2621458 Ontario Inc. c/o Altus Group Limited

# Transportation Impact Study

## Proposed Residential Development at 1393 Grahams Lane, City of Burlington, Halton Region, Ontario

March 13, 2024

# Final Transportation Impact Study

**Proposed Residential Development at 1393 Grahams Lane, City of Burlington, Halton Region, Ontario**

March 13, 2024

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# 1 Introduction

Arcadis has been retained by 2621458 Ontario Inc. c/o Altus Group Limited (the “Owner”) to prepare the Transportation Impact Study (TIS) report in support of the zoning by-law amendment and site plan applications for the proposed residential development. The proposed development site (the “Site”) is currently occupied by the by the building previously used by Mission Self Storage located approximately 80 meters west of Legion Road on the north side of Grahams Lane in City of Burlington (the 'City') within the Halton Region (the 'Region').

The development consists of the redevelopment of a commercial property into a vibrant master-planned residential community consisting of 3 buildings. Building A, located at the southeast corner of the site, would rise to 16 storeys and contain approximately 316 dwelling units. Building B, located at the southwest corner of the site, would rise to 9 storeys and contain approximately 120 dwelling units. Lastly, Building C, located at the northwest corner of the site, would rise to 20 storeys and contain approximately 286 dwelling units. A total of 505 resident underground parking spaces and 93 visitor parking spaces (split as 582 underground and 16 above ground) would be provided, with primary access via Grahams Lane between Building A and Building B.

While changes to site plan and site statistics may occur as the development progresses through the approval process, we anticipate that transportation impacts will be consistent with the concept described above. Nevertheless, our submission will reflect the most up-to-date information available.

## 1.1 Study Purpose

The purpose of this report is to analyze the existing condition and the impact that the proposed development may have on the surrounding transportation network. The scope of this study is outlined below as follows:

- Assess the 2024 existing traffic operations of the study area intersections during the weekday morning and afternoon peak hours;
- Assess traffic operations in the Future (2029) Background scenario as a 5-year horizon during the weekday AM and PM peak hours incorporating both traffic growth and background developments in the area;
- Estimate site traffic based on information published in the Trip Generation Manual, 11th Edition, by the Institute of Transportation Engineers (ITE);
- Assess traffic operations in the Future (2029) Total scenario as 5-year horizon during the weekday AM and PM peak hours incorporating traffic growth, background developments in the area, and development site generated traffic;
- Develop mitigation measures to address any deficiencies observed under base case scenarios (existing, Future Background and Future Total traffic) for all key study area intersections;
- Assess the functionality of the subject site vehicular access and internal maneuvering; and,
- Review the adequacy of the proposed parking supply regarding the parking requirements per the City of Burlington By-law 2020, as amended (the “Zoning By-law”) for the site.

## 1.2 Summary of Consultation with Review Agencies

At the onset of the project, Arcadis circulated the terms of reference of the study to the City which is enclosed in **Appendix A**.

## 1.3 Report Structure

The scope of the current study is based on the City's TIS guidelines. This TIS report examines the anticipated impact of the proposed development on the study area traffic operations and identifies potential improvements to operations if needed. Following is the report structure:

- **Section 2** examines the existing transportation facilities available at study intersections.
- **Section 3** discusses the traffic analysis details, such as signal timing plans, turning movement counts, analysis periods, and analysis criteria.
- **Section 4** examines the existing traffic operational conditions and identifies existing operational issues.
- **Section 5** through **Section 6** examines the future transportation planned by the City, Future Background traffic operations under a 5-year horizon (2029) without the subject site.
- **Section 7** examines site trip generation estimates from the proposed developments and trip assignment to the study area road network.
- **Section 8** through **Section 9** examines Future Total traffic operations under a 5-year horizon.
- **Section** Error! Reference source not found. examines potential intersection improvements aimed at mitigating t he identified operational issues.
- **Section 11** examines the concept draft plan based on the vehicle swept path analysis and parking required to support concept design.
- **Section 13** provides conclusions made based on the preceding sections.
- **Section 14** provides recommendations made based on the preceding sections.

# 2 Existing Transportation Context and Traffic Data

This section documents the transportation network in the study area observed in 2023, including existing roadways, traffic control measures, walking and cycling facilities, and transit routes.

The study area intersections were determined through consultation with the City are presented in Figure 2-1, and consist of the following key locations:

1. Brant Street (Halton Regional Road 18) and Fairview Street (signalized);
2. Brant Street and Grahams Lane / Prospect Street (signalized);
3. Brant Street and Ghent Avenue (signalized);
4. Grahams Lane and Legion Road (unsignalized); and,
5. Grahams Lane and Proposed Site Access (unsignalized).

The area surrounding the proposed development to the west is a mix of residential, park / open space. The areas to the north, south, and west are predominantly commercial land uses.

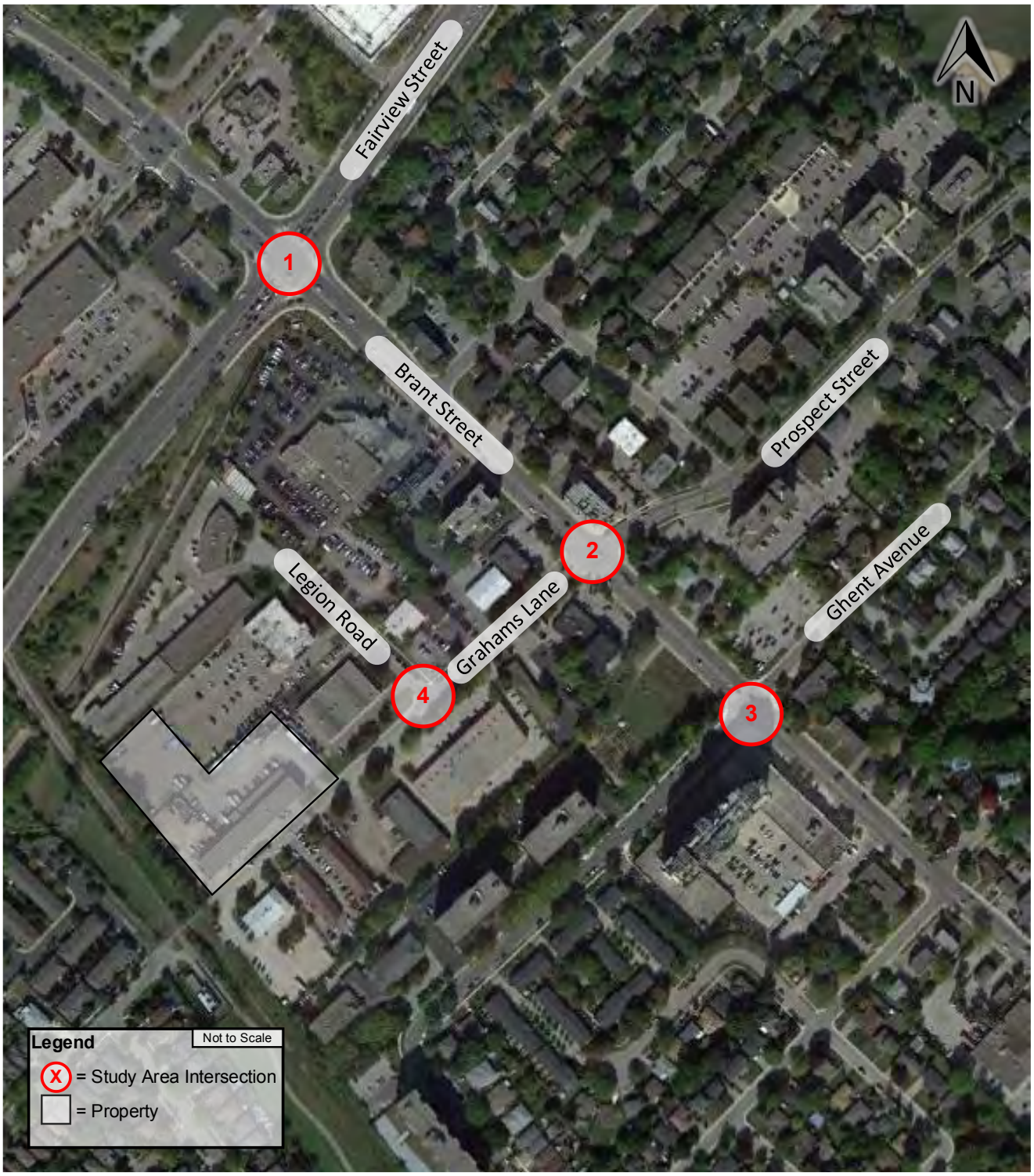



*Figure 2-1 Development Study Area*
Image Source: Google Maps. Retrieved February 8, 2024 from https://www.google.com/maps

## 2.1 Existing Road Network

The characteristics of the study area roadways are summarized in Table 2-1.

*Table 2-1 Study Roadway Characteristics*

| Street Name | Class. | Orient. | Road Width (Lanes) | Traffic Direction | From | To | On-Street Parking | Speed Limit |
|---|---|---|---|---|---|---|---|---|
| Fairview Street | Multi-Purpose Arterial | East / West | 4 | Two-way | Queen Elizabeth Way HWY | Appleby Line | Prohibited | 50 km/h |
| Brant Street | Major Arterial | North / South | 4-6 | Two-way | Dundas Street | Fairview Street | Prohibited | 60 km/h |
| | Main Street | North / South | 4 | Two-way | Fairview Street | Lakeshore Road | Prohibited | 50 km/h |
| Prospect Street | Neighborhood Connector | East / West | 2-4 | Two-way | Brant Street | Cumberland Avenue | Prohibited | 40 km/h |
| Ghent Avenue | Neighborhood Connector | East / West | 2 | Two-way | Hager Avenue | George Street | Allowed | 40 km/h |
| Grahams Lane | Neighborhood Connector | East / West | 2 | Two-way | Brant Street | Dead End | Allowed | 40 km/h |
| Legion Road | Local | North / South | 2 | Two-way | Dead End | Grahams Lane | Allowed | 40 km/h |

The location of study area intersections in graphically presented in Figure 2-2 below.

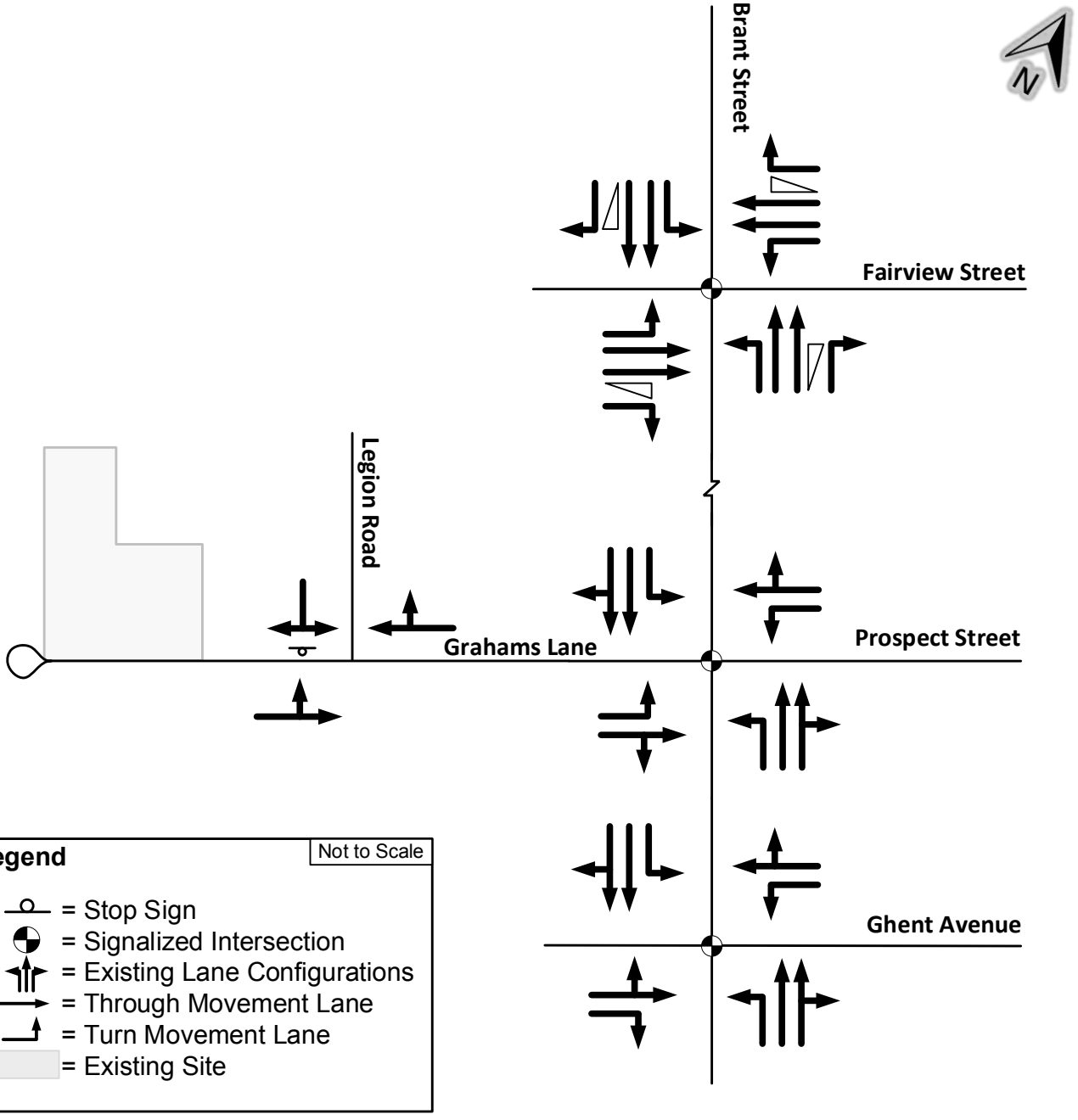



*Figure 2-2 Existing Study Area Lane Configurations*

## 2.2 Existing Transit Network

The Development site is within proximity of the Burlington Transit service routes. Shown in the Figure 2-3 are the transit routes available within 1km radius from the Site.

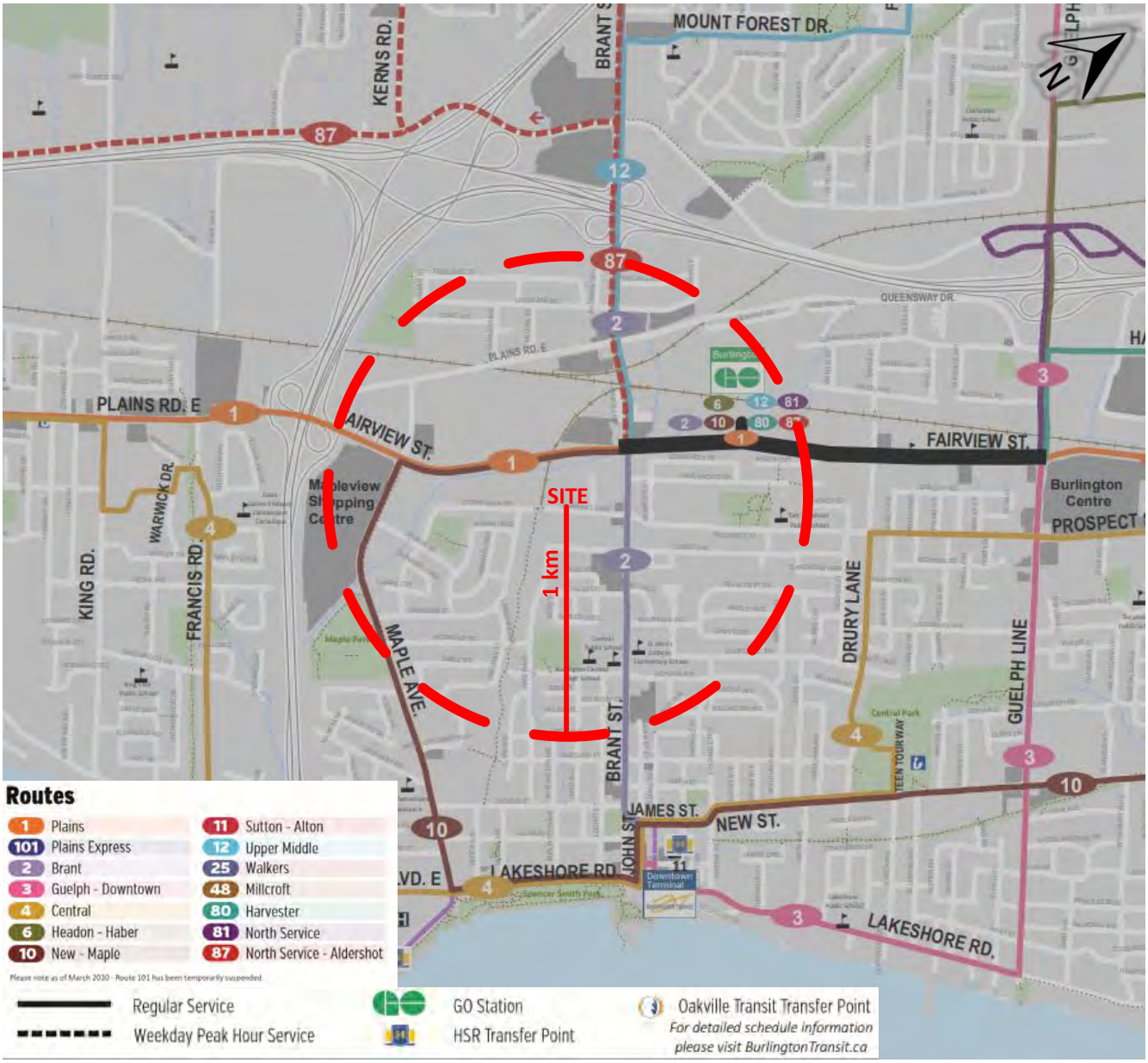



*Figure 2-3 Existing Transit Network*
Image Source: Burlington Transit Map. Retrieved February 8, 2024 from
https://www.burlington.ca/en/transit/resources/Schedules-and-Routes/Schedules-and-Maps/Route-Map.pdf

The summary of transit route operation is outlined in the Table 2-2 below.

*Table 2-2 Existing Transit Service Patterns*

| Route | Description | Approximate Walking Distance to Nearest Bus Stop | Average Peak Hour Transit Service Frequency |
|---|---|---|---|
| Burlington Bus Transit #1 | Weekdays – East to Appleby GO Station<br>Weekdays – West to Hamilton | 600 metres<br>(9 minutes) | 10-12 minutes |
| Burlington Transit #2 | Weekdays – North to 407 Carpool Lot<br>Weekdays – South to Downtown | 300 metres<br>(4 minutes) | 15 minutes |
| Burlington Transit #6 | Weekdays – North to 407 Carpool Lot<br>Weekdays – South to Burlington GO Station | 1000 metres<br>(15 minutes) | 30 minutes |
| Burlington Transit #10 | Weekdays – East to Appleby GO Station<br>Weekdays – West to Burlington GO Station | 600 metres<br>(9 minutes) | 15 minutes |
| Burlington Transit #12 | Weekdays – East to Dundas<br>Weekdays – West to Burlington GO Station | 600 metres<br>(9 minutes) | 30 minutes |
| Burlington Transit #80 | Weekdays – East to Appleby GO Station<br>Weekdays – West to Burlington GO Station | 1000 metres<br>(15 minutes) | 30 minutes |
| Burlington Transit #81 | Weekdays – East to Appleby GO Station<br>Weekdays – West to Burlington GO Station | 1000 metres<br>(15 minutes) | 30 minutes |
| Burlington Transit #87 | Weekdays – East to Burlington GO Station<br>Weekdays – West to Aldershot GO Station | 600 metres<br>(9 minutes) | 30 minutes |
| GO Transit - Lakeshore West Line | Between Oshawa (via Union Station) and Hamilton or Niagara Falls | 1000 metres<br>(15 minutes) | 15 minutes |

*Note: Approximate walking speed of 1 m/s.*

## 2.3 Existing Active Transportation Network

The subject site is well connected to the City's cycling network and multi-use trails that provide connection to Lakeshore Road and to other parts of the local community and transit accesses, as shown in Figure 2-4.

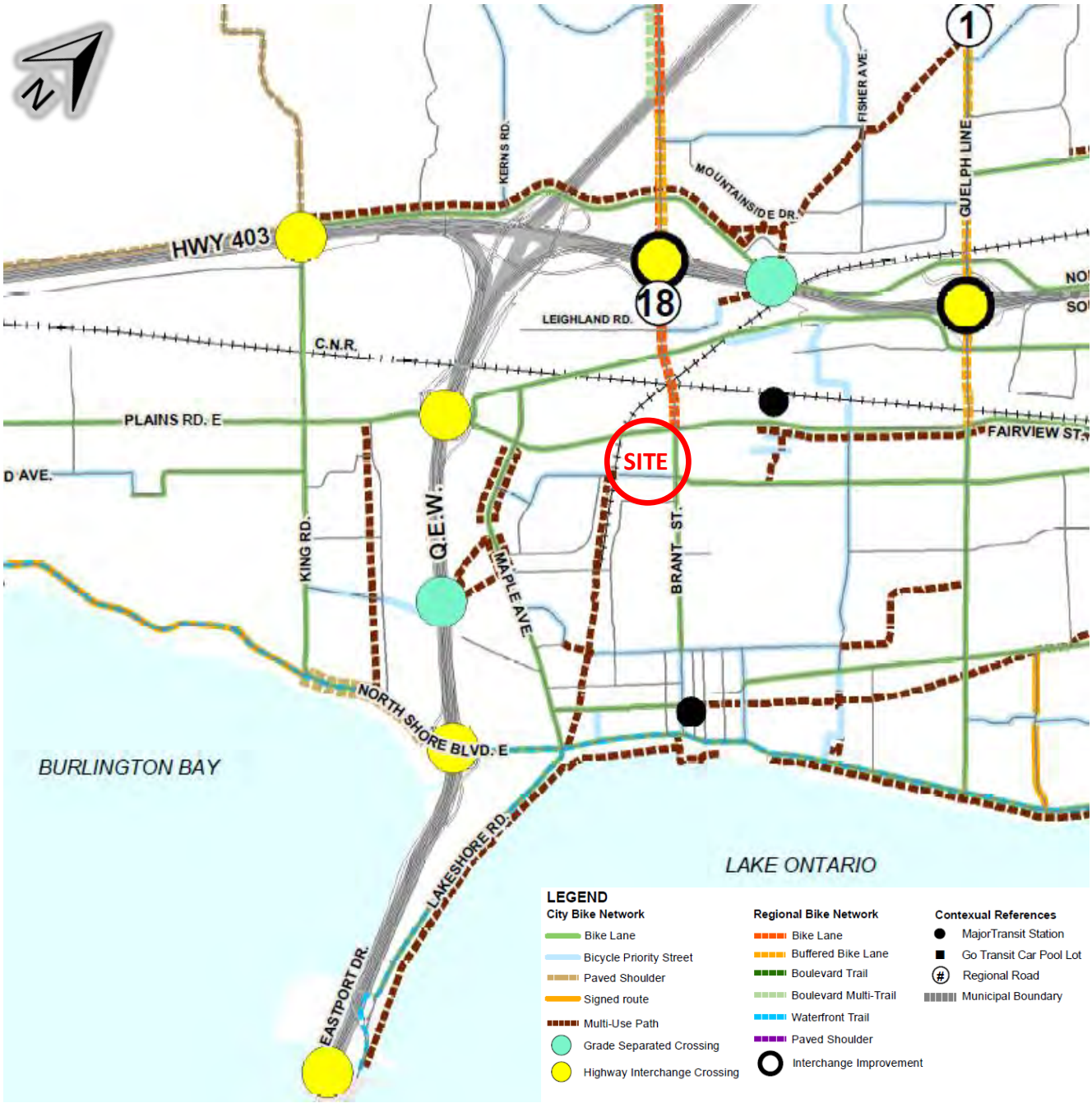



*Figure 2-4 City of Burlington Long Term Cycling Master Plan*
Image Source: Burlington Official Plan. Retrieved February 8, 2024 from
https://www.burlington.ca/en/planning-and-development/resources/Official-Plan/Burlington-Official-Plan-2020-Full.pdf

# 3 Data Collection and Analysis Methodology

This section contains a description of collected data for the average weekday morning and afternoon peak periods of operation, the suitability of traffic data, and the analysis criteria to identify intersections and movements which meet or exceed the capacity.

## 3.1 Study Area Modal Split

The study area transportation mode share characteristics are presented in Table 3-1. Transportation Tomorrow Survey (TTS) zones 4059 and 4060 were selected for obtaining relevant traffic information applicable to study area.

*Table 3-1 Study Area Travel Mode and Vehicle Occupancy Rate*

| Travel Modes | TTS Zones | | Count per Mode | Percent per Mode |
|---|---|---|---|---|
| | 4059 | 4060 | | |
| Transit excluding GO rail | 100 | 441 | 541 | 2% |
| Cycle | 336 | 118 | 454 | 2% |
| Auto driver | 8733 | 9564 | 18297 | 75% |
| GO rail only | 202 | 98 | 300 | 1% |
| Joint GO rail and local transit | 120 | 86 | 206 | 1% |
| Motorcycle | 62 | 0 | 62 | 0% |
| Auto passenger | 1293 | 1850 | 3143 | 13% |
| Walk | 588 | 656 | 1244 | 5% |
| **Total Area Survey Count** | | | **24247** | **100%** |
| **Auto Mode** | | | **21440** | **88%** |
| **Non-Auto Mode** | | | **2807** | **12%** |
| **Vehicle Occupancy Rate** | | | | **1.13 person/vehicle** |

Non-auto mode reduction is applied to the site trip generation which is discussed more in detail in Section 7.2.

## 3.2 Traffic Data Collection Survey Periods

Based on the proposed development's predominant residential land use, the following analysis periods were used in this study:

- AM Peak Period – 7:00 a.m. to 9:00 a.m. on a typical weekday; and
- PM Peak Period – 4:00 p.m. to 6:00 p.m. on a typical weekday.

## 3.3 Turning Movement Counts

The latest turning movement count (TMCs) data for the study area intersections was collected by Ontario Traffic Inc. (OTI). The TMC survey was conducted from 7:00 a.m. to 9:00 a.m. on a typical weekday (Weekday AM peak period) and from 4:00 p.m. to 6:00 p.m. on a typical weekday (Weekday PM peak period) as outlined in Table 3-2.

*Table 3-2 Traffic Data Information*

| Intersection | Data Source | Count Dates | Observed Peak Hours |
|---|---|---|---|
| Brant Street (Halton Regional Road 18) and Fairview Street (signalized) | Ontario Traffic Inc. | Tuesday, December 5, 2023 | AM Peak 8:00 a.m – 9:00 a.m.<br>PM Peak 4:15 p.m. – 5:15 p.m. |
| Brant Street and Grahams Lane / Prospect Street (signalized) | | | AM Peak 8:00 a.m – 9:00 a.m.<br>PM Peak 4:15 p.m. – 5:15 p.m. |
| Brant Street and Ghent Avenue (signalized); | | | AM Peak 8:00 a.m – 9:00 a.m.<br>PM Peak 4:30 p.m. – 5:30 p.m. |
| Grahams Lane and Legion Road (unsignalized) | | | AM Peak 7:45 a.m – 8:45 a.m.<br>PM Peak 4:15 p.m. – 5:15 p.m. |

Collected traffic volumes are presented in Figure 3-1. TMC data was not collected at the existing site driveway because the building occupying the site is vacant and does not generate traffic. Full turning movement count data presented in **Appendix B**.

It is worth noting that growth rate was not applied to project data collected in 2023 to describe the 2024 existing condition, as the traffic data was collected in December of 2023, which is less than one year apart when compared to the first submission date of this report.

