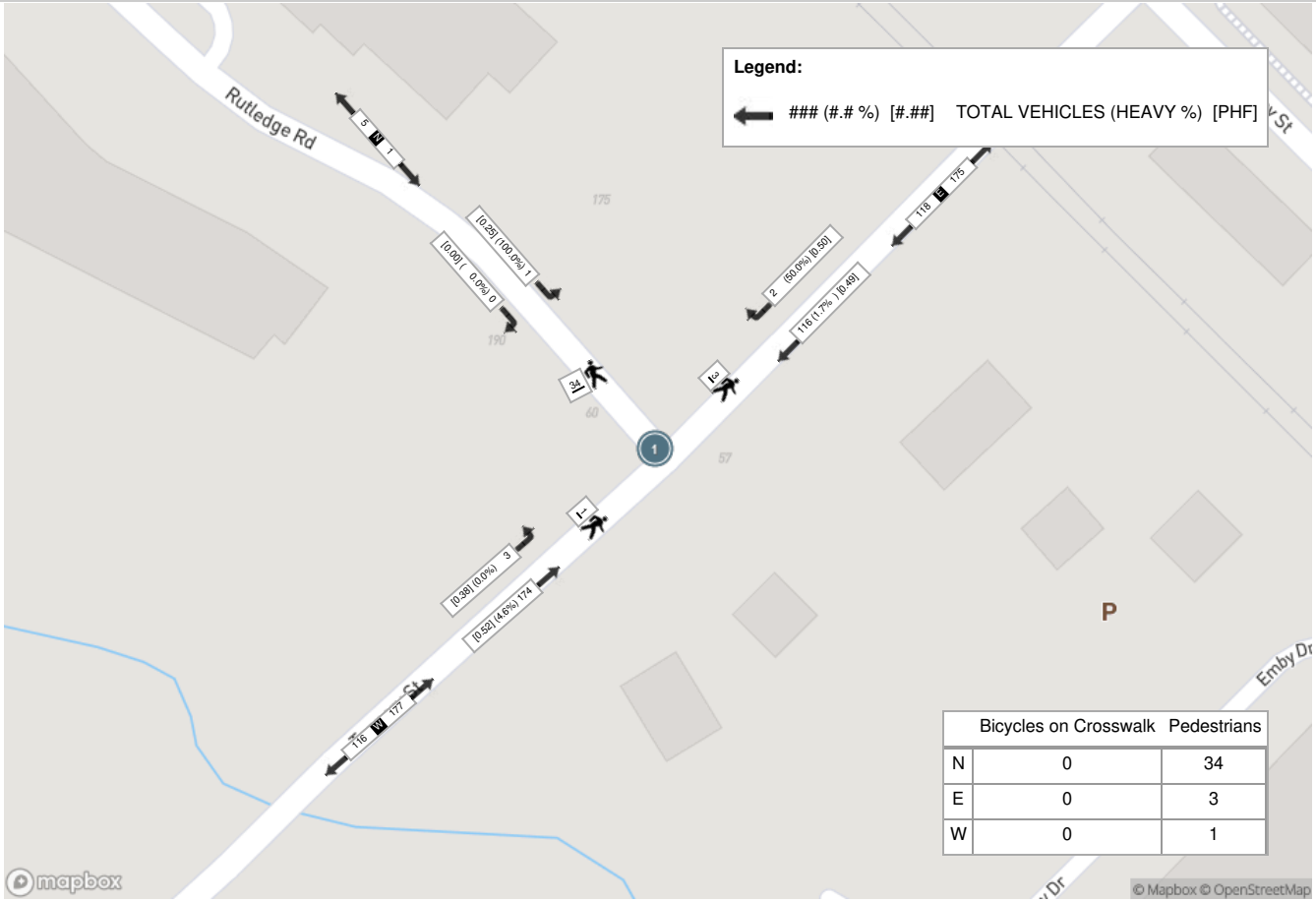
Peak Hour: 07:45 AM - 08:45 AM Weather: Broken Clouds (-1.4 °C)

Start Time	N Approach RUTLEDGE RD					E Approach TANNERY ST					W Approach TANNERY ST					Int. Total (15 min)
	Right	Left	UTurn	Peds	Approach Total	Right	Thru	UTurn	Peds	Approach Total	Thru	Left	UTurn	Peds	Approach Total	
07:45:00	0	0	0	14	0	0	28	0	1	28	39	1	0	1	40	68
08:00:00	0	0	0	13	0	1	59	0	1	60	84	0	0	0	84	144
08:15:00	0	1	0	4	1	0	15	0	0	15	31	2	0	0	33	49
08:30:00	0	0	0	3	0	1	14	0	1	15	20	0	0	0	20	35
Grand Total	0	1	0	34	1	2	116	0	3	118	174	3	0	1	177	**296**
Approach%	0%	100%	0%		-	1.7%	98.3%	0%		-	98.3%	1.7%	0%		-	**-**
Totals %	0%	0.3%	0%		0.3%	0.7%	39.2%	0%		39.9%	58.8%	1%	0%		59.8%	**-**
PHF	0	0.25	0		0.25	0.5	0.49	0		0.49	0.52	0.38	0		0.53	**-**
Heavy	0	1	0		1	1	2	0		3	8	0	0		8	**-**
Heavy %	0%	100%	0%		100%	50%	1.7%	0%		2.5%	4.6%	0%	0%		4.5%	**-**
Lights	0	0	0		0	1	114	0		115	166	3	0		169	**-**
Lights %	0%	0%	0%		0%	50%	98.3%	0%		97.5%	95.4%	100%	0%		95.5%	**-**
Single-Unit Trucks	0	1	0		1	1	0	0		1	2	0	0		2	**-**
Single-Unit Trucks %	0%	100%	0%		100%	50%	0%	0%		0.8%	1.1%	0%	0%		1.1%	**-**
Buses	0	0	0		0	0	2	0		2	6	0	0		6	**-**
Buses %	0%	0%	0%		0%	0%	1.7%	0%		1.7%	3.4%	0%	0%		3.4%	**-**
Bicycles on Road	0	0	0		0	0	0	0		0	0	0	0		0	**-**
Bicycles on Road %	0%	0%	0%		0%	0%	0%	0%		0%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	34	-	-	-	-	3	-	-	-	-	1	-	**-**
Pedestrians%	-	-	-	89.5%		-	-	-	7.9%		-	-	-	2.6%		**-**
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	**-**
Bicycles on Crosswalk%	-	-	-	0%		-	-	-	0%		-	-	-	0%		**-**

Peak Hour: 04:45 PM - 05:45 PM Weather: Overcast Clouds (4.45 °C)

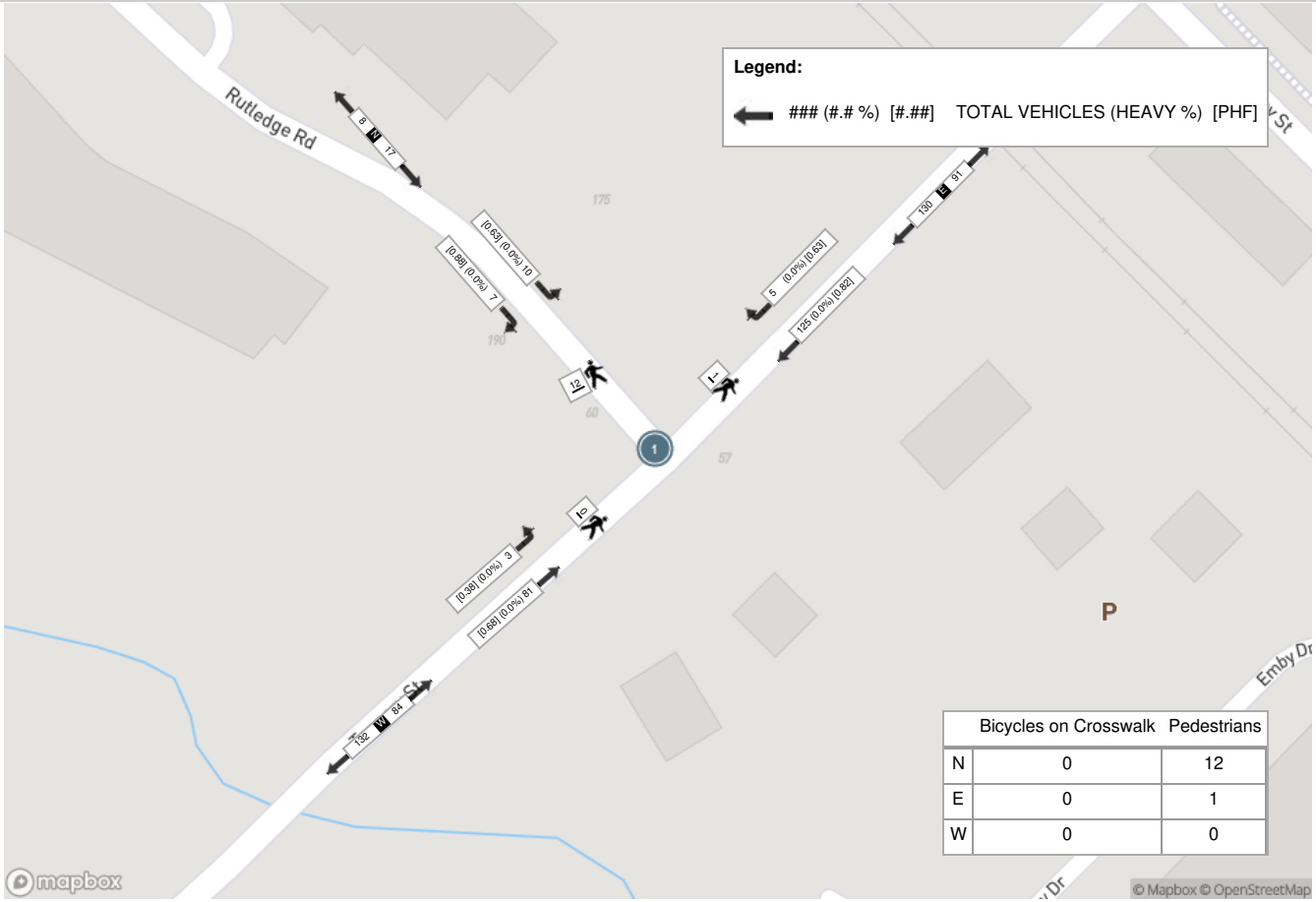
Start Time	N Approach RUTLEDGE RD					E Approach TANNERY ST					W Approach TANNERY ST					Int. Total (15 min)
	Right	Left	UTurn	Peds	Approach Total	Right	Thru	UTurn	Peds	Approach Total	Thru	Left	UTurn	Peds	Approach Total	
16:45:00	1	0	0	3	1	2	38	0	0	40	30	0	0	0	30	71
17:00:00	2	4	0	5	6	2	28	0	0	30	19	1	0	0	20	56
17:15:00	2	2	0	4	4	1	30	0	1	31	16	2	0	0	18	53
17:30:00	2	4	0	0	6	0	29	0	0	29	16	0	0	0	16	51
Grand Total	7	10	0	12	17	5	125	0	1	130	81	3	0	0	84	**231**
Approach%	41.2%	58.8%	0%		-	3.8%	96.2%	0%		-	96.4%	3.6%	0%		-	**-**
Totals %	3%	4.3%	0%		7.4%	2.2%	54.1%	0%		56.3%	35.1%	1.3%	0%		36.4%	**-**
PHF	0.88	0.63	0		0.71	0.63	0.82	0		0.81	0.68	0.38	0		0.7	**-**
Heavy	0	0	0		0	0	0	0		0	0	0	0		0	**-**
Heavy %	0%	0%	0%		0%	0%	0%	0%		0%	0%	0%	0%		0%	**-**
Lights	7	10	0		17	4	125	0		129	81	3	0		84	**-**
Lights %	100%	100%	0%		100%	80%	100%	0%		99.2%	100%	100%	0%		100%	**-**
Single-Unit Trucks	0	0	0		0	0	0	0		0	0	0	0		0	**-**
Single-Unit Trucks %	0%	0%	0%		0%	0%	0%	0%		0%	0%	0%	0%		0%	**-**
Buses	0	0	0		0	0	0	0		0	0	0	0		0	**-**
Buses %	0%	0%	0%		0%	0%	0%	0%		0%	0%	0%	0%		0%	**-**
Bicycles on Road	0	0	0		0	1	0	0		1	0	0	0		0	**-**
Bicycles on Road %	0%	0%	0%		0%	20%	0%	0%		0.8%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	12	-	-	-	-	1	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	92.3%		-	-	-	7.7%		-	-	-	0%		**-**
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	**-**
Bicycles on Crosswalk%	-	-	-	0%		-	-	-	0%		-	-	-	0%		**-**

Peak Hour: 07:45 AM - 08:45 AM Weather: Broken Clouds (-1.4 °C)



	Bicycles on Crosswalk	Pedestrians
N	0	34
E	0	3
W	0	1

Peak Hour: 04:45 PM - 05:45 PM Weather: Overcast Clouds (4.45 °C)



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

Spectrum

Turning Movement Count
Location Name: TANNERY ST & QUEEN ST S
Date: Tue, Mar 22, 2022 Deployment Lead: Tasos Issaaakidis

NexTrans
SUITE 204 15260 YONGE ST
AURORA ONTARIO, L4G 1N4
CANADA

Turning Movement Count (2 . TANNERY ST & QUEEN ST S)

Start Time	N Approach QUEEN ST S						E Approach EAST DRIVEWAY						S Approach QUEEN ST S						W Approach TANNERY ST						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total		
07:00:00	4	21	0	0	4	25	0	0	0	0	3	0	0	28	3	0	0	31	4	0	3	0	0	7	63	
07:15:00	6	30	0	0	0	36	0	0	0	0	1	0	2	40	5	0	0	47	3	0	1	0	2	4	87	
07:30:00	9	33	1	0	3	43	1	0	0	0	2	1	1	53	4	0	1	58	6	0	10	0	2	16	118	
07:45:00	16	41	2	0	3	59	0	0	0	0	5	0	1	50	17	0	3	68	11	0	22	0	1	33	160	428
08:00:00	17	45	1	0	2	63	2	1	0	0	2	3	4	65	34	0	0	103	25	1	32	0	1	58	227	592
08:15:00	13	80	1	0	1	94	2	1	1	0	2	4	2	101	4	0	0	107	8	0	15	0	2	23	228	733
08:30:00	7	87	0	0	2	94	0	0	0	0	3	0	3	83	10	0	1	96	11	1	6	0	10	18	208	823
08:45:00	12	73	4	0	4	89	5	6	3	0	3	14	4	85	8	0	0	97	12	6	10	0	3	28	228	891
09:00:00	12	56	2	0	2	70	6	2	1	0	6	9	1	70	9	0	1	80	6	1	12	0	5	19	178	842
09:15:00	15	56	0	0	0	71	0	0	0	0	3	0	1	54	8	0	2	63	6	0	14	0	3	20	154	768
09:30:00	11	48	0	0	2	59	1	0	0	0	3	1	1	63	6	0	1	70	5	0	7	0	9	12	142	702
09:45:00	10	68	0	0	2	78	1	0	0	0	6	1	0	72	10	0	9	82	6	0	5	0	7	11	172	646
BREAK																										
16:00:00	15	101	1	0	2	117	0	1	3	0	8	4	2	87	5	0	4	94	7	0	14	0	11	21	236	
16:15:00	14	93	1	0	3	108	0	1	0	0	8	1	0	101	11	0	4	112	11	0	13	0	17	24	245	
16:30:00	14	78	2	0	9	94	2	1	1	0	24	4	1	104	12	0	2	117	12	1	15	0	20	28	243	
16:45:00	19	99	0	0	5	118	2	4	2	0	13	8	6	101	7	0	4	114	9	2	12	0	8	23	263	987
17:00:00	15	103	2	0	4	120	3	2	1	0	20	6	0	101	9	0	3	110	13	0	16	0	10	29	265	1016
17:15:00	18	117	0	0	2	135	3	0	0	0	9	3	0	107	9	0	3	116	7	0	18	0	12	25	279	1050
17:30:00	11	105	0	0	5	116	0	0	0	0	21	0	0	101	5	0	1	106	7	0	10	0	6	17	239	1046
17:45:00	18	97	0	0	3	115	0	0	0	0	9	0	0	123	11	0	6	134	11	0	18	0	8	29	278	1061
18:00:00	9	78	0	0	6	87	0	0	0	0	7	0	0	88	11	0	3	99	7	0	11	0	12	18	204	1000
18:15:00	14	91	0	0	2	105	0	0	0	0	10	0	0	80	10	0	2	90	6	0	19	0	9	25	220	941
18:30:00	12	83	0	0	2	95	0	1	0	0	9	1	0	80	9	0	4	89	6	1	16	0	19	23	208	910
18:45:00	14	76	0	0	5	90	0	1	0	0	18	1	0	85	11	0	3	96	5	1	11	0	10	17	204	836
Grand Total	305	1759	17	0	73	2081	28	21	12	0	195	61	29	1922	228	0	57	2179	204	14	310	0	187	528	**4849**	-
Approach%	14.7%	84.5%	0.8%	0%		-	45.9%	34.4%	19.7%	0%		-	1.3%	88.2%	10.5%	0%		-	38.6%	2.7%	58.7%	0%		-	**-**	-
Totals %	6.3%	36.3%	0.4%	0%		42.9%	0.6%	0.4%	0.2%	0%		1.3%	0.6%	39.6%	4.7%	0%		44.9%	4.2%	0.3%	6.4%	0%		10.9%	**-**	-
Heavy	6	37	0	0		-	0	0	0	0		-	0	50	3	0		-	4	0	6	0		-	**-**	-
Heavy %	2%	2.1%	0%	0%		-	0%	0%	0%	0%		-	0%	2.6%	1.3%	0%		-	2%	0%	1.9%	0%		-	**-**	-
Bicycles	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-
Bicycle %	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-

NexTrans
SUITE 204 15260 YONGE ST
AURORA ONTARIO, L4G 1N4
CANADA

Peak Hour: 08:00 AM - 09:00 AM Weather: Broken Clouds (-1.4 °C)

Start Time	N Approach QUEEN ST S						E Approach EAST DRIVEWAY						S Approach QUEEN ST S						W Approach TANNERY ST						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
08:00:00	17	45	1	0	2	63	2	1	0	0	2	3	4	65	34	0	0	103	25	1	32	0	1	58	227
08:15:00	13	80	1	0	1	94	2	1	1	0	2	4	2	101	4	0	0	107	8	0	15	0	2	23	228
08:30:00	7	87	0	0	2	94	0	0	0	0	3	0	3	83	10	0	1	96	11	1	6	0	10	18	208
08:45:00	12	73	4	0	4	89	5	6	3	0	3	14	4	85	8	0	0	97	12	6	10	0	3	28	228
Grand Total	49	285	6	0	9	340	9	8	4	0	10	21	13	334	56	0	1	403	56	8	63	0	16	127	**891**
Approach%	14.4%	83.8%	1.8%	0%		-	42.9%	38.1%	19%	0%		-	3.2%	82.9%	13.9%	0%		-	44.1%	6.3%	49.6%	0%		-	**-**
Totals %	5.5%	32%	0.7%	0%		38.2%	1%	0.9%	0.4%	0%		2.4%	1.5%	37.5%	6.3%	0%		45.2%	6.3%	0.9%	7.1%	0%		14.3%	**-**
PHF	0.72	0.82	0.38	0		0.9	0.45	0.33	0.33	0		0.38	0.81	0.83	0.41	0		0.94	0.56	0.33	0.49	0		0.55	**-**
Heavy	3	12	0	0		15	0	0	0	0		0	0	16	0	0		16	2	0	3	0		5	**-**
Heavy %	6.1%	4.2%	0%	0%		4.4%	0%	0%	0%	0%		0%	0%	4.8%	0%	0%		4%	3.6%	0%	4.8%	0%		3.9%	**-**
Lights	46	273	6	0		325	9	8	4	0		21	13	318	56	0		387	54	8	60	0		122	**-**
Lights %	93.9%	95.8%	100%	0%		95.6%	100%	100%	100%	0%		100%	100%	95.2%	100%	0%		96%	96.4%	100%	95.2%	0%		96.1%	**-**
Single-Unit Trucks	2	4	0	0		6	0	0	0	0		0	0	6	0	0		6	0	0	2	0		2	**-**
Single-Unit Trucks %	4.1%	1.4%	0%	0%		1.8%	0%	0%	0%	0%		0%	0%	1.8%	0%	0%		1.5%	0%	0%	3.2%	0%		1.6%	**-**
Buses	1	8	0	0		9	0	0	0	0		0	0	10	0	0		10	2	0	1	0		3	**-**
Buses %	2%	2.8%	0%	0%		2.6%	0%	0%	0%	0%		0%	0%	3%	0%	0%		2.5%	3.6%	0%	1.6%	0%		2.4%	**-**
Articulated Trucks	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	**-**
Articulated Trucks %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	**-**
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%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	-	9	-	-	-	-	-	10	-	-	-	-	-	1	-	-	-	-	-	16	-	**-**
Pedestrians%	-	-	-	-	25%		-	-	-	-	27.8%		-	-	-	-	2.8%		-	-	-	-	44.4%		**-**
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Bicycles on Crosswalk%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**

Peak Hour: 05:00 PM - 06:00 PM Weather: Overcast Clouds (4.45 °C)