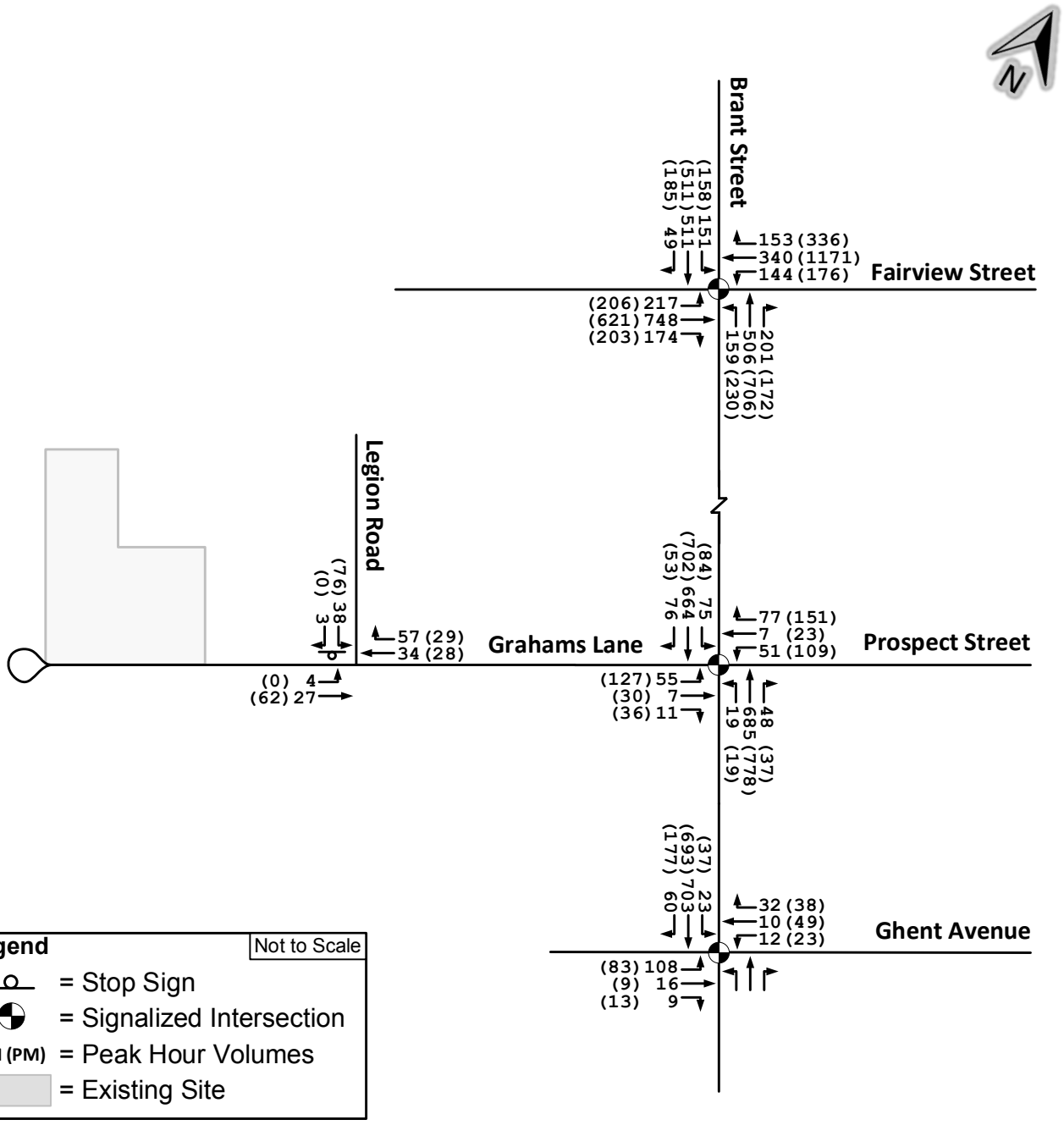



*Figure 3-1 Existing Condition Traffic Volumes*

## 3.4 Signal Timing Plans

Signal timing plans for signalized study area intersections were provided by the City and are presented in **Appendix C**. The signalized study area intersections mostly function under a semi-actuated mode of operation.

## 3.5 Traffic Analysis Criteria

The criteria for identifying movements that exceed the critical threshold at signalized intersections is based on the *Transportation Impact Study Guidelines, Halton Region* dated January 2015 as follows:

- Volume to capacity (v/c) ratio exceeds 0.85 or for overall intersection operations, through movements, or shared through/turning movements;
- Volume to capacity (v/c) ratio exceeds 0.95 for exclusive turning movements; and,
- Queues (95th percentile) that exceed available storage for exclusive turning movements.

Furthermore, the following criteria were used to identify unsignalized intersections or individual movements that exceed the critical threshold are as follows:

- Level of service (LOS), based on average delay per vehicle, on individual movements exceeds LOS 'D'; and
- Queues (95th percentile) that exceed available storage for exclusive turning movements.

# 4 2024 Existing Conditions Analysis

Using the turning movement counts shown in Figure 3-1, the study area intersections were analyzed using the software package Synchro 11, which is based on the Highway Capacity Manual methodology. Results summary of existing traffic operations for the AM and PM peak periods at the signalized and the unsignalized intersections are presented in Table 4-1 and Table 4-4, respectively. Synchro analysis detail reports for the existing conditions scenario is presented in **Appendix D**.

## 4.1 Signalized Intersections

The results of the 2024 Existing Conditions traffic operations analysis for study area signalized intersections are presented in Table 4-1. Some movements at the study area signalized intersections operating above Regions' critical thresholds, were noted:

- The intersection of Brant Street & Grahams Lane/Prospect Street:
  - The westbound left-turn movements' 95th percentile queue lengths exceed the available storage lengths during the Weekday PM peak hour by 14m or approximately 2 car lengths.
- The intersection of Brant Street & Fairview Street:
  - Overall intersection is operating above critical threshold (v/c of 0.89) during the Weekday PM peak hour;
  - Eastbound exclusive left movement is operating above critical threshold (v/c of 1.06) during the Weekday PM peak hours; and,
  - Westbound through movement is operating above critical threshold (v/c of 0.94) during the Weekday PM peak hours.

Model calibration to the Brant Street & Fairview Street intersection during PM peak hour are further discussed in **Section 4.1.1**.

*Table 4-1 2024 Existing Conditions Traffic Operations – Signalized Intersections Summary*

| Intersection Name | Overall Intersection | | | Individual Approach | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | LOS | Delay | v/c Ratio | Movement | LOS | Delay (s) | v/c Ratio | 95th Percentile Queue Length (m) | Storage Capacity (m) |
| **AM Peak Period** | | | | | | | | | |
| Brant Street & Grahams Lane/Prospect Street | A | 8.4 | 0.36 | EBL | C | 33.8 | 0.45 | 17 | - |
| | | | | EBTR | C | 30.1 | 0.05 | 6 | - |
| | | | | WBL | C | 32.5 | 0.36 | 16 | 15 |
| | | | | WBTR | C | 30.4 | 0.09 | 12 | - |
| | | | | NBL | A | 5.6 | 0.05 | 4 | 20 |
| | | | | NBTR | A | 7.2 | 0.35 | 43 | - |
| | | | | SBL | A | 3.1 | 0.15 | 6 | 20 |
| | | | | SBTR | A | 3.7 | 0.30 | 27 | - |
| Brant Street & Ghent Avenue | A | 8.8 | 0.42 | EBLT | C | 31.4 | 0.60 | 32 | - |
| | | | | EBR | C | 24.5 | 0.01 | 1 | 35 |
| | | | | WBT | C | 25.2 | 0.12 | 11 | - |
| | | | | NBL | A | 4.6 | 0.03 | 2 | 45 |
| | | | | NBTR | A | 6.1 | 0.34 | 36 | - |
| | | | | SBL | A | 5.0 | 0.07 | 4 | 25 |
| | | | | SBTR | A | 6.3 | 0.38 | 41 | - |
| Brant Street & Fairview Street | C | 29.9 | 0.61 | EBL | C | 21.8 | 0.52 | 46 | - |
| | | | | EBT | D | 36.1 | 0.76 | 98 | - |
| | | | | EBR | C | 26.5 | 0.12 | 15 | 150 |
| | | | | WBL | D | 39.3 | 0.73 | 37 | 65 |
| | | | | WBT | C | 33.7 | 0.44 | 48 | - |
| | | | | WBR | C | 30.8 | 0.12 | 11 | - |
| | | | | NBL | C | 22.1 | 0.47 | 36 | 85 |
| | | | | NBT | C | 30.3 | 0.49 | 71 | - |
| | | | | NBR | C | 26.2 | 0.15 | 18 | 70 |
| | | | | SBL | B | 18.7 | 0.43 | 34 | 50 |
| | | | | SBT | C | 27.4 | 0.45 | 65 | - |
| | | | | SBR | C | 22.7 | 0.04 | - | - |

| Intersection Name | Overall Intersection | | | Individual Approach | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | LOS | Delay | v/c Ratio | Movement | LOS | Delay (s) | v/c Ratio | 95th Percentile Queue Length (m) | Storage Capacity (m) |
| **PM Peak Period** | | | | | | | | | |
| Brant Street & Grahams Lane/Prospect Street | B | 13.3 | 0.47 | EBL | D | 38.4 | 0.67 | 35 | - |
| | | | | EBTR | C | 26.9 | 0.13 | 13 | - |
| | | | | WBL | C | 29.9 | 0.46 | 29 | 15 |
| | | | | WBTR | C | 27.3 | 0.18 | 18 | - |
| | | | | NBL | A | 8.2 | 0.06 | 6 | 20 |
| | | | | NBTR | B | 10.7 | 0.42 | 63 | - |
| | | | | SBL | A | 5.3 | 0.20 | 10 | 20 |
| | | | | SBTR | A | 5.9 | 0.33 | 41 | - |
| Brant Street & Ghent Avenue | A | 7.6 | 0.4 | EBLT | C | 30.1 | 0.51 | 24 | - |
| | | | | EBR | C | 26.0 | 0.01 | 2 | 35 |
| | | | | WBT | C | 28.7 | 0.41 | 22 | - |
| | | | | NBL | A | 3.6 | 0.03 | 2 | 45 |
| | | | | NBTR | A | 4.7 | 0.33 | 35 | - |
| | | | | SBL | A | 3.9 | 0.09 | 5 | 25 |
| | | | | SBTR | A | 5.0 | 0.38 | 39 | - |
| Brant Street & Fairview Street | D | 41.4 | 0.89 | EBL | F | 109.2 | 1.06 | 90 | - |
| | | | | EBT | C | 32.2 | 0.54 | 88 | - |
| | | | | EBR | C | 27.3 | 0.14 | 17 | 150 |
| | | | | WBL | C | 20.9 | 0.50 | 39 | 65 |
| | | | | WBT | D | 48.8 | 0.94 | 193 | - |
| | | | | WBR | C | 27.1 | 0.31 | 36 | - |
| | | | | NBL | C | 28.3 | 0.63 | 54 | 85 |
| | | | | NBT | D | 43.8 | 0.74 | 109 | - |
| | | | | NBR | C | 32.6 | 0.12 | 17 | 70 |
| | | | | SBL | C | 31.2 | 0.60 | 38 | 50 |
| | | | | SBT | D | 41.4 | 0.59 | 77 | - |
| | | | | SBR | C | 34.7 | 0.13 | 18 | - |

*Note: Red font represents movements operating above critical thresholds. N/A indicates excessive critical operations that exceeded Synchro reporting limits above critical thresholds.*

### 4.1.1 Signalized Intersections – Calibrated

Model calibration for the Brant Street & Fairview Street intersection during PM peak hour is outlined in Table 4-2.

*Table 4-2 2024 Existing Conditions – Calibration Description*

| Intersection | Peak Period | Calibration Description |
|---|---|---|
| Brant Street & Fairview Street | PM | Lost time adjustment of (-1) applied to eastbound exclusive left-turn. |

The results of the calibrated traffic operations analysis for Brant Street & Fairview Street signalized intersection are presented in Table 4-3. Synchro analysis detail reports for the existing conditions scenario is presented in **Appendix E**.

*Table 4-3 2024 Existing Conditions Traffic Operations – Signalized Intersection Calibrated*

| Intersection Name | Overall Intersection | | | Individual Approach | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | LOS | Delay | v/c Ratio | Movement | LOS | Delay (s) | v/c Ratio | 95th Percentile Queue Length (m) | Storage Capacity (m) |
| **PM Peak Period** | | | | | | | | | |
| Brant Street & Fairview Street | D | 40.4 | 0.87 | EBL | F | 87.1 | 0.99 | 86 | - |
| | | | | EBT | C | 32.2 | 0.54 | 88 | - |
| | | | | EBR | C | 27.3 | 0.14 | 17 | 150 |
| | | | | WBL | C | 20.9 | 0.50 | 39 | 65 |
| | | | | WBT | D | 48.8 | 0.94 | 193 | - |
| | | | | WBR | C | 27.1 | 0.31 | 36 | - |
| | | | | NBL | C | 28.3 | 0.63 | 54 | 85 |
| | | | | NBT | D | 43.8 | 0.74 | 109 | - |
| | | | | NBR | C | 32.6 | 0.12 | 17 | 70 |
| | | | | SBL | C | 31.2 | 0.60 | 38 | 50 |
| | | | | SBT | D | 41.4 | 0.59 | 77 | - |
| | | | | SBR | C | 34.7 | 0.13 | 18 | - |

*Note: Red font represents movements operating above critical thresholds. N/A indicates excessive critical operations that exceeded Synchro reporting limits above critical thresholds.*

The calibration applied to the movement reduces the v/c and brings the movement operation within the generally operable range, but still exceeding critical thresholds set in Region's analysis guidelines. Eastbound left queue cannot fully clear because of the significant westbound through traffic volume. The eastbound exclusive left-turn is the termination of the eastbound through lane and has ample amount of storage of over 500 metres and can provide safe queuing storage refuge. Potential mitigations for this intersection under future conditions are further discussed in **Section** Error! Reference source not found. of this report.

## 4.2 Unsignalized Intersections

The results of the traffic operations analysis for unsignalized intersections under 2024 Existing Conditions traffic operations are presented in Table 4-4. No movements exceeding critical thresholds were observed during AM and PM Peak Periods in Existing Conditions at the study area unsignalized intersections.

*Table 4-4 2024 Existing Conditions Traffic Operations – Unsignalized Intersections Summary*

| Intersection | Intersection Delay (s) | Lane | Lane LOS | Lane Delay (s) | Lane V/C Ratio | Lane 95th Percentile Queue (m) | Lane Storage Capacity (m) |
|---|---|---|---|---|---|---|---|
| **AM Peak Period** | | | | | | | |
| Grahams Lane & Legion Road | 2.6 | EBLT | A | 1.0 | 0.00 | 0 | - |
| | | SBLR | A | 9.6 | 0.06 | 1 | - |
| **PM Peak Period** | | | | | | | |
| Grahams Lane & Legion Road | 3.7 | SBLR | A | 9.6 | 0.10 | 3 | - |

*Note: Red font represents movements operating above critical thresholds. N/A indicates excessive critical operations that exceeded Synchro reporting limits.*

# 5 Future Background Transportation Context

This section discusses the proposed development horizon years, background traffic growth rates and other development-related traffic in the study area. A five-year horizon (2029) is selected for the Future Background and Future Total analyses.

## 5.1 Review of Planned Transportation Network Improvements

The investigation was conducted by reviewing City's plans for the study area roadways to determine the applicable future transportation network improvements. The following documents were reviewed:

- City of Burlington Official Plan, November 2020;
- Infrastructure & Construction Projects, City of Burlington website; and,
- Interactive Map of Development Applications, City of Burlington website.

The review of background studies has shown that no major capital projects or road improvements are planned near the development site in the near future.

## 5.2 Growth Rate

The development site is situated in MTSA[1]Special Planning Area surrounded by mixture of commercial and residential land uses. Due to the nature of the location, a conservative annual background traffic growth rate of 1% was assumed. Similar growth rate was found in traffic analysis for background development applications planned near the Site. Growth rate assumption was communicated with the City. Background growth volumes shown in Figure 5-1 have been estimated by applying a growth rate to the through movements along Fairview Street and Brant Street roadways. No growth rate was applied to exclusive turning movements or local roads traffic volumes.

[1] *MTSA – Major Transit Station Area, Schedule F, City of Burlington Official Plan, November 2020*

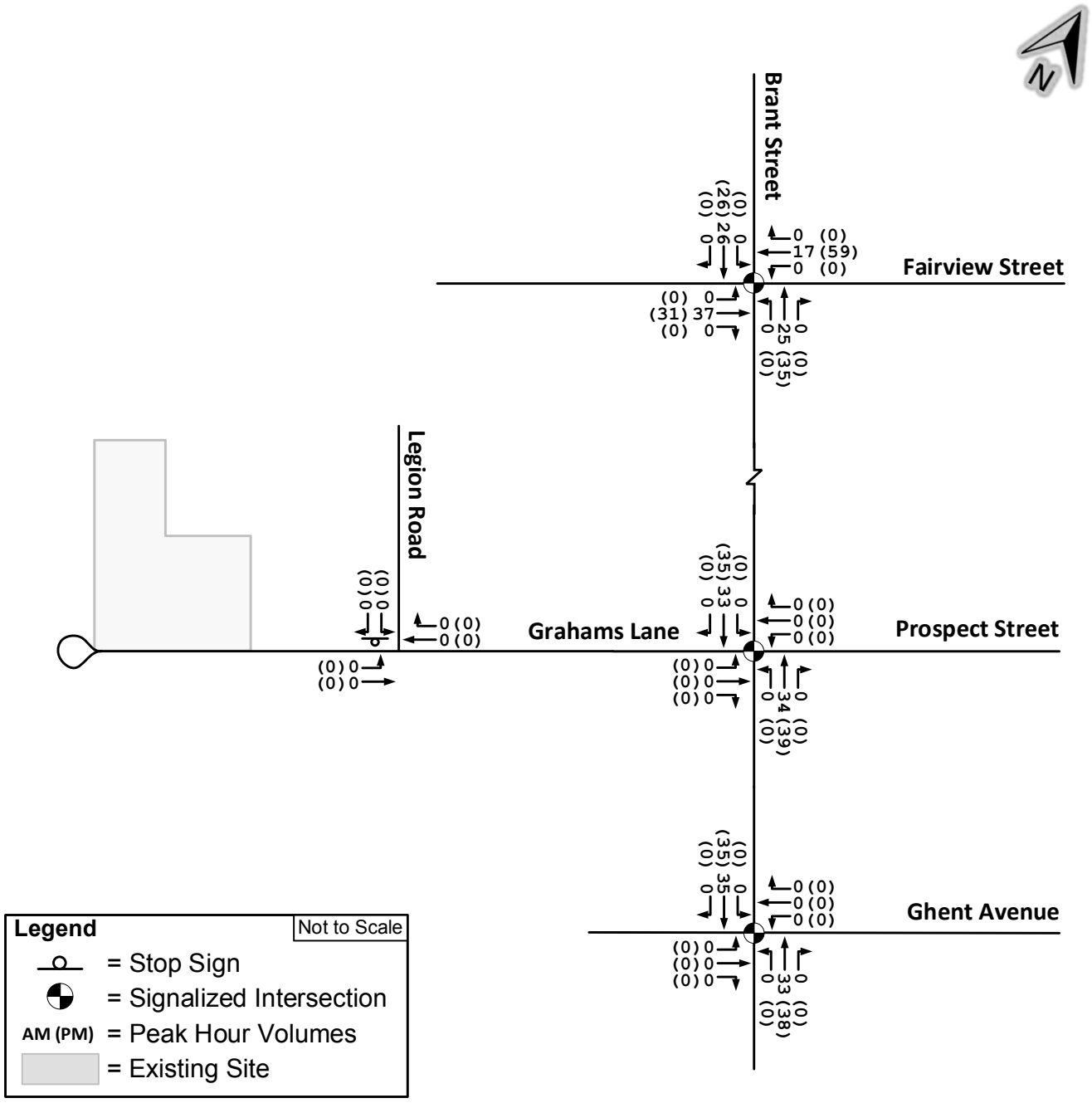



*Figure 5-1 Background Growth Volumes*

## 5.3 Background Developments

The research of background developments planned in the vicinity of the proposed development was conducted through the City's development application online database. The research identified the following background developments that have directly contribute to the study area traffic volumes and intersection operations:

1. Mixed Use Residential Development at 789-795 Brant Street. TIS by Crozier, September 2022; and,
2. Mixed Use Residential Development at 774, 778, 780 and 782 Brant Street (Parcel A); 769, 779, 783 Brant Street & 2023, 2027, 2031-2033 Ghent Avenue (Parcel B); and, 747 and 761 Brant Street (Parcel C). TIS by Paradigm, May 2021.

The information pertaining to the traffic generation from this background development was extracted and included in the traffic analysis. The excerpts with traffic information relevant to the study are enclosed in **Appendix F**. Anticipated total background development generated traffic volumes presented in in Figure 5-2 were assigned to the network based on combination of existing travel patterns and engineering judgement.

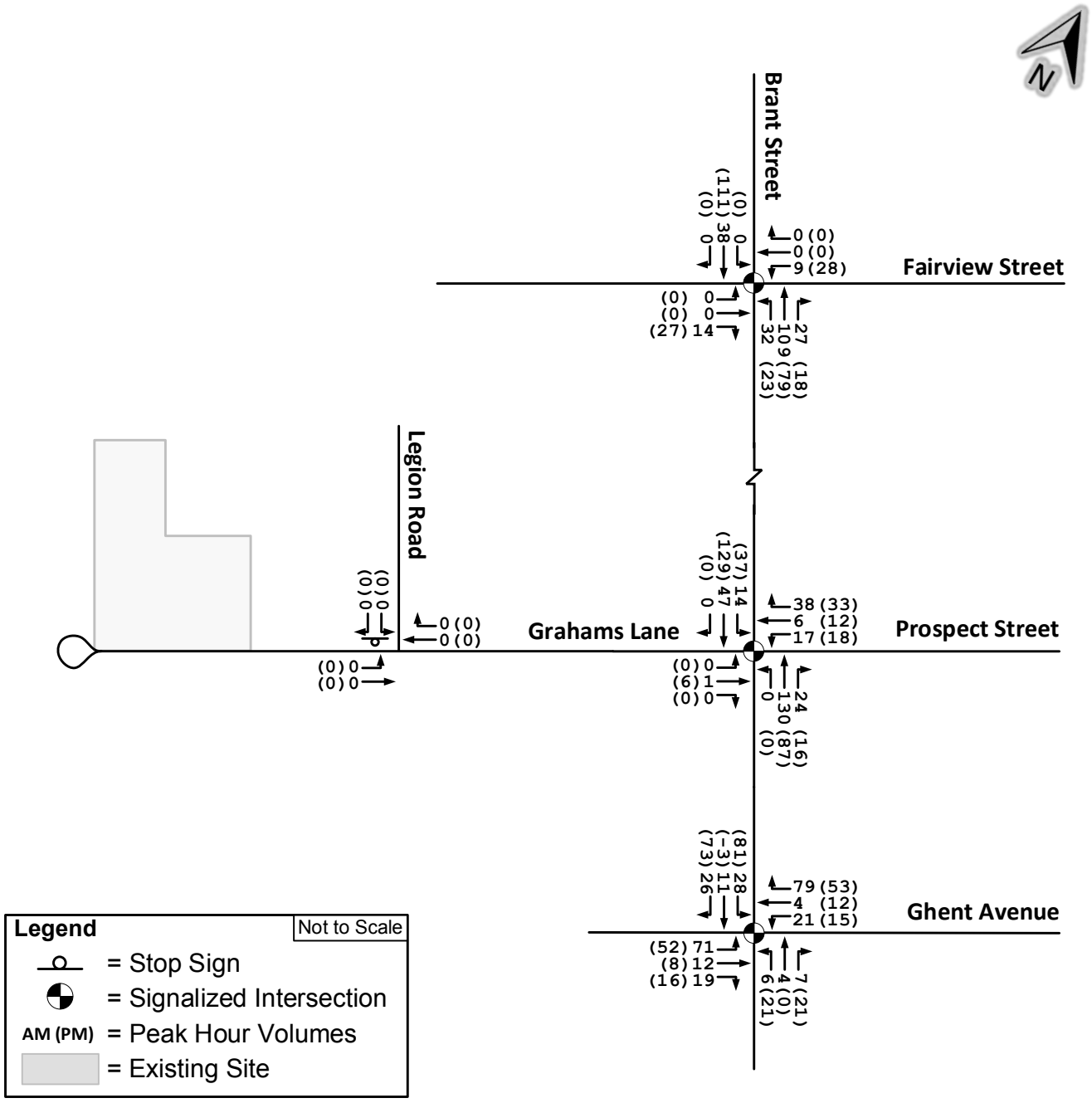



*Figure 5-2 Background Development Total Traffic Volume*

# 6 Future (2029) Background Conditions

The future background traffic volumes consist of the following components:

- Background traffic growth from outside the study area; and,
- Traffic generated from other proposed developments in the vicinity of the study area.

The estimated volumes for the future (2029) background traffic conditions are illustrated in Figure 6-1. The results of the Future Background analysis are summarized in the following subsections. Synchro software based on the Highway Capacity Manual methodology was used to assess traffic operation conditions under the Future Background conditions. The detailed Synchro HCM reports under the Future Background conditions are presented in **Appendix G**.

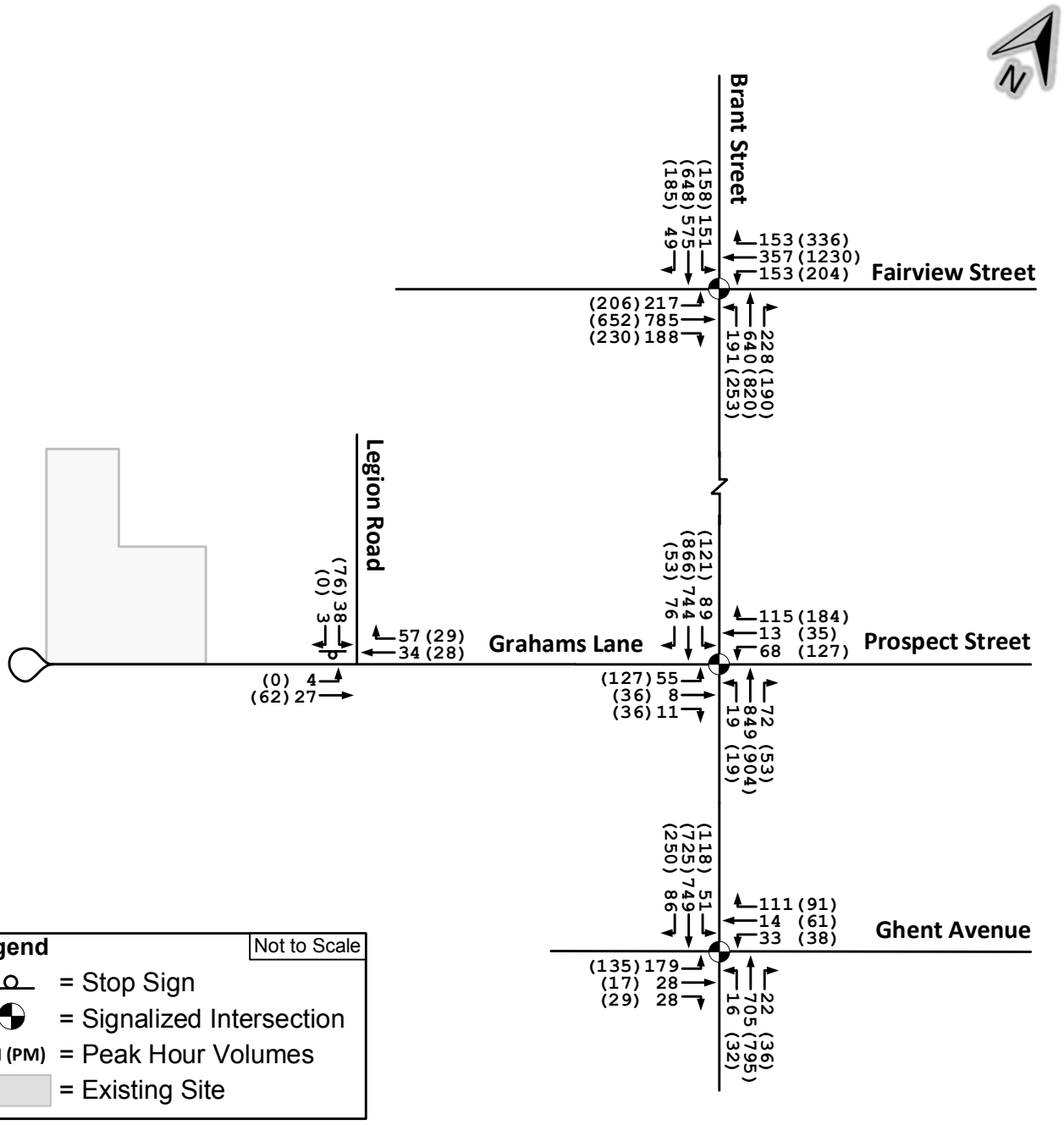



*Figure 6-1 Future (2029) Background Traffic Volumes*

## 6.1 Signalized Intersections

The results of the traffic operations analysis for study area signalized intersections under Future(2029) Background conditions are presented in Table 6-1. Some movements at the study area signalized intersections operating above Regions' critical thresholds, were noted:

- The intersection of Brant Street & Grahams Lane/Prospect Street:
  - The westbound left-turn movements' 95th percentile queue lengths exceed the available storage lengths during the Weekday AM peak hour by 4 meters or less than 1 car lengths, and during the Weekday PM peak hour by 18 meters or approximately 3 car lengths.
- The intersection of Brant Street & Fairview Street:
  - Overall intersection is operating above critical threshold (v/c of 0.95) during the Weekday PM peak hour;
  - Eastbound exclusive left movement is operating above critical threshold (v/c of 0.99) during the Weekday PM peak hours;
  - Westbound through movement is operating above critical threshold (v/c of 0.99) during the Weekday PM peak hours; and,
  - Northbound through movement is operating above critical threshold (v/c of 0.85) during the Weekday PM peak hours.

Potential mitigations for this intersection under future conditions are further discussed in **Section** Error! Reference s ource not found. of this report.

*Table 6-1 Future (2029) Background Conditions Traffic Operations – Signalized Intersections*

| Intersection Name | Overall Intersection | | | Individual Approach | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | LOS | Delay | v/c Ratio | Movement | LOS | Delay (s) | v/c Ratio | 95th Percentile Queue Length (m) | Storage Capacity (m) |
| **AM Peak Period** | | | | | | | | | |
| Brant Street & Grahams Lane/Prospect Street | A | 9.7 | 0.44 | EBL | C | 32.0 | 0.39 | 18 | - |
| | | | | EBTR | C | 29.1 | 0.05 | 6 | - |
| | | | | WBL | C | 31.8 | 0.40 | 20 | 15 |
| | | | | WBTR | C | 29.7 | 0.14 | 16 | - |
| | | | | NBL | A | 6.4 | 0.05 | 5 | 20 |
| | | | | NBTR | A | 9.0 | 0.46 | 58 | - |
| | | | | SBL | A | 4.1 | 0.22 | 7 | 20 |
| | | | | SBTR | A | 4.4 | 0.34 | 31 | - |
| Brant Street & Ghent Avenue | B | 13.7 | 0.55 | EBLT | D | 35.8 | 0.75 | 52 | - |
| | | | | EBR | C | 21.1 | 0.02 | 5 | 35 |
| | | | | WBT | C | 23.1 | 0.28 | 22 | - |
| | | | | NBL | A | 7.5 | 0.06 | 5 | 45 |
| | | | | NBTR | A | 9.6 | 0.41 | 58 | - |
| | | | | SBL | A | 9.2 | 0.20 | 13 | 25 |
| | | | | SBTR | B | 10.1 | 0.46 | 67 | - |
| Brant Street & Fairview Street | C | 31.4 | 0.69 | EBL | C | 21.6 | 0.52 | 46 | - |
| | | | | EBT | D | 36.3 | 0.77 | 104 | - |
| | | | | EBR | C | 26.2 | 0.13 | 15 | 150 |
| | | | | WBL | D | 46.8 | 0.80 | 46 | 65 |
| | | | | WBT | C | 33.4 | 0.45 | 50 | - |
| | | | | WBR | C | 30.4 | 0.12 | 11 | - |
| | | | | NBL | C | 26.5 | 0.62 | 42 | 85 |
| | | | | NBT | C | 33.9 | 0.63 | 92 | - |
| | | | | NBR | C | 27.2 | 0.17 | 19 | 70 |
| | | | | SBL | C | 20.7 | 0.52 | 34 | 50 |
| | | | | SBT | C | 29.2 | 0.51 | 74 | - |
| | | | | SBR | C | 23.3 | 0.04 | - | - |

| Intersection Name | Overall Intersection | | | Individual Approach | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | LOS | Delay | v/c Ratio | Movement | LOS | Delay (s) | v/c Ratio | 95th Percentile Queue Length (m) | Storage Capacity (m) |
| PM Peak Period | | | | | | | | | |
| Brant Street & Grahams Lane/Prospect Street | B | 14.5 | 0.56 | EBL | D | 47.3 | 0.76 | 37 | - |
| | | | | EBTR | C | 26.6 | 0.14 | 15 | - |
| | | | | WBL | C | 30.0 | 0.50 | 33 | 15 |
| | | | | WBTR | C | 27.4 | 0.24 | 21 | - |
| | | | | NBL | A | 9.1 | 0.07 | 6 | 20 |
| | | | | NBTR | B | 12.5 | 0.51 | 84 | - |
| | | | | SBL | A | 6.8 | 0.34 | 15 | 20 |
| | | | | SBTR | A | 7.0 | 0.41 | 57 | - |
| Brant Street & Ghent Avenue | B | 11.4 | 0.53 | EBLT | C | 34.7 | 0.69 | 39 | - |
| | | | | EBR | C | 22.5 | 0.02 | 5 | 35 |
| | | | | WBT | C | 25.9 | 0.47 | 35 | - |
| | | | | NBL | A | 6.6 | 0.12 | 7 | 45 |
| | | | | NBTR | A | 7.6 | 0.40 | 51 | - |
| | | | | SBL | A | 9.7 | 0.36 | 23 | 25 |
| | | | | SBTR | A | 8.3 | 0.48 | 60 | - |
| Brant Street & Fairview Street | D | 45.9 | 0.95 | EBL | F | 89.5 | 0.99 | 85 | - |
| | | | | EBT | C | 34.2 | 0.59 | 93 | - |
| | | | | EBR | C | 28.6 | 0.15 | 18 | 150 |
| | | | | WBL | C | 23.5 | 0.60 | 45 | 65 |
| | | | | WBT | E | 61.1 | 0.99 | 208 | - |
| | | | | WBR | C | 27.8 | 0.33 | 39 | - |
| | | | | NBL | D | 37.2 | 0.78 | 72 | 85 |
| | | | | NBT | D | 49.0 | 0.85 | 144 | - |
| | | | | NBR | C | 33.1 | 0.17 | 23 | 70 |
| | | | | SBL | D | 35.3 | 0.66 | 40 | 50 |
| | | | | SBT | D | 46.6 | 0.75 | 99 | - |
| | | | | SBR | D | 35.1 | 0.13 | 18 | - |

*Note: Red font represents movements operating above critical thresholds. N/A indicates excessive critical operations that exceeded Synchro reporting limits.*

## 6.2 Unsignalized Intersections

The results of the traffic operations analysis for unsignalized intersections under Future (2029) Background conditions are presented in Exhibit 5 3. No movements exceeding critical thresholds were observed during AM and PM Peak Periods in Future (2029) Background Conditions at the study area unsignalized intersections.

*Table 6-2 Future (2029) Background Conditions Traffic Operations – Unsignalized Intersections*

| Intersection | Intersection Delay (s) | Lane | Lane LOS | Lane Delay (s) | Lane V/C Ratio | Lane 95th Percentile Queue (m) | Lane Storage Capacity (m) |
|---|---|---|---|---|---|---|---|
| **AM Peak Period** | | | | | | | |
| Grahams Lane & Legion Road | 2.6 | EBLT | A | 1.0 | 0.00 | 0 | - |
| | | SBLR | A | 9.6 | 0.06 | 1 | - |
| **PM Peak Period** | | | | | | | |
| Grahams Lane & Legion Road | 3.7 | SBLR | A | 9.6 | 0.10 | 3 | - |

*Note: Red font represents movements operating above critical thresholds. N/A indicates excessive critical operations that exceeded Synchro reporting limits.*

# 7 Proposed Development

The proponent proposes to remove the existing vacant building and construct three residential buildings. Building A, located at the southeast corner of the site, would rise to 16 storeys and contain approximately 275 dwelling units. Building B, located at the southwest corner of the site, would rise to 9 storeys and contain approximately 108 dwelling units. Lastly, Building C, located at the northwest corner of the site, would rise to 20 storeys and contain approximately 245 dwelling units. The proposed site plan is illustrated in Exhibit 6 1. The site will accommodate a total of A total of 503 resident underground parking spaces and 94 visitor parking spaces (split as 76 underground and 18 above ground) would be provided. A total of three loading areas, one for each building, is proposed within the development site to accommodate delivery vehicles and refuse collection.

It must be noted that small changes in building sizes may occur as this development moves through the approval process. However, the assumptions in this report are conservative, and differences in traffic operations from these changes are expected to be negligible. Complete drawing package for development that shows site statistics used in this study is enclosed in **Appendix H**.

# 7.1 Site Access

Currently, the site has three full moves access located at Grahams Lane. To accommodate the proposed development plan, all existing accesses will be removed, and the proponent will construct a new site access between Building A and Building B that better fits the development plan with primary access to the Grahams Lane.

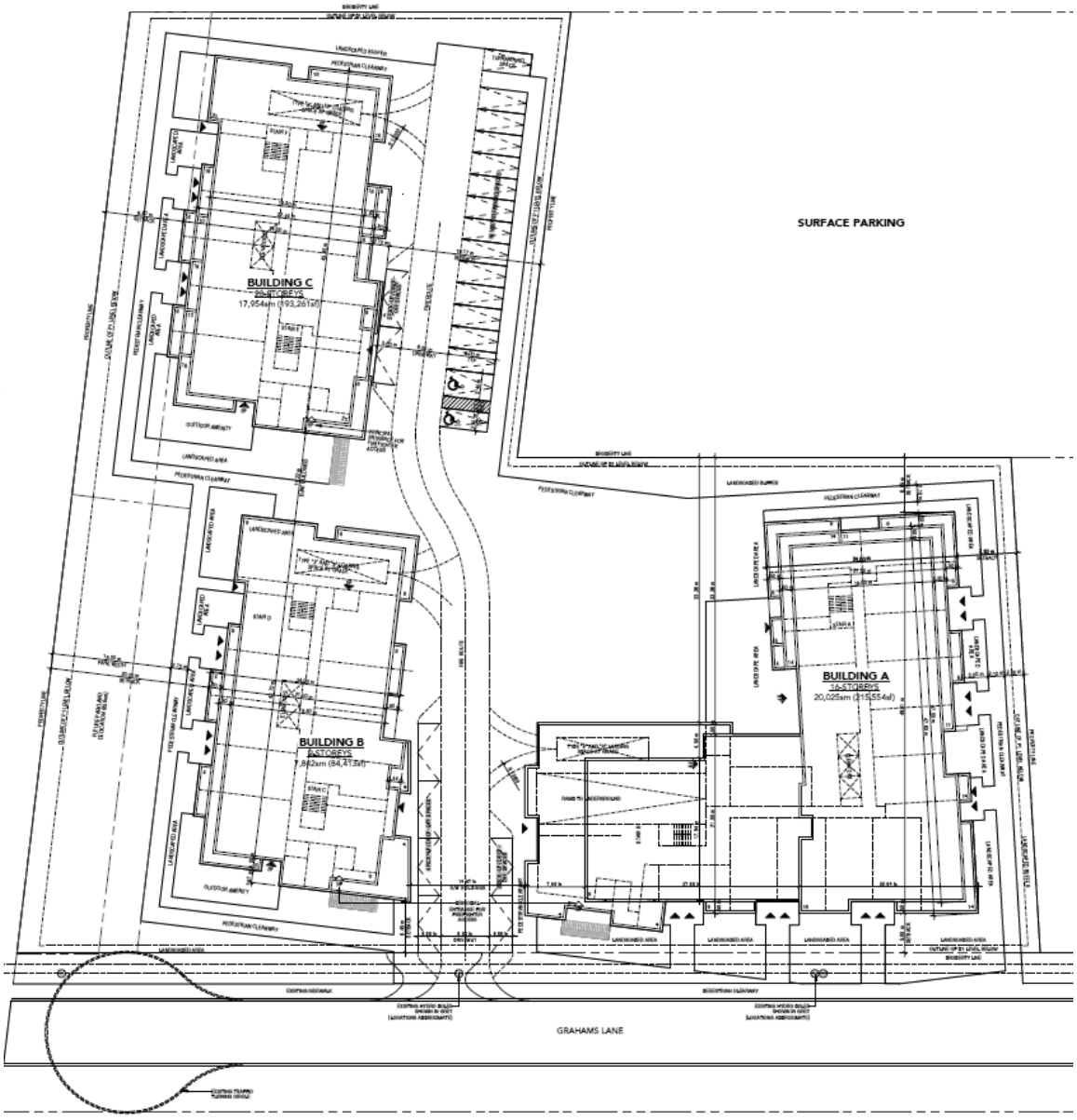



*Figure 7-1 Proposed Development Concept Site Plan*

## 7.2 Trip Generation

The trips expected to be generated from the proposed development are examined in this section. Trip generation rates from the publication Trip Generation Manual, 11th Edition (Institute of Transportation Engineers, September 2021) were used to estimate future automobile trips associated with the proposed development. Based on the proposed residential use of the site, the following land use codes (LUC) where used:

- LUC 221: Multifamily Housing (Mid-Rise); and,
- LUC 222: Multifamily Housing (High-Rise).

The trip generation calculation is summarized below in Table 7-1. The process for selecting the average rate or equation in Trip Generation Manual data is based on the flow chart presented in ITE's Trip Generation Handbook 3rd Edition.

*Table 7-1 Proposed Development Trip Generation – Building A*

| Term | Unit | Weekday AM Peak Hour | | | Weekday PM Peak Hour | | |
|---|---|---|---|---|---|---|---|
| | | In | Out | Total | In | Out | Total |
| **Building A: LUC 222 Multifamily Housing (High-Rise) – General Urban/Suburban - 316 Units (16-storey)** | | | | | | | |
| Trip Generation Equation | veh. trips / hour | T = 0.22(X) + 18.85 | | | T = 0.26(X) + 23.12 | | |
| ITE Distribution | percentage | 26% | 74% | 100% | 62% | 38% | 100% |
| Trip Generation Rate | veh. trips / hour | 0.07 | 0.22 | 0.29 | 0.21 | 0.14 | 0.35 |
| Modal Split Reduction | percentage | -3% | -9% | -12% | -3% | -9% | -12% |
| Net Trips | veh. trips / hour | 22 | 61 | 83 | 63 | 37 | 100 |
| **Building B: LUC 222 Multifamily Housing (Mid-Rise) – General Urban/Suburban - 120 Units (9-storey)** | | | | | | | |
| Trip Generation Equation | veh. trips / hour | T = 0.44(X) – 11.61 | | | T = 0.39(X) + 0.34 | | |
| ITE Distribution | percentage | 23% | 77% | 100% | 61% | 39% | 100% |
| Trip Generation Rate | veh. trips / hour | 0.08 | 0.29 | 0.37 | 0.23 | 0.16 | 0.39 |
| Modal Split Reduction | percentage | -3% | -9% | -12% | -3% | -9% | -12% |
| Net Trips | veh. trips / hour | 10 | 31 | 41 | 29 | 27 | 46 |
| **Building C: LUC 222 Multifamily Housing (High-Rise) - General Urban/Suburban - 286 Units (20-storey)** | | | | | | | |
| Trip Generation Equation | veh. trips / hour | T = 0.22(X) + 18.85 | | | T = 0.26(X) + 23.12 | | |
| ITE Distribution | percentage | 26% | 74% | 26% | 74% | 26% | 74% |
| Trip Generation Rate | veh. trips / hour | 0.07 | 0.22 | 0.07 | 0.22 | 0.07 | 0.22 |
| Modal Split Reduction | percentage | -3% | -9% | -12% | -3% | -9% | -12% |
| Net Trips | veh. trips / hour | 21 | 56 | 77 | 59 | 34 | 93 |
| **Development Total** | | | | | | | |
| Total Net New Auto Trips | veh. trips / hour | 53 | 148 | 201 | 151 | 88 | 239 |

The proposed development is expected to generate 201 two-way (53 inbound and 148 outbound) primary trips during the Weekday AM peak hour, and 239 two-way (151 inbound and 88 outbound) primary trips during the Weekday PM peak hour.

## 7.3 Trip Distribution and Assignment

The resulting net trips are distributed to the study area road network using directional distribution calculated from 2016 Transportation Tomorrow Survey (TTS) data as presented in Table 7-2.

*Table 7-2 Proposed Development Trip Distribution*

| To / From | | Inbound | | Outbound | |
|---|---|---|---|---|---|
| | | AM Peak Hour | PM Peak Hour | AM Peak Hour | PM Peak Hour |
| Brant Street | North | 35% | 30% | 38% | 45% |
| Brant Street | South | 15% | 28% | 17% | 15% |
| Fairview Street | West | 15% | 11% | 10% | 10% |
| Fairview Street | East | 25% | 21% | 25% | 20% |
| Prospect Street | | 10% | 10% | 10% | 10% |

Trip assignment shown in is prepared based on trip distribution was adjusted based on logical travel opportunities and engineering judgement.

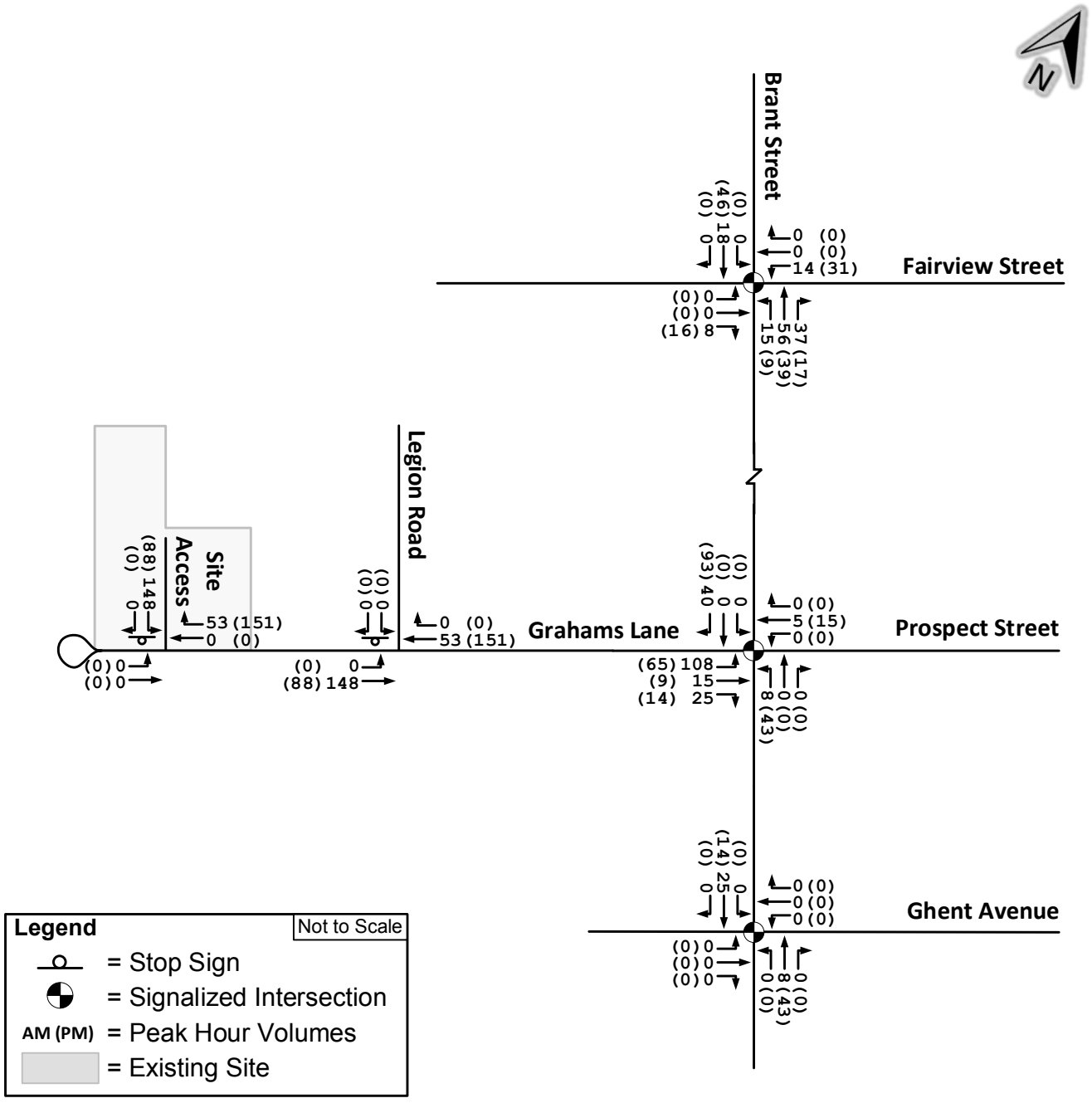



*Figure 7-2 Total Net Site Trips*

# 8 Future (2029) Total Conditions Analysis

New trips resulting from the proposed development were added to the Future (2029) Background conditions scenario, producing the Future (2029) Total traffic volumes illustrated in Exhibit 7 1.

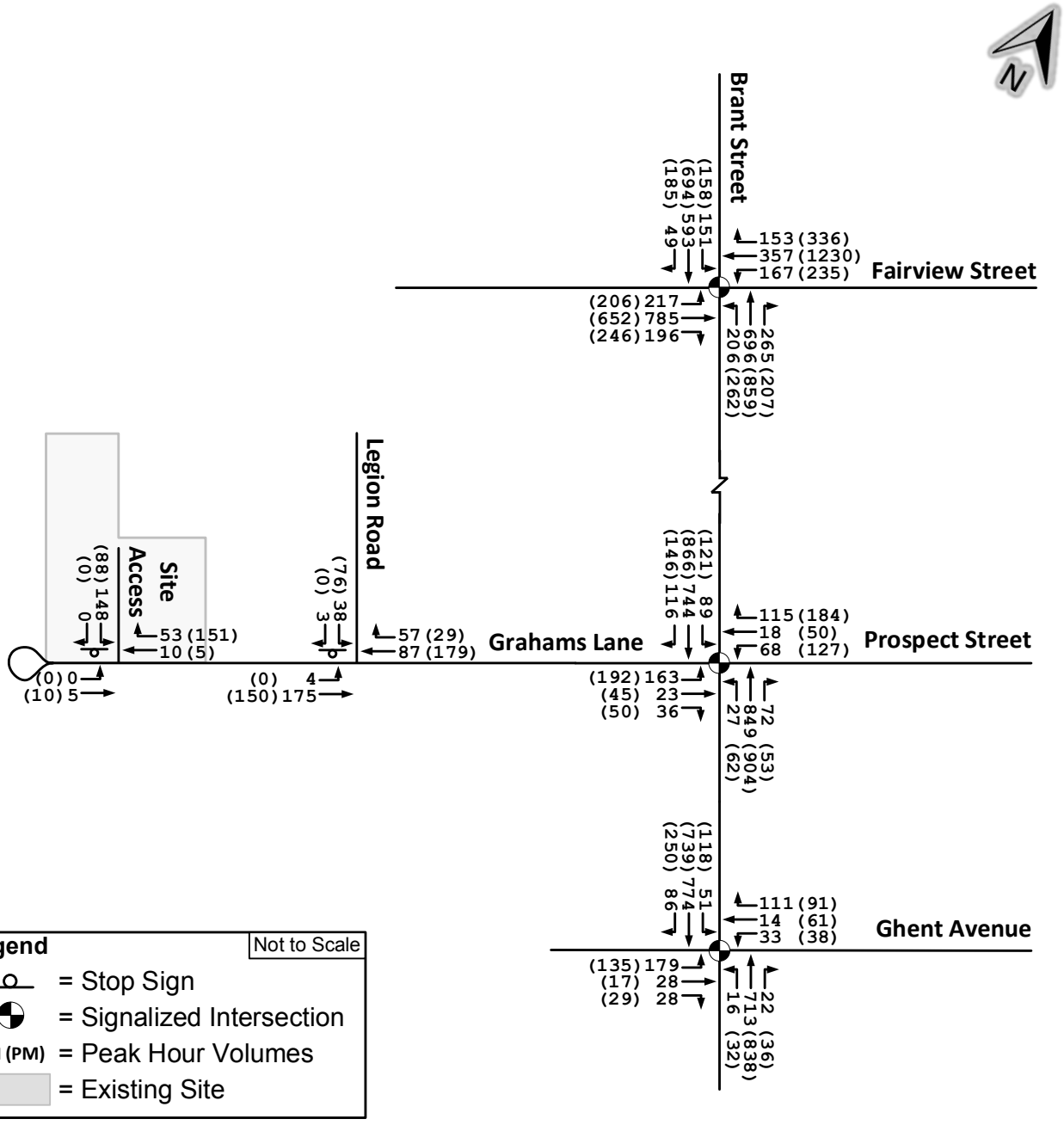



*Figure 8-1 Future (2029) Total Traffic Volumes*

Traffic operations analysis was conducted using the Future (2029) Total traffic volumes to determine future intersection performance with the impact of the proposed development. The results of the traffic operations analysis are presented in the following subsections. The traffic analysis under the Future (2029) Total conditions scenario is presented in **Appendix I**.

## 8.1 Signalized Intersections

The results of the traffic operations analysis for study area signalized intersections under Future (2029) Total conditions are presented in Table 8-1.

- The intersection of Brant Street & Grahams Lane/Prospect Street:
  - The westbound left-turn movements' 95th percentile queue lengths exceed the available storage lengths during the Weekday AM peak hour by 4 meters or less than 1 car lengths, and during the Weekday PM peak hour by 18 meters or approximately 3 car lengths.
- The intersection of Brant Street & Fairview Street:
  - Overall intersection is operating above critical threshold (v/c of 0.97) during the Weekday PM peak hour;
  - Eastbound exclusive left movement is operating above critical threshold (v/c of 1.00) during the Weekday PM peak hours;
  - Westbound through movement is operating above critical threshold (v/c of 1.00) during the Weekday PM peak hours; and,
  - Northbound through movement is operating above critical threshold (v/c of 0.88) during the Weekday PM peak hours.

Potential mitigations for this intersection under future conditions are further discussed in **Section** Error! Reference s ource not found. of this report.