Start Time	N Approach QUEEN ST S						E Approach EAST DRIVEWAY						S Approach QUEEN ST S						W Approach TANNERY ST						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
17:00:00	15	103	2	0	4	120	3	2	1	0	20	6	0	101	9	0	3	110	13	0	16	0	10	29	265
17:15:00	18	117	0	0	2	135	3	0	0	0	9	3	0	107	9	0	3	116	7	0	18	0	12	25	279
17:30:00	11	105	0	0	5	116	0	0	0	0	21	0	0	101	5	0	1	106	7	0	10	0	6	17	239
17:45:00	18	97	0	0	3	115	0	0	0	0	9	0	0	123	11	0	6	134	11	0	18	0	8	29	278
Grand Total	62	422	2	0	14	486	6	2	1	0	59	9	0	432	34	0	13	466	38	0	62	0	36	100	**1061**
Approach%	12.8%	86.8%	0.4%	0%		-	66.7%	22.2%	11.1%	0%		-	0%	92.7%	7.3%	0%		-	38%	0%	62%	0%		-	**-**
Totals %	5.8%	39.8%	0.2%	0%		45.8%	0.6%	0.2%	0.1%	0%		0.8%	0%	40.7%	3.2%	0%		43.9%	3.6%	0%	5.8%	0%		9.4%	**-**
PHF	0.86	0.9	0.25	0		0.9	0.5	0.25	0.25	0		0.38	0	0.88	0.77	0		0.87	0.73	0	0.86	0		0.86	**-**
Heavy	0	3	0	0		3	0	0	0	0		0	0	4	0	0		4	0	0	1	0		1	**-**
Heavy %	0%	0.7%	0%	0%		0.6%	0%	0%	0%	0%		0%	0%	0.9%	0%	0%		0.9%	0%	0%	1.6%	0%		1%	**-**
Lights	62	418	2	0		482	6	2	1	0		9	0	428	34	0		462	38	0	61	0		99	**-**
Lights %	100%	99.1%	100%	0%		99.2%	100%	100%	100%	0%		100%	0%	99.1%	100%	0%		99.1%	100%	0%	98.4%	0%		99%	**-**
Single-Unit Trucks	0	1	0	0		1	0	0	0	0		0	0	1	0	0		1	0	0	0	0		0	**-**
Single-Unit Trucks %	0%	0.2%	0%	0%		0.2%	0%	0%	0%	0%		0%	0%	0.2%	0%	0%		0.2%	0%	0%	0%	0%		0%	**-**
Buses	0	2	0	0		2	0	0	0	0		0	0	3	0	0		3	0	0	0	0		0	**-**
Buses %	0%	0.5%	0%	0%		0.4%	0%	0%	0%	0%		0%	0%	0.7%	0%	0%		0.6%	0%	0%	0%	0%		0%	**-**
Articulated Trucks	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	1	0		1	**-**
Articulated Trucks %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	1.6%	0%		1%	**-**
Bicycles on Road	0	1	0	0		1	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	**-**
Bicycles on Road %	0%	0.2%	0%	0%		0.2%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	-	14	-	-	-	-	-	59	-	-	-	-	-	13	-	-	-	-	-	36	-	**-**
Pedestrians%	-	-	-	-	11.5%		-	-	-	-	48.4%		-	-	-	-	10.7%		-	-	-	-	29.5%		**-**
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Bicycles on Crosswalk%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**

Peak Hour: 08:00 AM - 09:00 AM **Weather: Broken Clouds (-1.4 °C)**

Peak Hour: 05:00 PM - 06:00 PM **Weather: Overcast Clouds (4.45 °C)**

	Bicycles on Crosswalk	Pedestrians
N	0	14
S	0	13
E	0	59
W	0	36

Turning Movement Count (1 . THOMAS ST & JOYMAR DR)

Start Time	N Approach JOYMAR DR					E Approach THOMAS ST					W Approach THOMAS ST					Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Left N:E	U-Turn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	U-Turn E:E	Peds E:	Approach Total	Thru W:E	Left W:N	U-Turn W:W	Peds W:	Approach Total		
07:00:00	6	7	0	3	13	1	60	0	0	61	186	16	0	0	202	276	
07:15:00	9	9	0	4	18	7	67	0	0	74	277	24	0	0	301	393	
07:30:00	15	4	0	2	19	9	92	0	0	101	322	45	0	0	367	487	
07:45:00	30	5	0	3	35	13	85	0	0	98	372	78	0	0	450	583	1739
08:00:00	58	2	0	0	60	12	96	0	0	108	380	63	0	0	443	611	2074
08:15:00	22	7	0	0	29	4	71	0	0	75	182	68	0	0	250	354	2035
08:30:00	23	5	0	0	28	9	79	0	0	88	281	67	0	0	348	464	2012
08:45:00	24	3	0	3	27	7	73	0	0	80	123	49	0	1	172	279	1708
BREAK																	
16:00:00	32	2	0	0	34	6	87	0	0	93	86	14	0	0	100	227	
16:15:00	29	5	0	2	34	6	179	0	0	185	77	26	0	0	103	322	
16:30:00	35	5	0	3	40	8	117	0	0	125	80	23	0	0	103	268	
16:45:00	39	2	0	3	41	7	192	0	0	199	101	19	0	0	120	360	1177
17:00:00	50	9	0	4	59	4	205	0	0	209	77	20	0	0	97	365	1315
17:15:00	43	4	0	4	47	12	198	0	1	210	103	23	0	0	126	383	1376
17:30:00	28	1	0	1	29	11	304	0	0	315	87	25	0	0	112	456	1564
17:45:00	47	5	0	0	52	9	199	0	0	208	100	28	0	0	128	388	1592
Grand Total	490	75	0	32	565	125	2104	0	1	2229	2834	588	0	1	3422	**6216**	-
Approach%	86.7%	13.3%	0%		-	5.6%	94.4%	0%		-	82.8%	17.2%	0%		-	-	-
Totals %	7.9%	1.2%	0%		9.1%	2%	33.8%	0%		35.9%	45.6%	9.5%	0%		55.1%	-	-
Heavy	10	3	0		-	1	60	0		-	73	12	0		-	-	-
Heavy %	2%	4%	0%		-	0.8%	2.9%	0%		-	2.6%	2%	0%		-	-	-
Bicycles	0	0	0		-	0	0	0		-	2	0	0		-	-	-
Bicycle %	0%	0%	0%		-	0%	0%	0%		-	0.1%	0%	0%		-	-	-

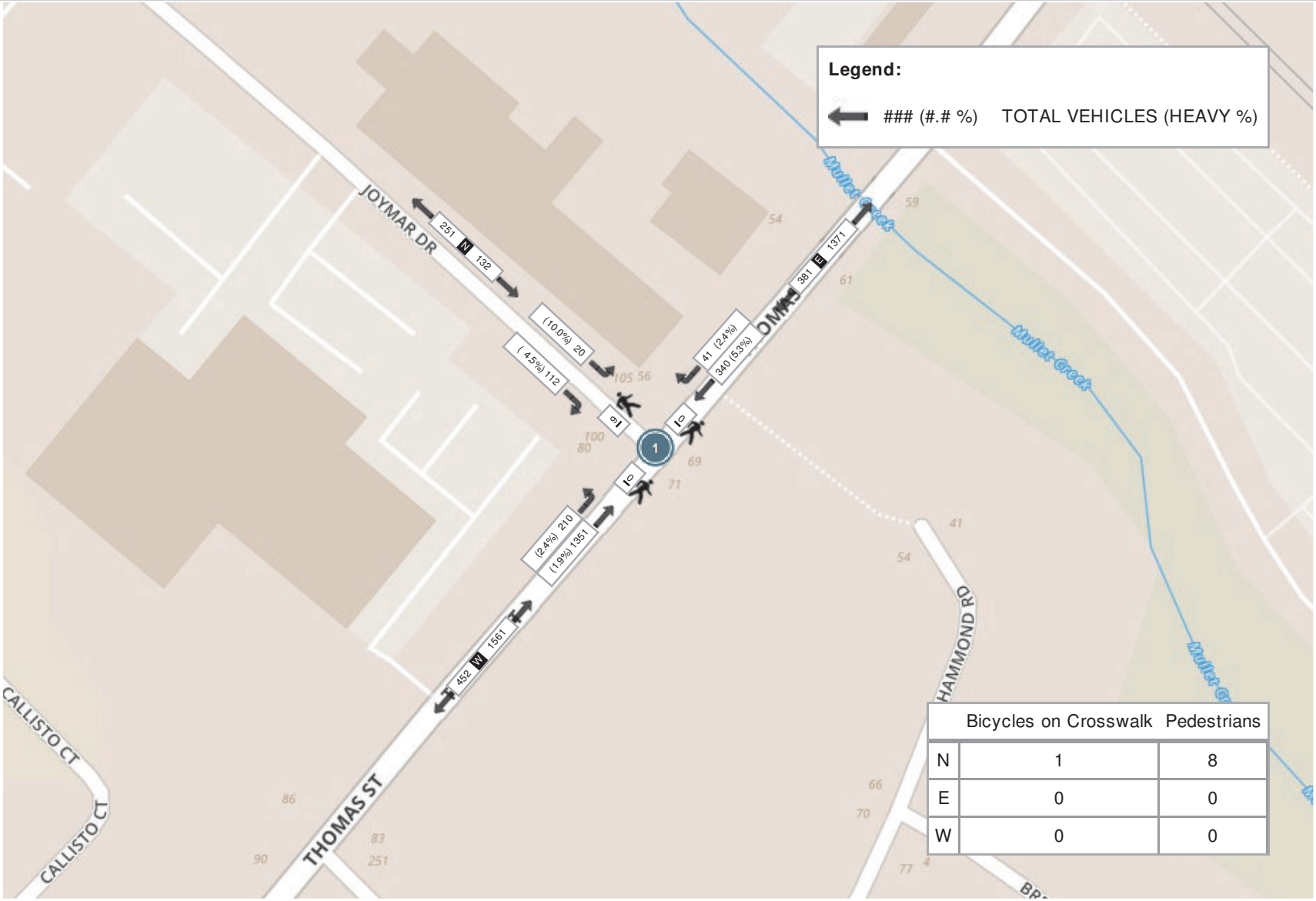
Peak Hour: 07:15 AM - 08:15 AM Weather: Overcast Clouds (4.7 °C)

Start Time	N Approach JOYMAR DR					E Approach THOMAS ST					W Approach THOMAS ST					Int. Total (15 min)
	Right	Left	U-Turn	Peds	Approach Total	Right	Thru	U-Turn	Peds	Approach Total	Thru	Left	U-Turn	Peds	Approach Total	
07:15:00	9	9	0	4	18	7	67	0	0	74	277	24	0	0	301	393
07:30:00	15	4	0	2	19	9	92	0	0	101	322	45	0	0	367	487
07:45:00	30	5	0	3	35	13	85	0	0	98	372	78	0	0	450	583
08:00:00	58	2	0	0	60	12	96	0	0	108	380	63	0	0	443	611
Grand Total	112	20	0	9	132	41	340	0	0	381	1351	210	0	0	1561	**2074**
Approach%	84.8%	15.2%	0%		-	10.8%	89.2%	0%		-	86.5%	13.5%	0%		-	-
Totals %	5.4%	1%	0%		6.4%	2%	16.4%	0%		18.4%	65.1%	10.1%	0%		75.3%	-
PHF	0.48	0.56	0		0.55	0.79	0.89	0		0.88	0.89	0.67	0		0.87	-
Heavy	5	2	0		7	1	18	0		19	25	5	0		30	-
Heavy %	4.5%	10%	0%		5.3%	2.4%	5.3%	0%		5%	1.9%	2.4%	0%		1.9%	-
Lights	107	18	0		125	40	322	0		362	1326	205	0		1531	-
Lights %	95.5%	90%	0%		94.7%	97.6%	94.7%	0%		95%	98.1%	97.6%	0%		98.1%	-
Single-Unit Trucks	0	0	0		0	1	2	0		3	0	1	0		1	-
Single-Unit Trucks %	0%	0%	0%		0%	2.4%	0.6%	0%		0.8%	0%	0.5%	0%		0.1%	-
Buses	5	2	0		7	0	16	0		16	25	4	0		29	-
Buses %	4.5%	10%	0%		5.3%	0%	4.7%	0%		4.2%	1.9%	1.9%	0%		1.9%	-
Pedestrians	-	-	-	8	-	-	-	-	0	-	-	-	-	0	-	-
Pedestrians%	-	-	-	88.9%		-	-	-	0%		-	-	-	0%		-
Bicycles on Crosswalk	-	-	-	1	-	-	-	-	0	-	-	-	-	0	-	-
Bicycles on Crosswalk%	-	-	-	11.1%		-	-	-	0%		-	-	-	0%		-
Bicycles on Road	0	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: Overcast Clouds (-0.78 °C)

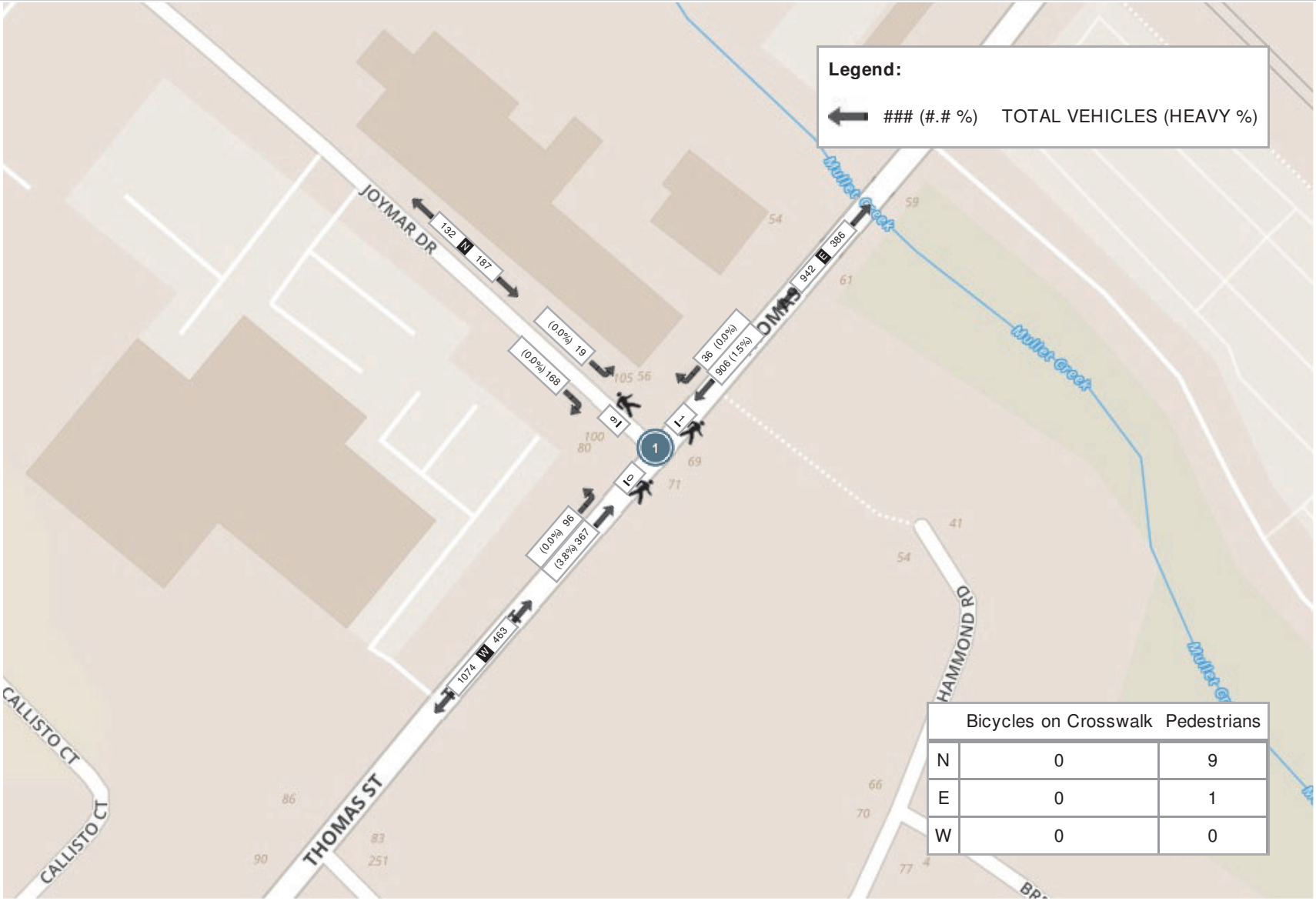
Start Time	N Approach JOYMAR DR					E Approach THOMAS ST					W Approach THOMAS ST					Int. Total (15 min)
	Right	Left	U-Turn	Peds	Approach Total	Right	Thru	U-Turn	Peds	Approach Total	Thru	Left	U-Turn	Peds	Approach Total	
17:00:00	50	9	0	4	59	4	205	0	0	209	77	20	0	0	97	365
17:15:00	43	4	0	4	47	12	198	0	1	210	103	23	0	0	126	383
17:30:00	28	1	0	1	29	11	304	0	0	315	87	25	0	0	112	456
17:45:00	47	5	0	0	52	9	199	0	0	208	100	28	0	0	128	388
Grand Total	168	19	0	9	187	36	906	0	1	942	367	96	0	0	463	**1592**
Approach%	89.8%	10.2%	0%		-	3.8%	96.2%	0%		-	79.3%	20.7%	0%		-	-
Totals %	10.6%	1.2%	0%		11.7%	2.3%	56.9%	0%		59.2%	23.1%	6%	0%		29.1%	-
PHF	0.84	0.53	0		0.79	0.75	0.75	0		0.75	0.89	0.86	0		0.9	-
Heavy	0	0	0		0	0	14	0		14	14	0	0		14	-
Heavy %	0%	0%	0%		0%	0%	1.5%	0%		1.5%	3.8%	0%	0%		3%	-
Lights	168	19	0		187	36	892	0		928	353	96	0		449	-
Lights %	100%	100%	0%		100%	100%	98.5%	0%		98.5%	96.2%	100%	0%		97%	-
Single-Unit Trucks	0	0	0		0	0	1	0		1	2	0	0		2	-
Single-Unit Trucks %	0%	0%	0%		0%	0%	0.1%	0%		0.1%	0.5%	0%	0%		0.4%	-
Buses	0	0	0		0	0	13	0		13	12	0	0		12	-
Buses %	0%	0%	0%		0%	0%	1.4%	0%		1.4%	3.3%	0%	0%		2.6%	-
Pedestrians	-	-	-	9	-	-	-	-	1	-	-	-	-	0	-	-
Pedestrians%	-	-	-	90%		-	-	-	10%		-	-	-	0%		-
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: 07:15 AM - 08:15 AM Weather: Overcast Clouds (4.7 °C)



	Bicycles on Crosswalk	Pedestrians
N	1	8
E	0	0
W	0	0

Peak Hour: 05:00 PM - 06:00 PM Weather: Overcast Clouds (-0.78 °C)



	Bicycles on Crosswalk	Pedestrians
N	0	9
E	0	1
W	0	0

Turning Movement Count (2 . THOMAS ST & STREETSVILLE GO STATION PARKING LOT ENTRANCE)

Start Time	N Approach NORTH DRIVEWAY						E Approach THOMAS ST						S Approach STREETSVILLE GO STATION PARKING LOT ENTRANCE						W Approach THOMAS ST						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	U-Turn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	U-Turn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	U-Turn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	U-Turn W:W	Peds W:	Approach Total		
07:00:00	1	0	0	0	3	1	0	16	32	0	3	48	16	0	47	0	2	63	143	53	0	0	0	196	308	
07:15:00	0	0	0	0	5	0	1	20	38	0	4	59	30	0	52	0	3	82	203	79	0	0	0	282	423	
07:30:00	1	0	0	0	3	1	0	28	41	0	2	69	27	0	72	0	1	99	227	89	0	0	1	316	485	
07:45:00	0	0	1	0	5	1	0	32	47	0	2	79	36	0	65	0	2	101	268	102	1	0	4	371	552	1768
08:00:00	0	0	0	0	3	0	0	42	38	0	2	80	42	0	66	0	0	108	261	134	0	0	2	395	583	2043
08:15:00	1	0	0	0	0	1	1	44	7	0	1	52	18	0	29	0	1	47	49	127	3	0	1	179	279	1899
08:30:00	2	0	2	0	1	4	0	46	15	0	1	61	16	0	42	0	2	58	128	166	2	0	0	296	419	1833
08:45:00	1	0	0	0	4	1	3	61	1	0	2	65	4	0	16	0	3	20	1	132	2	0	0	135	221	1502
BREAK																										
16:00:00	0	0	1	0	1	1	2	92	12	0	0	106	2	0	3	0	0	5	14	75	0	0	0	89	201	
16:15:00	4	0	0	0	5	4	2	119	5	0	1	126	40	0	70	0	2	110	17	63	4	0	1	84	324	
16:30:00	3	0	2	0	4	5	3	109	5	0	0	117	4	0	5	0	1	9	10	73	3	0	1	86	217	
16:45:00	2	0	3	0	4	5	0	138	8	0	0	146	21	1	56	0	4	78	11	86	2	0	1	99	328	1070
17:00:00	4	0	1	0	3	5	1	135	9	0	1	145	12	1	65	0	3	78	22	60	2	0	1	84	312	1181
17:15:00	4	0	0	0	4	4	3	117	10	0	3	130	23	0	91	0	0	114	41	67	0	0	0	108	356	1213
17:30:00	0	0	1	0	7	1	1	102	17	0	2	120	69	0	217	0	3	286	33	56	0	0	1	89	496	1492
17:45:00	1	0	0	0	3	1	0	128	15	0	0	143	22	0	79	0	2	101	40	67	0	0	0	107	352	1516
Grand Total	24	0	11	0	55	35	17	1229	300	0	24	1546	382	2	975	0	29	1359	1468	1429	19	0	13	2916	**5856**	-
Approach%	68.6%	0%	31.4%	0%		-	1.1%	79.5%	19.4%	0%		-	28.1%	0.1%	71.7%	0%		-	50.3%	49%	0.7%	0%		-	-	-
Totals %	0.4%	0%	0.2%	0%		0.6%	0.3%	21%	5.1%	0%		26.4%	6.5%	0%	16.6%	0%		23.2%	25.1%	24.4%	0.3%	0%		49.8%	-	-
Heavy	0	0	0	0		-	0	30	4	0		-	10	0	30	0		-	41	37	0	0		-	-	-
Heavy %	0%	0%	0%	0%		-	0%	2.4%	1.3%	0%		-	2.6%	0%	3.1%	0%		-	2.8%	2.6%	0%	0%		-	-	-
Bicycles	0	0	0	0		-	0	0	0	0		-	0	0	0	0		-	1	0	0	0		-	-	-
Bicycle %	0%	0%	0%	0%		-	0%	0%	0%	0%		-	0%	0%	0%	0%		-	0.1%	0%	0%	0%		-	-	-

Peak Hour: 07:15 AM - 08:15 AM Weather: Overcast Clouds (4.7 °C)