*Table 8-1 Future (2029) Total Conditions Traffic Operations – Signalized Intersections*

| Intersection Name | Overall Intersection | | | Individual Approach | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | LOS | Delay | v/c Ratio | Movement | LOS | Delay (s) | v/c Ratio | 95th Percentile Queue Length (m) | Storage Capacity (m) |
| **AM Peak Period** | | | | | | | | | |
| Brant Street & Grahams Lane/Prospect Street | B | 14 | 0.56 | EBL | D | 38.9 | 0.71 | 44 | - |
| | | | | EBTR | C | 26.0 | 0.11 | 12 | - |
| | | | | WBL | C | 27.2 | 0.25 | 19 | 15 |
| | | | | WBTR | C | 26.2 | 0.13 | 15 | - |
| | | | | NBL | A | 9.6 | 0.09 | 8 | 20 |
| | | | | NBTR | B | 13.0 | 0.51 | 84 | - |
| | | | | SBL | A | 6.8 | 0.26 | 12 | 20 |
| | | | | SBTR | A | 7.4 | 0.40 | 55 | - |
| Brant Street & Ghent Avenue | B | 13.7 | 0.56 | EBLT | D | 35.8 | 0.75 | 52 | - |
| | | | | EBR | C | 21.1 | 0.02 | 5 | 35 |
| | | | | WBT | C | 23.1 | 0.28 | 23 | - |
| | | | | NBL | A | 7.6 | 0.07 | 5 | 45 |
| | | | | NBTR | A | 9.6 | 0.41 | 59 | - |
| | | | | SBL | A | 9.2 | 0.20 | 13 | 25 |
| | | | | SBTR | B | 10.2 | 0.48 | 70 | - |
| Brant Street & Fairview Street | C | 32.6 | 0.73 | EBL | C | 21.6 | 0.52 | 46 | - |
| | | | | EBT | D | 36.3 | 0.77 | 104 | - |
| | | | | EBR | C | 26.3 | 0.14 | 15 | 150 |
| | | | | WBL | E | 59.5 | 0.87 | 54 | 65 |
| | | | | WBT | C | 33.4 | 0.45 | 50 | - |
| | | | | WBR | C | 30.4 | 0.12 | 11 | - |
| | | | | NBL | C | 29.8 | 0.69 | 51 | 85 |
| | | | | NBT | D | 35.3 | 0.69 | 101 | - |
| | | | | NBR | C | 28.1 | 0.23 | 25 | 70 |
| | | | | SBL | C | 22.0 | 0.55 | 34 | 50 |
| | | | | SBT | C | 29.5 | 0.53 | 77 | - |
| | | | | SBR | C | 23.3 | 0.04 | - | - |

| Intersection Name | Overall Intersection | | | Individual Approach | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | LOS | Delay | v/c Ratio | Movement | LOS | Delay (s) | v/c Ratio | 95th Percentile Queue Length (m) | Storage Capacity (m) |
| **PM Peak Period** | | | | | | | | | |
| Brant Street & Grahams Lane/Prospect Street | B | 18.2 | 0.65 | EBL | E | 59.9 | 0.88 | 64 | - |
| | | | | EBTR | C | 25.0 | 0.14 | 17 | - |
| | | | | WBL | C | 27.3 | 0.40 | 33 | 15 |
| | | | | WBTR | C | 25.8 | 0.25 | 24 | - |
| | | | | NBL | B | 15.3 | 0.28 | 18 | 20 |
| | | | | NBTR | B | 16.0 | 0.56 | 88 | - |
| | | | | SBL | A | 9.4 | 0.38 | 16 | 20 |
| | | | | SBTR | B | 10.1 | 0.49 | 69 | - |
| Brant Street & Ghent Avenue | B | 11.4 | 0.54 | EBLT | C | 34.7 | 0.69 | 39 | - |
| | | | | EBR | C | 22.5 | 0.02 | 5 | 35 |
| | | | | WBT | C | 25.9 | 0.47 | 35 | - |
| | | | | NBL | A | 6.6 | 0.12 | 7 | 45 |
| | | | | NBTR | A | 7.7 | 0.42 | 54 | - |
| | | | | SBL | B | 10.3 | 0.39 | 24 | 25 |
| | | | | SBTR | A | 8.3 | 0.49 | 61 | - |
| Brant Street & Fairview Street | D | 47.5 | 0.97 | EBL | F | 90.8 | 1.00 | 85 | - |
| | | | | EBT | D | 35.3 | 0.61 | 93 | - |
| | | | | EBR | C | 29.5 | 0.16 | 19 | 150 |
| | | | | WBL | C | 26.8 | 0.69 | 51 | 65 |
| | | | | WBT | E | 62.4 | 1.00 | 208 | - |
| | | | | WBR | C | 28.0 | 0.33 | 39 | - |
| | | | | NBL | D | 44.2 | 0.84 | 86 | 85 |
| | | | | NBT | D | 51.3 | 0.88 | 156 | - |
| | | | | NBR | C | 33.5 | 0.20 | 26 | 70 |
| | | | | SBL | D | 35.7 | 0.66 | 40 | 50 |
| | | | | SBT | D | 49.3 | 0.80 | 107 | - |
| | | | | SBR | D | 35.2 | 0.13 | 18 | - |

*Note: Red font represents movements operating above critical thresholds. N/A indicates excessive critical operations that exceeded Synchro reporting limits.*

The calibration applied to the movement reduces the v/c and brings the movement operation within the generally acceptable range, but still exceeding critical thresholds set in Region's analysis guidelines.

## 8.2 Unsignalized Intersections

The results of the traffic operations analysis for unsignalized intersections under Future (2029) Total conditions are presented in Table 8-2. No movements exceeding critical thresholds were observed during AM and PM Peak Periods in Future (2029) Total Conditions at the study area unsignalized intersections.

*Table 8-2 Future (2029) Total Conditions Traffic Operations – Unsignalized Intersections*

| Intersection | Intersection Delay (s) | Lane | Lane LOS | Lane Delay (s) | Lane V/C Ratio | Lane 95th Percentile Queue (m) | Lane Storage Capacity (m) |
|---|---|---|---|---|---|---|---|
| **AM Peak Period** | | | | | | | |
| Grahams Lane & Legion Road | 2.6 | EBLT | A | 1.0 | 0.00 | 0 | - |
| | | SBLR | A | 9.6 | 0.06 | 1 | - |
| Grahams Lane & Prop. Site Access | 6.5 | SBLR | A | 9.5 | 0.11 | 3 | - |
| **PM Peak Period** | | | | | | | |
| Grahams Lane & Legion Road | 3.7 | SBLR | A | 9.6 | 0.10 | 3 | - |
| Grahams Lane & Prop. Site Access | 3.3 | SBLR | A | 9.5 | 0.11 | 3 | - |

*Note: Red font represents movements operating above critical thresholds. N/A indicates excessive critical operations that exceeded Synchro reporting limits.*

# 9 Traffic Analysis Summary

A comparison of signalized intersections operations under 2029 Future Background traffic conditions and 2029 Future Total traffic conditions is presented in Table 9-1. Note that comparison is only provided for intersections that exceeded the critical thresholds identified in Section 3.5.

The traffic operations analysis indicates that the addition of development site traffic to the study is expected to have a minimal effect on the existing signalized intersection operation. The signalized traffic operations analysis demonstrates that the addition of development site traffic to the study area is marginally contributes to traffic volumes at pre-existing congested movements, when comparing the maximum queue length increases of approximately two car lengths (14 metres). Potential mitigations for this intersection under future conditions are further discussed in **Section** Error! Reference source not found. of this report.

*Table 9-1 Signalized Intersection Traffic Operations Comparison*

| Intersection | Peak Hour | Movement | 2029 Future Background Conditions | | | 2029 Future Total Conditions | | | Comparison | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Delay (s) | V/C Ratio | 95th Percentile Queue (m) | Delay (s) | V/C Ratio | 95th Percentile Queue (m) | Delay (s) | V/C Ratio | 95th Percentile Queue (m) |
| Brant Street & Fairview Street | PM | EBL | 89.5 | 0.99 | 85 | 90.8 | 1.00 | 85 | +1.3 | +0.01 | 0 |
| | | EBT | 34.2 | 0.59 | 93 | 35.3 | 0.61 | 93 | +1.1 | +0.02 | 0 |
| | | EBR | 28.6 | 0.15 | 18 | 29.5 | 0.16 | 19 | +0.9 | +0.01 | +1 |
| | | WBL | 23.5 | 0.6 | 45 | 26.8 | 0.69 | 51 | +3.3 | +0.09 | +6 |
| | | WBT | 61.1 | 0.99 | 208 | 62.4 | 1.00 | 208 | +1.3 | +0.01 | 0 |
| | | WBR | 27.8 | 0.33 | 39 | 28 | 0.33 | 39 | +0.2 | 0.00 | 0 |
| | | NBL | 37.2 | 0.78 | 72 | 44.2 | 0.84 | 86 | +7.0 | +0.06 | +14 |
| | | NBT | 49 | 0.85 | 144 | 51.3 | 0.88 | 156 | +2.3 | +0.03 | +12 |
| | | NBR | 33.1 | 0.17 | 23 | 33.5 | 0.2 | 26 | +0.4 | +0.03 | +3 |
| | | SBL | 35.3 | 0.66 | 40 | 35.7 | 0.66 | 40 | +0.4 | 0.00 | 0 |
| | | SBT | 46.6 | 0.75 | 99 | 49.3 | 0.8 | 107 | +2.7 | +0.05 | +8 |
| | | SBR | 35.1 | 0.13 | 18 | 35.2 | 0.13 | 18 | +0.1 | 0.00 | 0 |

*Note: Red font represents movements operating above critical thresholds. N/A indicates excessive critical operations that exceeded Synchro reporting limits.*

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# 10 Potential Traffic Mitigation Measures

This section of the report examines potential measures to mitigate instances of high delay and movements which exceed capacity thresholds or recommend additional traffic signs to improve traffic circulation in medium-density urban setting. In order to alleviate the traffic impacts at Brant Street and Fairview Street intersection under 2029 Future Background Condition and Total Condition traffic scenarios, the following mitigation measures, as outlined in Table 10-1, were applied to improve the intersection operations.

*Table 10-1 Future Conditions – Improvement Measures Description*

| Intersection | Peak Period | Improvement |
|---|---|---|
| Brant Street and Fairview Street | PM | Manually adjusted total split timings |

The results of the analysis with the proposed mitigation measures under Future Background Condition listed above are summarized in Table 10-2 below. The detailed Synchro HCM reports with mitigation measures and revised Synchro signal plan are enclosed in **Appendix J**.

*Table 10-2 Future Background Conditions Traffic Operations with Mitigation – Brant Street and Fairview Street*

| Intersection Name | Overall Intersection | | | Individual Approach | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | LOS | Delay | v/c Ratio | Movement | LOS | Delay (s) | v/c Ratio | 95th Percentile Queue Length (m) | Storage Capacity (m) |
| **AM Peak Period** | | | | | | | | | |
| Brant Street & Fairview Street | D | 45.2 | 0.96 | EBL | E | 70.2 | 0.93 | 83 | - |
| | | | | EBT | C | 31.8 | 0.55 | 92 | - |
| | | | | EBR | C | 26.8 | 0.15 | 18 | 150 |
| | | | | WBL | C | 21.0 | 0.56 | 42 | 65 |
| | | | | WBT | D | 50.3 | 0.95 | 201 | - |
| | | | | WBR | C | 26.5 | 0.31 | 36 | - |
| | | | | NBL | D | 45.3 | 0.83 | 84 | 85 |
| | | | | NBT | E | 59.6 | 0.93 | 156 | - |
| | | | | NBR | D | 35.6 | 0.18 | 25 | 70 |
| | | | | SBL | D | 37.2 | 0.66 | 40 | 50 |
| | | | | SBT | D | 53.9 | 0.84 | 108 | - |
| | | | | SBR | D | 37.5 | 0.13 | 18 | - |

The results of the analysis with the proposed mitigation measures under Future Total Condition listed above are summarized in Table 10-3 below. The detailed Synchro HCM reports with mitigation measures and revised Synchro signal plan are enclosed in **Appendix K**.

*Table 10-3 Future Total Conditions Traffic Operations with Mitigation – Brant Street and Fairview Street*

| Intersection Name | Overall Intersection | | | Individual Approach | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | LOS | Delay | v/c Ratio | Movement | LOS | Delay (s) | v/c Ratio | 95th Percentile Queue Length (m) | Storage Capacity (m) |
| **AM Peak Period** | | | | | | | | | |
| Brant Street & Fairview Street | D | 47.7 | 0.97 | EBL | E | 71.3 | 0.93 | 83 | - |
| | | | | EBT | C | 33.1 | 0.57 | 93 | - |
| | | | | EBR | C | 27.9 | 0.16 | 19 | 150 |
| | | | | WBL | C | 23.0 | 0.64 | 48 | 65 |
| | | | | WBT | D | 51.0 | 0.95 | 201 | - |
| | | | | WBR | C | 26.6 | 0.31 | 36 | - |
| | | | | NBL | D | 49.7 | 0.86 | 90 | 85 |
| | | | | NBT | E | 65.9 | 0.97 | 167 | - |
| | | | | NBR | D | 36.1 | 0.22 | 28 | 70 |
| | | | | SBL | D | 37.5 | 0.66 | 40 | 50 |
| | | | | SBT | E | 59.6 | 0.90 | 121 | - |
| | | | | SBR | D | 37.7 | 0.13 | 18 | - |

Mitigation measures applied to the movement reduces the v/c and brings the movement operation within the generally operable range, but still exceeding critical thresholds set in Region's analysis guidelines under future background and future total volumes.

# 11 Development Plan Review

This section examines the vehicle swept path analysis, and parking required to support concept design.

## 11.1 Design Vehicle Swept Path Analysis

Analysis was conducted using AutoTURN to demonstrate that truck traffic can enter and exit the site in a forward motion and that access to waste collection and loading areas are functional. This analysis is presented in **Appendix L**.

# 12 Parking and TDM Analysis

The purpose of this section is to determine if the proposed parking supply of 598 vehicular parking spaces (803 resident parking spaces, and 146 visitor and non-residential parking spaces) and 1,576 bicycle parking spaces (1,280 long-term / secure spaces and 296 short-term spaces) is an appropriate supply to accommodate anticipated demand from the proposed development.

## 12.1 Automobile Parking Review

The property is presently governed by the City of Burlington Zoning By-law 2020 (referred to as “City’s ZBL 2020”) and the is situated in MTSA[2]Special Planning Area. According to the City’s ZBL 2020 Part 2 – Residential Zones, Section 4.3 PARKING, parking shall be provided in accordance with Part 1, Subsection 2.25 “Off-Street Parking and Loading Requirements”. According to the Part 1 – General Conditions and Provisions, Subsection 2.25.4 The number of parking spaces required for permitted uses in all zones shall be in accordance with City’s ZBL 2020 Table 1.2.6.

Resident parking will be accommodated within the site’s two levels of underground parking facility and provision for visitor parking and drop-off spaces at the surface level. This on-site parking will include a total of 598 parking spaces where the majority of those would be provided in the underground parking facility and only 16 of them will be on the ground floor. A summary of applicable parking rates and a breakdown of the proposed automobile parking spaces is outlined in Table 12-1.

*Table 12-1 Proposed Automobile Parking Supply Compared to City’s ZBL 2020 Requirements*

| Type | Units | ZBL Required Parking Rate | ZBL Required Parking Spaces | Proposed Rate | Proposed Spaces |
|---|---|---|---|---|---|
| Resident - studio & 1B | 492 | 1.0 spaces / unit | 492 | 0.70 spaces / unit | 505 |
| Resident – 2B | 188 | 1.25 spaces / unit | 235 | | |
| Resident – 3B | 42 | 1.5 spaces / unit | 63 | | |

[2] *MTSA – Major Transit Station Area, Schedule F, City of Burlington Official Plan, November 2020*

| Type | Units | ZBL Required Parking Rate | ZBL Required Parking Spaces | Proposed Rate | Proposed Spaces |
|---|---|---|---|---|---|
| Visitor | 722 | 0.25 spaces / unit | 181 | 0.13 spaces / unit | 93 |
| Maintenance | | 1 space / 75 units | 7 | - | - |
| **Total** | **722** | **1.354 spaces / unit (weighted average rate)** | **978** | **0.83 spaces / unit (blended rate)** | **598** |

Based on automobile parking rates referenced from City's ZBL 2020, the site is proposing a total of 598 spaces while it is required to provide a total of 978 parking spaces resulting in a deficiency of 380 spaces or 39% of requirement.

## 12.2 Vehicle Parking Demand Review

This section discusses anticipated vehicle parking demand for the proposed uses.

### 12.2.1 Sustainable Transportation Network

As discussed in Section 2.2, the proposed development site is located within an approximate 15-minute walk of eight Burlington Transit routes connecting with either the Downtown Terminal or the Burlington GO Transit rail station, as well as the rail station itself. While rail service currently operates every 15 minutes during the peak hours and every 30 minutes during off-peak hours, the GO Expansion program seeks to transform the rail line from a weekday commuter-oriented service to a "suburban subway" offering fast, frequent service suitable for a wide variety of trip purposes. This is expected to reduce parking demand at the proposed development site by shifting automobile drivers to full-time transit users.

As discussed in Section 2.3, the proposed development site is also well connected to the City of Burlington cycling network, with Grahams Lane designated as a Bicycle Priority Street and with connections to downtown Burlington and to the Burlington GO station available via existing bicycle lanes, bicycle priority streets, or multi-use paths. This, combined with secure bicycle parking proposed as part of the development, is expected to reduce parking demand by enabling cycling as a convenient alternative to automobile travel for trips to employment and commercial areas, or to transit stations where onward connections are available.

### 12.2.2 Parking Occupancy Observations

In order to determine an appropriate parking supply for the proposed residential uses, a review of real-world parking observations at multiple existing residential development in the City of Burlington was conducted to better understand parking demand among the likely residents of the proposed development.

*Table 12-2 Proxy Site Observations*

| Proxy Site | Count Date | Source | Peak Resident Parking Demand | Peak Visitor Parking Demand | Combined Peak Parking Demand |
|---|---|---|---|---|---|
| 551 Maple Avenue | November 2016 | PTSL[3] | 0.80 resident spaces per unit | 0.19 visitor spaces per unit | 0.99 spaces per unit |
| 360 Pearl Street | November 2016 | PTSL[4] | 0.76 resident spaces per unit | 0.13 visitor spaces per unit | 0.89 spaces per unit |
| 5340 Lakeshore Road | March 2017 | C.F. Crozier[5] | 1.07 resident spaces per unit | 0.10 visitor spaces per unit | 1.17 spaces per unit |

Based on observations collected in the City of Burlington, peak parking demand was observed to be 0.89 to 1.17 spaces per unit among legacy residents. Based on 722 dwellings, this translates to approximately 845 spaces being required in the event that no behavioral change compared to 2016-2017 conditions is considered. This is less than the 1.35 parking spaces which would be required under the zoning by-law, which suggests that providing 978 parking spaces would lead to an over-supply of parking.

### 12.2.3 Quality of and Proximity to Rapid Transit

While peak parking demand was observed to be 0.89 to 1.17 spaces per unit among legacy residents, it must be noted that past parking behavior does not necessarily dictate future parking demand due to increased availability of rapid transit services, and that the proxy sites referenced are located further from GO Transit rail services than the proposed development site.

With respect to the availability of higher-order transit, while GO Transit rail frequencies in 2016-2017 were largely comparable to service in 2023, notable connections were unavailable to proxy site residents when individual transportation mode choice and automobile ownership decisions were being made. Namely, two-way all-day GO Transit rail service to West Harbour station in the neighbouring City of Hamilton was unavailable, with Hamilton-bound transfer-free service from Burlington only available during the afternoon peak period. Given employment, commercial, and post-secondary education uses in Hamilton, it is likely that the availability of all-day, two-way service would have translated to lower parking demand at the proxy site had it been available prior to 2021. Looking into the future, the previously mentioned GO Expansion program seeks to transform GO Transit rail service from a rush-hour commuter orientation to faster, higher-frequency transit service for which timetables need not be consulted. These expansions are expected to be transformative, and result in levels of transit accessibility and convenience previously only available within the metropolitan core. Specifically, Metrolinx and GO Transit notes that over 10,000 weekly departures would be offered from 3,500 offered in 2019, resulting in

[3] Old Lakeshore Road Transportation Impact Study, Parking Study and TDM Options Report (Paradigm Transportation Solutions Limited, February 2020)
[4] Old Lakeshore Road Transportation Impact Study, Parking Study and TDM Options Report (Paradigm Transportation Solutions Limited, February 2020)
[5] Parking Justification Study – 441 Maple Avenue (C.F. Crozier & Associates Inc., December 2018)

increased frequency to Burlington and the development site area, and an increased ability to connect onward to destination in other parts of the region previously inaccessible by rail.

In addition to sustainable transportation not available to legacy residents, it must be noted that while the proposed development site is located within the MTSA, the noted proxy sites are located further from higher-order transit links. Specifically, whereas the proposed development site is located approximately 15 minutes walking time away from the rail station, both 551 Maple Avenue and 360 Pearl Street are located 40 minutes walking time away. 5340 Lakeshore Road is located east of downtown Burlington and is approximately 55 minutes walking time away from Appleby GO station. Based on these differences, it is likely that parking demand would be higher at the proxy sites than at the proposed development site gives lower access to rail transit.

In order to determine an appropriate adjustment parking supply for the proposed development given differences between transit availability and proximity when compared to the proxy sites, the Region of Waterloo Transportation Demand Management Implementation Checklist and Parking Management Worksheet (Region of Waterloo, 2013) was consulted in order to quantify difference between these factors. The Region of Waterloo TDM checklist is recognized by many municipalities as a means of quantifying the impact of various transportation demand management policies, incentives, and design features on parking demand. The checklist is recognized by both urban and rural municipalities within Waterloo Region, as well as by the Town of Milton, City of Hamilton, and the City of Vaughan. Internationally, the checklist is recognized by the City of Fort Collins, Colorado, and the City of Boise, Idaho.

Based on the checklist, if proximity to transit is considered alone then a 24% reduction in parking demand over baseline conditions can be expected if a development located within walking distance of a rapid transit station. This suggests that, based on baseline conditions of 0.89 to 1.17 parking spaces per unit outside of MTSA, equivalent parking demand within the MTSA is expected to be between 0.68 and 0.89 parking spaces per unit. Given that the proposed parking supply falls within this range, the proposed parking supply is expected to be sufficient to accommodate anticipated demand. Further, the increased service quality proposed by the GO Expansion program is expected to decrease parking demand compared to the existing service being provided. This further underscores the expectation that the 598 parking spaces is expected to be sufficient to accommodate anticipated parking demand at the proposed development.

## 12.3 Accessible Parking Review

In addition, the proposed development needs to provide accessible parking spaces. The site is governed by both City's ZBL 2020 and City's Accessibility Design Guidelines, Third Edition, April 2016 (referred to as "City's Accessibility Guidelines 2016"). A summary of required accessible parking spaces is outlined in Table 12-1.

*Table 12-3 Required Accessible Parking Supply Compared to City's Requirements*

| | | |
|---|---|---|
| **Required Total Automobile Parking Spaces as per City's ZBL 2020** | | 978 spaces |
| **Required Accessible Parking as per City's ZBL 2020** | **Rate** | 3% of required parking spaces |
| | **Spaces** | 30 spaces<br>(15 Type A and 15 Type B) |
| **Required Accessible Parking as per City's Accessibility Guidelines 2016** | **Rate** | 2+2% of required parking spaces |
| | **Spaces** | 22 spaces<br>(11 Type A and 11 Type B) |

The Site is deficient in accessible parking requirement as per City's ZBL 2020 and City's Accessibility Guidelines 2016 with respect to the total spaces required as per City's ZBL 2020 for proposed development.

In comparison, a summary of required accessible automobile parking spaces relative to the proposed parking supply is outlined in Table 12-4.

*Table 12-4 Proposed Accessible Parking Supply Compared to City's Requirements*

| | | |
|---|---|---|
| **Proposed Automobile Parking** | | 598 spaces |
| **Proposed Accessible Spaces** | **Rate** | 2.34% of total proposed spaces |
| | **Spaces** | 14 spaces<br>(7 Type A and 7 Type B) |
| **Required Accessible Parking as per City's ZBL 2020** | **Rate** | 3% of required parking spaces |
| | **Spaces** | 18 spaces<br>(9 Type A and 9 Type B) |
| **Proposed Accessible Parking as per City's Accessibility Guidelines 2016** | **Rate** | 2+2% of required parking spaces |
| | **Spaces** | 14 spaces<br>(7 Type A and 7 Type B) |

When calculating the accessible parking requirement relative to the proposed parking, the Site meets the requirements under City's Accessibility Guidelines 2016.

## 12.4 Bicycle Parking Review

Currently, bicycle parking requirements are not outlined in the City's ZBL 2020 for residential land uses. Nonetheless, the development site does provide bicycle parking facilities for short-term and long-term bicycle parking. The proposed bicycle parking rate and quantities are summarized below in Table 12-5.

*Table 12-5 Proposed Bicycle Parking Supply*

| | | |
|---|---|---|
| **Proposed Bicycle Parking Total** | | 398 spaces |
| **Proposed Short-Term Spaces** | **Rate** | 0.05 per unit |
| | **Spaces** | 36 |
| **Proposed Long-Term Spaces** | **Rate** | 0.5 per unit |
| | **Spaces** | 362 |

Development site proposes 36 short-term and 362 long-term bicycle parking spaces.

## 12.5 Transportation Demand Management Incentives

Transportation Demand Management (TDM) refers to policies, incentives, and design features which encourage sustainable transportation choices. As the proposed development is equipped with 362 secure bicycle parking spaces, and is proposed to be located near existing and future cycling and transit facilities, the following measures are recommended to better leverage these sustainable transportation opportunities:

- The provision of bicycle repair tools and stations, to be located within bicycle locker zones. This measure is expected to incentivize cycling as a more feasible means of transportation; and
- The addition of a real-time transit and transportation information screen, to be installed at an easily accessible area for residents.

Furthermore, to assess the efficiency of the noted TDM measures, it is recommended to develop a transportation monitoring program to monitor development levels and travel patterns as the transportation network and associated improvements are implemented through phased redevelopment. Such a transportation monitoring plan is proposed to entail periodic commuting surveys including one survey being undertaken at the time of move-in, and another other being conducted in three years' time.

# 13 Conclusions

This section summarizes the key findings of this transportation impact study (TIS).

## 13.1 TIS Findings

The proposed development, located at 1393 Grahams Lane in the City of Burlington, consists of 3 residential buildings. Building A, located at the southeast corner of the site, would rise to 16 storeys and contain approximately 316 dwelling units. Building B, located at the southwest corner of the site, would rise to 9 storeys and contain approximately 120 dwelling units. Lastly, Building C, located at the northwest corner of the site, would rise to 20 storeys and contain approximately 286 dwelling units. A total of 505 resident underground parking spaces and 93 visitor parking spaces (split as 582 underground and 16 above ground) would be provided, with primary access via Grahams Lane between Building A and Building B.

The proposed development is expected to generate 201 two-way (53 inbound and 148 outbound) primary trips during the Weekday AM peak hour, and 239 two-way (151 inbound and 88 outbound) primary trips during the Weekday PM peak hour. Under Future 2029 Total Conditions, intersection capacity analysis indicates that:

- The intersection of Brant Street & Grahams Lane/Prospect Street:
  - The westbound left-turn movements' 95th percentile queue lengths exceed the available storage lengths during the Weekday AM peak hour by 4 meters or less than 1 car lengths, and during the Weekday PM peak hour by 18 meters or approximately 3 car lengths.
- The intersection of Brant Street & Fairview Street:
  - Overall intersection is operating above critical threshold (v/c of 0.97) during the Weekday PM peak hour;
  - Eastbound exclusive left movement is operating above critical threshold (v/c of 1.00) during the Weekday PM peak hours;
  - Westbound through movement is operating above critical threshold (v/c of 1.00) during the Weekday PM peak hours; and,
  - Northbound through movement is operating above critical threshold (v/c of 0.88) during the Weekday PM peak hours.

The traffic operations analysis indicates that the addition of development site traffic to the study is expected to have a minimal effect on the existing signalized intersection operation. The signalized traffic operations analysis demonstrates that the addition of development site traffic to the study area is marginally contributes to traffic volumes at pre-existing congested movements, when comparing the queue length increases of approximately less than one car length (7.5 metres). For unsignalized intersections under existing, background and total traffic operations are presented, no movements are exceeding critical thresholds during AM and PM Peak Periods at the study area intersections.

## 13.2 Vehicle Swept Path Analysis

Analysis was conducted using AutoTURN to demonstrate that truck traffic can enter and exit the site in a forward motion and that access to waste collection and loading areas are functional.

## 13.3 Parking Analysis

Based on automobile parking rates referenced from City's ZBL 2020, the site is proposing a total of 598 spaces while it is required to provide a total of 978 parking spaces. While the proposed parking supply translates to 0.83 spaces per unit provided, a review of parking occupancy studies, the availability of existing and future sustainable transportation options, and the provision of a real-time transit information display suggest that actual demand will be as low as 0.68 spaces per unit. This suggests that the proposed parking supply will likely be sufficient to accommodate anticipated demand. When calculating the accessible parking requirement relative to the proposed parking, the Site meets the requirements of 14 accessible spaces under City's Accessibility Guidelines 2016.

The development site proposes to provide 36 short-term and 362 long-term bicycle parking spaces, and the provision of bicycle repair tools can be utilized as a TDM incentive to further increase cycling as an alternative to automobile travel.

# 14 Potential Recommendations

Based on the key findings of this transportation impact study, the following potential recommendations are proposed:

## 14.1 Signalized Intersection Potential Improvements

With the proposed signal plan changes, the intersection of Brant Street and Fairview Street can operate with improved capacity under future conditions. It is however acknowledged that this measure may be limited by traffic signal coordination requirements with adjacent traffic signals along the Fairview Street corridor.

| Intersection | Peak Period | Improvement |
|---|---|---|
| Brant Street and Fairview Street | PM | Manually adjusted total split timings |

# Appendix A – Study Terms of Reference

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October 2, 2023

Sandra Lucas
Supervisor of Transportation Planning
Transportation Services Department
City of Burlington

426 Brant Street
Burlington, ON L7R 3Z6

Dear Sandra Lucas:

**SCOPE OF WORK FOR TRANSPORTATION IMPACT STUDY FOR PROPOSED DEVELOPMENT AT 1393 GRAHAMS LANE, BURLINGTON**

This letter provides our proposed scope of work for a proposed development located at 1393 Grahams Lane in the City of Burlington.