Start Time	N Approach NORTH DRIVEWAY						E Approach THOMAS ST						S Approach STREETSVILLE GO STATION PARKING LOT ENTRANCE						W Approach THOMAS ST						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
07:15:00	0	0	0	0	5	0	1	20	38	0	4	59	30	0	52	0	3	82	203	79	0	0	0	282	423
07:30:00	1	0	0	0	3	1	0	28	41	0	2	69	27	0	72	0	1	99	227	89	0	0	1	316	485
07:45:00	0	0	1	0	5	1	0	32	47	0	2	79	36	0	65	0	2	101	268	102	1	0	4	371	552
08:00:00	0	0	0	0	3	0	0	42	38	0	2	80	42	0	66	0	0	108	261	134	0	0	2	395	583
Grand Total	1	0	1	0	16	2	1	122	164	0	10	287	135	0	255	0	6	390	959	404	1	0	7	1364	**2043**
Approach%	50%	0%	50%	0%		-	0.3%	42.5%	57.1%	0%		-	34.6%	0%	65.4%	0%		-	70.3%	29.6%	0.1%	0%		-	**-**
Totals %	0%	0%	0%	0%		0.1%	0%	6%	8%	0%		14%	6.6%	0%	12.5%	0%		19.1%	46.9%	19.8%	0%	0%		66.8%	**-**
PHF	0.25	0	0.25	0		0.5	0.25	0.73	0.87	0		0.9	0.8	0	0.89	0		0.9	0.89	0.75	0.25	0		0.86	**-**
Heavy	0	0	0	0		0	0	10	0	0		10	6	0	7	0		13	18	10	0	0		28	**-**
Heavy %	0%	0%	0%	0%		0%	0%	8.2%	0%	0%		3.5%	4.4%	0%	2.7%	0%		3.3%	1.9%	2.5%	0%	0%		2.1%	**-**
Lights	1	0	1	0		2	1	112	164	0		277	129	0	248	0		377	941	394	1	0		1336	**-**
Lights %	100%	0%	100%	0%		100%	100%	91.8%	100%	0%		96.5%	95.6%	0%	97.3%	0%		96.7%	98.1%	97.5%	100%	0%		97.9%	**-**
Single-Unit Trucks	0	0	0	0		0	0	3	0	0		3	0	0	0	0		0	0	0	0	0		0	**-**
Single-Unit Trucks %	0%	0%	0%	0%		0%	0%	2.5%	0%	0%		1%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	**-**
Buses	0	0	0	0		0	0	7	0	0		7	6	0	7	0		13	18	10	0	0		28	**-**
Buses %	0%	0%	0%	0%		0%	0%	5.7%	0%	0%		2.4%	4.4%	0%	2.7%	0%		3.3%	1.9%	2.5%	0%	0%		2.1%	**-**
Pedestrians	-	-	-	-	16	-	-	-	-	-	10	-	-	-	-	-	6	-	-	-	-	-	7	-	**-**
Pedestrians%	-	-	-	-	41%		-	-	-	-	25.6%		-	-	-	-	15.4%		-	-	-	-	17.9%		**-**
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Bicycles on Crosswalk%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**
Bicycles on Road	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	1	0	0	0	0	-	**-**
Bicycles on Road%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**

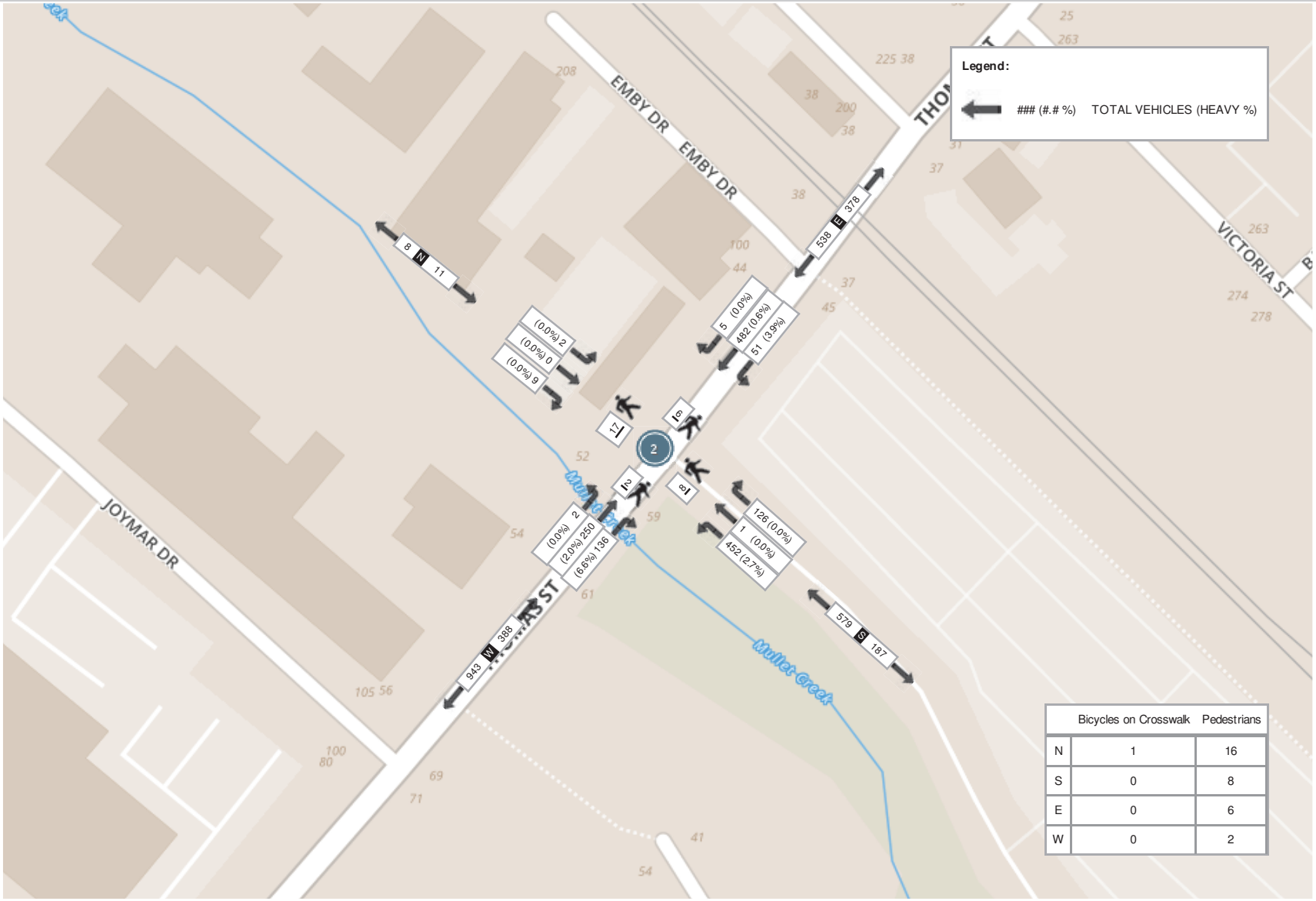
Peak Hour: 05:00 PM - 06:00 PM Weather: Overcast Clouds (-0.78 °C)

Start Time	N Approach NORTH DRIVEWAY						E Approach THOMAS ST						S Approach STREETSVILLE GO STATION PARKING LOT ENTRANCE						W Approach THOMAS ST						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
17:00:00	4	0	1	0	3	5	1	135	9	0	1	145	12	1	65	0	3	78	22	60	2	0	1	84	312
17:15:00	4	0	0	0	4	4	3	117	10	0	3	130	23	0	91	0	0	114	41	67	0	0	0	108	356
17:30:00	0	0	1	0	7	1	1	102	17	0	2	120	69	0	217	0	3	286	33	56	0	0	1	89	496
17:45:00	1	0	0	0	3	1	0	128	15	0	0	143	22	0	79	0	2	101	40	67	0	0	0	107	352
Grand Total	9	0	2	0	17	11	5	482	51	0	6	538	126	1	452	0	8	579	136	250	2	0	2	388	**1516**
Approach%	81.8%	0%	18.2%	0%		-	0.9%	89.6%	9.5%	0%		-	21.8%	0.2%	78.1%	0%		-	35.1%	64.4%	0.5%	0%		-	**-**
Totals %	0.6%	0%	0.1%	0%		0.7%	0.3%	31.8%	3.4%	0%		35.5%	8.3%	0.1%	29.8%	0%		38.2%	9%	16.5%	0.1%	0%		25.6%	**-**
PHF	0.56	0	0.5	0		0.55	0.42	0.89	0.75	0		0.93	0.46	0.25	0.52	0		0.51	0.83	0.93	0.25	0		0.9	**-**
Heavy	0	0	0	0		0	0	3	2	0		5	0	0	12	0		12	9	5	0	0		14	**-**
Heavy %	0%	0%	0%	0%		0%	0%	0.6%	3.9%	0%		0.9%	0%	0%	2.7%	0%		2.1%	6.6%	2%	0%	0%		3.6%	**-**
Lights	9	0	2	0		11	5	479	49	0		533	126	1	440	0		567	127	245	2	0		374	**-**
Lights %	100%	0%	100%	0%		100%	100%	99.4%	96.1%	0%		99.1%	100%	100%	97.3%	0%		97.9%	93.4%	98%	100%	0%		96.4%	**-**
Single-Unit Trucks	0	0	0	0		0	0	1	0	0		1	0	0	1	0		1	0	2	0	0		2	**-**
Single-Unit Trucks %	0%	0%	0%	0%		0%	0%	0.2%	0%	0%		0.2%	0%	0%	0.2%	0%		0.2%	0%	0.8%	0%	0%		0.5%	**-**
Buses	0	0	0	0		0	0	2	2	0		4	0	0	11	0		11	9	3	0	0		12	**-**
Buses %	0%	0%	0%	0%		0%	0%	0.4%	3.9%	0%		0.7%	0%	0%	2.4%	0%		1.9%	6.6%	1.2%	0%	0%		3.1%	**-**
Pedestrians	-	-	-	-	16	-	-	-	-	-	6	-	-	-	-	-	8	-	-	-	-	-	2	-	**-**
Pedestrians%	-	-	-	-	48.5%		-	-	-	-	18.2%		-	-	-	-	24.2%		-	-	-	-	6.1%		**-**
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Bicycles on Crosswalk%	-	-	-	-	3%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**
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: 07:15 AM - 08:15 AM Weather: Overcast Clouds (4.7 °C)

	Bicycles on Crosswalk	Pedestrians
N	0	16
S	0	6
E	0	10
W	0	7

Peak Hour: 05:00 PM - 06:00 PM **Weather: Overcast Clouds (-0.78 °C)**



Turning Movement Count (3 . THOMAS ST & BROADWAY ST)

Start Time	N Approach BROADWAY ST						E Approach THOMAS ST						S Approach SOUTH DRIVEWAY						W Approach THOMAS ST						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	U-Turn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	U-Turn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	U-Turn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	U-Turn W:W	Peds W:	Approach Total		
07:00:00	8	0	1	0	0	9	1	40	0	0	0	41	0	0	0	0	1	0	0	54	12	0	0	66	116	
07:15:00	8	0	0	0	1	8	0	53	0	0	1	53	0	0	0	0	1	0	0	88	15	0	0	103	164	
07:30:00	17	0	1	0	1	18	4	57	0	0	0	61	0	0	0	0	2	0	0	100	21	0	2	121	200	
07:45:00	18	0	0	0	1	18	1	56	1	0	0	58	0	0	0	0	3	0	1	101	33	0	0	135	211	691
08:00:00	28	0	0	0	0	28	5	51	1	0	0	57	1	0	0	0	0	1	0	135	44	0	0	179	265	840
08:15:00	14	0	1	0	2	15	5	38	0	0	0	43	0	0	0	0	0	0	0	106	36	0	0	142	200	876
08:30:00	12	0	1	0	0	13	1	50	0	0	0	51	0	0	0	0	3	0	2	125	34	0	0	161	225	901
08:45:00	14	0	1	0	3	15	5	51	1	0	1	57	0	0	0	0	5	0	2	113	39	0	0	154	226	916
BREAK																										
16:00:00	25	0	3	0	1	28	2	80	4	0	0	86	1	0	1	0	1	2	1	63	16	0	0	80	196	
16:15:00	30	0	2	0	4	32	3	95	1	0	0	99	2	0	0	0	3	2	0	77	19	0	0	96	229	
16:30:00	25	0	2	0	4	27	2	95	2	0	0	99	0	0	0	0	1	0	0	62	12	0	0	74	200	
16:45:00	28	0	2	0	4	30	1	121	0	0	1	122	1	0	1	0	3	2	1	80	34	0	0	115	269	894
17:00:00	42	0	6	0	3	48	5	104	2	0	1	111	1	0	0	0	3	1	1	59	15	0	0	75	235	933
17:15:00	32	0	0	0	2	32	3	96	1	0	1	100	1	0	2	0	7	3	0	67	21	0	0	88	223	927
17:30:00	23	0	4	0	4	27	7	95	0	0	0	102	2	0	0	0	3	2	1	90	32	0	0	123	254	981
17:45:00	25	0	4	0	0	29	7	103	0	0	0	110	1	0	0	0	2	1	1	59	25	0	0	85	225	937
Grand Total	349	0	28	0	30	377	52	1185	13	0	5	1250	10	0	4	0	38	14	10	1379	408	0	2	1797	**3438**	-
Approach%	92.6%	0%	7.4%	0%		-	4.2%	94.8%	1%	0%		-	71.4%	0%	28.6%	0%		-	0.6%	76.7%	22.7%	0%		-	-	-
Totals %	10.2%	0%	0.8%	0%		11%	1.5%	34.5%	0.4%	0%		36.4%	0.3%	0%	0.1%	0%		0.4%	0.3%	40.1%	11.9%	0%		52.3%	-	-
Heavy	5	0	1	0		-	2	27	1	0		-	2	0	0	0		-	1	48	2	0		-	-	-
Heavy %	1.4%	0%	3.6%	0%		-	3.8%	2.3%	7.7%	0%		-	20%	0%	0%	0%		-	10%	3.5%	0.5%	0%		-	-	-
Bicycles	1	0	0	0		-	0	0	0	0		-	0	0	0	0		-	0	0	1	0		-	-	-
Bicycle %	0.3%	0%	0%	0%		-	0%	0%	0%	0%		-	0%	0%	0%	0%		-	0%	0%	0.2%	0%		-	-	-

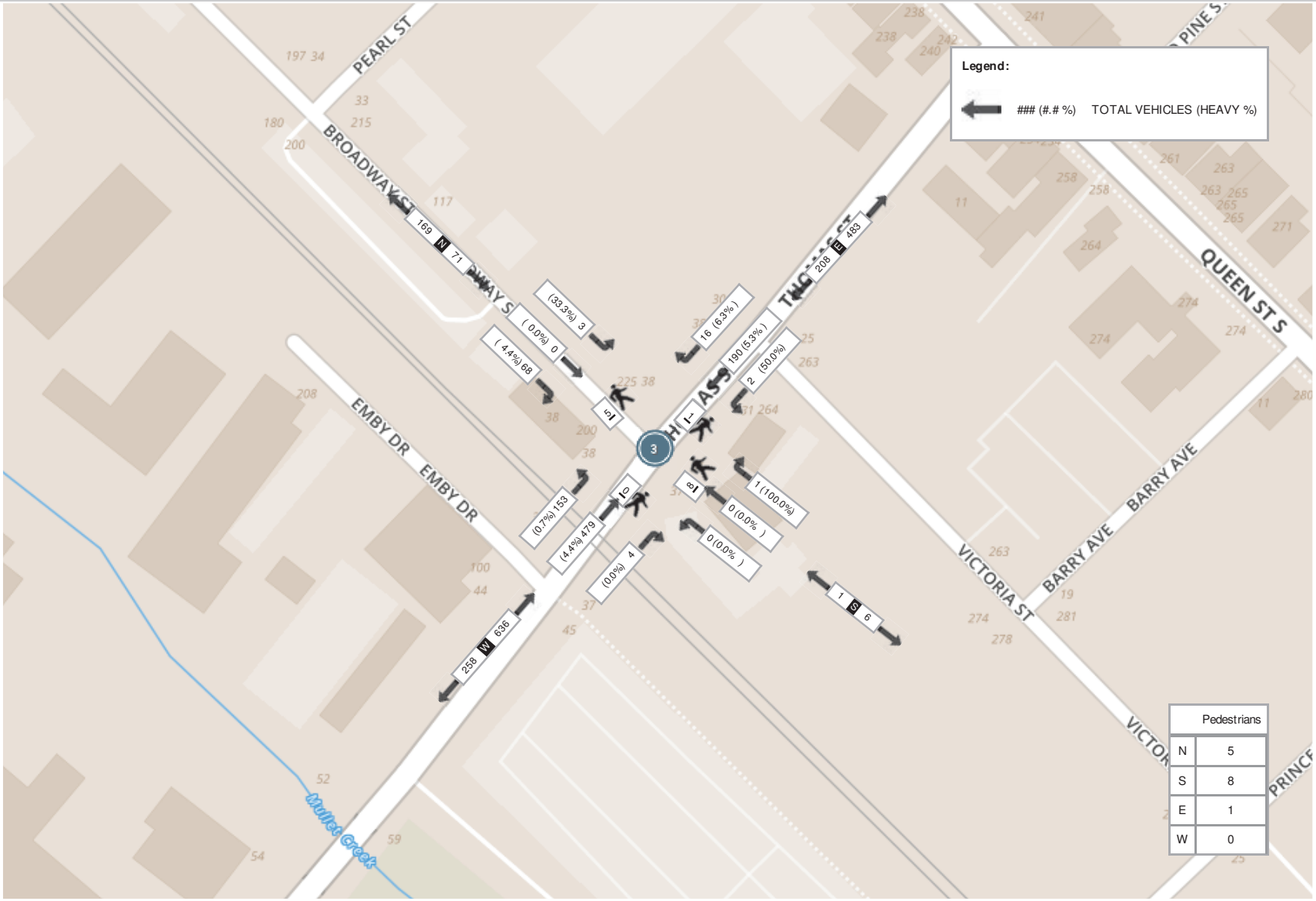
Peak Hour: 08:00 AM - 09:00 AM Weather: Overcast Clouds (4.7 °C)

Start Time	N Approach BROADWAY ST						E Approach THOMAS ST						S Approach SOUTH DRIVEWAY						W Approach THOMAS ST						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
08:00:00	28	0	0	0	0	28	5	51	1	0	0	57	1	0	0	0	0	1	0	135	44	0	0	179	265
08:15:00	14	0	1	0	2	15	5	38	0	0	0	43	0	0	0	0	0	0	0	106	36	0	0	142	200
08:30:00	12	0	1	0	0	13	1	50	0	0	0	51	0	0	0	0	3	0	2	125	34	0	0	161	225
08:45:00	14	0	1	0	3	15	5	51	1	0	1	57	0	0	0	0	5	0	2	113	39	0	0	154	226
Grand Total	68	0	3	0	5	71	16	190	2	0	1	208	1	0	0	0	8	1	4	479	153	0	0	636	**916**
Approach%	95.8%	0%	4.2%	0%		-	7.7%	91.3%	1%	0%		-	100%	0%	0%	0%		-	0.6%	75.3%	24.1%	0%		-	**-**
Totals %	7.4%	0%	0.3%	0%		7.8%	1.7%	20.7%	0.2%	0%		22.7%	0.1%	0%	0%	0%		0.1%	0.4%	52.3%	16.7%	0%		69.4%	**-**
PHF	0.61	0	0.75	0		0.63	0.8	0.93	0.5	0		0.91	0.25	0	0	0		0.25	0.5	0.89	0.87	0		0.89	**-**
Heavy	3	0	1	0		4	1	10	1	0		12	1	0	0	0		1	0	21	1	0		22	**-**
Heavy %	4.4%	0%	33.3%	0%		5.6%	6.3%	5.3%	50%	0%		5.8%	100%	0%	0%	0%		100%	0%	4.4%	0.7%	0%		3.5%	**-**
Lights	65	0	2	0		67	15	180	1	0		196	0	0	0	0		0	4	458	152	0		614	**-**
Lights %	95.6%	0%	66.7%	0%		94.4%	93.8%	94.7%	50%	0%		94.2%	0%	0%	0%	0%		0%	100%	95.6%	99.3%	0%		96.5%	**-**
Single-Unit Trucks	1	0	1	0		2	0	1	1	0		2	1	0	0	0		1	0	2	0	0		2	**-**
Single-Unit Trucks %	1.5%	0%	33.3%	0%		2.8%	0%	0.5%	50%	0%		1%	100%	0%	0%	0%		100%	0%	0.4%	0%	0%		0.3%	**-**
Buses	2	0	0	0		2	1	9	0	0		10	0	0	0	0		0	0	19	1	0		20	**-**
Buses %	2.9%	0%	0%	0%		2.8%	6.3%	4.7%	0%	0%		4.8%	0%	0%	0%	0%		0%	0%	4%	0.7%	0%		3.1%	**-**
Pedestrians	-	-	-	-	5	-	-	-	-	-	1	-	-	-	-	-	8	-	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	-	35.7%		-	-	-	-	7.1%		-	-	-	-	57.1%		-	-	-	-	0%		**-**
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%		**-**

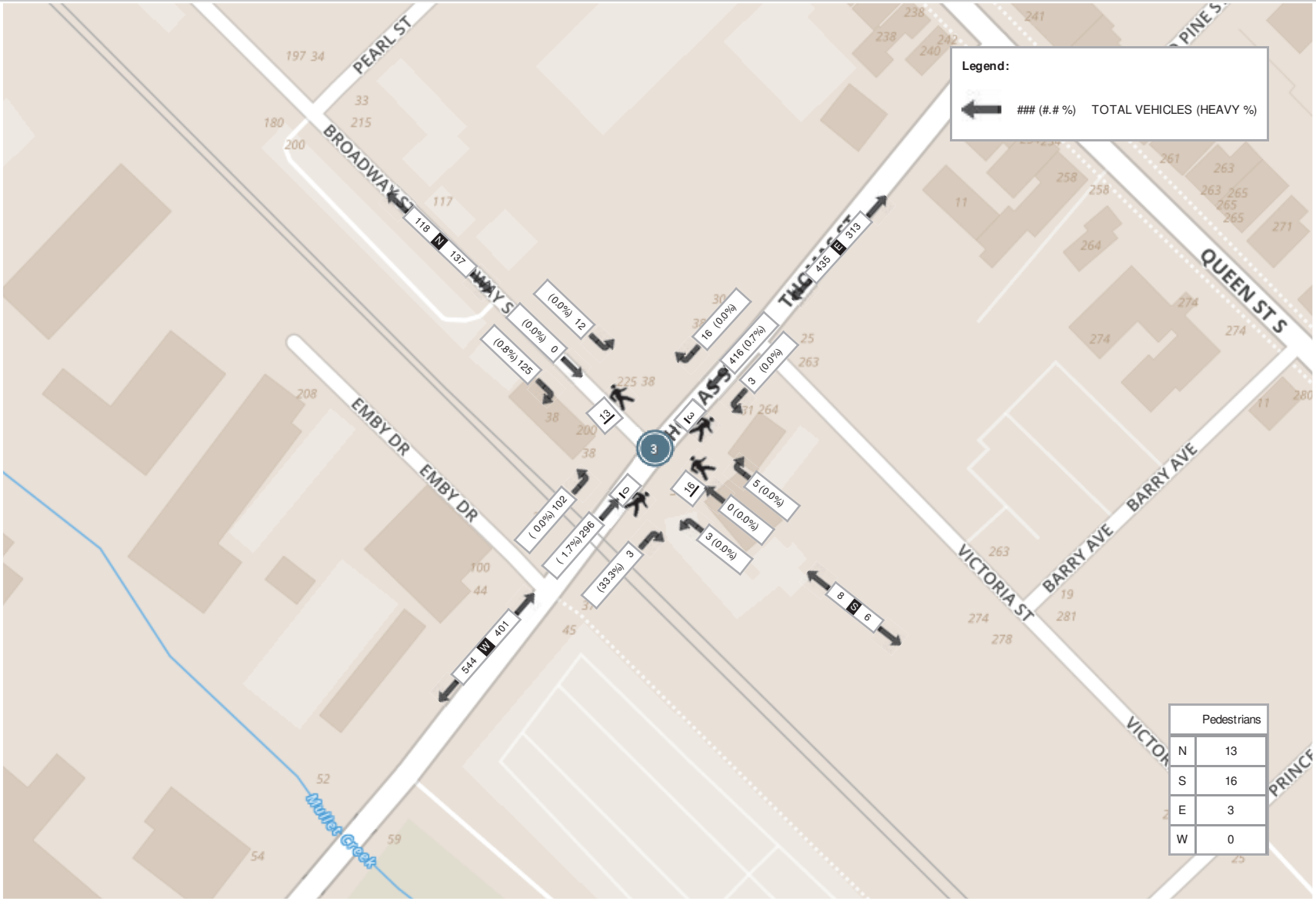
Peak Hour: 04:45 PM - 05:45 PM Weather: Overcast Clouds (-0.78 °C)

Start Time	N Approach BROADWAY ST						E Approach THOMAS ST						S Approach SOUTH DRIVEWAY						W Approach THOMAS ST						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
16:45:00	28	0	2	0	4	30	1	121	0	0	1	122	1	0	1	0	3	2	1	80	34	0	0	115	269
17:00:00	42	0	6	0	3	48	5	104	2	0	1	111	1	0	0	0	3	1	1	59	15	0	0	75	235
17:15:00	32	0	0	0	2	32	3	96	1	0	1	100	1	0	2	0	7	3	0	67	21	0	0	88	223
17:30:00	23	0	4	0	4	27	7	95	0	0	0	102	2	0	0	0	3	2	1	90	32	0	0	123	254
Grand Total	125	0	12	0	13	137	16	416	3	0	3	435	5	0	3	0	16	8	3	296	102	0	0	401	**981**
Approach%	91.2%	0%	8.8%	0%		-	3.7%	95.6%	0.7%	0%		-	62.5%	0%	37.5%	0%		-	0.7%	73.8%	25.4%	0%		-	**-**
Totals %	12.7%	0%	1.2%	0%		14%	1.6%	42.4%	0.3%	0%		44.3%	0.5%	0%	0.3%	0%		0.8%	0.3%	30.2%	10.4%	0%		40.9%	**-**
PHF	0.74	0	0.5	0		0.71	0.57	0.86	0.38	0		0.89	0.63	0	0.38	0		0.67	0.75	0.82	0.75	0		0.82	**-**
Heavy	1	0	0	0		1	0	3	0	0		3	0	0	0	0		0	1	5	0	0		6	**-**
Heavy %	0.8%	0%	0%	0%		0.7%	0%	0.7%	0%	0%		0.7%	0%	0%	0%	0%		0%	33.3%	1.7%	0%	0%		1.5%	**-**
Lights	124	0	12	0		136	16	413	3	0		432	5	0	3	0		8	2	291	102	0		395	**-**
Lights %	99.2%	0%	100%	0%		99.3%	100%	99.3%	100%	0%		99.3%	100%	0%	100%	0%		100%	66.7%	98.3%	100%	0%		98.5%	**-**
Single-Unit Trucks	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	1	1	0	0		2	**-**
Single-Unit Trucks %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	33.3%	0.3%	0%	0%		0.5%	**-**
Buses	1	0	0	0		1	0	3	0	0		3	0	0	0	0		0	0	4	0	0		4	**-**
Buses %	0.8%	0%	0%	0%		0.7%	0%	0.7%	0%	0%		0.7%	0%	0%	0%	0%		0%	0%	1.4%	0%	0%		1%	**-**
Pedestrians	-	-	-	-	13	-	-	-	-	-	3	-	-	-	-	-	16	-	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	-	40.6%		-	-	-	-	9.4%		-	-	-	-	50%		-	-	-	-	0%		**-**
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: 08:00 AM - 09:00 AM Weather: Overcast Clouds (4.7 °C)



Peak Hour: 04:45 PM - 05:45 PM **Weather: Overcast Clouds (-0.78 °C)**



Turning Movement Count (5 . TANNERY ST & BROADWAY ST)

Start Time	N Approach CRUMBIE ST						E Approach TANNERY ST						S Approach BROADWAY ST						W Approach TANNERY ST						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	U-Turn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	U-Turn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	U-Turn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	U-Turn W:W	Peds W:	Approach Total		
07:00:00	1	3	1	0	3	5	0	3	1	0	2	4	2	4	0	0	0	6	8	7	3	0	0	18	33	
07:15:00	3	2	3	0	3	8	1	6	6	0	0	13	7	2	4	0	0	13	6	7	4	0	0	17	51	
07:30:00	5	2	3	0	17	10	0	14	9	0	1	23	4	3	5	0	0	12	15	18	8	0	0	41	86	
07:45:00	2	2	1	0	9	5	2	50	11	0	0	63	8	4	10	0	5	22	27	41	8	0	0	76	166	336
08:00:00	6	0	3	0	6	9	0	42	11	0	2	53	13	5	8	0	2	26	38	67	11	0	0	116	204	507
08:15:00	5	4	0	0	4	9	0	13	2	0	1	15	4	8	3	0	1	15	22	30	7	0	1	59	98	554
08:30:00	6	3	1	0	2	10	0	16	4	0	0	20	10	3	4	0	1	17	25	47	9	0	0	81	128	596
08:45:00	6	1	1	0	3	8	1	14	7	0	1	22	7	7	5	0	1	19	4	37	10	0	0	51	100	530
BREAK																										
16:00:00	14	7	1	0	2	22	0	13	9	0	2	22	8	5	5	0	0	18	4	11	5	0	0	20	82	
16:15:00	11	6	0	0	6	17	1	18	6	0	0	25	9	6	8	0	0	23	5	11	5	0	0	21	86	
16:30:00	13	7	0	0	0	20	5	26	4	0	1	35	8	3	5	0	3	16	7	15	10	0	0	32	103	
16:45:00	9	5	1	0	1	15	2	18	5	0	2	25	9	11	5	0	3	25	3	14	14	0	0	31	96	367
17:00:00	14	10	1	0	5	25	2	25	15	0	1	42	11	6	8	0	0	25	11	13	10	0	0	34	126	411
17:15:00	10	4	0	0	1	14	3	33	9	0	0	45	12	5	8	0	0	25	5	19	6	0	0	30	114	439
17:30:00	10	5	2	0	1	17	3	19	8	0	3	30	11	10	7	0	1	28	5	18	4	0	1	27	102	438
17:45:00	15	4	0	0	0	19	0	32	5	0	2	37	15	5	8	0	1	28	3	17	10	0	0	30	114	456
Grand Total	130	65	18	0	63	213	20	342	112	0	18	474	138	87	93	0	18	318	188	372	124	0	2	684	**1689**	-
Approach%	61%	30.5%	8.5%	0%		-	4.2%	72.2%	23.6%	0%		-	43.4%	27.4%	29.2%	0%		-	27.5%	54.4%	18.1%	0%		-	-	-
Totals %	7.7%	3.8%	1.1%	0%		12.6%	1.2%	20.2%	6.6%	0%		28.1%	8.2%	5.2%	5.5%	0%		18.8%	11.1%	22%	7.3%	0%		40.5%	-	-
Heavy	0	2	0	0		-	0	8	5	0		-	5	1	3	0		-	3	9	3	0		-	-	-
Heavy %	0%	3.1%	0%	0%		-	0%	2.3%	4.5%	0%		-	3.6%	1.1%	3.2%	0%		-	1.6%	2.4%	2.4%	0%		-	-	-
Bicycles	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-
Bicycle %	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-

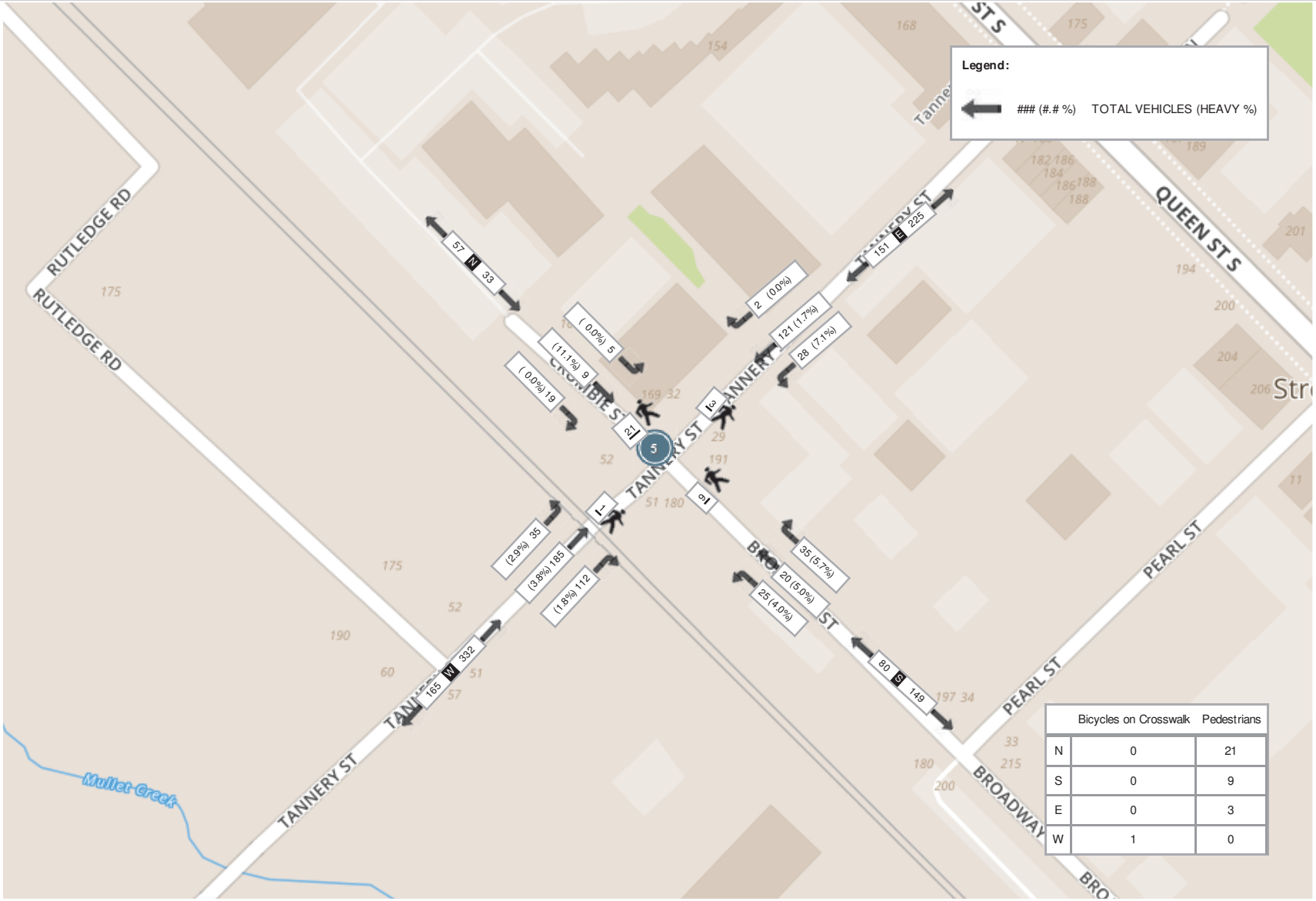
Peak Hour: 07:45 AM - 08:45 AM Weather: Overcast Clouds (4.7 °C)

Start Time	N Approach CRUMBIE ST						E Approach TANNERY ST						S Approach BROADWAY ST						W Approach TANNERY ST						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
07:45:00	2	2	1	0	9	5	2	50	11	0	0	63	8	4	10	0	5	22	27	41	8	0	0	76	166
08:00:00	6	0	3	0	6	9	0	42	11	0	2	53	13	5	8	0	2	26	38	67	11	0	0	116	204
08:15:00	5	4	0	0	4	9	0	13	2	0	1	15	4	8	3	0	1	15	22	30	7	0	1	59	98
08:30:00	6	3	1	0	2	10	0	16	4	0	0	20	10	3	4	0	1	17	25	47	9	0	0	81	128
Grand Total	19	9	5	0	21	33	2	121	28	0	3	151	35	20	25	0	9	80	112	185	35	0	1	332	**596**
Approach%	57.6%	27.3%	15.2%	0%		-	1.3%	80.1%	18.5%	0%		-	43.8%	25%	31.3%	0%		-	33.7%	55.7%	10.5%	0%		-	**-**
Totals %	3.2%	1.5%	0.8%	0%		5.5%	0.3%	20.3%	4.7%	0%		25.3%	5.9%	3.4%	4.2%	0%		13.4%	18.8%	31%	5.9%	0%		55.7%	**-**
PHF	0.79	0.56	0.42	0		0.83	0.25	0.61	0.64	0		0.6	0.67	0.63	0.63	0		0.77	0.74	0.69	0.8	0		0.72	**-**
Heavy	0	1	0	0		1	0	2	2	0		4	2	1	1	0		4	2	7	1	0		10	**-**
Heavy %	0%	11.1%	0%	0%		3%	0%	1.7%	7.1%	0%		2.6%	5.7%	5%	4%	0%		5%	1.8%	3.8%	2.9%	0%		3%	**-**
Lights	19	8	5	0		32	2	119	26	0		147	33	19	24	0		76	110	178	34	0		322	**-**
Lights %	100%	88.9%	100%	0%		97%	100%	98.3%	92.9%	0%		97.4%	94.3%	95%	96%	0%		95%	98.2%	96.2%	97.1%	0%		97%	**-**
Single-Unit Trucks	0	1	0	0		1	0	0	2	0		2	1	1	0	0		2	0	2	1	0		3	**-**
Single-Unit Trucks %	0%	11.1%	0%	0%		3%	0%	0%	7.1%	0%		1.3%	2.9%	5%	0%	0%		2.5%	0%	1.1%	2.9%	0%		0.9%	**-**
Buses	0	0	0	0		0	0	2	0	0		2	1	0	1	0		2	1	5	0	0		6	**-**
Buses %	0%	0%	0%	0%		0%	0%	1.7%	0%	0%		1.3%	2.9%	0%	4%	0%		2.5%	0.9%	2.7%	0%	0%		1.8%	**-**
Articulated Trucks	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	1	0	0	0		1	**-**
Articulated Trucks %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0.9%	0%	0%	0%		0.3%	**-**
Pedestrians	-	-	-	-	21	-	-	-	-	-	3	-	-	-	-	-	9	-	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	-	61.8%		-	-	-	-	8.8%		-	-	-	-	26.5%		-	-	-	-	0%		**-**
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	**-**
Bicycles on Crosswalk%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	2.9%		**-**

Peak Hour: 05:00 PM - 06:00 PM Weather: Overcast Clouds (-0.78 °C)

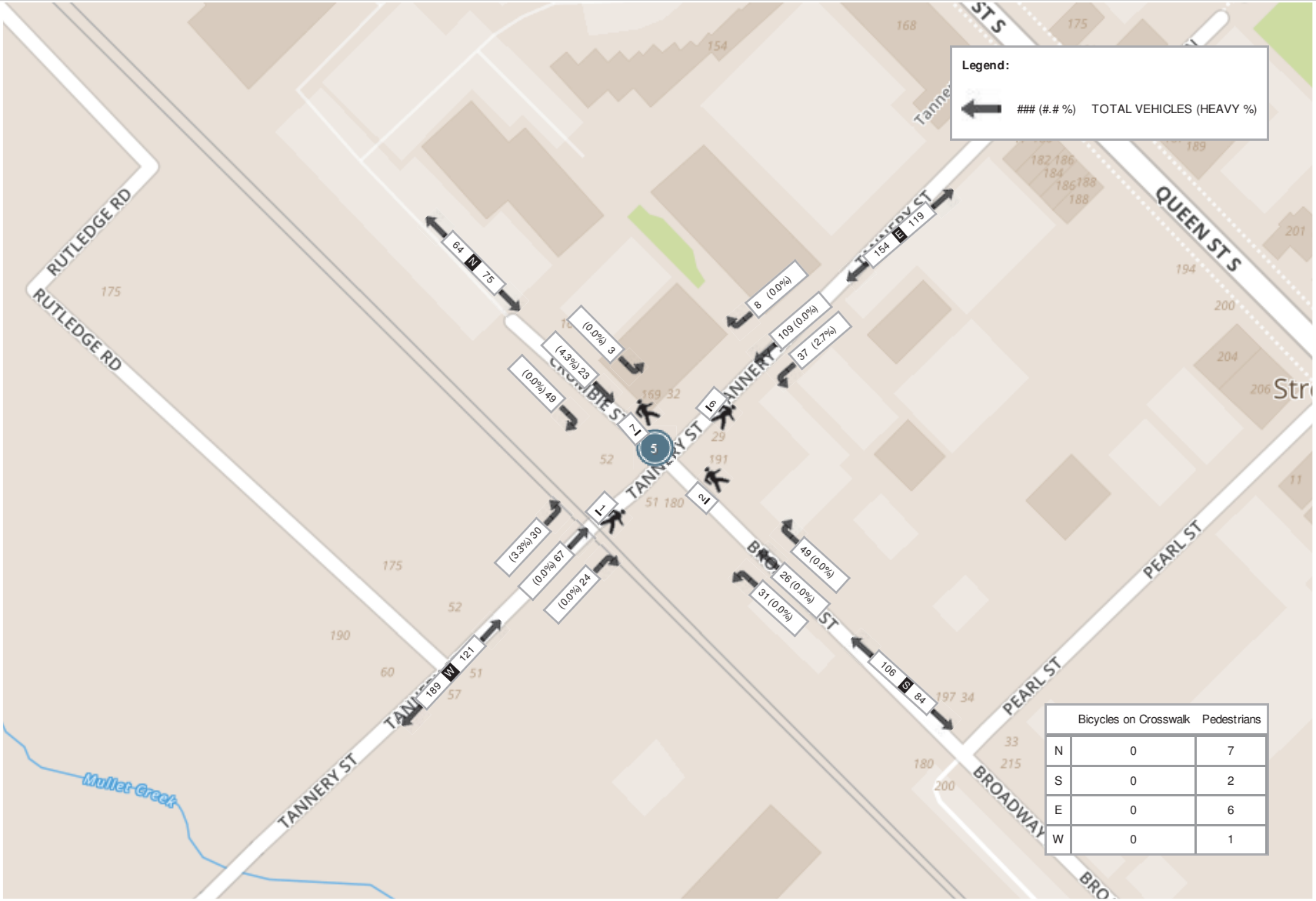
Start Time	N Approach CRUMBIE ST						E Approach TANNERY ST						S Approach BROADWAY ST						W Approach TANNERY ST						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
17:00:00	14	10	1	0	5	25	2	25	15	0	1	42	11	6	8	0	0	25	11	13	10	0	0	34	126
17:15:00	10	4	0	0	1	14	3	33	9	0	0	45	12	5	8	0	0	25	5	19	6	0	0	30	114
17:30:00	10	5	2	0	1	17	3	19	8	0	3	30	11	10	7	0	1	28	5	18	4	0	1	27	102
17:45:00	15	4	0	0	0	19	0	32	5	0	2	37	15	5	8	0	1	28	3	17	10	0	0	30	114
Grand Total	49	23	3	0	7	75	8	109	37	0	6	154	49	26	31	0	2	106	24	67	30	0	1	121	**456**
Approach%	65.3%	30.7%	4%	0%		-	5.2%	70.8%	24%	0%		-	46.2%	24.5%	29.2%	0%		-	19.8%	55.4%	24.8%	0%		-	**-**
Totals %	10.7%	5%	0.7%	0%		16.4%	1.8%	23.9%	8.1%	0%		33.8%	10.7%	5.7%	6.8%	0%		23.2%	5.3%	14.7%	6.6%	0%		26.5%	**-**
PHF	0.82	0.58	0.38	0		0.75	0.67	0.83	0.62	0		0.86	0.82	0.65	0.97	0		0.95	0.55	0.88	0.75	0		0.89	**-**
Heavy	0	1	0	0		1	0	0	1	0		1	0	0	0	0		0	0	0	1	0		1	**-**
Heavy %	0%	4.3%	0%	0%		1.3%	0%	0%	2.7%	0%		0.6%	0%	0%	0%	0%		0%	0%	0%	3.3%	0%		0.8%	**-**
Lights	49	22	3	0		74	8	109	36	0		153	49	26	31	0		106	24	67	29	0		120	**-**
Lights %	100%	95.7%	100%	0%		98.7%	100%	100%	97.3%	0%		99.4%	100%	100%	100%	0%		100%	100%	100%	96.7%	0%		99.2%	**-**
Single-Unit Trucks	0	0	0	0		0	0	0	1	0		1	0	0	0	0		0	0	0	1	0		1	**-**
Single-Unit Trucks %	0%	0%	0%	0%		0%	0%	0%	2.7%	0%		0.6%	0%	0%	0%	0%		0%	0%	0%	3.3%	0%		0.8%	**-**
Buses	0	1	0	0		1	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	**-**
Buses %	0%	4.3%	0%	0%		1.3%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	**-**
Articulated Trucks	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	**-**
Articulated Trucks %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	-	7	-	-	-	-	-	6	-	-	-	-	-	2	-	-	-	-	-	1	-	**-**
Pedestrians%	-	-	-	-	43.8%		-	-	-	-	37.5%		-	-	-	-	12.5%		-	-	-	-	6.3%		**-**
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Bicycles on Crosswalk%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**

Peak Hour: 07:45 AM - 08:45 AM Weather: Overcast Clouds (4.7 °C)