The development consists of the redevelopment of a commercial property into a vibrant master-planned residential community consisting of 3 buildings. Building A, located at the southeast corner of the site, would rise to 16 storeys and contain approximately 275 dwelling units. Building B, located at the southwest corner of the site, would rise to 9 storeys and contain approximately 108 dwelling units. Lastly, Building C, located at the northwest corner of the site, would rise to 20 storeys and contain approximately 245 dwelling units. A total of 503 resident underground parking spaces and 94 visitor parking spaces (split as 76 underground and 18 above ground) would be provided, with primary access via Grahams Lane between Building A and Building B.

While changes to site plan and site statistics may occur as the development progresses through the approval process, we anticipate that transportation impacts will be consistent with the concept described above. Nevertheless, our submission will reflect the most up-to-date information available.

## Work Plan – Transportation Impact Study

The tasks that will be completed for the transportation impact study are as follows:

1. **Analysis Time Periods and Intersections:** Based on the proposed development's residential land use, we plan to analyze the weekday AM peak period (7:00 a.m. – 9:00 a.m.) and weekday PM peak period (4:00 p.m. – 6:00 p.m.). The following intersections will be included in this analysis:
    1. Brant Street (Halton Regional Road 18) and Fairview Street (signalized);
    2. Brant Street and Grahams Lane / Prospect Street (signalized);
    3. Brant Street and Ghent Avenue (signalized);
    4. Grahams Lane and Legion Road (unsignalized);

5. Future Road and Grahams Lane (unsignalized); and
6. Grahams Lane and Proposed Site Access (unsignalized).

2. **2023 Existing Conditions:** The 2023 existing traffic operations will be analyzed using the software program Synchro (version 11) for the weekday AM and weekday PM peak hours, for the existing intersections listed above. Turning movement count data at the existing study area intersections will be collected.

3. **Future Background Traffic Conditions:** The 2028 background traffic volumes will be determined for the study area intersections, which coincides with five years from the publication date of the study. This approach is consistent with the *Halton Region Transportation Impact Study Guidelines (January 2015)* requirements. We will identify an applicable background traffic growth rate and other area developments which may introduce traffic into the study area. Any future road network or intersection changes proposed by the review agencies, or outlined in the capital works program, will be taken into consideration.

   The 2028 background traffic analysis will identify and determine the impacts of the adjacent developments without the proposed site traffic under existing and future roadway conditions.

4. **Site Traffic Generation and Trip Distribution:** The trip generation for the proposed development will be based on the information presented in the Institute of Transportation Engineers ("ITE") publication, *Trip Generation, 11th Edition*. A review of the modal split will also be undertaken to account for the trips being made by non-auto modes of travel. The City's Transportation Master Plan will be used as a tool for this review.

   The trip distribution for the proposed residential development will be based on a review of existing travel patterns, the 2016 Transportation Tomorrow Survey (TTS), and the available road network. The forecast site traffic for the development will be added to the road network based on the trip distribution, and assigned to the network based on logical travel routes and available traffic capacity. Trips associated with the existing land uses (i.e., warehouse) will be deducted from the net new trip generation, distribution, and assignment, as appropriate.

5. **Future Total Traffic Conditions**: The estimated site traffic volumes will be combined with the 2028 background traffic volumes to determine the 2028 total traffic volumes, respectively, for the study area intersections.

   Intersection operations analysis will be undertaken for the weekday AM and weekday PM peak hours. Any necessary road improvements required to accommodate total traffic volumes and mitigate traffic impacts as per review agency standards will be identified if necessary, such as additional turning lanes, storage length modifications, and / or traffic control signals.

6. **Parking Regulations Review and Parking Observations**: To inform the proposed parking supply for the site, Arcadis IBI Group will compare the proposed parking supply to the applicable zoning by-law requirement (City of Burlington Zoning By-law 2020). Arcadis IBI Group will also conduct parking occupancy observations at a comparable development within the City of Burlington or surrounding area during the following days and time periods to coincide with times of peak demand for residents and visitors:

   1. One weekday from 6:00 p.m. to 12:00 a.m.;

2. One Friday from 6:00 p.m. to 12:00 a.m.; and
3. One Saturday from 6:00 a.m. to 1:00 p.m.

The parking surveys will record the existing parking demand on the site every 30 minutes, and will allow for a peak parking demand ratio to be calculated. This is anticipated to provide a basis and justification for supporting reduced parking supply on the site, if needed.

If you have any questions regarding the proposed scope of work for the 1393 Grahams Lane development, please do not hesitate to contact us.

Yours truly,

**ARCADIS IBI GROUP**



**Jason Endrawis**, P. Eng.
Transporation Engineer,
Transportation Systems
416 596 1930 ext 61356
jason.endrawis@arcadis.com

# Appendix B – Turning Movement Counts

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

# Project #23-401 - Arcadis Professional Services (Canada) Inc.

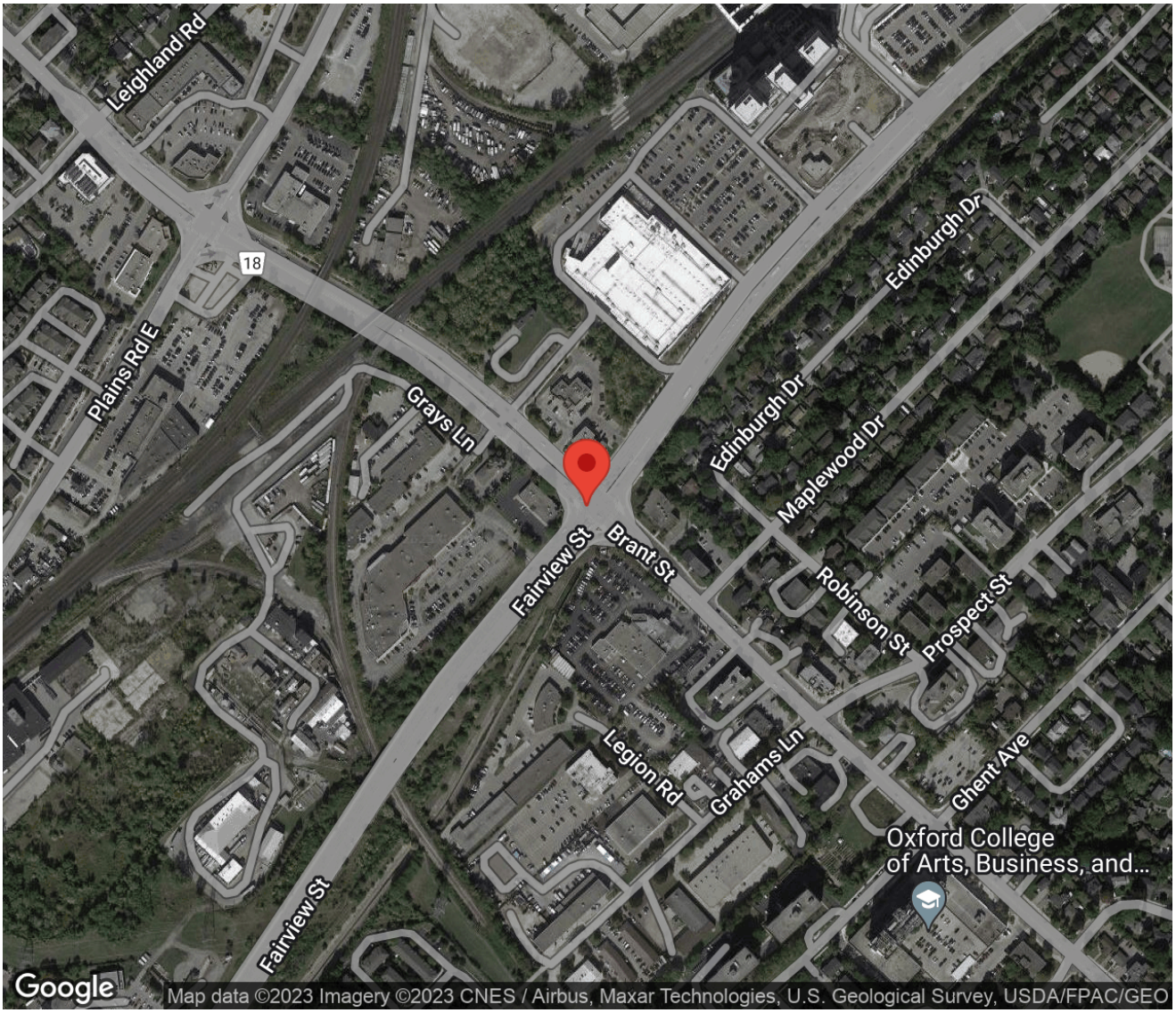
## Intersection Count Report

| | |
|---|---|
| **Intersection:** | Fairview St & Brant St |
| **Municipality:** | Burlington |
| **Count Date:** | Tuesday, Dec 05, 2023 |
| **Site Code:** | 2340100001 |
| **Count Categories:** | Cars, Trucks, Bicycles, Pedestrians |
| **Count Period:** | 07:00-09:00, 16:00-18:00 |
| **Weather:** | Clear |
| **Comments:** | |

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

# Traffic Count Map

| | |
|---|---|
| Intersection: | Fairview St & Brant St |
| Site Code: | 2340100001 |
| Municipality: | Burlington |
| Count Date: | Dec 05, 2023 |



Ontario Traffic Inc.
Traffic Monitoring • Services & Products

# Traffic Count Summary

| | |
|---|---|
| Intersection: | Fairview St & Brant St |
| Site Code: | 2340100001 |
| Municipality: | Burlington |
| Count Date: | Dec 05, 2023 |

## Brant St - Traffic Summary

| | North Approach Totals | | | | | | South Approach Totals | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Includes Cars, Trucks, Bicycles | | | | | | Includes Cars, Trucks, Bicycles | | | | | | |
| Hour | Left | Thru | Right | U-Turn | Total | Peds | Left | Thru | Right | U-Turn | Total | Peds | Total |
| 07:00 - 08:00 | 103 | 314 | 39 | 0 | 456 | 14 | 103 | 370 | 135 | 0 | 608 | 12 | 1064 |
| 08:00 - 09:00 | 151 | 522 | 49 | 0 | 722 | 3 | 159 | 506 | 201 | 0 | 866 | 12 | 1588 |
| BREAK | | | | | | | | | | | | | |
| 16:00 - 17:00 | 158 | 519 | 188 | 0 | 865 | 22 | 233 | 667 | 169 | 0 | 1069 | 11 | 1934 |
| 17:00 - 18:00 | 160 | 525 | 172 | 0 | 857 | 13 | 209 | 577 | 162 | 0 | 948 | 11 | 1805 |
| **GRAND TOTAL** | **572** | **1880** | **448** | **0** | **2900** | **52** | **704** | **2120** | **667** | **0** | **3491** | **46** | **6391** |

Ontario Traffic Inc.
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# Traffic Count Summary

| | |
|---|---|
| Intersection: | Fairview St & Brant St |
| Site Code: | 2340100001 |
| Municipality: | Burlington |
| Count Date: | Dec 05, 2023 |

## Fairview St - Traffic Summary

| | East Approach Totals | | | | | | West Approach Totals | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Includes Cars, Trucks, Bicycles | | | | | | Includes Cars, Trucks, Bicycles | | | | | | |
| Hour | Left | Thru | Right | U-Turn | Total | Peds | Left | Thru | Right | U-Turn | Total | Peds | Total |
| 07:00 - 08:00 | 81 | 232 | 137 | 0 | 450 | 31 | 314 | 714 | 119 | 0 | 1147 | 14 | 1597 |
| 08:00 - 09:00 | 144 | 340 | 153 | 0 | 637 | 32 | 217 | 748 | 174 | 0 | 1139 | 11 | 1776 |
| BREAK | | | | | | | | | | | | | |
| 16:00 - 17:00 | 167 | 1126 | 314 | 0 | 1607 | 31 | 209 | 625 | 204 | 1 | 1039 | 11 | 2646 |
| 17:00 - 18:00 | 183 | 1234 | 326 | 0 | 1743 | 40 | 206 | 639 | 200 | 0 | 1045 | 13 | 2788 |
| **GRAND TOTAL** | **575** | **2932** | **930** | **0** | **4437** | **134** | **946** | **2726** | **697** | **1** | **4370** | **49** | **8807** |

Ontario Traffic Inc.
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# Traffic Count Data

Intersection: Fairview St & Brant St
Site Code: 2340100001
Municipality: Burlington
Count Date: Dec 05, 2023

## North Approach - Brant St

| Start Time | Cars | | | | | Trucks | | | | | Bicycles | | | | | Total Peds |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ↰ | ↑ | ↱ | ↻ | Total | ↰ | ↑ | ↱ | ↻ | Total | ↰ | ↑ | ↱ | ↻ | Total | |
| **07:00** | 15 | 37 | 5 | 0 | 57 | 1 | 4 | 1 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 3 |
| **07:15** | 22 | 47 | 11 | 0 | 80 | 3 | 2 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 |
| **07:30** | 28 | 74 | 11 | 0 | 113 | 3 | 3 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 4 |
| **07:45** | 29 | 143 | 11 | 0 | 183 | 2 | 4 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 7 |
| **08:00** | 32 | 119 | 10 | 0 | 161 | 4 | 3 | 2 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 1 |
| **08:15** | 25 | 133 | 7 | 0 | 165 | 3 | 2 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 1 |
| **08:30** | 41 | 116 | 14 | 0 | 171 | 5 | 2 | 1 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 1 |
| **08:45** | 39 | 143 | 13 | 0 | 195 | 2 | 4 | 2 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 |
| **SUBTOTAL** | 231 | 812 | 82 | 0 | 1125 | 23 | 24 | 6 | 0 | 53 | 0 | 0 | 0 | 0 | 0 | 17 |

Ontario Traffic Inc.
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# Traffic Count Data

Intersection: Fairview St & Brant St
Site Code: 2340100001
Municipality: Burlington
Count Date: Dec 05, 2023

## North Approach - Brant St

| Start Time | Cars | | | | | Trucks | | | | | Bicycles | | | | | Total Peds |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ↰ | ↑ | ↱ | ↶ | Total | ↰ | ↑ | ↱ | ↶ | Total | ↰ | ↑ | ↱ | ↶ | Total | |
| **16:00** | 39 | 116 | 49 | 0 | 204 | 1 | 5 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 10 |
| **16:15** | 35 | 139 | 45 | 0 | 219 | 1 | 3 | 2 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 2 |
| **16:30** | 40 | 112 | 34 | 0 | 186 | 3 | 0 | 2 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 8 |
| **16:45** | 37 | 144 | 54 | 0 | 235 | 2 | 0 | 2 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 2 |
| **17:00** | 39 | 113 | 45 | 0 | 197 | 1 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 2 |
| **17:15** | 39 | 156 | 43 | 0 | 238 | 3 | 1 | 2 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 8 |
| **17:30** | 40 | 111 | 42 | 0 | 193 | 1 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| **17:45** | 35 | 143 | 39 | 0 | 217 | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 2 |
| **SUBTOTAL** | 304 | 1034 | 351 | 0 | 1689 | 14 | 10 | 9 | 0 | 33 | 0 | 0 | 0 | 0 | 0 | 35 |
| **GRAND TOTAL** | **535** | **1846** | **433** | **0** | **2814** | **37** | **34** | **15** | **0** | **86** | **0** | **0** | **0** | **0** | **0** | **52** |

Ontario Traffic Inc.
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# Traffic Count Data

Intersection: Fairview St & Brant St
Site Code: 2340100001
Municipality: Burlington
Count Date: Dec 05, 2023

## South Approach - Brant St

| Start Time | Cars | | | | | Trucks | | | | | Bicycles | | | | | Total Peds |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ↰ | ↑ | ↱ | ↶ | Total | ↰ | ↑ | ↱ | ↶ | Total | ↰ | ↑ | ↱ | ↶ | Total | |
| **07:00** | 11 | 65 | 24 | 0 | 100 | 0 | 3 | 1 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 2 |
| **07:15** | 19 | 83 | 27 | 0 | 129 | 1 | 5 | 1 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 3 |
| **07:30** | 30 | 98 | 38 | 0 | 166 | 2 | 5 | 3 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 3 |
| **07:45** | 36 | 104 | 37 | 0 | 177 | 4 | 7 | 4 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 4 |
| **08:00** | 30 | 131 | 43 | 0 | 204 | 1 | 7 | 5 | 0 | 13 | 0 | 0 | 0 | 0 | 0 | 2 |
| **08:15** | 40 | 131 | 56 | 0 | 227 | 1 | 4 | 2 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 3 |
| **08:30** | 44 | 118 | 48 | 0 | 210 | 2 | 3 | 5 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 4 |
| **08:45** | 38 | 108 | 39 | 0 | 185 | 3 | 4 | 3 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 3 |
| **SUBTOTAL** | 248 | 838 | 312 | 0 | 1398 | 14 | 38 | 24 | 0 | 76 | 0 | 0 | 0 | 0 | 0 | 24 |

Ontario Traffic Inc.
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# Traffic Count Data

Intersection: Fairview St & Brant St
Site Code: 2340100001
Municipality: Burlington
Count Date: Dec 05, 2023

## South Approach - Brant St

| Start Time | Cars | | | | | Trucks | | | | | Bicycles | | | | | Total Peds |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ↰ | ↑ | ↱ | ↶ | Total | ↰ | ↑ | ↱ | ↶ | Total | ↰ | ↑ | ↱ | ↶ | Total | |
| **16:00** | 64 | 145 | 32 | 0 | 241 | 1 | 1 | 2 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 4 |
| **16:15** | 48 | 180 | 39 | 0 | 267 | 3 | 2 | 3 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 3 |
| **16:30** | 66 | 170 | 50 | 0 | 286 | 1 | 2 | 1 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 2 |
| **16:45** | 50 | 163 | 41 | 0 | 254 | 0 | 4 | 1 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 2 |
| **17:00** | 62 | 183 | 36 | 0 | 281 | 0 | 2 | 1 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 4 |
| **17:15** | 41 | 129 | 47 | 0 | 217 | 0 | 1 | 2 | 0 | 3 | 0 | 1 | 0 | 0 | 1 | 3 |
| **17:30** | 62 | 132 | 39 | 0 | 233 | 1 | 1 | 2 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 1 |
| **17:45** | 43 | 126 | 34 | 0 | 203 | 0 | 2 | 1 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 3 |
| **SUBTOTAL** | 436 | 1228 | 318 | 0 | 1982 | 6 | 15 | 13 | 0 | 34 | 0 | 1 | 0 | 0 | 1 | 22 |
| **GRAND TOTAL** | **684** | **2066** | **630** | **0** | **3380** | **20** | **53** | **37** | **0** | **110** | **0** | **1** | **0** | **0** | **1** | **46** |

Ontario Traffic Inc.
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# Traffic Count Data

Intersection: Fairview St & Brant St
Site Code: 2340100001
Municipality: Burlington
Count Date: Dec 05, 2023

## East Approach - Fairview St

| Start Time | Cars | | | | | Trucks | | | | | Bicycles | | | | | Total Peds |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ↰ | ↑ | ↱ | ↶ | Total | ↰ | ↑ | ↱ | ↶ | Total | ↰ | ↑ | ↱ | ↶ | Total | |
| **07:00** | 9 | 42 | 13 | 0 | 64 | 2 | 5 | 10 | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 5 |
| **07:15** | 14 | 61 | 33 | 0 | 108 | 3 | 6 | 8 | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 6 |
| **07:30** | 21 | 50 | 39 | 0 | 110 | 5 | 5 | 4 | 0 | 14 | 0 | 0 | 0 | 0 | 0 | 6 |
| **07:45** | 25 | 57 | 27 | 0 | 109 | 2 | 6 | 3 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 14 |
| **08:00** | 35 | 62 | 21 | 0 | 118 | 4 | 5 | 8 | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 9 |
| **08:15** | 32 | 72 | 29 | 0 | 133 | 5 | 5 | 6 | 0 | 16 | 0 | 0 | 0 | 0 | 0 | 12 |
| **08:30** | 29 | 87 | 37 | 0 | 153 | 3 | 5 | 7 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 6 |
| **08:45** | 31 | 95 | 43 | 0 | 169 | 5 | 9 | 2 | 0 | 16 | 0 | 0 | 0 | 0 | 0 | 5 |
| **SUBTOTAL** | 196 | 526 | 242 | 0 | 964 | 29 | 46 | 48 | 0 | 123 | 0 | 0 | 0 | 0 | 0 | 63 |

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# Traffic Count Data

Intersection: Fairview St & Brant St
Site Code: 2340100001
Municipality: Burlington
Count Date: Dec 05, 2023

## East Approach - Fairview St

| Start Time | Cars | | | | | Trucks | | | | | Bicycles | | | | | Total Peds |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ↰ | ↑ | ↱ | ↶ | Total | ↰ | ↑ | ↱ | ↶ | Total | ↰ | ↑ | ↱ | ↶ | Total | |
| **16:00** | 33 | 256 | 57 | 0 | 346 | 2 | 6 | 5 | 0 | 13 | 0 | 0 | 0 | 0 | 0 | 6 |
| **16:15** | 59 | 272 | 97 | 0 | 428 | 2 | 4 | 3 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 7 |
| **16:30** | 33 | 265 | 66 | 0 | 364 | 1 | 3 | 2 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 12 |
| **16:45** | 36 | 316 | 79 | 0 | 431 | 1 | 4 | 5 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 6 |
| **17:00** | 42 | 299 | 82 | 0 | 423 | 2 | 8 | 2 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 8 |
| **17:15** | 45 | 294 | 91 | 0 | 430 | 1 | 6 | 1 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 13 |
| **17:30** | 50 | 307 | 73 | 0 | 430 | 1 | 7 | 4 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 7 |
| **17:45** | 39 | 308 | 71 | 0 | 418 | 3 | 5 | 2 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 12 |
| **SUBTOTAL** | 337 | 2317 | 616 | 0 | 3270 | 13 | 43 | 24 | 0 | 80 | 0 | 0 | 0 | 0 | 0 | 71 |
| **GRAND TOTAL** | **533** | **2843** | **858** | **0** | **4234** | **42** | **89** | **72** | **0** | **203** | **0** | **0** | **0** | **0** | **0** | **134** |

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# Traffic Count Data

Intersection: Fairview St & Brant St
Site Code: 2340100001
Municipality: Burlington
Count Date: Dec 05, 2023

## West Approach - Fairview St

| Start Time | Cars | | | | | Trucks | | | | | Bicycles | | | | | Total Peds |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Total | | | | | Total | | | | | Total | |
| 07:00 | 85 | 137 | 15 | 0 | 237 | 0 | 3 | 1 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 3 |
| 07:15 | 71 | 180 | 19 | 0 | 270 | 1 | 5 | 3 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 2 |
| 07:30 | 71 | 183 | 31 | 0 | 285 | 3 | 4 | 4 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 4 |
| 07:45 | 82 | 197 | 42 | 0 | 321 | 1 | 5 | 4 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 5 |
| 08:00 | 61 | 174 | 43 | 0 | 278 | 2 | 4 | 2 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 4 |
| 08:15 | 44 | 158 | 45 | 0 | 247 | 5 | 6 | 1 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 2 |
| 08:30 | 56 | 225 | 45 | 0 | 326 | 1 | 5 | 1 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 3 |
| 08:45 | 47 | 170 | 35 | 0 | 252 | 1 | 6 | 2 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 2 |
| SUBTOTAL | 517 | 1424 | 275 | 0 | 2216 | 14 | 38 | 18 | 0 | 70 | 0 | 0 | 0 | 0 | 0 | 25 |

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# Traffic Count Data

Intersection: Fairview St & Brant St
Site Code: 2340100001
Municipality: Burlington
Count Date: Dec 05, 2023

## West Approach - Fairview St

| Start Time | Cars | | | | | Trucks | | | | | Bicycles | | | | | Total Peds |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ↰ | ↑ | ↱ | ↶ | Total | ↰ | ↑ | ↱ | ↶ | Total | ↰ | ↑ | ↱ | ↶ | Total | |
| **16:00** | 49 | 156 | 49 | 1 | 255 | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 2 |
| **16:15** | 50 | 156 | 61 | 0 | 267 | 2 | 3 | 4 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 2 |
| **16:30** | 57 | 155 | 49 | 0 | 261 | 0 | 8 | 1 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 4 |
| **16:45** | 51 | 140 | 40 | 0 | 231 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| **17:00** | 46 | 154 | 48 | 0 | 248 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 3 |
| **17:15** | 55 | 156 | 63 | 0 | 274 | 0 | 3 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 1 |
| **17:30** | 52 | 165 | 47 | 0 | 264 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 4 |
| **17:45** | 53 | 146 | 42 | 0 | 241 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 5 |
| **SUBTOTAL** | 413 | 1228 | 399 | 1 | 2041 | 2 | 36 | 5 | 0 | 43 | 0 | 0 | 0 | 0 | 0 | 24 |
| **GRAND TOTAL** | **930** | **2652** | **674** | **1** | **4257** | **16** | **74** | **23** | **0** | **113** | **0** | **0** | **0** | **0** | **0** | **49** |

# Peak Hour Diagram

**Specified Period**
From: 07:00:00
To: 09:00:00

**One Hour Peak**
From: 08:00:00
To: 09:00:00

**Intersection:** Fairview St & Brant St
**Site Code:** 2340100001
**Count Date:** Dec 05, 2023

**Weather conditions:** Clear

**** Signalized Intersection ****

**Major Road:** Fairview St runs E/W

## North Approach

| | Out | In | Total |
|---|---|---|---|
| Cars | 692 | 826 | 1518 |
| Trucks | 30 | 50 | 80 |
| Bicycles | 0 | 0 | 0 |
| | **722** | **876** | **1598** |

## Brant St

| | | | | |
|---|---|---|---|---|
| Bicycles | 0 | 0 | 0 | 0 |
| Trucks | 5 | 11 | 14 | 0 |
| Cars | 44 | 511 | 137 | 0 |
| **Totals** | **49** | **522** | **151** | **0** |

## East Approach

| | Out | In | Total |
|---|---|---|---|
| Cars | 573 | 1050 | 1623 |
| Trucks | 64 | 50 | 114 |
| Bicycles | 0 | 0 | 0 |
| | **637** | **1100** | **1737** |

## Fairview St

| Bicycles | Trucks | Cars | Totals |
|---|---|---|---|
| 0 | 0 | 0 | **0** |
| 0 | 9 | 208 | **217** |
| 0 | 21 | 727 | **748** |
| 0 | 6 | 168 | **174** |

Peds: 3

Peds: 11




Peds: 32

## Fairview St

| Totals | Cars | Trucks | Bicycles |
|---|---|---|---|
| **0** | 0 | 0 | 0 |
| **153** | 130 | 23 | 0 |
| **340** | 316 | 24 | 0 |
| **144** | 127 | 17 | 0 |

Peds: 12

## West Approach

| | Out | In | Total |
|---|---|---|---|
| Cars | 1103 | 512 | 1615 |
| Trucks | 36 | 36 | 72 |
| Bicycles | 0 | 0 | 0 |
| | **1139** | **548** | **1687** |

## Brant St

| | | | | |
|---|---|---|---|---|
| **Totals** | **159** | **506** | **201** | **0** |
| Cars | 152 | 488 | 186 | 0 |
| Trucks | 7 | 18 | 15 | 0 |
| Bicycles | 0 | 0 | 0 | 0 |

## South Approach

| | Out | In | Total |
|---|---|---|---|
| Cars | 826 | 806 | 1632 |
| Trucks | 40 | 34 | 74 |
| Bicycles | 0 | 0 | 0 |
| | **866** | **840** | **1706** |

Cars - Trucks - Bicycles

## Comments

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# Peak Hour Summary

Intersection: Fairview St & Brant St
Site Code: 2340100001
Count Date: Dec 05, 2023
Period: 07:00 - 09:00