	Bicycles on Crosswalk	Pedestrians
N	0	21
S	0	9
E	0	3
W	1	0

Peak Hour: 05:00 PM - 06:00 PM **Weather: Overcast Clouds (-0.78 °C)**



	Bicycles on Crosswalk	Pedestrians
N	0	7
S	0	2
E	0	6
W	0	1

Turning Movement Count (4 . JOYMAR DR & TANNERY ST)

Start Time	N Approach JOYMAR DR						E Approach TANNERY ST						S Approach JOYMAR DR						W Approach WEST DRIVEWAY						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	U-Turn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	U-Turn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	U-Turn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	U-Turn W:W	Peds W:	Approach Total		
07:00:00	2	16	9	0	0	27	3	0	1	0	1	4	6	11	1	0	0	18	0	0	1	0	3	1	50	
07:15:00	0	12	7	0	2	19	5	3	6	0	0	14	12	20	3	0	0	35	0	0	0	0	1	0	68	
07:30:00	8	15	19	0	10	42	9	5	6	0	2	20	14	32	7	0	0	53	1	4	1	0	1	6	121	
07:45:00	9	18	34	0	30	61	14	24	8	0	2	46	24	39	23	0	4	86	8	20	10	0	7	38	231	470
08:00:00	11	28	45	0	21	84	22	43	3	0	2	68	17	30	34	0	3	81	24	49	9	0	7	82	315	735
08:15:00	3	16	28	0	3	47	10	3	8	0	0	21	30	39	1	0	1	70	1	1	1	0	0	3	141	808
08:30:00	0	9	33	0	5	42	10	0	12	0	0	22	49	29	0	0	0	78	0	0	0	0	0	0	142	829
08:45:00	0	12	20	0	3	32	6	2	13	0	0	21	34	20	0	0	0	54	1	0	0	0	1	1	108	706
BREAK																										
16:00:00	0	17	2	0	4	19	15	0	12	0	0	27	13	12	0	0	0	25	2	1	0	0	3	3	74	
16:15:00	1	14	10	0	3	25	19	2	22	0	0	43	12	16	1	0	0	29	2	1	1	0	0	4	101	
16:30:00	1	16	16	0	0	33	18	1	23	0	0	42	14	17	1	0	2	32	3	0	1	0	1	4	111	
16:45:00	0	20	13	0	7	33	17	0	18	0	0	35	15	14	0	0	2	29	0	1	1	0	6	2	99	385
17:00:00	0	31	18	0	2	49	23	0	23	0	0	46	11	10	0	0	0	21	0	0	0	0	3	0	116	427
17:15:00	0	30	14	0	1	44	31	1	20	0	0	52	15	23	0	0	1	38	0	1	1	0	0	2	136	462
17:30:00	1	26	10	0	1	37	17	1	18	0	0	36	17	18	0	0	0	35	0	0	1	0	2	1	109	460
17:45:00	0	17	14	0	0	31	20	2	31	0	1	53	17	25	1	0	0	43	0	0	0	0	1	0	127	488
Grand Total	36	297	292	0	92	625	239	87	224	0	8	550	300	355	72	0	13	727	42	78	27	0	36	147	**2049**	-
Approach%	5.8%	47.5%	46.7%	0%		-	43.5%	15.8%	40.7%	0%		-	41.3%	48.8%	9.9%	0%		-	28.6%	53.1%	18.4%	0%		-	-	-
Totals %	1.8%	14.5%	14.3%	0%		30.5%	11.7%	4.2%	10.9%	0%		26.8%	14.6%	17.3%	3.5%	0%		35.5%	2%	3.8%	1.3%	0%		7.2%	-	-
Heavy	1	7	8	0		-	4	0	8	0		-	6	8	0	0		-	0	1	4	0		-	-	-
Heavy %	2.8%	2.4%	2.7%	0%		-	1.7%	0%	3.6%	0%		-	2%	2.3%	0%	0%		-	0%	1.3%	14.8%	0%		-	-	-
Bicycles	0	1	0	0		-	0	0	0	0		-	0	0	0	0		-	0	0	0	0		-	-	-
Bicycle %	0%	0.3%	0%	0%		-	0%	0%	0%	0%		-	0%	0%	0%	0%		-	0%	0%	0%	0%		-	-	-

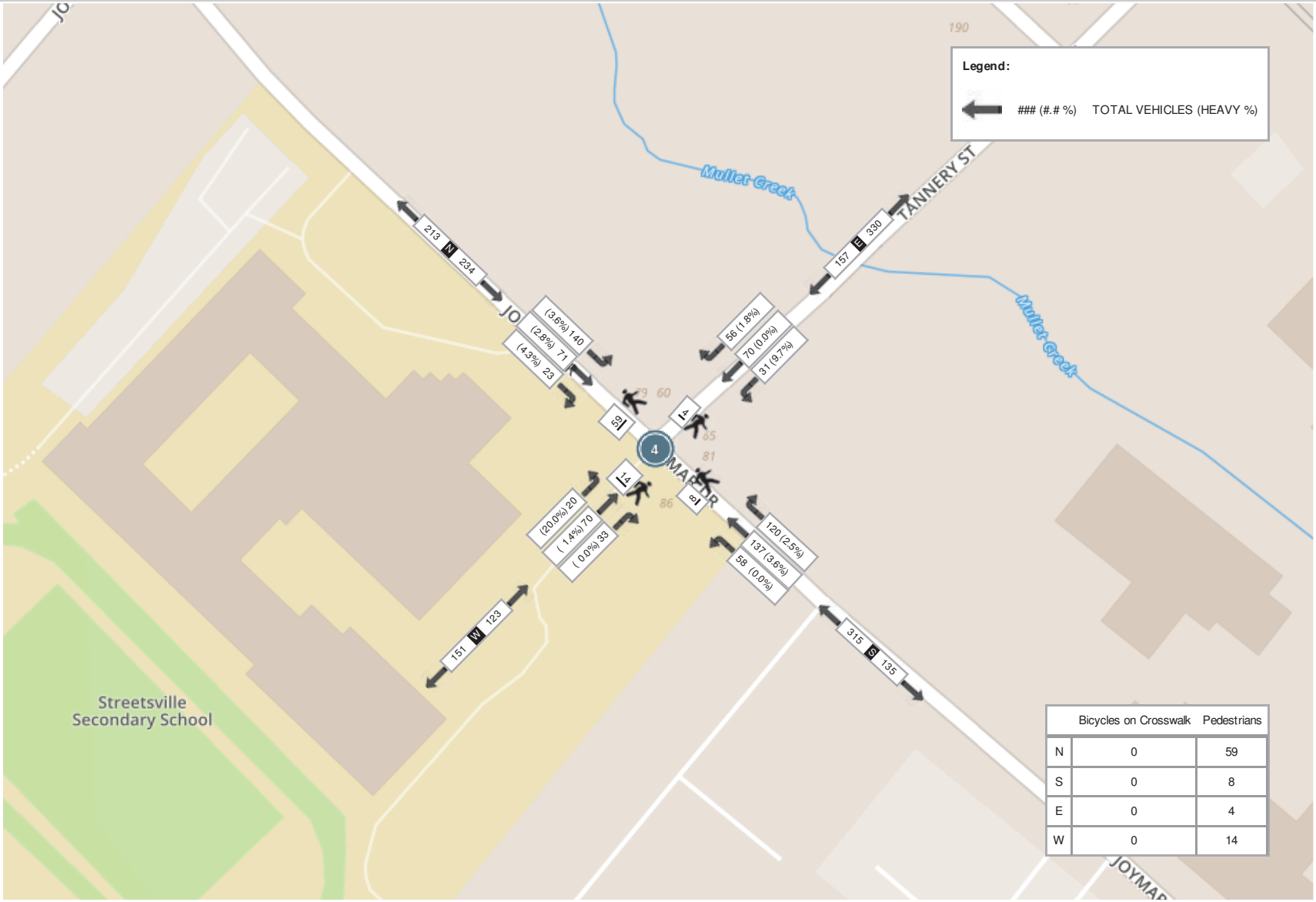
Peak Hour: 07:45 AM - 08:45 AM Weather: Overcast Clouds (4.7 °C)

Start Time	N Approach JOYMAR DR						E Approach TANNERY ST						S Approach JOYMAR DR						W Approach WEST DRIVEWAY						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
07:45:00	9	18	34	0	30	61	14	24	8	0	2	46	24	39	23	0	4	86	8	20	10	0	7	38	231
08:00:00	11	28	45	0	21	84	22	43	3	0	2	68	17	30	34	0	3	81	24	49	9	0	7	82	315
08:15:00	3	16	28	0	3	47	10	3	8	0	0	21	30	39	1	0	1	70	1	1	1	0	0	3	141
08:30:00	0	9	33	0	5	42	10	0	12	0	0	22	49	29	0	0	0	78	0	0	0	0	0	0	142
Grand Total	23	71	140	0	59	234	56	70	31	0	4	157	120	137	58	0	8	315	33	70	20	0	14	123	**829**
Approach%	9.8%	30.3%	59.8%	0%		-	35.7%	44.6%	19.7%	0%		-	38.1%	43.5%	18.4%	0%		-	26.8%	56.9%	16.3%	0%		-	**-**
Totals %	2.8%	8.6%	16.9%	0%		28.2%	6.8%	8.4%	3.7%	0%		18.9%	14.5%	16.5%	7%	0%		38%	4%	8.4%	2.4%	0%		14.8%	**-**
PHF	0.52	0.63	0.78	0		0.7	0.64	0.41	0.65	0		0.58	0.61	0.88	0.43	0		0.92	0.34	0.36	0.5	0		0.38	**-**
Heavy	1	2	5	0		8	1	0	3	0		4	3	5	0	0		8	0	1	4	0		5	**-**
Heavy %	4.3%	2.8%	3.6%	0%		3.4%	1.8%	0%	9.7%	0%		2.5%	2.5%	3.6%	0%	0%		2.5%	0%	1.4%	20%	0%		4.1%	**-**
Lights	22	69	135	0		226	55	70	28	0		153	117	132	58	0		307	33	69	16	0		118	**-**
Lights %	95.7%	97.2%	96.4%	0%		96.6%	98.2%	100%	90.3%	0%		97.5%	97.5%	96.4%	100%	0%		97.5%	100%	98.6%	80%	0%		95.9%	**-**
Single-Unit Trucks	1	0	1	0		2	0	0	0	0		0	2	1	0	0		3	0	0	1	0		1	**-**
Single-Unit Trucks %	4.3%	0%	0.7%	0%		0.9%	0%	0%	0%	0%		0%	1.7%	0.7%	0%	0%		1%	0%	0%	5%	0%		0.8%	**-**
Buses	0	2	4	0		6	1	0	3	0		4	1	4	0	0		5	0	1	3	0		4	**-**
Buses %	0%	2.8%	2.9%	0%		2.6%	1.8%	0%	9.7%	0%		2.5%	0.8%	2.9%	0%	0%		1.6%	0%	1.4%	15%	0%		3.3%	**-**
Pedestrians	-	-	-	-	59	-	-	-	-	-	4	-	-	-	-	-	8	-	-	-	-	-	14	-	**-**
Pedestrians%	-	-	-	-	69.4%		-	-	-	-	4.7%		-	-	-	-	9.4%		-	-	-	-	16.5%		**-**
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Bicycles on Crosswalk%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**
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%		**-**

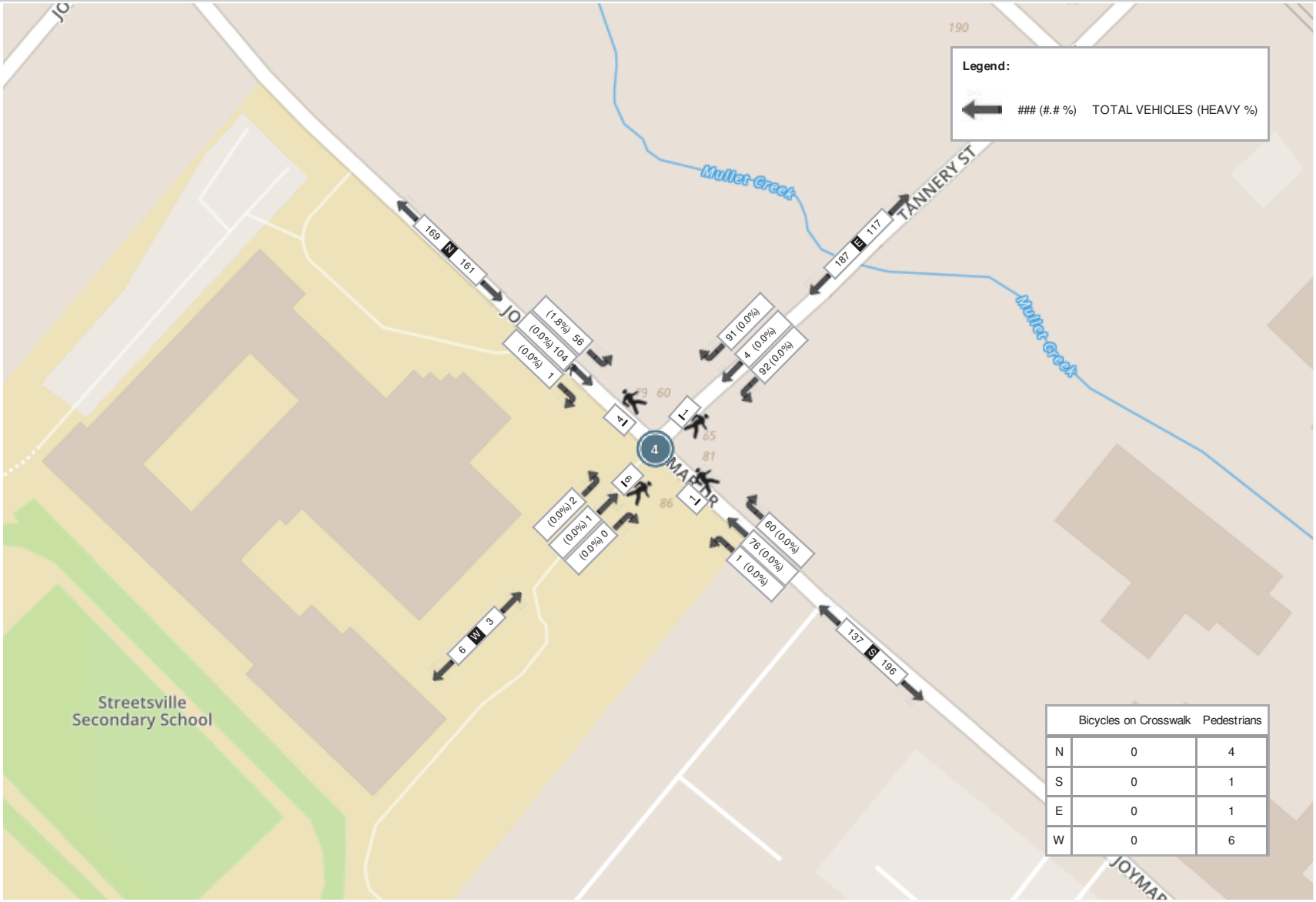
Peak Hour: 05:00 PM - 06:00 PM Weather: Overcast Clouds (-0.78 °C)

Start Time	N Approach JOYMAR DR						E Approach TANNERY ST						S Approach JOYMAR DR						W Approach WEST DRIVEWAY						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
17:00:00	0	31	18	0	2	49	23	0	23	0	0	46	11	10	0	0	0	21	0	0	0	0	3	0	116
17:15:00	0	30	14	0	1	44	31	1	20	0	0	52	15	23	0	0	1	38	0	1	1	0	0	2	136
17:30:00	1	26	10	0	1	37	17	1	18	0	0	36	17	18	0	0	0	35	0	0	1	0	2	1	109
17:45:00	0	17	14	0	0	31	20	2	31	0	1	53	17	25	1	0	0	43	0	0	0	0	1	0	127
Grand Total	1	104	56	0	4	161	91	4	92	0	1	187	60	76	1	0	1	137	0	1	2	0	6	3	**488**
Approach%	0.6%	64.6%	34.8%	0%		-	48.7%	2.1%	49.2%	0%		-	43.8%	55.5%	0.7%	0%		-	0%	33.3%	66.7%	0%		-	-
Totals %	0.2%	21.3%	11.5%	0%		33%	18.6%	0.8%	18.9%	0%		38.3%	12.3%	15.6%	0.2%	0%		28.1%	0%	0.2%	0.4%	0%		0.6%	-
PHF	0.25	0.84	0.78	0		0.82	0.73	0.5	0.74	0		0.88	0.88	0.76	0.25	0		0.8	0	0.25	0.5	0		0.38	-
Heavy	0	0	1	0		1	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	-
Heavy %	0%	0%	1.8%	0%		0.6%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	-
Lights	1	104	55	0		160	91	4	92	0		187	60	76	1	0		137	0	1	2	0		3	-
Lights %	100%	100%	98.2%	0%		99.4%	100%	100%	100%	0%		100%	100%	100%	100%	0%		100%	0%	100%	100%	0%		100%	-
Single-Unit Trucks	0	0	1	0		1	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	-
Single-Unit Trucks %	0%	0%	1.8%	0%		0.6%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	-
Buses	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	-
Buses %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	-
Pedestrians	-	-	-	-	4	-	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	6	-	-
Pedestrians%	-	-	-	-	33.3%		-	-	-	-	8.3%		-	-	-	-	8.3%		-	-	-	-	50%		-
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
Bicycles on Crosswalk%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-
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: 07:45 AM - 08:45 AM Weather: Overcast Clouds (4.7 °C)

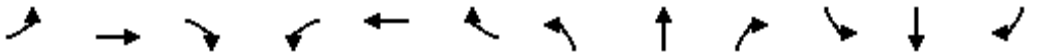


Peak Hour: 05:00 PM - 06:00 PM **Weather: Overcast Clouds (-0.78 °C)**



	Bicycles on Crosswalk	Pedestrians
N	0	4
S	0	1
E	0	1
W	0	6

Appendix C
Existing Traffic Level of Service Calculations

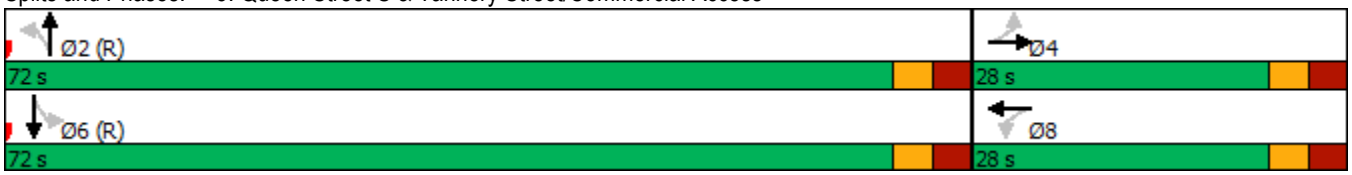


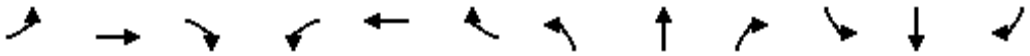
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	114	14	102	4	10	9	76	339	13	6	291	67
Future Volume (vph)	114	14	102	4	10	9	76	339	13	6	291	67
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	30.0		0.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	0		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	1700	1557	0	0	1746	0	0	3382	0	0	3289	0
Flt Permitted	0.741				0.953			0.808			0.949	
Satd. Flow (perm)	1309	1557	0	0	1677	0	0	2747	0	0	3124	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		109			10			7			58	
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		173.5			42.6			384.1			169.0	
Travel Time (s)		15.6			3.8			34.6			15.2	
Confl. Peds. (#/hr)	9		1	1		9	16		10	10		16
Confl. Bikes (#/hr)												
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	0%	4%	0%	0%	0%	0%	5%	0%	0%	4%	6%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	121	124	0	0	25	0	0	456	0	0	387	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	28.0	28.0		28.0	28.0		29.0	29.0		29.0	29.0	
Total Split (s)	28.0	28.0		28.0	28.0		72.0	72.0		72.0	72.0	
Total Split (%)	28.0%	28.0%		28.0%	28.0%		72.0%	72.0%		72.0%	72.0%	
Maximum Green (s)	22.0	22.0		22.0	22.0		66.0	66.0		66.0	66.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	-1.0	-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)	5.0	5.0			5.0			5.0			5.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	11.0	11.0		11.0	11.0		12.0	12.0		12.0	12.0	
Flash Dont Walk (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	15.9	15.9			15.9			74.1			74.1	
Actuated g/C Ratio	0.16	0.16			0.16			0.74			0.74	
v/c Ratio	0.58	0.37			0.09			0.22			0.17	
Control Delay	49.8	12.1			24.4			4.7			3.8	
Queue Delay	0.0	0.0			0.0			0.0			0.0	
Total Delay	49.8	12.1			24.4			4.7			3.8	
LOS	D	B			C			A			A	
Approach Delay		30.7			24.4			4.7			3.8	
Approach LOS		C			C			A			A	
Queue Length 50th (m)	23.3	2.7			2.7			12.2			8.4	
Queue Length 95th (m)	39.5	17.5			9.5			22.8			16.5	
Internal Link Dist (m)		149.5			18.6			360.1			145.0	
Turn Bay Length (m)	30.0											
Base Capacity (vph)	301	442			393			2038			2331	
Starvation Cap Reductn	0	0			0			0			0	
Spillback Cap Reductn	0	0			0			0			0	
Storage Cap Reductn	0	0			0			0			0	
Reduced v/c Ratio	0.40	0.28			0.06			0.22			0.17	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 84 (84%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.58			
Intersection Signal Delay: 10.5		Intersection LOS: B	
Intersection Capacity Utilization 62.3%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 3: Queen Street S & Tannery Street/Commercial Access

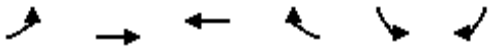




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	20	71	33	32	70	57	58	141	122	142	73	23
Future Volume (vph)	20	71	33	32	70	57	58	141	122	142	73	23
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	22	77	36	35	76	62	63	153	133	154	79	25

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	135	173	349	258
Volume Left (vph)	22	35	63	154
Volume Right (vph)	36	62	133	25
Hadj (s)	-0.06	-0.13	-0.14	0.12
Departure Headway (s)	5.8	5.6	5.1	5.5
Degree Utilization, x	0.22	0.27	0.49	0.39
Capacity (veh/h)	545	566	664	615
Control Delay (s)	10.4	10.7	12.9	11.9
Approach Delay (s)	10.4	10.7	12.9	11.9
Approach LOS	B	B	B	B