## Peak Hour Data (08:00 - 09:00)

| Start Time | North Approach Brant St | | | | | | South Approach Brant St | | | | | | East Approach Fairview St | | | | | | West Approach Fairview St | | | | | | Total Vehicles |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ↰ | ↑ | ↱ | ↩ | Peds | Total | ↰ | ↑ | ↱ | ↩ | Peds | Total | ↰ | ↑ | ↱ | ↩ | Peds | Total | ↰ | ↑ | ↱ | ↩ | Peds | Total | |
| **08:00** | 36 | 122 | 12 | 0 | 1 | 170 | 31 | 138 | 48 | 0 | 2 | 217 | 39 | 67 | 29 | 0 | 9 | 135 | 63 | 178 | 45 | 0 | 4 | 286 | 808 |
| **08:15** | 28 | 135 | 7 | 0 | 1 | 170 | 41 | 135 | 58 | 0 | 3 | 234 | 37 | 77 | 35 | 0 | 12 | 149 | 49 | 164 | 46 | 0 | 2 | 259 | 812 |
| **08:30** | 46 | 118 | 15 | 0 | 1 | 179 | 46 | 121 | 53 | 0 | 4 | 220 | 32 | 92 | 44 | 0 | 6 | 168 | 57 | 230 | 46 | 0 | 3 | 333 | 900 |
| **08:45** | 41 | 147 | 15 | 0 | 0 | 203 | 41 | 112 | 42 | 0 | 3 | 195 | 36 | 104 | 45 | 0 | 5 | 185 | 48 | 176 | 37 | 0 | 2 | 261 | 844 |
| **Grand Total** | **151** | **522** | **49** | **0** | **3** | **722** | **159** | **506** | **201** | **0** | **12** | **866** | **144** | **340** | **153** | **0** | **32** | **637** | **217** | **748** | **174** | **0** | **11** | **1139** | **3364** |
| **Approach %** | 20.9 | 72.3 | 6.8 | 0 | | - | 18.4 | 58.4 | 23.2 | 0 | | - | 22.6 | 53.4 | 24 | 0 | | - | 19.1 | 65.7 | 15.3 | 0 | | - | |
| **Totals %** | 4.5 | 15.5 | 1.5 | 0 | | 21.5 | 4.7 | 15 | 6 | 0 | | 25.7 | 4.3 | 10.1 | 4.5 | 0 | | 18.9 | 6.5 | 22.2 | 5.2 | 0 | | 33.9 | |
| **PHF** | **0.82** | **0.89** | **0.82** | **0** | | **0.89** | **0.86** | **0.92** | **0.87** | **0** | | **0.93** | **0.92** | **0.82** | **0.85** | **0** | | **0.86** | **0.86** | **0.81** | **0.95** | **0** | | **0.86** | **0.93** |
| **Cars** | 137 | 511 | 44 | 0 | | 692 | 152 | 488 | 186 | 0 | | 826 | 127 | 316 | 130 | 0 | | 573 | 208 | 727 | 168 | 0 | | 1103 | 3194 |
| **% Cars** | 90.7 | 97.9 | 89.8 | 0 | | 95.8 | 95.6 | 96.4 | 92.5 | 0 | | 95.4 | 88.2 | 92.9 | 85 | 0 | | 90 | 95.9 | 97.2 | 96.6 | 0 | | 96.8 | 94.9 |
| **Trucks** | 14 | 11 | 5 | 0 | | 30 | 7 | 18 | 15 | 0 | | 40 | 17 | 24 | 23 | 0 | | 64 | 9 | 21 | 6 | 0 | | 36 | 170 |
| **% Trucks** | 9.3 | 2.1 | 10.2 | 0 | | 4.2 | 4.4 | 3.6 | 7.5 | 0 | | 4.6 | 11.8 | 7.1 | 15 | 0 | | 10 | 4.1 | 2.8 | 3.4 | 0 | | 3.2 | 5.1 |
| **Bicycles** | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | | 0 | 0 |
| **% Bicycles** | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | | 0 | 0 |
| **Peds** | | | | | 3 | - | | | | | 12 | - | | | | | 32 | - | | | | | 11 | - | 58 |
| **% Peds** | | | | | 5.2 | - | | | | | 20.7 | - | | | | | 55.2 | - | | | | | 19 | - | |

# Peak Hour Diagram

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

| Specified Period | | One Hour Peak | |
|---|---|---|---|
| From: | 16:00:00 | From: | 16:15:00 |
| To: | 18:00:00 | To: | 17:15:00 |

**Intersection:** Fairview St & Brant St
**Site Code:** 2340100001
**Count Date:** Dec 05, 2023

**Weather conditions:** Clear

**** Signalized Intersection ****

**Major Road:** Fairview St runs E/W

## North Approach

| | Out | In | Total |
|---|---|---|---|
| Cars | 837 | 1224 | 2061 |
| Trucks | 17 | 24 | 41 |
| Bicycles | 0 | 0 | 0 |
| | **854** | **1248** | **2102** |

## Brant St

| | | | | |
|---|---|---|---|---|
| Bicycles | 0 | 0 | 0 | 0 |
| Trucks | 7 | 3 | 7 | 0 |
| Cars | 178 | 508 | 151 | 0 |
| **Totals** | **185** | **511** | **158** | **0** |

## East Approach

| | Out | In | Total |
|---|---|---|---|
| Cars | 1646 | 922 | 2568 |
| Trucks | 37 | 29 | 66 |
| Bicycles | 0 | 0 | 0 |
| | **1683** | **951** | **2634** |

Peds: 14

## Fairview St

| Bicycles | Trucks | Cars | Totals |
|---|---|---|---|
| 0 | 0 | 0 | **0** |
| 0 | 2 | 204 | **206** |
| 0 | 16 | 605 | **621** |
| 0 | 5 | 198 | **203** |

Peds: 12




Peds: 33

## Fairview St

| | Totals | Cars | Trucks | Bicycles |
|---|---|---|---|---|
| | **0** | 0 | 0 | 0 |
| | **336** | 324 | 12 | 0 |
| | **1171** | 1152 | 19 | 0 |
| | **176** | 170 | 6 | 0 |

Peds: 11

## West Approach

| | Out | In | Total |
|---|---|---|---|
| Cars | 1007 | 1556 | 2563 |
| Trucks | 23 | 30 | 53 |
| Bicycles | 0 | 0 | 0 |
| | **1030** | **1586** | **2616** |

| | | | | |
|---|---|---|---|---|
| **Totals** | **230** | **706** | **172** | **0** |
| Cars | 226 | 696 | 166 | 0 |
| Trucks | 4 | 10 | 6 | 0 |
| Bicycles | 0 | 0 | 0 | 0 |

Brant St

## South Approach

| | Out | In | Total |
|---|---|---|---|
| Cars | 1088 | 876 | 1964 |
| Trucks | 20 | 14 | 34 |
| Bicycles | 0 | 0 | 0 |
| | **1108** | **890** | **1998** |

Cars - Trucks - Bicycles

## Comments

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

# Peak Hour Summary

Intersection: Fairview St & Brant St
Site Code: 2340100001
Count Date: Dec 05, 2023
Period: 16:00 - 18:00

## Peak Hour Data (16:15 - 17:15)

| Start Time | North Approach Brant St | | | | | | South Approach Brant St | | | | | | East Approach Fairview St | | | | | | West Approach Fairview St | | | | | | Total Vehicles |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ↰ | ↑ | ↱ | ↶ | Peds | Total | ↰ | ↑ | ↱ | ↶ | Peds | Total | ↰ | ↑ | ↱ | ↶ | Peds | Total | ↰ | ↑ | ↱ | ↶ | Peds | Total | |
| **16:15** | 36 | 142 | 47 | 0 | 2 | 225 | 51 | 182 | 42 | 0 | 3 | 275 | 61 | 276 | 100 | 0 | 7 | 437 | 52 | 159 | 65 | 0 | 2 | 276 | 1213 |
| **16:30** | 43 | 112 | 36 | 0 | 8 | 191 | 67 | 172 | 51 | 0 | 2 | 290 | 34 | 268 | 68 | 0 | 12 | 370 | 57 | 163 | 50 | 0 | 4 | 270 | 1121 |
| **16:45** | 39 | 144 | 56 | 0 | 2 | 239 | 50 | 167 | 42 | 0 | 2 | 259 | 37 | 320 | 84 | 0 | 6 | 441 | 51 | 140 | 40 | 0 | 3 | 231 | 1170 |
| **17:00** | 40 | 113 | 46 | 0 | 2 | 199 | 62 | 185 | 37 | 0 | 4 | 284 | 44 | 307 | 84 | 0 | 8 | 435 | 46 | 159 | 48 | 0 | 3 | 253 | 1171 |
| **Grand Total** | **158** | **511** | **185** | **0** | **14** | **854** | **230** | **706** | **172** | **0** | **11** | **1108** | **176** | **1171** | **336** | **0** | **33** | **1683** | **206** | **621** | **203** | **0** | **12** | **1030** | **4675** |
| **Approach %** | 18.5 | 59.8 | 21.7 | 0 | | - | 20.8 | 63.7 | 15.5 | 0 | | - | 10.5 | 69.6 | 20 | 0 | | - | 20 | 60.3 | 19.7 | 0 | | - | |
| **Totals %** | 3.4 | 10.9 | 4 | 0 | | 18.3 | 4.9 | 15.1 | 3.7 | 0 | | 23.7 | 3.8 | 25 | 7.2 | 0 | | 36 | 4.4 | 13.3 | 4.3 | 0 | | 22 | |
| **PHF** | **0.92** | **0.89** | **0.83** | **0** | | **0.89** | **0.86** | **0.95** | **0.84** | **0** | | **0.96** | **0.72** | **0.91** | **0.84** | **0** | | **0.95** | **0.9** | **0.95** | **0.78** | **0** | | **0.93** | **0.96** |
| **Cars** | 151 | 508 | 178 | 0 | | 837 | 226 | 696 | 166 | 0 | | 1088 | 170 | 1152 | 324 | 0 | | 1646 | 204 | 605 | 198 | 0 | | 1007 | 4578 |
| **% Cars** | 95.6 | 99.4 | 96.2 | 0 | | 98 | 98.3 | 98.6 | 96.5 | 0 | | 98.2 | 96.6 | 98.4 | 96.4 | 0 | | 97.8 | 99 | 97.4 | 97.5 | 0 | | 97.8 | 97.9 |
| **Trucks** | 7 | 3 | 7 | 0 | | 17 | 4 | 10 | 6 | 0 | | 20 | 6 | 19 | 12 | 0 | | 37 | 2 | 16 | 5 | 0 | | 23 | 97 |
| **% Trucks** | 4.4 | 0.6 | 3.8 | 0 | | 2 | 1.7 | 1.4 | 3.5 | 0 | | 1.8 | 3.4 | 1.6 | 3.6 | 0 | | 2.2 | 1 | 2.6 | 2.5 | 0 | | 2.2 | 2.1 |
| **Bicycles** | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | | 0 | 0 |
| **% Bicycles** | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | | 0 | 0 |
| **Peds** | | | | | 14 | - | | | | | 11 | - | | | | | 33 | - | | | | | 12 | - | 70 |
| **% Peds** | | | | | 20 | - | | | | | 15.7 | - | | | | | 47.1 | - | | | | | 17.1 | - | |

Ontario Traffic Inc.
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# Project #23-401 - Arcadis Professional Services (Canada) Inc.

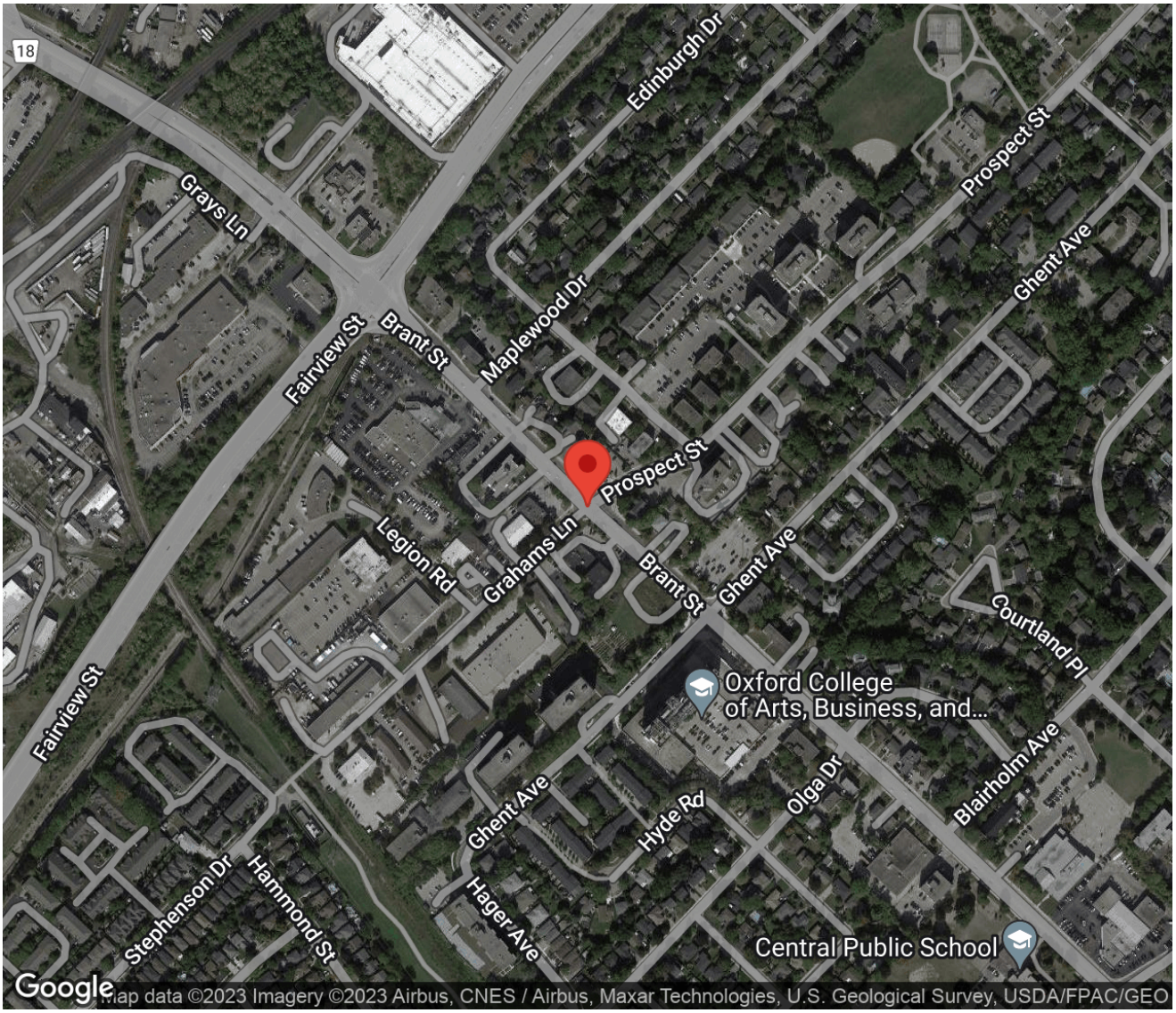
## Intersection Count Report

| | |
|---|---|
| **Intersection:** | Brant St & Prospect St - Grahams Ln |
| **Municipality:** | Burlington |
| **Count Date:** | Tuesday, Dec 05, 2023 |
| **Site Code:** | 2340100002 |
| **Count Categories:** | Cars, Trucks, Bicycles, Pedestrians |
| **Count Period:** | 07:00-09:00, 16:00-18:00 |
| **Weather:** | Clear |
| **Comments:** | |

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# Traffic Count Map

| | |
|---|---|
| Intersection: | Brant St & Prospect St - Grahams Ln |
| Site Code: | 2340100002 |
| Municipality: | Burlington |
| Count Date: | Dec 05, 2023 |



Ontario Traffic Inc.
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# Traffic Count Summary

| | |
|---|---|
| Intersection: | Brant St & Prospect St - Grahams Ln |
| Site Code: | 2340100002 |
| Municipality: | Burlington |
| Count Date: | Dec 05, 2023 |

## Brant St - Traffic Summary

| | North Approach Totals | | | | | | South Approach Totals | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Includes Cars, Trucks, Bicycles | | | | | | Includes Cars, Trucks, Bicycles | | | | | | |
| Hour | Left | Thru | Right | U-Turn | Total | Peds | Left | Thru | Right | U-Turn | Total | Peds | Total |
| 07:00 - 08:00 | 44 | 389 | 69 | 0 | 502 | 3 | 15 | 479 | 21 | 0 | 515 | 11 | 1017 |
| 08:00 - 09:00 | 75 | 664 | 76 | 0 | 815 | 8 | 19 | 685 | 48 | 0 | 752 | 5 | 1567 |
| BREAK | | | | | | | | | | | | | |
| 16:00 - 17:00 | 82 | 703 | 53 | 0 | 838 | 6 | 26 | 792 | 45 | 0 | 863 | 7 | 1701 |
| 17:00 - 18:00 | 99 | 741 | 49 | 0 | 889 | 6 | 7 | 658 | 36 | 0 | 701 | 9 | 1590 |
| **GRAND TOTAL** | **300** | **2497** | **247** | **0** | **3044** | **23** | **67** | **2614** | **150** | **0** | **2831** | **32** | **5875** |

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# Traffic Count Summary

| | |
|---|---|
| Intersection: | Brant St & Prospect St - Grahams Ln |
| Site Code: | 2340100002 |
| Municipality: | Burlington |
| Count Date: | Dec 05, 2023 |

## Prospect St - Traffic Summary

| | East Approach Totals | | | | | | West Approach Totals | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Includes Cars, Trucks, Bicycles | | | | | | Includes Cars, Trucks, Bicycles | | | | | | |
| Hour | Left | Thru | Right | U-Turn | Total | Peds | Left | Thru | Right | U-Turn | Total | Peds | Total |
| 07:00 - 08:00 | 14 | 8 | 66 | 0 | 88 | 16 | 28 | 1 | 6 | 0 | 35 | 13 | 123 |
| 08:00 - 09:00 | 51 | 7 | 77 | 0 | 135 | 20 | 55 | 7 | 11 | 0 | 73 | 24 | 208 |
| BREAK | | | | | | | | | | | | | |
| 16:00 - 17:00 | 105 | 22 | 137 | 0 | 264 | 16 | 114 | 28 | 29 | 0 | 171 | 15 | 435 |
| 17:00 - 18:00 | 83 | 12 | 144 | 0 | 239 | 17 | 99 | 19 | 40 | 0 | 158 | 11 | 397 |
| **GRAND TOTAL** | **253** | **49** | **424** | **0** | **726** | **69** | **296** | **55** | **86** | **0** | **437** | **63** | **1163** |

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# Traffic Count Data

Intersection: Brant St & Prospect St - Grahams Ln
Site Code: 2340100002
Municipality: Burlington
Count Date: Dec 05, 2023

## North Approach - Brant St

| Start Time | Cars | | | | | Trucks | | | | | Bicycles | | | | | Total Peds |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ↰ | ↑ | ↱ | ↻ | Total | ↰ | ↑ | ↱ | ↻ | Total | ↰ | ↑ | ↱ | ↻ | Total | |
| **07:00** | 6 | 48 | 10 | 0 | 64 | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 |
| **07:15** | 9 | 59 | 11 | 0 | 79 | 0 | 7 | 1 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 2 |
| **07:30** | 14 | 87 | 20 | 0 | 121 | 1 | 7 | 1 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 1 |
| **07:45** | 13 | 164 | 26 | 0 | 203 | 1 | 10 | 0 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 0 |
| **08:00** | 17 | 149 | 23 | 0 | 189 | 1 | 6 | 2 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 |
| **08:15** | 15 | 167 | 14 | 0 | 196 | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 1 |
| **08:30** | 21 | 155 | 15 | 0 | 191 | 0 | 6 | 1 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 4 |
| **08:45** | 20 | 165 | 21 | 0 | 206 | 1 | 9 | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 3 |
| **SUBTOTAL** | 115 | 994 | 140 | 0 | 1249 | 4 | 59 | 5 | 0 | 68 | 0 | 0 | 0 | 0 | 0 | 11 |

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# Traffic Count Data

Intersection: Brant St & Prospect St - Grahams Ln
Site Code: 2340100002
Municipality: Burlington
Count Date: Dec 05, 2023

## North Approach - Brant St

| Start Time | Cars | | | | | Trucks | | | | | Bicycles | | | | | Total Peds |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ↰ | ↑ | ↱ | ↶ | Total | ↰ | ↑ | ↱ | ↶ | Total | ↰ | ↑ | ↱ | ↶ | Total | |
| **16:00** | 19 | 160 | 12 | 0 | 191 | 0 | 5 | 2 | 0 | 7 | 0 | 1 | 0 | 0 | 1 | 1 |
| **16:15** | 25 | 196 | 15 | 0 | 236 | 1 | 6 | 2 | 0 | 9 | 0 | 1 | 0 | 0 | 1 | 1 |
| **16:30** | 17 | 158 | 12 | 0 | 187 | 0 | 2 | 1 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 1 |
| **16:45** | 20 | 172 | 9 | 0 | 201 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 3 |
| **17:00** | 21 | 164 | 14 | 0 | 199 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| **17:15** | 33 | 196 | 19 | 0 | 248 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 2 |
| **17:30** | 33 | 175 | 11 | 0 | 219 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| **17:45** | 12 | 199 | 4 | 0 | 215 | 0 | 2 | 1 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 2 |
| **SUBTOTAL** | 180 | 1420 | 96 | 0 | 1696 | 1 | 22 | 6 | 0 | 29 | 0 | 2 | 0 | 0 | 2 | 12 |
| **GRAND TOTAL** | **295** | **2414** | **236** | **0** | **2945** | **5** | **81** | **11** | **0** | **97** | **0** | **2** | **0** | **0** | **2** | **23** |

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# Traffic Count Data

Intersection: Brant St & Prospect St - Grahams Ln
Site Code: 2340100002
Municipality: Burlington
Count Date: Dec 05, 2023

## South Approach - Brant St

| Start Time | Cars | | | | | Trucks | | | | | Bicycles | | | | | Total Peds |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ↰ | ↑ | ↱ | ↻ | Total | ↰ | ↑ | ↱ | ↻ | Total | ↰ | ↑ | ↱ | ↻ | Total | |
| **07:00** | 2 | 74 | 10 | 0 | 86 | 0 | 2 | 1 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 3 |
| **07:15** | 3 | 106 | 1 | 0 | 110 | 0 | 8 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 2 |
| **07:30** | 2 | 134 | 5 | 0 | 141 | 0 | 8 | 0 | 0 | 8 | 0 | 2 | 0 | 0 | 2 | 3 |
| **07:45** | 8 | 133 | 4 | 0 | 145 | 0 | 12 | 0 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 3 |
| **08:00** | 2 | 157 | 12 | 0 | 171 | 0 | 4 | 1 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 |
| **08:15** | 5 | 186 | 10 | 0 | 201 | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 1 |
| **08:30** | 2 | 171 | 14 | 0 | 187 | 0 | 11 | 0 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 4 |
| **08:45** | 10 | 142 | 11 | 0 | 163 | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 |
| **SUBTOTAL** | 34 | 1103 | 67 | 0 | 1204 | 0 | 59 | 2 | 0 | 61 | 0 | 2 | 0 | 0 | 2 | 16 |

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# Traffic Count Data

Intersection: Brant St & Prospect St - Grahams Ln
Site Code: 2340100002
Municipality: Burlington
Count Date: Dec 05, 2023

## South Approach - Brant St

| Start Time | Cars | | | | | Trucks | | | | | Bicycles | | | | | Total Peds |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ↰ | ↑ | ↱ | ↶ | Total | ↰ | ↑ | ↱ | ↶ | Total | ↰ | ↑ | ↱ | ↶ | Total | |
| 16:00 | 10 | 194 | 15 | 0 | 219 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 3 |
| 16:15 | 4 | 195 | 9 | 0 | 208 | 1 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 16:30 | 7 | 202 | 9 | 0 | 218 | 1 | 3 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 1 |
| 16:45 | 3 | 191 | 12 | 0 | 206 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 2 |
| 17:00 | 3 | 179 | 7 | 0 | 189 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 17:15 | 0 | 155 | 8 | 0 | 163 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 17:30 | 2 | 171 | 12 | 0 | 185 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 3 |
| 17:45 | 2 | 143 | 9 | 0 | 154 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 4 |
| SUBTOTAL | 31 | 1430 | 81 | 0 | 1542 | 2 | 20 | 0 | 0 | 22 | 0 | 0 | 0 | 0 | 0 | 16 |
| GRAND TOTAL | 65 | 2533 | 148 | 0 | 2746 | 2 | 79 | 2 | 0 | 83 | 0 | 2 | 0 | 0 | 2 | 32 |

Ontario Traffic Inc.
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# Traffic Count Data

Intersection: Brant St & Prospect St - Grahams Ln
Site Code: 2340100002
Municipality: Burlington
Count Date: Dec 05, 2023

## East Approach - Prospect St

| Start Time | Cars | | | | | Trucks | | | | | Bicycles | | | | | Total Peds |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ↰ | ↑ | ↱ | ↻ | Total | ↰ | ↑ | ↱ | ↻ | Total | ↰ | ↑ | ↱ | ↻ | Total | |
| 07:00 | 3 | 2 | 13 | 0 | 18 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 3 |
| 07:15 | 3 | 0 | 14 | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 07:30 | 3 | 2 | 24 | 0 | 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 07:45 | 4 | 4 | 14 | 0 | 22 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 8 |
| 08:00 | 10 | 1 | 21 | 0 | 32 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 |
| 08:15 | 12 | 2 | 17 | 0 | 31 | 1 | 1 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 1 | 4 |
| 08:30 | 16 | 2 | 17 | 0 | 35 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 |
| 08:45 | 11 | 1 | 21 | 0 | 33 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 3 |
| SUBTOTAL | 62 | 14 | 141 | 0 | 217 | 2 | 1 | 2 | 0 | 5 | 1 | 0 | 0 | 0 | 1 | 36 |

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# Traffic Count Data

Intersection: Brant St & Prospect St - Grahams Ln
Site Code: 2340100002
Municipality: Burlington
Count Date: Dec 05, 2023

## East Approach - Prospect St

| Start Time | Cars | | | | | Trucks | | | | | Bicycles | | | | | Total Peds |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ↰ | ↑ | ↱ | ↶ | Total | ↰ | ↑ | ↱ | ↶ | Total | ↰ | ↑ | ↱ | ↶ | Total | |
| 16:00 | 19 | 4 | 32 | 0 | 55 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 6 |
| 16:15 | 24 | 4 | 30 | 0 | 58 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 16:30 | 24 | 5 | 40 | 0 | 69 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 5 |
| 16:45 | 38 | 7 | 32 | 0 | 77 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 3 |
| 17:00 | 23 | 5 | 45 | 0 | 73 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 4 |
| 17:15 | 24 | 2 | 35 | 0 | 61 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 17:30 | 14 | 3 | 31 | 0 | 48 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 7 |
| 17:45 | 21 | 2 | 30 | 0 | 53 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 4 |
| SUBTOTAL | 187 | 32 | 275 | 0 | 494 | 1 | 2 | 6 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 33 |
| **GRAND TOTAL** | **249** | **46** | **416** | **0** | **711** | **3** | **3** | **8** | **0** | **14** | **1** | **0** | **0** | **0** | **1** | **69** |

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# Traffic Count Data

Intersection: Brant St & Prospect St - Grahams Ln
Site Code: 2340100002
Municipality: Burlington
Count Date: Dec 05, 2023

## West Approach - Grahams Ln

| Start Time | Cars | | | | | Trucks | | | | | Bicycles | | | | | Total Peds |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Total | | | | | Total | | | | | Total | |
| **07:00** | 2 | 0 | 1 | 0 | 3 | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 3 |
| **07:15** | 3 | 1 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| **07:30** | 7 | 0 | 0 | 0 | 7 | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 5 |
| **07:45** | 8 | 0 | 5 | 0 | 13 | 4 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 4 |
| **08:00** | 12 | 1 | 3 | 0 | 16 | 5 | 1 | 2 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 7 |
| **08:15** | 14 | 1 | 1 | 0 | 16 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 6 |
| **08:30** | 10 | 3 | 0 | 0 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 |
| **08:45** | 13 | 1 | 4 | 0 | 18 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 5 |
| **SUBTOTAL** | 69 | 7 | 14 | 0 | 90 | 14 | 1 | 3 | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 37 |

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# Traffic Count Data

Intersection: Brant St & Prospect St - Grahams Ln
Site Code: 2340100002
Municipality: Burlington
Count Date: Dec 05, 2023

## West Approach - Grahams Ln

| Start Time | Cars | | | | | Trucks | | | | | Bicycles | | | | | Total Peds |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ↰ | ↑ | ↱ | ↶ | Total | ↰ | ↑ | ↱ | ↶ | Total | ↰ | ↑ | ↱ | ↶ | Total | |
| **16:00** | 24 | 7 | 7 | 0 | 38 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 |
| **16:15** | 24 | 8 | 8 | 0 | 40 | 5 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 4 |
| **16:30** | 36 | 4 | 7 | 0 | 47 | 0 | 1 | 2 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 6 |
| **16:45** | 24 | 7 | 4 | 0 | 35 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 3 |
| **17:00** | 38 | 10 | 14 | 0 | 62 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| **17:15** | 17 | 4 | 14 | 0 | 35 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| **17:30** | 27 | 3 | 7 | 0 | 37 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| **17:45** | 16 | 2 | 5 | 0 | 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 |
| **SUBTOTAL** | 206 | 45 | 66 | 0 | 317 | 7 | 1 | 3 | 0 | 11 | 0 | 1 | 0 | 0 | 1 | 26 |
| **GRAND TOTAL** | **275** | **52** | **80** | **0** | **407** | **21** | **2** | **6** | **0** | **29** | **0** | **1** | **0** | **0** | **1** | **63** |

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# Peak Hour Diagram

| Specified Period | | One Hour Peak | |
|---|---|---|---|
| From: | 07:00:00 | From: | 08:00:00 |
| To: | 09:00:00 | To: | 09:00:00 |

**Intersection:** Brant St & Prospect St - Grahams Ln
**Site Code:** 2340100002
**Count Date:** Dec 05, 2023

**Weather conditions:** Clear

**** Signalized Intersection ****

**Major Road:** Brant St runs N/S

## North Approach

| | Out | In | Total |
|---|---|---|---|
| Cars | 782 | 781 | 1563 |
| Trucks | 33 | 36 | 69 |
| Bicycles | 0 | 0 | 0 |
| | **815** | **817** | **1632** |

## Brant St

| | | | | |
|---|---|---|---|---|
| Bicycles | 0 | 0 | 0 | 0 |
| Trucks | 3 | 28 | 2 | 0 |
| Cars | 73 | 636 | 73 | 0 |
| **Totals** | **76** | **664** | **75** | **0** |

## East Approach

| | Out | In | Total |
|---|---|---|---|
| Cars | 131 | 126 | 257 |
| Trucks | 3 | 4 | 7 |
| Bicycles | 1 | 0 | 1 |
| | **135** | **130** | **265** |

Peds: 8

## Grahams Ln

| Bicycles | Trucks | Cars | Totals |
|---|---|---|---|
| 0 | 0 | 0 | **0** |
| 0 | 6 | 49 | **55** |
| 0 | 1 | 6 | **7** |
| 0 | 3 | 8 | **11** |

Peds: 24




Peds: 20

## Prospect St

| Totals | Cars | Trucks | Bicycles |
|---|---|---|---|
| **0** | 0 | 0 | 0 |
| **77** | 76 | 1 | 0 |
| **7** | 6 | 1 | 0 |
| **51** | 49 | 1 | 1 |

Peds: 5

## West Approach

| | Out | In | Total |
|---|---|---|---|
| Cars | 63 | 98 | 161 |
| Trucks | 10 | 4 | 14 |
| Bicycles | 0 | 0 | 0 |
| | **73** | **102** | **175** |

## Brant St

| | | | | |
|---|---|---|---|---|
| **Totals** | **19** | **685** | **48** | **0** |
| Cars | 19 | 656 | 47 | 0 |
| Trucks | 0 | 29 | 1 | 0 |
| Bicycles | 0 | 0 | 0 | 0 |

## South Approach

| | Out | In | Total |
|---|---|---|---|
| Cars | 722 | 693 | 1415 |
| Trucks | 30 | 32 | 62 |
| Bicycles | 0 | 1 | 1 |
| | **752** | **726** | **1478** |

Cars - Trucks - Bicycles

## Comments

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

# Peak Hour Summary

Intersection: Brant St & Prospect St - Grahams Ln
Site Code: 2340100002
Count Date: Dec 05, 2023
Period: 07:00 - 09:00

## Peak Hour Data (08:00 - 09:00)

| Start Time | North Approach Brant St | | | | | | South Approach Brant St | | | | | | East Approach Prospect St | | | | | | West Approach Grahams Ln | | | | | | Total Vehicles |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Peds | Total | | | | | Peds | Total | | | | | Peds | Total | | | | | Peds | Total | |
| 08:00 | 18 | 155 | 25 | 0 | 0 | 198 | 2 | 161 | 13 | 0 | 0 | 176 | 10 | 1 | 21 | 0 | 8 | 32 | 17 | 2 | 5 | 0 | 7 | 24 | 430 |
| 08:15 | 15 | 174 | 14 | 0 | 1 | 203 | 5 | 193 | 10 | 0 | 1 | 208 | 14 | 3 | 17 | 0 | 4 | 34 | 14 | 1 | 2 | 0 | 6 | 17 | 462 |
| 08:30 | 21 | 161 | 16 | 0 | 4 | 198 | 2 | 182 | 14 | 0 | 4 | 198 | 16 | 2 | 17 | 0 | 5 | 35 | 10 | 3 | 0 | 0 | 6 | 13 | 444 |
| 08:45 | 21 | 174 | 21 | 0 | 3 | 216 | 10 | 149 | 11 | 0 | 0 | 170 | 11 | 1 | 22 | 0 | 3 | 34 | 14 | 1 | 4 | 0 | 5 | 19 | 439 |
| **Grand Total** | **75** | **664** | **76** | **0** | **8** | **815** | **19** | **685** | **48** | **0** | **5** | **752** | **51** | **7** | **77** | **0** | **20** | **135** | **55** | **7** | **11** | **0** | **24** | **73** | **1775** |
| Approach % | 9.2 | 81.5 | 9.3 | 0 | | - | 2.5 | 91.1 | 6.4 | 0 | | - | 37.8 | 5.2 | 57 | 0 | | - | 75.3 | 9.6 | 15.1 | 0 | | - | |
| Totals % | 4.2 | 37.4 | 4.3 | 0 | | 45.9 | 1.1 | 38.6 | 2.7 | 0 | | 42.4 | 2.9 | 0.4 | 4.3 | 0 | | 7.6 | 3.1 | 0.4 | 0.6 | 0 | | 4.1 | |
| **PHF** | **0.89** | **0.95** | **0.76** | **0** | | **0.94** | **0.48** | **0.89** | **0.86** | **0** | | **0.9** | **0.8** | **0.58** | **0.88** | **0** | | **0.96** | **0.81** | **0.58** | **0.55** | **0** | | **0.76** | **0.96** |
| Cars | 73 | 636 | 73 | 0 | | 782 | 19 | 656 | 47 | 0 | | 722 | 49 | 6 | 76 | 0 | | 131 | 49 | 6 | 8 | 0 | | 63 | 1698 |
| % Cars | 97.3 | 95.8 | 96.1 | 0 | | 96 | 100 | 95.8 | 97.9 | 0 | | 96 | 96.1 | 85.7 | 98.7 | 0 | | 97 | 89.1 | 85.7 | 72.7 | 0 | | 86.3 | 95.7 |
| Trucks | 2 | 28 | 3 | 0 | | 33 | 0 | 29 | 1 | 0 | | 30 | 1 | 1 | 1 | 0 | | 3 | 6 | 1 | 3 | 0 | | 10 | 76 |
| % Trucks | 2.7 | 4.2 | 3.9 | 0 | | 4 | 0 | 4.2 | 2.1 | 0 | | 4 | 2 | 14.3 | 1.3 | 0 | | 2.2 | 10.9 | 14.3 | 27.3 | 0 | | 13.7 | 4.3 |
| Bicycles | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | | 0 | 1 | 0 | 0 | 0 | | 1 | 0 | 0 | 0 | 0 | | 0 | 1 |
| % Bicycles | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | | 0 | 2 | 0 | 0 | 0 | | 0.7 | 0 | 0 | 0 | 0 | | 0 | 0.1 |
| Peds | | | | | 8 | - | | | | | 5 | - | | | | | 20 | - | | | | | 24 | - | 57 |
| % Peds | | | | | 14 | - | | | | | 8.8 | - | | | | | 35.1 | - | | | | | 42.1 | - | |

# Peak Hour Diagram

**Specified Period**
From: 16:00:00
To: 18:00:00

**One Hour Peak**
From: 16:15:00
To: 17:15:00

**Intersection:** Brant St & Prospect St - Grahams Ln
**Site Code:** 2340100002
**Count Date:** Dec 05, 2023

**Weather conditions:** Clear

**** Signalized Intersection ****

**Major Road:** Brant St runs N/S

## North Approach

| | Out | In | Total |
|---|---|---|---|
| Cars | 823 | 1036 | 1859 |
| Trucks | 15 | 20 | 35 |
| Bicycles | 1 | 0 | 1 |
| | **839** | **1056** | **1895** |

## Brant St

| | | | | |
|---|---|---|---|---|
| Bicycles | 0 | 1 | 0 | 0 |
| Trucks | 3 | 11 | 1 | 0 |
| Cars | 50 | 690 | 83 | 0 |
| **Totals** | **53** | **702** | **84** | **0** |

Peds: 6

## East Approach

| | Out | In | Total |
|---|---|---|---|
| Cars | 277 | 149 | 426 |
| Trucks | 6 | 2 | 8 |
| Bicycles | 0 | 1 | 1 |
| | **283** | **152** | **435** |

## Grahams Ln

| Bicycles | Trucks | Cars | Totals |
|---|---|---|---|
| 0 | 0 | 0 | **0** |
| 0 | 5 | 122 | **127** |
| 1 | 1 | 29 | **31** |
| 0 | 3 | 33 | **36** |

Peds: 15




Peds: 14

## Prospect St

| Totals | Cars | Trucks | Bicycles |
|---|---|---|---|
| **0** | 0 | 0 | 0 |
| **151** | 147 | 4 | 0 |
| **23** | 21 | 2 | 0 |
| **109** | 109 | 0 | 0 |

Peds: 5

## West Approach

| | Out | In | Total |
|---|---|---|---|
| Cars | 184 | 88 | 272 |
| Trucks | 9 | 7 | 16 |
| Bicycles | 1 | 0 | 1 |
| | **194** | **95** | **289** |

## Brant St

| | | | | |
|---|---|---|---|---|
| **Totals** | **19** | **778** | **37** | **0** |
| Cars | 17 | 767 | 37 | 0 |
| Trucks | 2 | 11 | 0 | 0 |
| Bicycles | 0 | 0 | 0 | 0 |

## South Approach

| | Out | In | Total |
|---|---|---|---|
| Cars | 821 | 832 | 1653 |
| Trucks | 13 | 14 | 27 |
| Bicycles | 0 | 1 | 1 |
| | **834** | **847** | **1681** |

Cars - Trucks - Bicycles

## Comments

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Traffic Monitoring • Services & Products

# Peak Hour Summary

Intersection: Brant St & Prospect St - Grahams Ln
Site Code: 2340100002
Count Date: Dec 05, 2023
Period: 16:00 - 18:00

## Peak Hour Data (16:15 - 17:15)

| Start Time | North Approach Brant St | | | | | | South Approach Brant St | | | | | | East Approach Prospect St | | | | | | West Approach Grahams Ln | | | | | | Total Vehicles |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Peds | Total | | | | | Peds | Total | | | | | Peds | Total | | | | | Peds | Total | |
| **16:15** | 26 | 203 | 17 | 0 | 1 | 246 | 5 | 196 | 9 | 0 | 1 | 210 | 24 | 4 | 30 | 0 | 2 | 58 | 29 | 8 | 8 | 0 | 4 | 45 | 559 |
| **16:30** | 17 | 160 | 13 | 0 | 1 | 190 | 8 | 205 | 9 | 0 | 1 | 222 | 24 | 5 | 42 | 0 | 5 | 71 | 36 | 5 | 9 | 0 | 6 | 50 | 533 |
| **16:45** | 20 | 174 | 9 | 0 | 3 | 203 | 3 | 196 | 12 | 0 | 2 | 211 | 38 | 9 | 32 | 0 | 3 | 79 | 24 | 8 | 5 | 0 | 3 | 37 | 530 |
| **17:00** | 21 | 165 | 14 | 0 | 1 | 200 | 3 | 181 | 7 | 0 | 1 | 191 | 23 | 5 | 47 | 0 | 4 | 75 | 38 | 10 | 14 | 0 | 2 | 62 | 528 |
| **Grand Total** | **84** | **702** | **53** | **0** | **6** | **839** | **19** | **778** | **37** | **0** | **5** | **834** | **109** | **23** | **151** | **0** | **14** | **283** | **127** | **31** | **36** | **0** | **15** | **194** | **2150** |
| **Approach %** | 10 | 83.7 | 6.3 | 0 | | - | 2.3 | 93.3 | 4.4 | 0 | | - | 38.5 | 8.1 | 53.4 | 0 | | - | 65.5 | 16 | 18.6 | 0 | | - | |
| **Totals %** | 3.9 | 32.7 | 2.5 | 0 | | 39 | 0.9 | 36.2 | 1.7 | 0 | | 38.8 | 5.1 | 1.1 | 7 | 0 | | 13.2 | 5.9 | 1.4 | 1.7 | 0 | | 9 | |
| **PHF** | **0.81** | **0.86** | **0.78** | **0** | | **0.85** | **0.59** | **0.95** | **0.77** | **0** | | **0.94** | **0.72** | **0.64** | **0.8** | **0** | | **0.9** | **0.84** | **0.78** | **0.64** | **0** | | **0.78** | **0.96** |
| **Cars** | 83 | 690 | 50 | 0 | | 823 | 17 | 767 | 37 | 0 | | 821 | 109 | 21 | 147 | 0 | | 277 | 122 | 29 | 33 | 0 | | 184 | 2105 |
| **% Cars** | 98.8 | 98.3 | 94.3 | 0 | | 98.1 | 89.5 | 98.6 | 100 | 0 | | 98.4 | 100 | 91.3 | 97.4 | 0 | | 97.9 | 96.1 | 93.5 | 91.7 | 0 | | 94.8 | 97.9 |
| **Trucks** | 1 | 11 | 3 | 0 | | 15 | 2 | 11 | 0 | 0 | | 13 | 0 | 2 | 4 | 0 | | 6 | 5 | 1 | 3 | 0 | | 9 | 43 |
| **% Trucks** | 1.2 | 1.6 | 5.7 | 0 | | 1.8 | 10.5 | 1.4 | 0 | 0 | | 1.6 | 0 | 8.7 | 2.6 | 0 | | 2.1 | 3.9 | 3.2 | 8.3 | 0 | | 4.6 | 2 |
| **Bicycles** | 0 | 1 | 0 | 0 | | 1 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 1 | 0 | 0 | | 1 | 2 |
| **% Bicycles** | 0 | 0.1 | 0 | 0 | | 0.1 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 3.2 | 0 | 0 | | 0.5 | 0.1 |
| **Peds** | | | | | 6 | - | | | | | 5 | - | | | | | 14 | - | | | | | 15 | - | 40 |
| **% Peds** | | | | | 15 | - | | | | | 12.5 | - | | | | | 35 | - | | | | | 37.5 | - | |

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# Project #23-401 - Arcadis Professional Services (Canada) Inc.

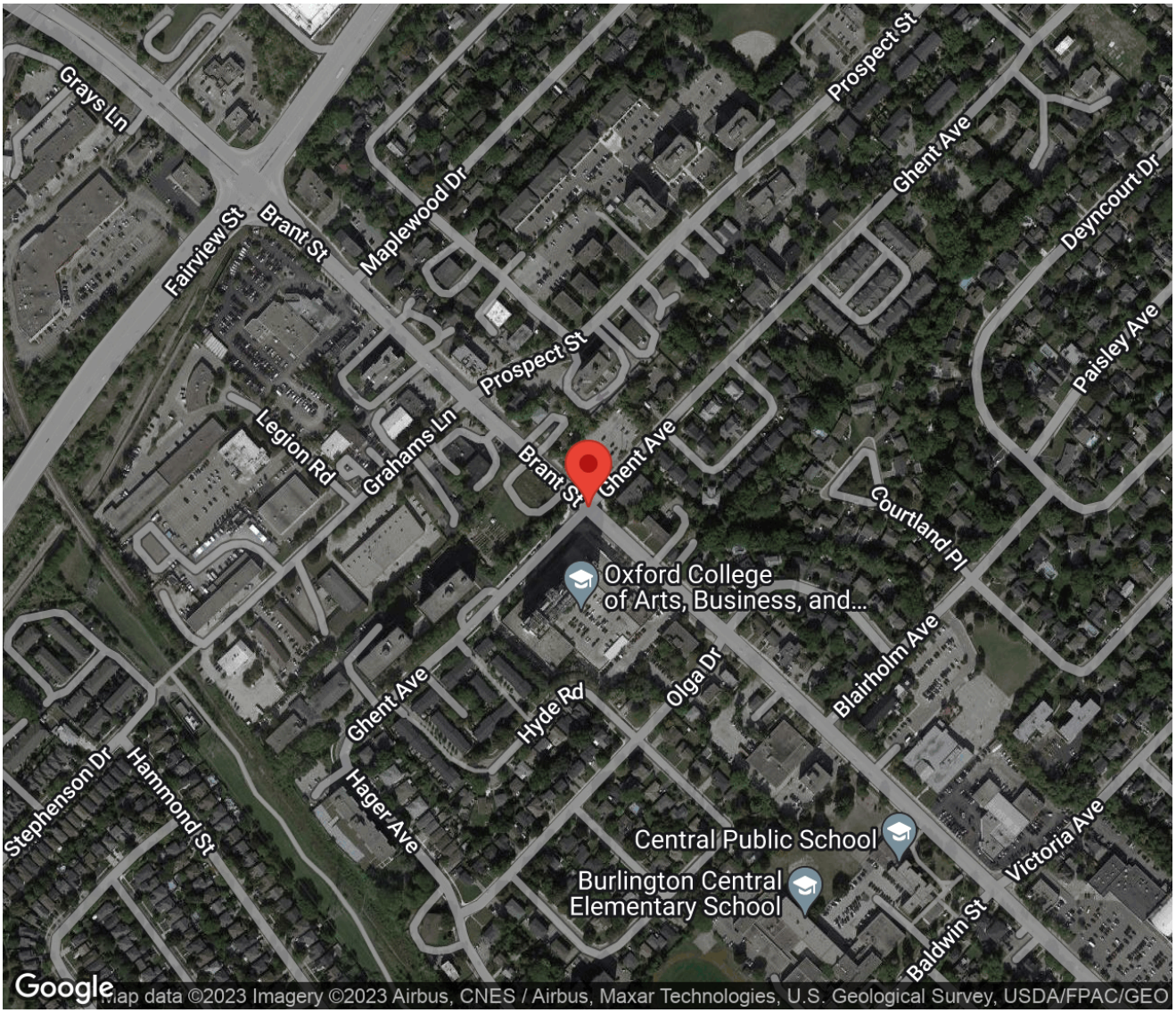
## Intersection Count Report

| | |
|---|---|
| **Intersection:** | Brant St & Ghent St |
| **Municipality:** | Burlington |
| **Count Date:** | Tuesday, Dec 05, 2023 |
| **Site Code:** | 2340100003 |
| **Count Categories:** | Cars, Trucks, Bicycles, Pedestrians |
| **Count Period:** | 07:00-09:00, 16:00-18:00 |
| **Weather:** | Clear |
| **Comments:** | |

Ontario Traffic Inc.
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# Traffic Count Map

| | |
|---|---|
| Intersection: | Brant St & Ghent St |
| Site Code: | 2340100003 |
| Municipality: | Burlington |
| Count Date: | Dec 05, 2023 |



Ontario Traffic Inc.
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# Traffic Count Summary

| | |
|---|---|
| Intersection: | Brant St & Ghent St |
| Site Code: | 2340100003 |
| Municipality: | Burlington |
| Count Date: | Dec 05, 2023 |

## Brant St - Traffic Summary

| | North Approach Totals | | | | | | South Approach Totals | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Includes Cars, Trucks, Bicycles | | | | | | Includes Cars, Trucks, Bicycles | | | | | | |
| Hour | Left | Thru | Right | U-Turn | Total | Peds | Left | Thru | Right | U-Turn | Total | Peds | Total |
| 07:00 - 08:00 | 11 | 383 | 28 | 0 | 422 | 0 | 2 | 407 | 10 | 0 | 419 | 4 | 841 |
| 08:00 - 09:00 | 23 | 703 | 60 | 0 | 786 | 9 | 10 | 668 | 15 | 0 | 693 | 12 | 1479 |
| BREAK | | | | | | | | | | | | | |
| 16:00 - 17:00 | 34 | 651 | 131 | 1 | 817 | 6 | 13 | 729 | 13 | 0 | 755 | 9 | 1572 |
| 17:00 - 18:00 | 42 | 722 | 157 | 0 | 921 | 9 | 6 | 648 | 25 | 0 | 679 | 8 | 1600 |
| **GRAND TOTAL** | **110** | **2459** | **376** | **1** | **2946** | **24** | **31** | **2452** | **63** | **0** | **2546** | **33** | **5492** |

Ontario Traffic Inc.
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# Traffic Count Summary

| | |
|---|---|
| Intersection: | Brant St & Ghent St |
| Site Code: | 2340100003 |
| Municipality: | Burlington |
| Count Date: | Dec 05, 2023 |

## Ghent St - Traffic Summary

| | East Approach Totals | | | | | | West Approach Totals | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Includes Cars, Trucks, Bicycles | | | | | | Includes Cars, Trucks, Bicycles | | | | | | |
| Hour | Left | Thru | Right | U-Turn | Total | Peds | Left | Thru | Right | U-Turn | Total | Peds | Total |
| 07:00 - 08:00 | 9 | 3 | 27 | 0 | 39 | 9 | 95 | 13 | 8 | 0 | 116 | 11 | 155 |
| 08:00 - 09:00 | 13 | 10 | 34 | 0 | 57 | 35 | 108 | 16 | 9 | 0 | 133 | 16 | 190 |
| BREAK | | | | | | | | | | | | | |
| 16:00 - 17:00 | 25 | 40 | 34 | 0 | 99 | 4 | 82 | 20 | 12 | 0 | 114 | 13 | 213 |
| 17:00 - 18:00 | 22 | 45 | 31 | 0 | 98 | 23 | 89 | 11 | 11 | 0 | 111 | 9 | 209 |
| **GRAND TOTAL** | **69** | **98** | **126** | **0** | **293** | **71** | **374** | **60** | **40** | **0** | **474** | **49** | **767** |

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# Traffic Count Data

Intersection: Brant St & Ghent St
Site Code: 2340100003
Municipality: Burlington
Count Date: Dec 05, 2023

## North Approach - Brant St

| Start Time | Cars | | | | | Trucks | | | | | Bicycles | | | | | Total Peds |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ↰ | ↑ | ↱ | ↻ | Total | ↰ | ↑ | ↱ | ↻ | Total | ↰ | ↑ | ↱ | ↻ | Total | |
| **07:00** | 2 | 51 | 7 | 0 | 60 | 0 | 3 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 |
| **07:15** | 2 | 63 | 7 | 0 | 72 | 0 | 8 | 0 | 0 | 8 | 0 | 0 | 1 | 0 | 1 | 0 |
| **07:30** | 3 | 93 | 5 | 0 | 101 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 |
| **07:45** | 4 | 156 | 7 | 0 | 167 | 0 | 4 | 1 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 |
| **08:00** | 3 | 170 | 12 | 0 | 185 | 0 | 5 | 1 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 5 |
| **08:15** | 5 | 190 | 13 | 0 | 208 | 0 | 8 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 2 |
| **08:30** | 6 | 172 | 13 | 0 | 191 | 1 | 4 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 1 |
| **08:45** | 6 | 150 | 20 | 0 | 176 | 2 | 4 | 1 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 1 |
| **SUBTOTAL** | 31 | 1045 | 84 | 0 | 1160 | 3 | 41 | 3 | 0 | 47 | 0 | 0 | 1 | 0 | 1 | 9 |

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# Traffic Count Data

Intersection: Brant St & Ghent St
Site Code: 2340100003
Municipality: Burlington
Count Date: Dec 05, 2023

## North Approach - Brant St

| Start Time | Cars | | | | | Trucks | | | | | Bicycles | | | | | Total Peds |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ↰ | ↑ | ↱ | ↶ | Total | ↰ | ↑ | ↱ | ↶ | Total | ↰ | ↑ | ↱ | ↶ | Total | |
| 16:00 | 11 | 148 | 19 | 0 | 178 | 1 | 6 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 2 |
| 16:15 | 8 | 159 | 28 | 1 | 196 | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 2 |
| 16:30 | 10 | 139 | 37 | 0 | 186 | 0 | 6 | 1 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 1 |
| 16:45 | 4 | 184 | 46 | 0 | 234 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 17:00 | 16 | 171 | 50 | 0 | 237 | 0 | 2 | 0 | 0 | 2 | 0 | 1 | 0 | 0 | 1 | 2 |
| 17:15 | 7 | 188 | 43 | 0 | 238 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 5 |
| 17:30 | 9 | 153 | 27 | 0 | 189 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:45 | 10 | 202 | 37 | 0 | 249 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 2 |
| SUBTOTAL | 75 | 1344 | 287 | 1 | 1707 | 1 | 28 | 1 | 0 | 30 | 0 | 1 | 0 | 0 | 1 | 15 |
| **GRAND TOTAL** | **106** | **2389** | **371** | **1** | **2867** | **4** | **69** | **4** | **0** | **77** | **0** | **1** | **1** | **0** | **2** | **24** |

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# Traffic Count Data

Intersection: Brant St & Ghent St
Site Code: 2340100003
Municipality: Burlington
Count Date: Dec 05, 2023

## South Approach - Brant St

| Start Time | Cars | | | | | Trucks | | | | | Bicycles | | | | | Total Peds |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ↰ | ↑ | ↱ | ↻ | Total | ↰ | ↑ | ↱ | ↻ | Total | ↰ | ↑ | ↱ | ↻ | Total | |
| **07:00** | 0 | 73 | 1 | 0 | 74 | 0 | 4 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 2 |
| **07:15** | 0 | 87 | 3 | 0 | 90 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| **07:30** | 1 | 109 | 1 | 0 | 111 | 0 | 4 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 2 |
| **07:45** | 1 | 123 | 5 | 0 | 129 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 |
| **08:00** | 4 | 139 | 4 | 0 | 147 | 0 | 4 | 1 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 5 |
| **08:15** | 0 | 208 | 7 | 0 | 215 | 0 | 4 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 3 |
| **08:30** | 5 | 158 | 1 | 0 | 164 | 0 | 12 | 1 | 0 | 13 | 0 | 0 | 0 | 0 | 0 | 4 |
| **08:45** | 1 | 137 | 1 | 0 | 139 | 0 | 6 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 |
| **SUBTOTAL** | 12 | 1034 | 23 | 0 | 1069 | 0 | 41 | 2 | 0 | 43 | 0 | 0 | 0 | 0 | 0 | 16 |

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# Traffic Count Data

Intersection: Brant St & Ghent St
Site Code: 2340100003
Municipality: Burlington
Count Date: Dec 05, 2023

## South Approach - Brant St

| Start Time | Cars | | | | | Trucks | | | | | Bicycles | | | | | Total Peds |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ↰ | ↑ | ↱ | ↶ | Total | ↰ | ↑ | ↱ | ↶ | Total | ↰ | ↑ | ↱ | ↶ | Total | |
| 16:00 | 4 | 165 | 8 | 0 | 177 | 0 | 3 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16:15 | 1 | 163 | 1 | 0 | 165 | 0 | 3 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 1 |
| 16:30 | 3 | 194 | 2 | 0 | 199 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 4 |
| 16:45 | 5 | 192 | 2 | 0 | 199 | 0 | 4 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 4 |
| 17:00 | 3 | 196 | 5 | 0 | 204 | 0 | 3 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 6 |
| 17:15 | 0 | 161 | 6 | 0 | 167 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 2 |
| 17:30 | 2 | 144 | 11 | 0 | 157 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:45 | 1 | 139 | 3 | 0 | 143 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| SUBTOTAL | 19 | 1354 | 38 | 0 | 1411 | 0 | 23 | 0 | 0 | 23 | 0 | 0 | 0 | 0 | 0 | 17 |
| GRAND TOTAL | 31 | 2388 | 61 | 0 | 2480 | 0 | 64 | 2 | 0 | 66 | 0 | 0 | 0 | 0 | 0 | 33 |

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# Traffic Count Data

Intersection: Brant St & Ghent St
Site Code: 2340100003
Municipality: Burlington
Count Date: Dec 05, 2023