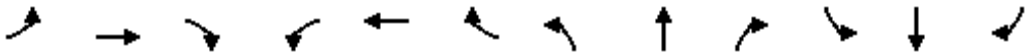
Intersection Summary				
Delay	11.9			
Level of Service	B			
Intersection Capacity Utilization	55.7%	ICU Level of Service	B	
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	213	1371	350	42	20	114
Future Volume (Veh/h)	213	1371	350	42	20	114
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	242	1558	398	48	23	130
Pedestrians					9	
Lane Width (m)					3.5	
Walking Speed (m/s)					1.2	
Percent Blockage					1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	455				1694	232
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	455				1694	232
tC, single (s)	4.1				7.0	7.0
tC, 2 stage (s)						
tF (s)	2.2				3.6	3.3
p0 queue free %	78				61	83
cM capacity (veh/h)	1094				60	755

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	761	1039	265	181	153
Volume Left	242	0	0	0	23
Volume Right	0	0	0	48	130
cSH	1094	1700	1700	1700	274
Volume to Capacity	0.22	0.61	0.16	0.11	0.56
Queue Length 95th (m)	6.8	0.0	0.0	0.0	25.1
Control Delay (s)	4.9	0.0	0.0	0.0	33.6
Lane LOS	A				D
Approach Delay (s)	2.1		0.0		33.6
Approach LOS					D

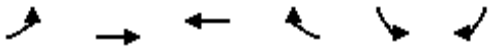
Intersection Summary			
Average Delay	3.7		
Intersection Capacity Utilization	73.9%	ICU Level of Service	D
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	190	112	28	123	2	25	20	35	5	9	19
Future Volume (Veh/h)	35	190	112	28	123	2	25	20	35	5	9	19
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	42	229	135	34	148	2	30	24	42	6	11	23
Pedestrians		1			3			9			21	
Lane Width (m)		3.5			3.5			3.5			3.5	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			1			2	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)					173							
pX, platoon unblocked												
vC, conflicting volume	171			373			636	628	308	676	695	171
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	171			373			636	628	308	676	695	171
tC, single (s)	4.1			4.2			7.1	6.5	6.3	7.1	6.6	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.5	4.0	3.4	3.5	4.1	3.3
p0 queue free %	97			97			91	93	94	98	97	97
cM capacity (veh/h)	1376			1150			342	363	715	304	326	862

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	406	184	96	40
Volume Left	42	34	30	6
Volume Right	135	2	42	23
cSH	1376	1150	452	499
Volume to Capacity	0.03	0.03	0.21	0.08
Queue Length 95th (m)	0.8	0.7	6.4	2.1
Control Delay (s)	1.1	1.7	15.1	12.8
Lane LOS	A	A	C	B
Approach Delay (s)	1.1	1.7	15.1	12.8
Approach LOS			C	B

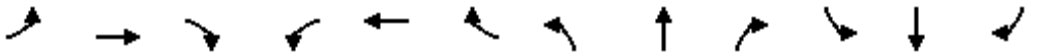
Intersection Summary			
Average Delay	3.7		
Intersection Capacity Utilization	38.0%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	3	332	159	8	5	0
Future Volume (Veh/h)	3	332	159	8	5	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.53	0.53	0.53	0.53	0.53	0.53
Hourly flow rate (vph)	6	626	300	15	9	0
Pedestrians		1	3		34	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		3	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			281			
pX, platoon unblocked						
vC, conflicting volume	349				982	342
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	349				982	342
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				97	100
cM capacity (veh/h)	1187				269	685

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	632	315	9
Volume Left	6	0	9
Volume Right	0	15	0
cSH	1187	1700	269
Volume to Capacity	0.01	0.19	0.03
Queue Length 95th (m)	0.1	0.0	0.8
Control Delay (s)	0.1	0.0	18.9
Lane LOS	A		C
Approach Delay (s)	0.1	0.0	18.9
Approach LOS			C

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	30.2%	ICU Level of Service	A
Analysis Period (min)	15		

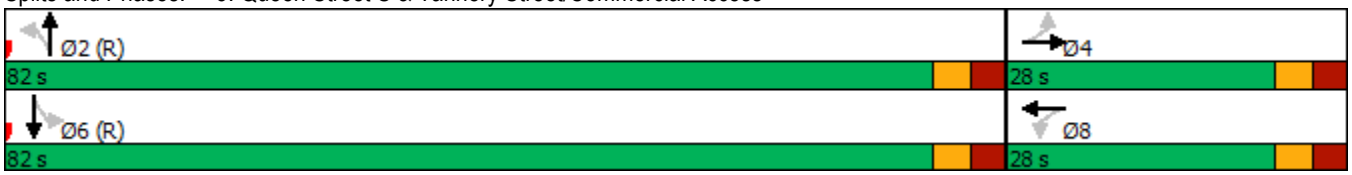


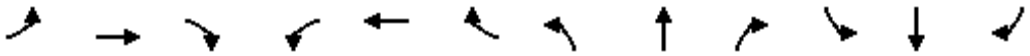
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	74	0	47	1	5	6	52	445	0	2	515	100
Future Volume (vph)	74	0	47	1	5	6	52	445	0	2	515	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	30.0		0.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	0		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	1750	1546	0	0	1715	0	0	3521	0	0	3395	0
Flt Permitted	0.748				0.981			0.812			0.954	
Satd. Flow (perm)	1348	1546	0	0	1687	0	0	2861	0	0	3238	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		331			7						48	
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		173.5			42.6			384.1			169.0	
Travel Time (s)		15.6			3.8			34.6			15.2	
Confl. Peds. (#/hr)	14		13	13		14	36		59	59		36
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	0%	0%	0%	0%	0%	0%	1%	0%	0%	1%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	82	52	0	0	14	0	0	552	0	0	685	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	28.0	28.0		28.0	28.0		29.0	29.0		29.0	29.0	
Total Split (s)	28.0	28.0		28.0	28.0		82.0	82.0		82.0	82.0	
Total Split (%)	25.5%	25.5%		25.5%	25.5%		74.5%	74.5%		74.5%	74.5%	
Maximum Green (s)	22.0	22.0		22.0	22.0		76.0	76.0		76.0	76.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	-1.0	-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)	5.0	5.0			5.0			5.0			5.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	11.0	11.0		11.0	11.0		12.0	12.0		12.0	12.0	
Flash Dont Walk (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	13.7	13.7			13.7			90.5			90.5	
Actuated g/C Ratio	0.12	0.12			0.12			0.82			0.82	
v/c Ratio	0.49	0.11			0.06			0.23			0.26	
Control Delay	54.3	0.4			29.2			3.4			3.2	
Queue Delay	0.0	0.0			0.0			0.0			0.0	
Total Delay	54.3	0.4			29.2			3.4			3.2	
LOS	D	A			C			A			A	
Approach Delay		33.4			29.2			3.4			3.2	
Approach LOS		C			C			A			A	
Queue Length 50th (m)	17.6	0.0			1.4			13.5			15.7	
Queue Length 95th (m)	32.2	0.0			7.2			24.0			27.3	
Internal Link Dist (m)		149.5			18.6			360.1			145.0	
Turn Bay Length (m)	30.0											
Base Capacity (vph)	281	585			358			2353			2672	
Starvation Cap Reductn	0	0			0			0			0	
Spillback Cap Reductn	0	0			0			0			0	
Storage Cap Reductn	0	0			0			0			0	
Reduced v/c Ratio	0.29	0.09			0.04			0.23			0.26	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 37 (34%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.49			
Intersection Signal Delay: 6.4		Intersection LOS: A	
Intersection Capacity Utilization 62.3%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 3: Queen Street S & Tannery Street/Commercial Access

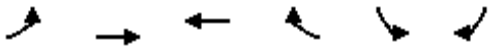




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	2	1	0	93	4	93	1	78	61	57	107	1
Future Volume (vph)	2	1	0	93	4	93	1	78	61	57	107	1
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	2	1	0	106	5	106	1	89	69	65	122	1

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	3	217	159	188
Volume Left (vph)	2	106	1	65
Volume Right (vph)	0	106	69	1
Hadj (s)	0.13	-0.20	-0.26	0.08
Departure Headway (s)	5.1	4.5	4.4	4.7
Degree Utilization, x	0.00	0.27	0.19	0.25
Capacity (veh/h)	628	743	771	725
Control Delay (s)	8.2	9.2	8.5	9.2
Approach Delay (s)	8.2	9.2	8.5	9.2
Approach LOS	A	A	A	A

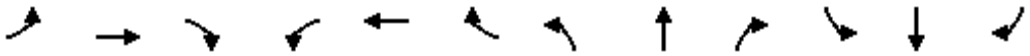
Intersection Summary				
Delay	9.0			
Level of Service	A			
Intersection Capacity Utilization	40.0%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	97	384	933	37	19	171
Future Volume (Veh/h)	97	384	933	37	19	171
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	108	427	1037	41	21	190
Pedestrians					9	
Lane Width (m)					3.5	
Walking Speed (m/s)					1.2	
Percent Blockage					1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1087				1496	548
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1087				1496	548
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	83				78	61
cM capacity (veh/h)	645				96	482

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	250	285	691	387	211
Volume Left	108	0	0	0	21
Volume Right	0	0	0	41	190
cSH	645	1700	1700	1700	344
Volume to Capacity	0.17	0.17	0.41	0.23	0.61
Queue Length 95th (m)	4.8	0.0	0.0	0.0	30.9
Control Delay (s)	6.3	0.0	0.0	0.0	30.8
Lane LOS	A				D
Approach Delay (s)	2.9		0.0		30.8
Approach LOS					D

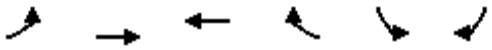
Intersection Summary			
Average Delay	4.4		
Intersection Capacity Utilization	62.1%	ICU Level of Service	B
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	69	24	37	112	8	31	26	49	3	23	49
Future Volume (Veh/h)	30	69	24	37	112	8	31	26	49	3	23	49
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	32	73	25	39	118	8	33	27	52	3	24	52
Pedestrians		1			6			2			7	
Lane Width (m)		3.5			3.5			3.5			3.5	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			0			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)					173							
pX, platoon unblocked												
vC, conflicting volume	133			100			416	362	94	428	371	130
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	133			100			416	362	94	428	371	130
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			97			93	95	95	99	95	94
cM capacity (veh/h)	1437			1484			479	537	963	466	525	919

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	130	165	112	79
Volume Left	32	39	33	3
Volume Right	25	8	52	52
cSH	1437	1484	647	727
Volume to Capacity	0.02	0.03	0.17	0.11
Queue Length 95th (m)	0.5	0.6	5.0	2.9
Control Delay (s)	2.0	1.9	11.7	10.6
Lane LOS	A	A	B	B
Approach Delay (s)	2.0	1.9	11.7	10.6
Approach LOS			B	B

Intersection Summary				
Average Delay	5.6			
Intersection Capacity Utilization	31.4%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	6	113	187	5	10	7
Future Volume (Veh/h)	6	113	187	5	10	7
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81
Hourly flow rate (vph)	7	140	231	6	12	9
Pedestrians			1		12	
Lane Width (m)			3.5		3.5	
Walking Speed (m/s)			1.2		1.2	
Percent Blockage			0		1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			281			
pX, platoon unblocked						
vC, conflicting volume	249				401	246
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	249				401	246
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				98	99
cM capacity (veh/h)	1316				599	790

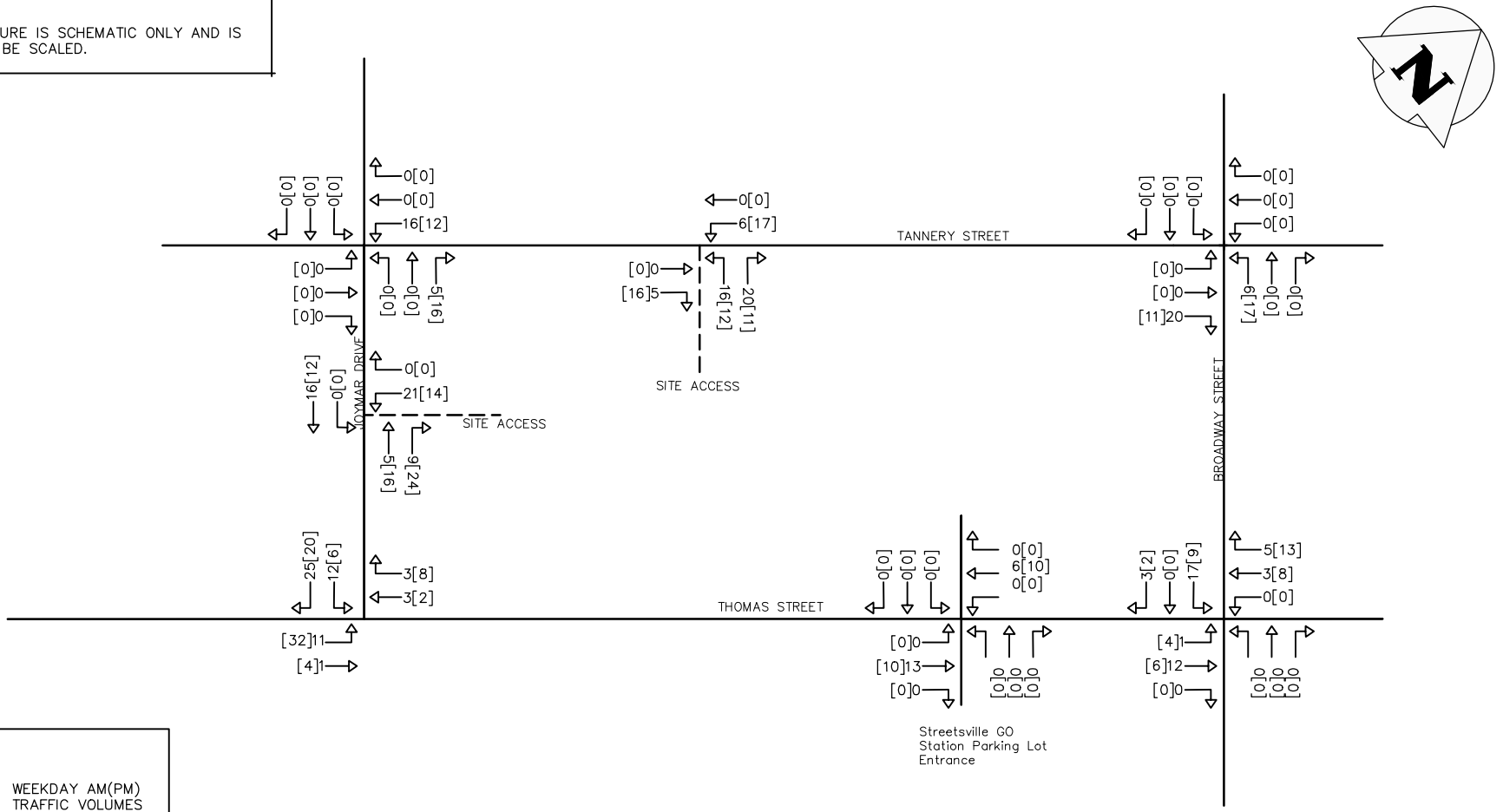
Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	147	237	21
Volume Left	7	0	12
Volume Right	0	6	9
cSH	1316	1700	668
Volume to Capacity	0.01	0.14	0.03
Queue Length 95th (m)	0.1	0.0	0.8
Control Delay (s)	0.4	0.0	10.6
Lane LOS	A		B
Approach Delay (s)	0.4	0.0	10.6
Approach LOS			B

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	21.2%	ICU Level of Service	A
Analysis Period (min)	15		

Appendix D
Background Development Traffic Volumes and Growth Rates

NOTE:

THIS FIGURE IS SCHEMATIC ONLY AND IS NOT TO BE SCALED.



LEGEND:

XX(XX) WEEKDAY AM(PM) TRAFFIC VOLUMES

66 THOMAS STREET CITY OF MISSISSAUGA

TRIP ASSIGNMENT

CROZIER & ASSOCIATES Consulting Engineers

2800 High Point Drive
Suite 100
Milton, ON L9T 6P4
905 875-0026 T
905 875-4915 F
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Drawn	Design	Project No.	
M.B.	K.S.	1419–4679	
Check K.S.	Check K.S.	Scale N.T.S	Dwg. FIG. 07

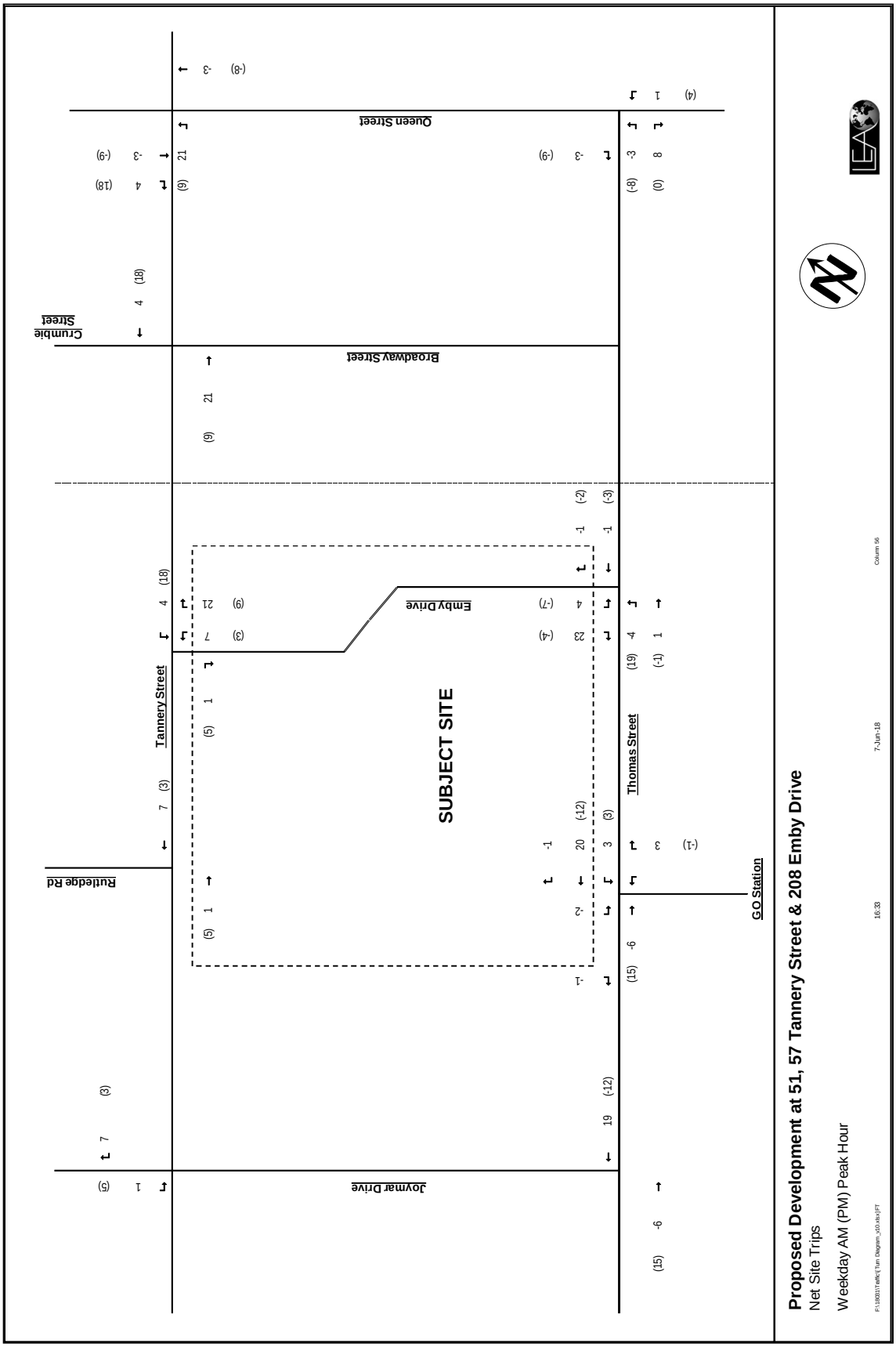
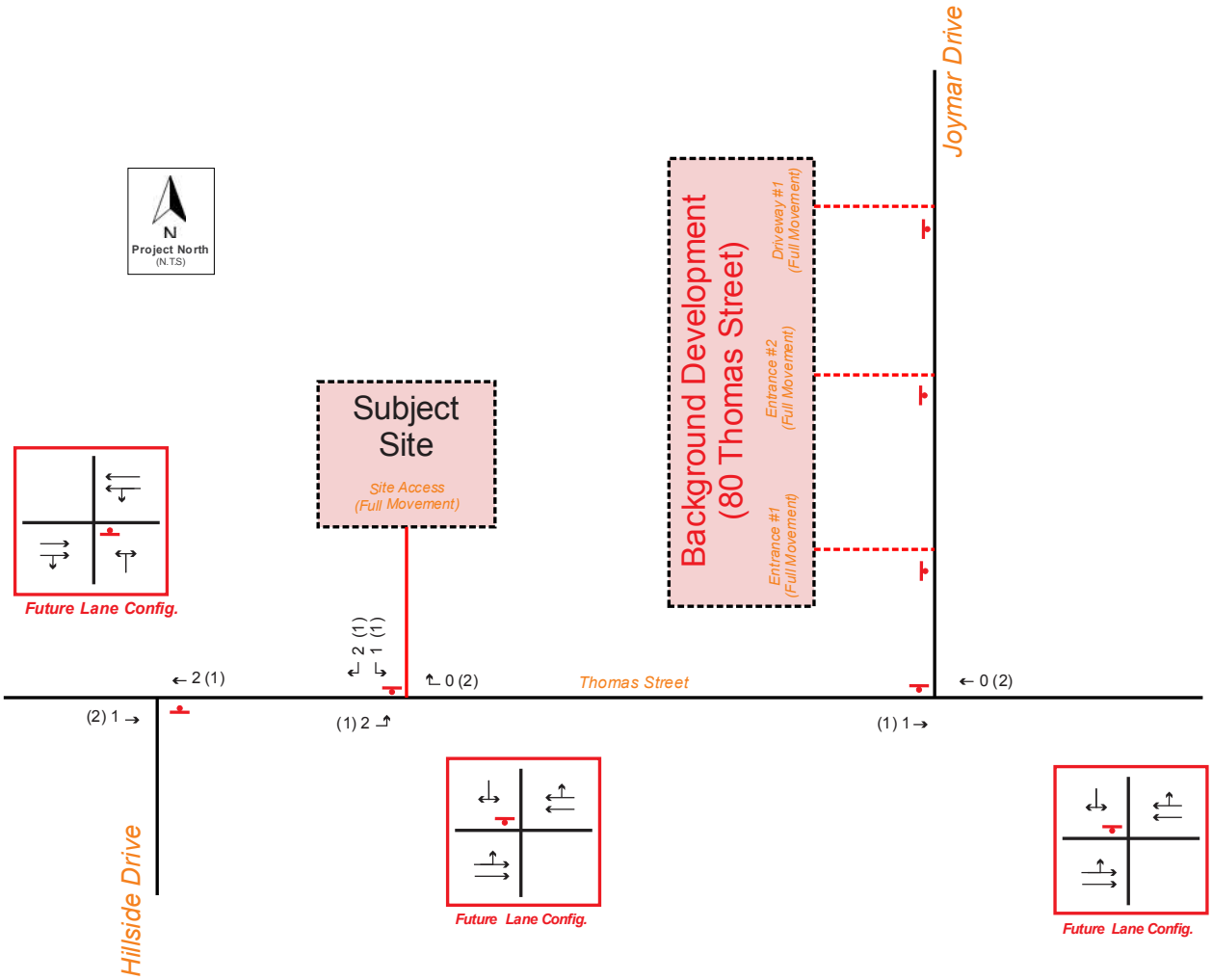


Figure 8: Net Site Trips

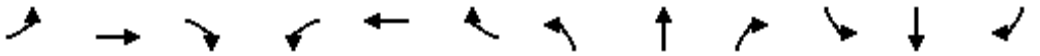
Figure 4-1 – Site Generated Traffic Volumes



5.0 FUTURE TOTAL TRAFFIC CONDITIONS

The forecasted 2024 future total traffic volumes (future background traffic volumes plus site generated traffic volumes) are illustrated in **Figure 5-1**, and were analyzed using Synchro 10 software. The detailed calculations are provided in **Appendix F** and summarized in **Table 5.1**.

Appendix E
Future Background Level of Service Calculations



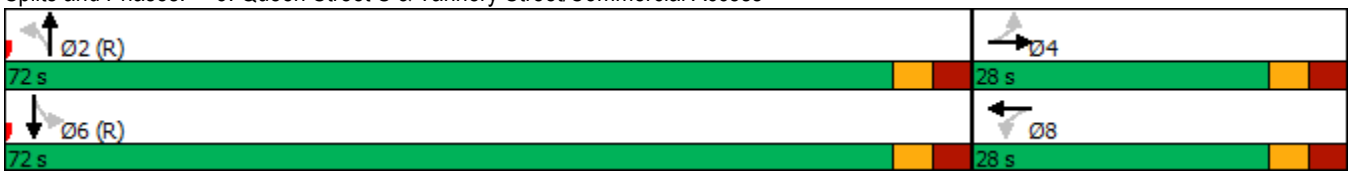
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	139	14	106	4	12	9	77	365	13	6	301	72
Future Volume (vph)	139	14	106	4	12	9	77	365	13	6	301	72
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	30.0		0.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	0		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	1700	1557	0	0	1756	0	0	3387	0	0	3284	0
Flt Permitted	0.740				0.958			0.808			0.949	
Satd. Flow (perm)	1308	1557	0	0	1694	0	0	2749	0	0	3119	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		113			10			6			62	
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		173.5			42.6			384.1			169.0	
Travel Time (s)		15.6			3.8			34.6			15.2	
Confl. Peds. (#/hr)	9		1	1		9	16		10	10		16
Confl. Bikes (#/hr)												
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	0%	4%	0%	0%	0%	0%	5%	0%	0%	4%	6%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	148	128	0	0	27	0	0	484	0	0	403	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	28.0	28.0		28.0	28.0		29.0	29.0		29.0	29.0	
Total Split (s)	28.0	28.0		28.0	28.0		72.0	72.0		72.0	72.0	
Total Split (%)	28.0%	28.0%		28.0%	28.0%		72.0%	72.0%		72.0%	72.0%	
Maximum Green (s)	22.0	22.0		22.0	22.0		66.0	66.0		66.0	66.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	-1.0	-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)	5.0	5.0			5.0			5.0			5.0	

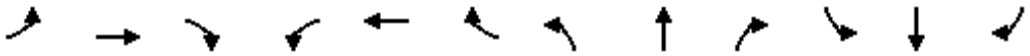
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	11.0	11.0		11.0	11.0		12.0	12.0		12.0	12.0	
Flash Dont Walk (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	17.3	17.3			17.3			72.7			72.7	
Actuated g/C Ratio	0.17	0.17			0.17			0.73			0.73	
v/c Ratio	0.65	0.35			0.09			0.24			0.18	
Control Delay	51.7	11.2			23.8			5.3			4.2	
Queue Delay	0.0	0.0			0.0			0.0			0.0	
Total Delay	51.7	11.2			23.8			5.3			4.2	
LOS	D	B			C			A			A	
Approach Delay		32.9			23.8			5.3			4.2	
Approach LOS		C			C			A			A	
Queue Length 50th (m)	28.4	2.6			2.9			14.5			9.6	
Queue Length 95th (m)	46.6	17.4			9.8			25.5			17.8	
Internal Link Dist (m)		149.5			18.6			360.1			145.0	
Turn Bay Length (m)	30.0											
Base Capacity (vph)	300	445			397			1999			2284	
Starvation Cap Reductn	0	0			0			0			0	
Spillback Cap Reductn	0	0			0			0			0	
Storage Cap Reductn	0	0			0			0			0	
Reduced v/c Ratio	0.49	0.29			0.07			0.24			0.18	

Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 84 (84%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.65
Intersection Signal Delay: 11.8 Intersection LOS: B
Intersection Capacity Utilization 63.6% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 3: Queen Street S & Tannery Street/Commercial Access

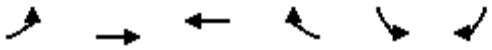




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	20	73	33	49	72	65	58	147	130	146	77	23
Future Volume (vph)	20	73	33	49	72	65	58	147	130	146	77	23
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	22	79	36	53	78	71	63	160	141	159	84	25

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	137	202	364	268
Volume Left (vph)	22	53	63	159
Volume Right (vph)	36	71	141	25
Hadj (s)	-0.06	-0.10	-0.15	0.13
Departure Headway (s)	6.0	5.8	5.2	5.6
Degree Utilization, x	0.23	0.33	0.53	0.42
Capacity (veh/h)	511	553	645	595
Control Delay (s)	10.7	11.6	14.0	12.7
Approach Delay (s)	10.7	11.6	14.0	12.7
Approach LOS	B	B	B	B

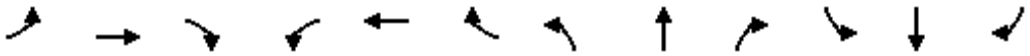
Intersection Summary				
Delay	12.7			
Level of Service	B			
Intersection Capacity Utilization	61.4%	ICU Level of Service	B	
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	229	1407	390	46	33	142
Future Volume (Veh/h)	229	1407	390	46	33	142
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	234	1436	398	47	34	145
Pedestrians					9	
Lane Width (m)					3.5	
Walking Speed (m/s)					1.2	
Percent Blockage					1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	454				1616	232
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	454				1616	232
tC, single (s)	4.1				7.0	7.0
tC, 2 stage (s)						
tF (s)	2.2				3.6	3.3
p0 queue free %	79				50	81
cM capacity (veh/h)	1095				68	756

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	713	957	265	180	179
Volume Left	234	0	0	0	34
Volume Right	0	0	0	47	145
cSH	1095	1700	1700	1700	259
Volume to Capacity	0.21	0.56	0.16	0.11	0.69
Queue Length 95th (m)	6.5	0.0	0.0	0.0	36.9
Control Delay (s)	4.8	0.0	0.0	0.0	45.2
Lane LOS	A				E
Approach Delay (s)	2.1		0.0		45.2
Approach LOS					E

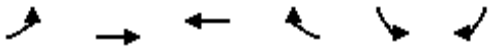
Intersection Summary			
Average Delay	5.0		
Intersection Capacity Utilization	78.7%	ICU Level of Service	D
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	206	132	28	131	2	31	21	35	5	9	19
Future Volume (Veh/h)	35	206	132	28	131	2	31	21	35	5	9	19
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	42	248	159	34	158	2	37	25	42	6	11	23
Pedestrians		1			3			9			21	
Lane Width (m)		3.5			3.5			3.5			3.5	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			1			2	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)					173							
pX, platoon unblocked												
vC, conflicting volume	181			416			677	670	340	717	748	181
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	181			416			677	670	340	717	748	181
tC, single (s)	4.1			4.2			7.1	6.5	6.3	7.1	6.6	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.5	4.0	3.4	3.5	4.1	3.3
p0 queue free %	97			97			88	93	94	98	96	97
cM capacity (veh/h)	1365			1108			320	343	687	283	303	851

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	449	194	104	40
Volume Left	42	34	37	6
Volume Right	159	2	42	23
cSH	1365	1108	417	473
Volume to Capacity	0.03	0.03	0.25	0.08
Queue Length 95th (m)	0.8	0.8	7.8	2.2
Control Delay (s)	1.0	1.7	16.5	13.3
Lane LOS	A	A	C	B
Approach Delay (s)	1.0	1.7	16.5	13.3
Approach LOS			C	B

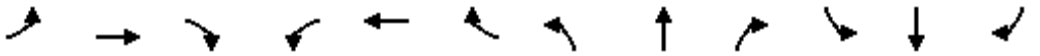
Intersection Summary				
Average Delay	3.8			
Intersection Capacity Utilization	41.5%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	3	361	176	8	5	0
Future Volume (Veh/h)	3	361	176	8	5	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.53	0.53	0.53	0.53	0.53	0.53
Hourly flow rate (vph)	6	681	332	15	9	0
Pedestrians		1	3		34	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		3	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			281			
pX, platoon unblocked						
vC, conflicting volume	381				1070	374
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	381				1070	374
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				96	100
cM capacity (veh/h)	1156				238	657

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	687	347	9
Volume Left	6	0	9
Volume Right	0	15	0
cSH	1156	1700	238
Volume to Capacity	0.01	0.20	0.04
Queue Length 95th (m)	0.1	0.0	0.9
Control Delay (s)	0.1	0.0	20.7
Lane LOS	A		C
Approach Delay (s)	0.1	0.0	20.7
Approach LOS			C

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	31.7%	ICU Level of Service	A
Analysis Period (min)	15		

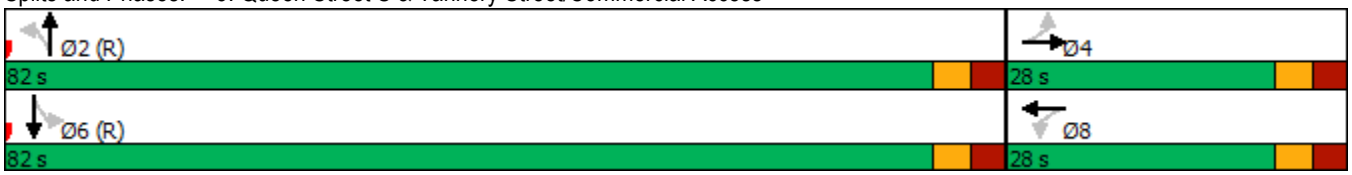


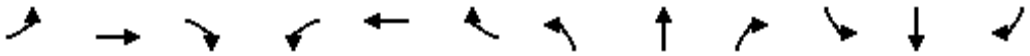
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	84	0	48	1	6	6	54	474	0	2	569	119
Future Volume (vph)	84	0	48	1	6	6	54	474	0	2	569	119
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	30.0		0.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	0		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	1750	1546	0	0	1728	0	0	3520	0	0	3384	0
Flt Permitted	0.748				0.983			0.798			0.954	
Satd. Flow (perm)	1348	1546	0	0	1701	0	0	2815	0	0	3228	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		295			7						53	
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		173.5			42.6			384.1			169.0	
Travel Time (s)		15.6			3.8			34.6			15.2	
Confl. Peds. (#/hr)	14		13	13		14	36		59	59		36
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	0%	0%	0%	0%	0%	0%	1%	0%	0%	1%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	93	53	0	0	15	0	0	587	0	0	766	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	28.0	28.0		28.0	28.0		29.0	29.0		29.0	29.0	
Total Split (s)	28.0	28.0		28.0	28.0		82.0	82.0		82.0	82.0	
Total Split (%)	25.5%	25.5%		25.5%	25.5%		74.5%	74.5%		74.5%	74.5%	
Maximum Green (s)	22.0	22.0		22.0	22.0		76.0	76.0		76.0	76.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	-1.0	-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)	5.0	5.0			5.0			5.0			5.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	11.0	11.0		11.0	11.0		12.0	12.0		12.0	12.0	
Flash Dont Walk (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	14.4	14.4			14.4			89.8			89.8	
Actuated g/C Ratio	0.13	0.13			0.13			0.82			0.82	
v/c Ratio	0.53	0.12			0.07			0.26			0.29	
Control Delay	54.8	0.5			29.1			3.7			3.5	
Queue Delay	0.0	0.0			0.0			0.0			0.0	
Total Delay	54.8	0.5			29.1			3.7			3.5	
LOS	D	A			C			A			A	
Approach Delay		35.1			29.1			3.7			3.5	
Approach LOS		D			C			A			A	
Queue Length 50th (m)	20.0	0.0			1.6			15.5			19.2	
Queue Length 95th (m)	35.6	0.0			7.5			27.3			33.0	
Internal Link Dist (m)		149.5			18.6			360.1			145.0	
Turn Bay Length (m)	30.0											
Base Capacity (vph)	281	556			361			2297			2643	
Starvation Cap Reductn	0	0			0			0			0	
Spillback Cap Reductn	0	0			0			0			0	
Storage Cap Reductn	0	0			0			0			0	
Reduced v/c Ratio	0.33	0.10			0.04			0.26			0.29	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 37 (34%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.53			
Intersection Signal Delay: 6.9		Intersection LOS: A	
Intersection Capacity Utilization 64.4%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 3: Queen Street S & Tannery Street/Commercial Access

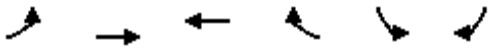




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	2	2	0	106	6	97	1	81	78	63	111	1
Future Volume (vph)	2	2	0	106	6	97	1	81	78	63	111	1
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	2	2	0	120	7	110	1	92	89	72	126	1

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	4	237	182	199
Volume Left (vph)	2	120	1	72
Volume Right (vph)	0	110	89	1
Hadj (s)	0.10	-0.18	-0.29	0.08
Departure Headway (s)	5.2	4.6	4.5	4.8
Degree Utilization, x	0.01	0.30	0.23	0.26
Capacity (veh/h)	610	725	761	708
Control Delay (s)	8.3	9.6	8.7	9.5
Approach Delay (s)	8.3	9.6	8.7	9.5
Approach LOS	A	A	A	A

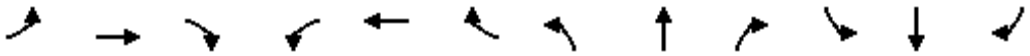
Intersection Summary				
Delay	9.3			
Level of Service	A			
Intersection Capacity Utilization	44.8%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	131	449	984	46	25	195
Future Volume (Veh/h)	131	449	984	46	25	195
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	134	458	1004	47	26	199
Pedestrians					9	
Lane Width (m)					3.5	
Walking Speed (m/s)					1.2	
Percent Blockage					1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1060				1534	534
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1060				1534	534
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	80				70	60
cM capacity (veh/h)	660				86	492

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	287	305	669	382	225
Volume Left	134	0	0	0	26
Volume Right	0	0	0	47	199
cSH	660	1700	1700	1700	319
Volume to Capacity	0.20	0.18	0.39	0.22	0.71
Queue Length 95th (m)	6.0	0.0	0.0	0.0	40.2
Control Delay (s)	6.9	0.0	0.0	0.0	39.3
Lane LOS	A				E
Approach Delay (s)	3.4		0.0		39.3
Approach LOS					E

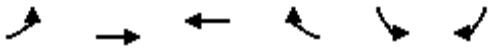
Intersection Summary			
Average Delay	5.8		
Intersection Capacity Utilization	68.4%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	76	35	37	134	8	48	27	49	3	24	49
Future Volume (Veh/h)	30	76	35	37	134	8	48	27	49	3	24	49
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	32	80	37	39	141	8	51	28	52	3	25	52
Pedestrians		1			6			2			7	
Lane Width (m)		3.5			3.5			3.5			3.5	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			0			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)					173							
pX, platoon unblocked												
vC, conflicting volume	156			119			453	398	106	464	413	153
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	156			119			453	398	106	464	413	153
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			97			89	95	95	99	95	94
cM capacity (veh/h)	1410			1460			450	512	947	439	497	893

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	149	188	131	80
Volume Left	32	39	51	3
Volume Right	37	8	52	52
cSH	1410	1460	588	693
Volume to Capacity	0.02	0.03	0.22	0.12
Queue Length 95th (m)	0.6	0.7	6.8	3.1
Control Delay (s)	1.8	1.7	12.9	10.9
Lane LOS	A	A	B	B
Approach Delay (s)	1.8	1.7	12.9	10.9
Approach LOS			B	B

Intersection Summary				
Average Delay	5.7			
Intersection Capacity Utilization	33.5%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	6	132	211	5	10	7
Future Volume (Veh/h)	6	132	211	5	10	7
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81
Hourly flow rate (vph)	7	163	260	6	12	9
Pedestrians			1		12	
Lane Width (m)			3.5		3.5	
Walking Speed (m/s)			1.2		1.2	
Percent Blockage			0		1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			281			
pX, platoon unblocked						
vC, conflicting volume	278				453	275
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	278				453	275
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				98	99
cM capacity (veh/h)	1284				559	761

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	170	266	21
Volume Left	7	0	12
Volume Right	0	6	9
cSH	1284	1700	631
Volume to Capacity	0.01	0.16	0.03
Queue Length 95th (m)	0.1	0.0	0.8
Control Delay (s)	0.4	0.0	10.9
Lane LOS	A		B
Approach Delay (s)	0.4	0.0	10.9
Approach LOS			B

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	22.1%	ICU Level of Service	A
Analysis Period (min)	15		

Appendix F
2016 Transportation Tomorrow Survey (TTS)
Data Analysis

Mode of Transportation - AM Peak Period

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: Primary travel mode of trip - mode_prime
Column: 2006 GTA zone of household - gta06_hhld

Filters:
Primary travel mode of trip - mode_prime In B
and
Start time of trip - start_time In 600-900
and
2006 GTA zone of household - gta06_hhld In 3715

C D G J M P T U W

3718 3836

Trip 2016
Table:

Mode of Transportation/Traffic Zones	3715	3718	3836	Total	Percentage
Transit excluding GO rail	223	85	14	322	6%
Cycle	15	0	0	15	0%
Auto driver	2071	1239	447	3757	68%
GO rail only	144	59	0	203	4%
Joint GO rail and local transit	84	32	10	126	2%
Auto passenger	252	394	106	752	14%
Taxi passenger	0	19	0	19	0%
Walk	216	85	0	301	5%
Total	**3005**	**1913**	**577**	**5495**	**100%**

Mode of Transportation - PM Peak Period

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: Primary travel mode of trip - mode_prime
Column: 2006 GTA zone of household - gta06_hhld

Filters:
Primary travel mode of trip - mode_prime In B C D G J M P T U W
and
Start time of trip - start_time In 1600-1900
and
2006 GTA zone of household - gta06_hhld In 3715 3718 3836

Trip 2016
Table:

Mode of Transportation/Traffic Zones	3715	3718	3836	Total	Percentage
Transit excluding GO rail	43	59	23	125	2%
Cycle	32	0	0	32	1%
Auto driver	1845	1469	581	3895	73%
GO rail only	123	59	0	182	3%
Joint GO rail and local transit	92	29	10	131	2%
Auto passenger	215	391	222	828	16%
Walk	64	45	0	109	2%
Total	**2414**	**2052**	**836**	**5302**	**100%**

Auto Distribution

Cross Tabulation Query Form - Trip - 2016 v1.1

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

Filters:
Primary travel mode of trip - mode_prime In D M P T U
and
Start time of trip - start_time In 600-900
and
2006 GTA zone of origin - gta06_orig In 3715 3718 3836

Trip 2016
Table:

	PD 1 of Toronto	PD 2 of Toronto	PD 3 of Toronto	PD 4 of Toronto	PD 7 of Toronto	PD 8 of Toronto	PD 9 of Toronto	PD 10 of Toronto	PD 13 of Toronto	PD 16 of Toronto	Clarington	Richmond Hill	Whitchurch-Stouffville	Markham	Vaughan	Caledon	Brampton	Mississauga	Halton Hills	Milton	Oakville	Burlington	Flamborough	Hamilton	External	
3715	0	6	31	0	0	6	39	0	32	66	0	0	21	16	41	23	129	2004	0	31	59	57	18	66	0	
3718	74	8	0	7	0	5	35	5	0	6	12	3	0	0	43	0	90	1148	11	38	63	7	0	0	12	
3836	0	0	0	0	56	0	0	0	0	0	0	0	0	0	3	0	40	505	31	0	56	0	0	0	0	
	74	14	31	7	56	11	74	5	32	72	12	3	21	16	87	23	259	3657	42	69	178	64	18	66	12	4903
	2%	0%	1%	0%	1%	0%	2%	0%	1%	1%	0%	0%	0%	0%	2%	0%	5%	75%	1%	1%	4%	1%	0%	1%	0%	100%

Mississauga	75%	
Toronto	8%	
York Region	3%	
Caledon	0%	
Brampton	5%	
Halton Region	9%	
	100%	
		round off
North	12%	10%
South	23%	25%
East	35%	35%
West	30%	30%
	100%	100%

Auto Distribution - Mississauga

Cross Tabulation Query Form - Trip - 2016 v1.1

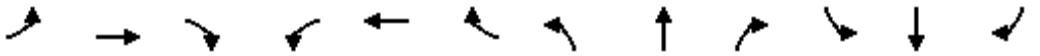
Row: 2006 GTA zone of origin - gta06_orig
Column: Ward number of destination - ward_dest

Filters:
Primary travel mode of trip - mode_prime In D M P T U
and
Start time of trip - start_time In 600-900
and
2006 GTA zone of origin - gta06_orig In 3715 3718 3836
and
Ward number of destination - ward_dest In 136-146

Trip 2016
Table:

Mississauga Ward No.	1	2	3	4	5	6	7	8	9	10	11	Total
TTS Ward No.	136	137	138	139	140	141	142	143	144	145	146	
3715	35	14	55	144	472	131	5	263	93	221	572	
3718	0	34	0	4	210	126	18	131	358	80	188	
3836	0	0	0	52	192	15	51	84	62	35	14	
	35	48	55	200	874	272	74	478	513	336	774	3659
	1%	1%	2%	5%	24%	7%	2%	13%	14%	9%	21%	100%
			75%									
	North	5%	4%									
	South	30%	22%									
	East	36%	27%									
	West	28%	21%									
		100%	75%									

Appendix G
Future Total Level of Service Calculations



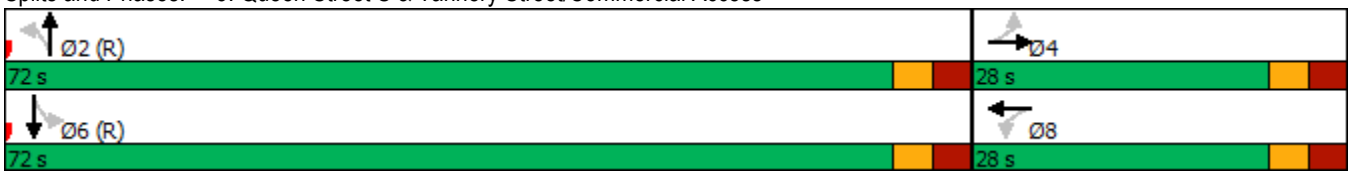
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	154	14	139	4	12	9	87	365	13	6	307	77
Future Volume (vph)	154	14	139	4	12	9	87	365	13	6	307	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	30.0		0.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	0		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	1700	1547	0	0	1756	0	0	3387	0	0	3279	0
Flt Permitted	0.740				0.956			0.788			0.949	
Satd. Flow (perm)	1308	1547	0	0	1691	0	0	2682	0	0	3114	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		148			10			6			66	
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		173.5			42.6			384.1			169.0	
Travel Time (s)		15.6			3.8			34.6			15.2	
Confl. Peds. (#/hr)	9		1	1		9	16		10	10		16
Confl. Bikes (#/hr)												
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	0%	4%	0%	0%	0%	0%	5%	0%	0%	4%	6%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	164	163	0	0	27	0	0	495	0	0	415	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	28.0	28.0		28.0	28.0		29.0	29.0		29.0	29.0	
Total Split (s)	28.0	28.0		28.0	28.0		72.0	72.0		72.0	72.0	
Total Split (%)	28.0%	28.0%		28.0%	28.0%		72.0%	72.0%		72.0%	72.0%	
Maximum Green (s)	22.0	22.0		22.0	22.0		66.0	66.0		66.0	66.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	-1.0	-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)	5.0	5.0			5.0			5.0			5.0	

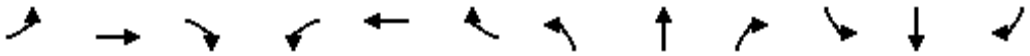
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	11.0	11.0		11.0	11.0		12.0	12.0		12.0	12.0	
Flash Dont Walk (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	18.1	18.1			18.1			71.9			71.9	
Actuated g/C Ratio	0.18	0.18			0.18			0.72			0.72	
v/c Ratio	0.69	0.41			0.09			0.26			0.18	
Control Delay	53.4	10.3			23.4			5.7			4.4	
Queue Delay	0.0	0.0			0.0			0.0			0.0	
Total Delay	53.4	10.3			23.4			5.7			4.4	
LOS	D	B			C			A			A	
Approach Delay		31.9			23.4			5.7			4.4	
Approach LOS		C			C			A			A	
Queue Length 50th (m)	31.4	2.6			2.9			15.9			10.4	
Queue Length 95th (m)	51.4	19.1			9.8			26.4			18.3	
Internal Link Dist (m)		149.5			18.6			360.1			145.0	
Turn Bay Length (m)	30.0											
Base Capacity (vph)	300	469			396			1931			2258	
Starvation Cap Reductn	0	0			0			0			0	
Spillback Cap Reductn	0	0			0			0			0	
Storage Cap Reductn	0	0			0			0			0	
Reduced v/c Ratio	0.55	0.35			0.07			0.26			0.18	

Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 84 (84%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.69
Intersection Signal Delay: 12.4 Intersection LOS: B
Intersection Capacity Utilization 64.4% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 3: Queen Street S & Tannery Street/Commercial Access

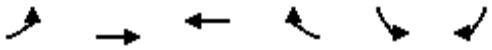




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	20	73	33	77	72	82	58	147	138	151	77	23
Future Volume (vph)	20	73	33	77	72	82	58	147	138	151	77	23
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	22	79	36	84	78	89	63	160	150	164	84	25

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	137	251	373	273
Volume Left (vph)	22	84	63	164
Volume Right (vph)	36	89	150	25
Hadj (s)	-0.06	-0.08	-0.16	0.13
Departure Headway (s)	6.2	5.9	5.5	5.9
Degree Utilization, x	0.24	0.41	0.57	0.45
Capacity (veh/h)	487	546	619	555
Control Delay (s)	11.2	13.1	15.3	13.5
Approach Delay (s)	11.2	13.1	15.3	13.5
Approach LOS	B	B	C	B

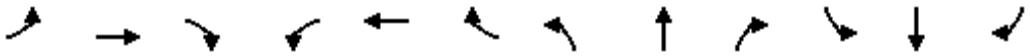
Intersection Summary				
Delay	13.8			
Level of Service	B			
Intersection Capacity Utilization	64.8%	ICU Level of Service	C	
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	237	1407	390	46	33	170
Future Volume (Veh/h)	237	1407	390	46	33	170
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	242	1436	398	47	34	173
Pedestrians					9	
Lane Width (m)					3.5	
Walking Speed (m/s)					1.2	
Percent Blockage					1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	454				1632	232
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	454				1632	232
tC, single (s)	4.1				7.0	7.0
tC, 2 stage (s)						
tF (s)	2.2				3.6	3.3
p0 queue free %	78				48	77
cM capacity (veh/h)	1095				66	756

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	721	957	265	180	207
Volume Left	242	0	0	0	34
Volume Right	0	0	0	47	173
cSH	1095	1700	1700	1700	277
Volume to Capacity	0.22	0.56	0.16	0.11	0.75
Queue Length 95th (m)	6.8	0.0	0.0	0.0	43.7
Control Delay (s)	5.0	0.0	0.0	0.0	48.3
Lane LOS	A				E
Approach Delay (s)	2.1		0.0		48.3
Approach LOS					E

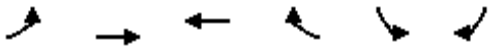
Intersection Summary			
Average Delay	5.8		
Intersection Capacity Utilization	80.7%	ICU Level of Service	D
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	254	132	28	146	2	31	21	35	5	9	19
Future Volume (Veh/h)	35	254	132	28	146	2	31	21	35	5	9	19
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	42	306	159	34	176	2	37	25	42	6	11	23
Pedestrians		1			3			9			21	
Lane Width (m)		3.5			3.5			3.5			3.5	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			1			2	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)					173							
pX, platoon unblocked												
vC, conflicting volume	199			474			753	746	398	793	824	199
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	199			474			753	746	398	793	824	199
tC, single (s)	4.1			4.2			7.1	6.5	6.3	7.1	6.6	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.5	4.0	3.4	3.5	4.1	3.3
p0 queue free %	97			97			87	92	93	98	96	97
cM capacity (veh/h)	1344			1055			283	310	637	248	273	832

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	507	212	104	40
Volume Left	42	34	37	6
Volume Right	159	2	42	23
cSH	1344	1055	375	434
Volume to Capacity	0.03	0.03	0.28	0.09
Queue Length 95th (m)	0.8	0.8	8.9	2.4
Control Delay (s)	0.9	1.6	18.3	14.1
Lane LOS	A	A	C	B
Approach Delay (s)	0.9	1.6	18.3	14.1
Approach LOS			C	B

Intersection Summary				
Average Delay	3.8			
Intersection Capacity Utilization	44.3%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	16	361	176	23	53	45
Future Volume (Veh/h)	16	361	176	23	53	45
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.53	0.53	0.53	0.53	0.53	0.53
Hourly flow rate (vph)	30	681	332	43	100	85
Pedestrians		1	3		34	
Lane Width (m)		3.5	3.5		3.5	
Walking Speed (m/s)		1.2	1.2		1.2	
Percent Blockage		0	0		3	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			281			
pX, platoon unblocked						
vC, conflicting volume	409				1132	388
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	409				1132	388
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				53	87
cM capacity (veh/h)	1129				214	645

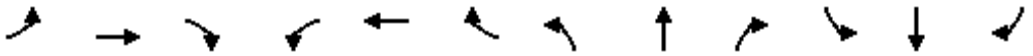
Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	711	375	185
Volume Left	30	0	100
Volume Right	0	43	85
cSH	1129	1700	309
Volume to Capacity	0.03	0.22	0.60
Queue Length 95th (m)	0.7	0.0	29.0
Control Delay (s)	0.7	0.0	32.6
Lane LOS	A		D
Approach Delay (s)	0.7	0.0	32.6
Approach LOS			D

Intersection Summary			
Average Delay	5.1		
Intersection Capacity Utilization	44.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	5	0	28	11	0	93
Future Volume (Veh/h)	5	0	28	11	0	93
Sign Control	Free		Stop			Stop
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	0	30	12	0	101
Pedestrians	10		10			10
Lane Width (m)	3.5		3.5			3.5
Walking Speed (m/s)	1.2		1.2			1.2
Percent Blockage	1		1			1
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	10		30	20	57	30
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	10		30	20	57	30
tC, single (s)	4.1		6.5	6.2	7.1	6.5
tC, 2 stage (s)						
tF (s)	2.2		4.0	3.3	3.5	4.0
p0 queue free %	100		96	99	100	88
cM capacity (veh/h)	1610		850	1046	881	850

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	5	42	101
Volume Left	5	0	0
Volume Right	0	12	0
cSH	1610	898	850
Volume to Capacity	0.00	0.05	0.12
Queue Length 95th (m)	0.1	1.2	3.2
Control Delay (s)	7.2	9.2	9.8
Lane LOS	A	A	A
Approach Delay (s)	7.2	9.2	9.8
Approach LOS		A	A

Intersection Summary			
Average Delay	9.5		
Intersection Capacity Utilization	19.0%	ICU Level of Service	A
Analysis Period (min)	15		

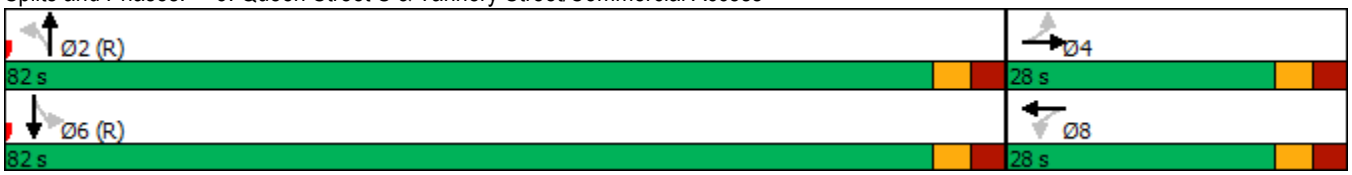


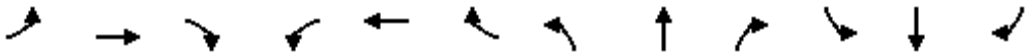
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	92	1	64	1	6	6	79	474	0	2	569	132
Future Volume (vph)	92	1	64	1	6	6	79	474	0	2	569	132
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Grade (%)		0%			0%			0%			0%	
Storage Length (m)	30.0		0.0	0.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	0		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Satd. Flow (prot)	1750	1550	0	0	1728	0	0	3515	0	0	3372	0
Flt Permitted	0.748				0.985			0.731			0.954	
Satd. Flow (perm)	1348	1550	0	0	1705	0	0	2575	0	0	3216	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		71			7						61	
Link Speed (k/h)		40			40			40			40	
Link Distance (m)		173.5			42.6			384.1			169.0	
Travel Time (s)		15.6			3.8			34.6			15.2	
Confl. Peds. (#/hr)	14		13	13		14	36		59	59		36
Confl. Bikes (#/hr)												
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	0%	0%	0%	0%	0%	0%	1%	0%	0%	1%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	102	72	0	0	15	0	0	615	0	0	781	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	28.0	28.0		28.0	28.0		29.0	29.0		29.0	29.0	
Total Split (s)	28.0	28.0		28.0	28.0		82.0	82.0		82.0	82.0	
Total Split (%)	25.5%	25.5%		25.5%	25.5%		74.5%	74.5%		74.5%	74.5%	
Maximum Green (s)	22.0	22.0		22.0	22.0		76.0	76.0		76.0	76.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	-1.0	-1.0			-1.0			-1.0			-1.0	
Total Lost Time (s)	5.0	5.0			5.0			5.0			5.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	11.0	11.0		11.0	11.0		12.0	12.0		12.0	12.0	
Flash Dont Walk (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	15.1	15.1			15.1			84.9			84.9	
Actuated g/C Ratio	0.14	0.14			0.14			0.77			0.77	
v/c Ratio	0.55	0.26			0.06			0.31			0.31	
Control Delay	55.2	12.0			28.6			4.6			4.1	
Queue Delay	0.0	0.0			0.0			0.0			0.0	
Total Delay	55.2	12.0			28.6			4.6			4.1	
LOS	E	B			C			A			A	
Approach Delay		37.3			28.6			4.6			4.1	
Approach LOS		D			C			A			A	
Queue Length 50th (m)	21.9	0.2			1.6			17.5			20.1	
Queue Length 95th (m)	37.8	12.8			7.4			31.1			35.0	
Internal Link Dist (m)		149.5			18.6			360.1			145.0	
Turn Bay Length (m)	30.0											
Base Capacity (vph)	281	380			362			1988			2497	
Starvation Cap Reductn	0	0			0			0			0	
Spillback Cap Reductn	0	0			0			0			0	
Storage Cap Reductn	0	0			0			0			0	
Reduced v/c Ratio	0.36	0.19			0.04			0.31			0.31	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 37 (34%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.55			
Intersection Signal Delay: 8.1		Intersection LOS: A	
Intersection Capacity Utilization 65.2%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 3: Queen Street S & Tannery Street/Commercial Access

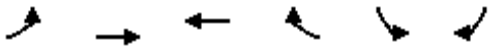




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	2	2	0	120	6	105	1	81	100	75	111	1
Future Volume (vph)	2	2	0	120	6	105	1	81	100	75	111	1
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	2	2	0	136	7	119	1	92	114	85	126	1

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	4	262	207	212
Volume Left (vph)	2	136	1	85
Volume Right (vph)	0	119	114	1
Hadj (s)	0.10	-0.17	-0.33	0.09
Departure Headway (s)	5.4	4.7	4.5	4.9
Degree Utilization, x	0.01	0.34	0.26	0.29
Capacity (veh/h)	585	708	748	689
Control Delay (s)	8.4	10.2	9.1	9.9
Approach Delay (s)	8.4	10.2	9.1	9.9
Approach LOS	A	B	A	A

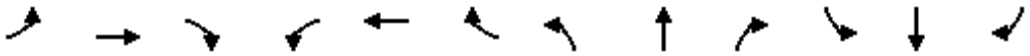
Intersection Summary				
Delay	9.8			
Level of Service	A			
Intersection Capacity Utilization	48.4%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	153	449	984	46	25	209
Future Volume (Veh/h)	153	449	984	46	25	209
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	156	458	1004	47	26	213
Pedestrians					9	
Lane Width (m)					3.5	
Walking Speed (m/s)					1.2	
Percent Blockage					1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1060				1578	534
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1060				1578	534
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	76				66	57
cM capacity (veh/h)	660				77	492

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	309	305	669	382	239
Volume Left	156	0	0	0	26
Volume Right	0	0	0	47	213
cSH	660	1700	1700	1700	311
Volume to Capacity	0.24	0.18	0.39	0.22	0.77
Queue Length 95th (m)	7.3	0.0	0.0	0.0	47.9
Control Delay (s)	7.7	0.0	0.0	0.0	46.5
Lane LOS	A				E
Approach Delay (s)	3.9		0.0		46.5
Approach LOS					E

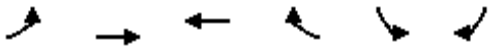
Intersection Summary			
Average Delay	7.1		
Intersection Capacity Utilization	69.9%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	100	35	37	172	8	48	27	49	3	24	49
Future Volume (Veh/h)	30	100	35	37	172	8	48	27	49	3	24	49
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	32	105	37	39	181	8	51	28	52	3	25	52
Pedestrians		1			6			2			7	
Lane Width (m)		3.5			3.5			3.5			3.5	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			0			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)					173							
pX, platoon unblocked												
vC, conflicting volume	196			144			518	464	132	530	478	193
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	196			144			518	464	132	530	478	193
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			97			87	94	94	99	95	94
cM capacity (veh/h)	1363			1430			405	470	917	395	456	848

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	174	228	131	80
Volume Left	32	39	51	3
Volume Right	37	8	52	52
cSH	1363	1430	541	647
Volume to Capacity	0.02	0.03	0.24	0.12
Queue Length 95th (m)	0.6	0.7	7.5	3.4
Control Delay (s)	1.6	1.5	13.8	11.4
Lane LOS	A	A	B	B
Approach Delay (s)	1.6	1.5	13.8	11.4
Approach LOS			B	B

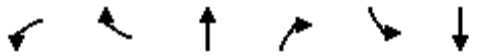
Intersection Summary				
Average Delay	5.4			
Intersection Capacity Utilization	35.9%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	40	132	211	43	30	29
Future Volume (Veh/h)	40	132	211	43	30	29
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81
Hourly flow rate (vph)	49	163	260	53	37	36
Pedestrians			1		12	
Lane Width (m)			3.5		3.5	
Walking Speed (m/s)			1.2		1.2	
Percent Blockage			0		1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			281			
pX, platoon unblocked						
vC, conflicting volume	325				560	298
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	325				560	298
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	96				92	95
cM capacity (veh/h)	1234				468	738

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	212	313	73
Volume Left	49	0	37
Volume Right	0	53	36
cSH	1234	1700	571
Volume to Capacity	0.04	0.18	0.13
Queue Length 95th (m)	1.0	0.0	3.5
Control Delay (s)	2.1	0.0	12.2
Lane LOS	A		B
Approach Delay (s)	2.1	0.0	12.2
Approach LOS			B

Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	36.5%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	13	0	72	11	0	46
Future Volume (Veh/h)	13	0	72	11	0	46
Sign Control	Free		Stop			Stop
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	14	0	78	12	0	50
Pedestrians	10		10			10
Lane Width (m)	3.5		3.5			3.5
Walking Speed (m/s)	1.2		1.2			1.2
Percent Blockage	1		1			1
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	10		48	20	99	48
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	10		48	20	99	48
tC, single (s)	4.1		6.5	6.2	7.1	6.5
tC, 2 stage (s)						
tF (s)	2.2		4.0	3.3	3.5	4.0
p0 queue free %	99		91	99	100	94
cM capacity (veh/h)	1597		826	1041	786	826

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	14	90	50
Volume Left	14	0	0
Volume Right	0	12	0
cSH	1597	850	826
Volume to Capacity	0.01	0.11	0.06
Queue Length 95th (m)	0.2	2.8	1.5
Control Delay (s)	7.3	9.7	9.6
Lane LOS	A	A	A
Approach Delay (s)	7.3	9.7	9.6
Approach LOS		A	A

Intersection Summary			
Average Delay	9.5		
Intersection Capacity Utilization	19.9%	ICU Level of Service	A
Analysis Period (min)	15		

Appendix H
Signal Warrant Analysis

Signal Warrant Calculation (OTM Book 12 - Justification 7)

Major Street: Thomas Street

Minor Street: Joymar Drive

Comment Future Total (2027) Traffic Condition

Number of Approaches: 1 [ ] 2 [X]

Tee Intersection Configuration: Yes [X] No [ ]

Flow Condition: Free Flow (Rural) [ ]
Restricted Flow (Urban) [X]

VOLUME	AM	PM	FACTOR *	
1A - All	2,283	1,866	n/a	1,037
1B - Minor	203	234	25%	109
2A - Major	2,080	1,632	25%	928
2B - Crossi	152	102	25%	64

* This factor relates average of the "peak eight hours" to the average of the "am and pm peak hours"

OVERALL WARRANT

150% Satisfied:	Yes [ ]	No [X]	Warrant for new intersection with forecast traffic
120% Satisfied:	Yes [ ]	No [X]	Warrant for existing intersection with forecast traffic
100% Satisfied:	Yes [X]	No [ ]	Warrant for existing intersection with existing traffic *
COMBO 80% Satisfied:	Yes [ ]	No [X]	Warrant for existing intersection with existing traffic
80% Satisfied:	Yes [X]	No [ ]	

* Consider full underground provisions if 100% for forecast traffic

WARRANT 1 - MINIMUM VEHICULAR VOLUME

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW X	
ALL APPROACHES	480	720	600	900	1037
	% FULFILLED				115%
APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW X	REST. FLOW	FREE FLOW	REST. FLOW	
MINOR STREET APPROACHES	180	255	180	255	109
	% FULFILLED				61%

150% Satisfied:	Yes [ ]	No [X]
120% Satisfied:	Yes [ ]	No [X]
100% Satisfied:	Yes [ ]	No [X]
80% Satisfied:	Yes [ ]	No [X]

WARRANT 2 - DELAY TO CROSS TRAFFIC

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW X	
MAJOR STREET APPROACHES	480	720	600	900	928
	% FULFILLED				103%
APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW X	REST. FLOW	FREE FLOW	REST. FLOW	
TRAFFIC CROSSING MAJOR STREET	50	75	120	170	64
	% FULFILLED				128%

150% Satisfied:	Yes [ ]	No [X]
120% Satisfied:	Yes [ ]	No [X]
100% Satisfied:	Yes [X]	No [ ]
80% Satisfied:	Yes [X]	No [ ]

1A - MINIMUM VEHICULAR VOLUME: Total vehicle volume on all approaches for average day

1B - MINIMUM VEHICULAR VOLUME: Total vehicle volume on minor streets

2A - DELAY TO CROSS TRAFFIC: Total vehicle volume on major street for average day

2B - DELAY TO CROSS TRAFFIC: Total vehicle and pedestrian volume crossing major street; comprising: (1) lefts from both minor streets, (2) heaviest through from minor street, (3) 50% of heavier left turn from major street when following criteria met: (a) left turn volume >120 and (b) left turn volume plus opposing volume > 720, (4) pedestrians crossing the major street.