## East Approach - Ghent St

| Start Time | Cars | | | | | Trucks | | | | | Bicycles | | | | | Total Peds |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ↰ | ↑ | ↱ | ↻ | Total | ↰ | ↑ | ↱ | ↻ | Total | ↰ | ↑ | ↱ | ↻ | Total | |
| 07:00 | 3 | 1 | 9 | 0 | 13 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 07:15 | 1 | 2 | 3 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 07:30 | 2 | 0 | 6 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 07:45 | 3 | 0 | 8 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| 08:00 | 4 | 1 | 6 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 |
| 08:15 | 2 | 2 | 6 | 0 | 10 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 10 |
| 08:30 | 5 | 2 | 13 | 0 | 20 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 8 |
| 08:45 | 1 | 5 | 7 | 0 | 13 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 3 |
| SUBTOTAL | 21 | 13 | 58 | 0 | 92 | 1 | 0 | 3 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 44 |

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

# Traffic Count Data

Intersection: Brant St & Ghent St
Site Code: 2340100003
Municipality: Burlington
Count Date: Dec 05, 2023

## East Approach - Ghent St

| Start Time | Cars | | | | | Trucks | | | | | Bicycles | | | | | Total Peds |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ↰ | ↑ | ↱ | ↻ | Total | ↰ | ↑ | ↱ | ↻ | Total | ↰ | ↑ | ↱ | ↻ | Total | |
| 16:00 | 2 | 10 | 8 | 0 | 20 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 16:15 | 11 | 10 | 7 | 0 | 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 16:30 | 5 | 9 | 10 | 0 | 24 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 16:45 | 5 | 10 | 9 | 0 | 24 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 17:00 | 5 | 13 | 15 | 0 | 33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 |
| 17:15 | 7 | 16 | 4 | 0 | 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| 17:30 | 3 | 12 | 6 | 0 | 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 17:45 | 7 | 4 | 6 | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 |
| SUBTOTAL | 45 | 84 | 65 | 0 | 194 | 2 | 1 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 27 |
| **GRAND TOTAL** | **66** | **97** | **123** | **0** | **286** | **3** | **1** | **3** | **0** | **7** | **0** | **0** | **0** | **0** | **0** | **71** |

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

# Traffic Count Data

Intersection: Brant St & Ghent St
Site Code: 2340100003
Municipality: Burlington
Count Date: Dec 05, 2023

## West Approach - Ghent St

| Start Time | Cars | | | | | Trucks | | | | | Bicycles | | | | | Total Peds |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ↰ | ↑ | ↱ | ↶ | Total | ↰ | ↑ | ↱ | ↶ | Total | ↰ | ↑ | ↱ | ↶ | Total | |
| 07:00 | 14 | 3 | 1 | 0 | 18 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:15 | 21 | 1 | 3 | 0 | 25 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 |
| 07:30 | 32 | 1 | 2 | 0 | 35 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 6 |
| 07:45 | 25 | 7 | 1 | 0 | 33 | 0 | 1 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 3 |
| 08:00 | 27 | 5 | 2 | 0 | 34 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 |
| 08:15 | 24 | 2 | 3 | 0 | 29 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 5 |
| 08:30 | 23 | 5 | 3 | 0 | 31 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 4 |
| 08:45 | 32 | 4 | 1 | 0 | 37 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| SUBTOTAL | 198 | 28 | 16 | 0 | 242 | 5 | 1 | 1 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 27 |

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

# Traffic Count Data

Intersection: Brant St & Ghent St
Site Code: 2340100003
Municipality: Burlington
Count Date: Dec 05, 2023

## West Approach - Ghent St

| Start Time | Cars | | | | | Trucks | | | | | Bicycles | | | | | Total Peds |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ↰ | ↑ | ↱ | ↶ | Total | ↰ | ↑ | ↱ | ↶ | Total | ↰ | ↑ | ↱ | ↶ | Total | |
| 16:00 | 24 | 7 | 3 | 0 | 34 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| 16:15 | 22 | 7 | 3 | 0 | 32 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 16:30 | 21 | 3 | 4 | 0 | 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 16:45 | 14 | 3 | 2 | 0 | 19 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 4 |
| 17:00 | 19 | 1 | 5 | 0 | 25 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 3 |
| 17:15 | 28 | 2 | 1 | 0 | 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 |
| 17:30 | 26 | 5 | 1 | 0 | 32 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:45 | 16 | 3 | 3 | 0 | 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| SUBTOTAL | 170 | 31 | 22 | 0 | 223 | 1 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 22 |
| GRAND TOTAL | 368 | 59 | 38 | 0 | 465 | 6 | 1 | 2 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 49 |

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

# Peak Hour Diagram

| Specified Period | | One Hour Peak | |
|---|---|---|---|
| From: | 07:00:00 | From: | 08:00:00 |
| To: | 09:00:00 | To: | 09:00:00 |

**Intersection:** Brant St & Ghent St
**Site Code:** 2340100003
**Count Date:** Dec 05, 2023

**Weather conditions:** Clear

**** Signalized Intersection ****

**Major Road:** Brant St runs N/S

## North Approach

| | Out | In | Total |
|---|---|---|---|
| Cars | 760 | 780 | 1540 |
| Trucks | 26 | 30 | 56 |
| Bicycles | 0 | 0 | 0 |
| | **786** | **810** | **1596** |

## Brant St

| | | | | |
|---|---|---|---|---|
| Bicycles | 0 | 0 | 0 | 0 |
| Trucks | 2 | 21 | 3 | 0 |
| Cars | 58 | 682 | 20 | 0 |
| **Totals** | **60** | **703** | **23** | **0** |

## East Approach

| | Out | In | Total |
|---|---|---|---|
| Cars | 54 | 49 | 103 |
| Trucks | 3 | 5 | 8 |
| Bicycles | 0 | 0 | 0 |
| | **57** | **54** | **111** |

## Ghent St

| Bicycles | Trucks | Cars | Totals | |
|---|---|---|---|---|
| 0 | 0 | 0 | **0** | |
| 0 | 2 | 106 | **108** | |
| 0 | 0 | 16 | **16** | |
| 0 | 0 | 9 | **9** | |

Peds: 9
Peds: 16
Peds: 35
Peds: 12

## Ghent St

| | Totals | Cars | Trucks | Bicycles |
|---|---|---|---|---|
| | **0** | 0 | 0 | 0 |
| | **34** | 32 | 2 | 0 |
| | **10** | 10 | 0 | 0 |
| | **13** | 12 | 1 | 0 |

## West Approach

| | Out | In | Total |
|---|---|---|---|
| Cars | 131 | 78 | 209 |
| Trucks | 2 | 2 | 4 |
| Bicycles | 0 | 0 | 0 |
| | **133** | **80** | **213** |

| | | | | |
|---|---|---|---|---|
| **Totals** | **10** | **668** | **15** | **0** |
| Cars | 10 | 642 | 13 | 0 |
| Trucks | 0 | 26 | 2 | 0 |
| Bicycles | 0 | 0 | 0 | 0 |

Brant St

## South Approach

| | Out | In | Total |
|---|---|---|---|
| Cars | 665 | 703 | 1368 |
| Trucks | 28 | 22 | 50 |
| Bicycles | 0 | 0 | 0 |
| | **693** | **725** | **1418** |

Cars - Trucks - Bicycles

## Comments

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

# Peak Hour Summary

Intersection: Brant St & Ghent St
Site Code: 2340100003
Count Date: Dec 05, 2023
Period: 07:00 - 09:00

## Peak Hour Data (08:00 - 09:00)

| Start Time | North Approach Brant St | | | | | | South Approach Brant St | | | | | | East Approach Ghent St | | | | | | West Approach Ghent St | | | | | | Total Vehicles |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ↰ | ↑ | ↱ | ↩ | Peds | Total | ↰ | ↑ | ↱ | ↩ | Peds | Total | ↰ | ↑ | ↱ | ↩ | Peds | Total | ↰ | ↑ | ↱ | ↩ | Peds | Total | |
| **08:00** | 3 | 175 | 13 | 0 | 5 | 191 | 4 | 143 | 5 | 0 | 5 | 152 | 4 | 1 | 6 | 0 | 14 | 11 | 27 | 5 | 2 | 0 | 6 | 34 | 388 |
| **08:15** | 5 | 198 | 13 | 0 | 2 | 216 | 0 | 212 | 7 | 0 | 3 | 219 | 2 | 2 | 7 | 0 | 10 | 11 | 25 | 2 | 3 | 0 | 5 | 30 | 476 |
| **08:30** | 7 | 176 | 13 | 0 | 1 | 196 | 5 | 170 | 2 | 0 | 4 | 177 | 6 | 2 | 13 | 0 | 8 | 21 | 24 | 5 | 3 | 0 | 4 | 32 | 426 |
| **08:45** | 8 | 154 | 21 | 0 | 1 | 183 | 1 | 143 | 1 | 0 | 0 | 145 | 1 | 5 | 8 | 0 | 3 | 14 | 32 | 4 | 1 | 0 | 1 | 37 | 379 |
| **Grand Total** | **23** | **703** | **60** | **0** | **9** | **786** | **10** | **668** | **15** | **0** | **12** | **693** | **13** | **10** | **34** | **0** | **35** | **57** | **108** | **16** | **9** | **0** | **16** | **133** | **1669** |
| **Approach %** | 2.9 | 89.4 | 7.6 | 0 | | - | 1.4 | 96.4 | 2.2 | 0 | | - | 22.8 | 17.5 | 59.6 | 0 | | - | 81.2 | 12 | 6.8 | 0 | | - | |
| **Totals %** | 1.4 | 42.1 | 3.6 | 0 | | 47.1 | 0.6 | 40 | 0.9 | 0 | | 41.5 | 0.8 | 0.6 | 2 | 0 | | 3.4 | 6.5 | 1 | 0.5 | 0 | | 8 | |
| **PHF** | **0.72** | **0.89** | **0.71** | **0** | | **0.91** | **0.5** | **0.79** | **0.54** | **0** | | **0.79** | **0.54** | **0.5** | **0.65** | **0** | | **0.68** | **0.84** | **0.8** | **0.75** | **0** | | **0.9** | **0.88** |
| **Cars** | 20 | 682 | 58 | 0 | | 760 | 10 | 642 | 13 | 0 | | 665 | 12 | 10 | 32 | 0 | | 54 | 106 | 16 | 9 | 0 | | 131 | 1610 |
| **% Cars** | 87 | 97 | 96.7 | 0 | | 96.7 | 100 | 96.1 | 86.7 | 0 | | 96 | 92.3 | 100 | 94.1 | 0 | | 94.7 | 98.1 | 100 | 100 | 0 | | 98.5 | 96.5 |
| **Trucks** | 3 | 21 | 2 | 0 | | 26 | 0 | 26 | 2 | 0 | | 28 | 1 | 0 | 2 | 0 | | 3 | 2 | 0 | 0 | 0 | | 2 | 59 |
| **% Trucks** | 13 | 3 | 3.3 | 0 | | 3.3 | 0 | 3.9 | 13.3 | 0 | | 4 | 7.7 | 0 | 5.9 | 0 | | 5.3 | 1.9 | 0 | 0 | 0 | | 1.5 | 3.5 |
| **Bicycles** | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | | 0 | 0 |
| **% Bicycles** | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | | 0 | 0 |
| **Peds** | | | | | 9 | - | | | | | 12 | - | | | | | 35 | - | | | | | 16 | - | 72 |
| **% Peds** | | | | | 12.5 | - | | | | | 16.7 | - | | | | | 48.6 | - | | | | | 22.2 | - | |

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

# Peak Hour Diagram

| Specified Period | | One Hour Peak | |
|---|---|---|---|
| From: | 16:00:00 | From: | 16:30:00 |
| To: | 18:00:00 | To: | 17:30:00 |

**Intersection:** Brant St & Ghent St
**Site Code:** 2340100003
**Count Date:** Dec 05, 2023

**Weather conditions:** Clear

**** Signalized Intersection ****

**Major Road:** Brant St runs N/S

## North Approach

| | Out | In | Total |
|---|---|---|---|
| Cars | 895 | 863 | 1758 |
| Trucks | 12 | 15 | 27 |
| Bicycles | 1 | 0 | 1 |
| | **908** | **878** | **1786** |

## Brant St

| | | | | |
|---|---|---|---|---|
| Bicycles | 0 | 1 | 0 | 0 |
| Trucks | 1 | 11 | 0 | 0 |
| Cars | 176 | 682 | 37 | 0 |
| **Totals** | **177** | **694** | **37** | **0** |

## East Approach

| | Out | In | Total |
|---|---|---|---|
| Cars | 108 | 61 | 169 |
| Trucks | 2 | 0 | 2 |
| Bicycles | 0 | 0 | 0 |
| | **110** | **61** | **171** |

## Ghent St

| Bicycles | Trucks | Cars | Totals | |
|---|---|---|---|---|
| 0 | 0 | 0 | **0** | |
| 0 | 1 | 82 | **83** | |
| 0 | 0 | 9 | **9** | |
| 0 | 1 | 12 | **13** | |

Peds: 9
Peds: 15
Peds: 17
Peds: 16




## Ghent St

| | Totals | Cars | Trucks | Bicycles |
|---|---|---|---|---|
| | **0** | 0 | 0 | 0 |
| | **38** | 38 | 0 | 0 |
| | **49** | 48 | 1 | 0 |
| | **23** | 22 | 1 | 0 |

## West Approach

| | Out | In | Total |
|---|---|---|---|
| Cars | 103 | 235 | 338 |
| Trucks | 2 | 2 | 4 |
| Bicycles | 0 | 0 | 0 |
| | **105** | **237** | **342** |

## Brant St

| | | | | |
|---|---|---|---|---|
| **Totals** | **11** | **757** | **15** | **0** |
| Cars | 11 | 743 | 15 | 0 |
| Trucks | 0 | 14 | 0 | 0 |
| Bicycles | 0 | 0 | 0 | 0 |

## South Approach

| | Out | In | Total |
|---|---|---|---|
| Cars | 769 | 716 | 1485 |
| Trucks | 14 | 13 | 27 |
| Bicycles | 0 | 1 | 1 |
| | **783** | **730** | **1513** |

Cars - Trucks - Bicycles

## Comments

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

# Peak Hour Summary

| | |
|---|---|
| Intersection: | Brant St & Ghent St |
| Site Code: | 2340100003 |
| Count Date: | Dec 05, 2023 |
| Period: | 16:00 - 18:00 |

## Peak Hour Data (16:30 - 17:30)

| Start Time | North Approach Brant St | | | | | | South Approach Brant St | | | | | | East Approach Ghent St | | | | | | West Approach Ghent St | | | | | | Total Vehicles |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Peds | Total | | | | | Peds | Total | | | | | Peds | Total | | | | | Peds | Total | |
| **16:30** | 10 | 145 | 38 | 0 | 1 | 193 | 3 | 199 | 2 | 0 | 4 | 204 | 5 | 10 | 10 | 0 | 1 | 25 | 21 | 3 | 4 | 0 | 3 | 28 | 450 |
| **16:45** | 4 | 186 | 46 | 0 | 1 | 236 | 5 | 196 | 2 | 0 | 4 | 203 | 6 | 10 | 9 | 0 | 1 | 25 | 15 | 3 | 2 | 0 | 4 | 20 | 484 |
| **17:00** | 16 | 174 | 50 | 0 | 2 | 240 | 3 | 199 | 5 | 0 | 6 | 207 | 5 | 13 | 15 | 0 | 11 | 33 | 19 | 1 | 6 | 0 | 3 | 26 | 506 |
| **17:15** | 7 | 189 | 43 | 0 | 5 | 239 | 0 | 163 | 6 | 0 | 2 | 169 | 7 | 16 | 4 | 0 | 4 | 27 | 28 | 2 | 1 | 0 | 5 | 31 | 466 |
| **Grand Total** | **37** | **694** | **177** | **0** | **9** | **908** | **11** | **757** | **15** | **0** | **16** | **783** | **23** | **49** | **38** | **0** | **17** | **110** | **83** | **9** | **13** | **0** | **15** | **105** | **1906** |
| **Approach %** | 4.1 | 76.4 | 19.5 | 0 | | - | 1.4 | 96.7 | 1.9 | 0 | | - | 20.9 | 44.5 | 34.5 | 0 | | - | 79 | 8.6 | 12.4 | 0 | | - | |
| **Totals %** | 1.9 | 36.4 | 9.3 | 0 | | 47.6 | 0.6 | 39.7 | 0.8 | 0 | | 41.1 | 1.2 | 2.6 | 2 | 0 | | 5.8 | 4.4 | 0.5 | 0.7 | 0 | | 5.5 | |
| **PHF** | **0.58** | **0.92** | **0.89** | **0** | | **0.95** | **0.55** | **0.95** | **0.63** | **0** | | **0.95** | **0.82** | **0.77** | **0.63** | **0** | | **0.83** | **0.74** | **0.75** | **0.54** | **0** | | **0.85** | **0.94** |
| **Cars** | 37 | 682 | 176 | 0 | | 895 | 11 | 743 | 15 | 0 | | 769 | 22 | 48 | 38 | 0 | | 108 | 82 | 9 | 12 | 0 | | 103 | 1875 |
| **% Cars** | 100 | 98.3 | 99.4 | 0 | | 98.6 | 100 | 98.2 | 100 | 0 | | 98.2 | 95.7 | 98 | 100 | 0 | | 98.2 | 98.8 | 100 | 92.3 | 0 | | 98.1 | 98.4 |
| **Trucks** | 0 | 11 | 1 | 0 | | 12 | 0 | 14 | 0 | 0 | | 14 | 1 | 1 | 0 | 0 | | 2 | 1 | 0 | 1 | 0 | | 2 | 30 |
| **% Trucks** | 0 | 1.6 | 0.6 | 0 | | 1.3 | 0 | 1.8 | 0 | 0 | | 1.8 | 4.3 | 2 | 0 | 0 | | 1.8 | 1.2 | 0 | 7.7 | 0 | | 1.9 | 1.6 |
| **Bicycles** | 0 | 1 | 0 | 0 | | 1 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | | 0 | 1 |
| **% Bicycles** | 0 | 0.1 | 0 | 0 | | 0.1 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | | 0 | 0.1 |
| **Peds** | | | | | 9 | - | | | | | 16 | - | | | | | 17 | - | | | | | 15 | - | 57 |
| **% Peds** | | | | | 15.8 | - | | | | | 28.1 | - | | | | | 29.8 | - | | | | | 26.3 | - | |

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

# Project #23-401 - Arcadis Professional Services (Canada) Inc.

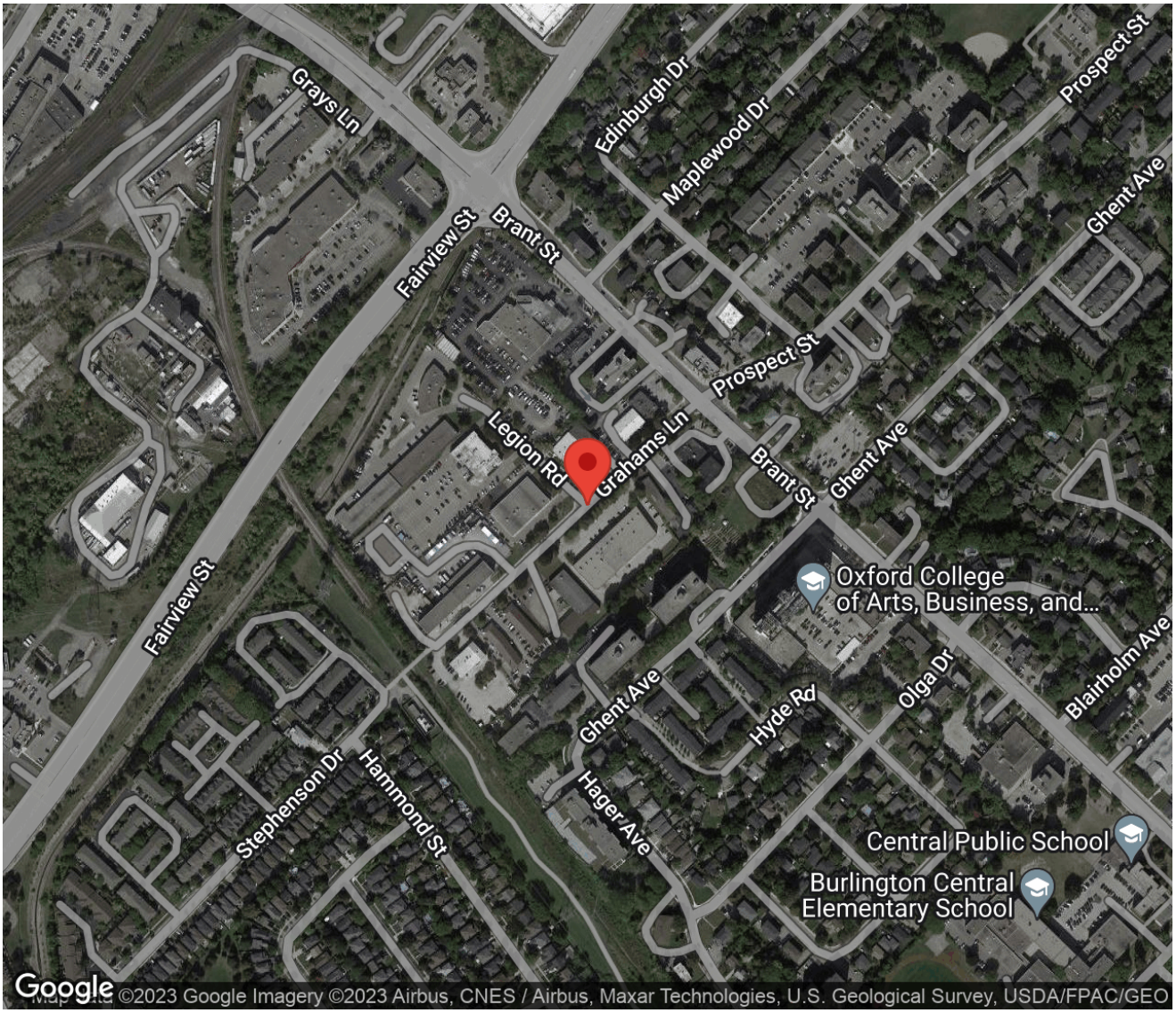
## Intersection Count Report

| | |
|---|---|
| **Intersection:** | Grahams Ln & Legion Rd |
| **Municipality:** | Burlington |
| **Count Date:** | Tuesday, Dec 05, 2023 |
| **Site Code:** | 2340100004 |
| **Count Categories:** | Cars, Trucks, Bicycles, Pedestrians |
| **Count Period:** | 07:00-09:00, 16:00-18:00 |
| **Weather:** | Clear |
| **Comments:** | |

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

# Traffic Count Map

| | |
|---|---|
| Intersection: | Grahams Ln & Legion Rd |
| Site Code: | 2340100004 |
| Municipality: | Burlington |
| Count Date: | Dec 05, 2023 |



Ontario Traffic Inc.
Traffic Monitoring • Services & Products

# Traffic Count Summary

| | |
|---|---|
| Intersection: | Grahams Ln & Legion Rd |
| Site Code: | 2340100004 |
| Municipality: | Burlington |
| Count Date: | Dec 05, 2023 |

## Legion Rd - Traffic Summary

| | North Approach Totals | | | | | | South Approach Totals | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Includes Cars, Trucks, Bicycles | | | | | | Includes Cars, Trucks, Bicycles | | | | | | |
| Hour | Left | Thru | Right | U-Turn | Total | Peds | Left | Thru | Right | U-Turn | Total | Peds | Total |
| 07:00 - 08:00 | 14 | 0 | 2 | 0 | 16 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 16 |
| 08:00 - 09:00 | 41 | 0 | 4 | 0 | 45 | 17 | 0 | 0 | 0 | 0 | 0 | 0 | 45 |
| BREAK | | | | | | | | | | | | | |
| 16:00 - 17:00 | 76 | 0 | 1 | 0 | 77 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 77 |
| 17:00 - 18:00 | 74 | 0 | 1 | 0 | 75 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 75 |
| **GRAND TOTAL** | **205** | **0** | **8** | **0** | **213** | **37** | **0** | **0** | **0** | **0** | **0** | **0** | **213** |

Ontario Traffic Inc.
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# Traffic Count Summary

| | |
|---|---|
| Intersection: | Grahams Ln & Legion Rd |
| Site Code: | 2340100004 |
| Municipality: | Burlington |
| Count Date: | Dec 05, 2023 |

## Grahams Ln - Traffic Summary

| | East Approach Totals | | | | | | West Approach Totals | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Includes Cars, Trucks, Bicycles | | | | | | Includes Cars, Trucks, Bicycles | | | | | | |
| Hour | Left | Thru | Right | U-Turn | Total | Peds | Left | Thru | Right | U-Turn | Total | Peds | Total |
| 07:00 - 08:00 | 0 | 37 | 49 | 0 | 86 | 0 | 1 | 16 | 0 | 0 | 17 | 0 | 103 |
| 08:00 - 09:00 | 0 | 34 | 54 | 0 | 88 | 0 | 5 | 27 | 0 | 0 | 32 | 0 | 120 |
| BREAK | | | | | | | | | | | | | |
| 16:00 - 17:00 | 0 | 27 | 37 | 0 | 64 | 1 | 1 | 53 | 0 | 0 | 54 | 1 | 118 |
| 17:00 - 18:00 | 0 | 15 | 30 | 0 | 45 | 0 | 0 | 43 | 0 | 0 | 43 | 1 | 88 |
| **GRAND TOTAL** | **0** | **113** | **170** | **0** | **283** | **1** | **7** | **139** | **0** | **0** | **146** | **2** | **429** |

Ontario Traffic Inc.
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# Traffic Count Data

Intersection: Grahams Ln & Legion Rd
Site Code: 2340100004
Municipality: Burlington
Count Date: Dec 05, 2023

## North Approach - Legion Rd

| Start Time | Cars | | | | | Trucks | | | | | Bicycles | | | | | Total Peds |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ↰ | ↑ | ↱ | ↶ | Total | ↰ | ↑ | ↱ | ↶ | Total | ↰ | ↑ | ↱ | ↶ | Total | |
| 07:00 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 07:15 | 3 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 07:30 | 2 | 0 | 2 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 07:45 | 7 | 0 | 0 | 0 | 7 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 |
| 08:00 | 11 | 0 | 1 | 0 | 12 | 3 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:15 | 7 | 0 | 1 | 0 | 8 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 8 |
| 08:30 | 7 | 0 | 1 | 0 | 8 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 6 |
| 08:45 | 11 | 0 | 1 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| SUBTOTAL | 49 | 0 | 6 | 0 | 55 | 6 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 26 |

Ontario Traffic Inc.
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# Traffic Count Data

Intersection: Grahams Ln & Legion Rd
Site Code: 2340100004
Municipality: Burlington
Count Date: Dec 05, 2023

## North Approach - Legion Rd

| Start Time | Cars | | | | | Trucks | | | | | Bicycles | | | | | Total Peds |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ↰ | ↑ | ↱ | ↷ | Total | ↰ | ↑ | ↱ | ↷ | Total | ↰ | ↑ | ↱ | ↷ | Total | |
| 16:00 | 26 | 0 | 1 | 0 | 27 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 |
| 16:15 | 12 | 0 | 0 | 0 | 12 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 3 |
| 16:30 | 21 | 0 | 0 | 0 | 21 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 3 |
| 16:45 | 13 | 0 | 0 | 0 | 13 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 17:00 | 27 | 0 | 0 | 0 | 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 17:15 | 21 | 0 | 0 | 0 | 21 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:30 | 18 | 0 | 0 | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:45 | 8 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SUBTOTAL | 146 | 0 | 1 | 0 | 147 | 4 | 0 | 1 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 11 |
| GRAND TOTAL | 195 | 0 | 7 | 0 | 202 | 10 | 0 | 1 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 37 |

Ontario Traffic Inc.
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# Traffic Count Data

Intersection: Grahams Ln & Legion Rd
Site Code: 2340100004
Municipality: Burlington
Count Date: Dec 05, 2023

## East Approach - Grahams Ln

| Start Time | Cars | | | | | Trucks | | | | | Bicycles | | | | | Total Peds |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ↰ | ↑ | ↱ | ↻ | Total | ↰ | ↑ | ↱ | ↻ | Total | ↰ | ↑ | ↱ | ↻ | Total | |
| 07:00 | 0 | 5 | 7 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:15 | 0 | 7 | 7 | 0 | 14 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:30 | 0 | 12 | 14 | 0 | 26 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:45 | 0 | 12 | 20 | 0 | 32 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:00 | 0 | 3 | 19 | 0 | 22 | 0 | 1 | 1 | 0 | 2 | 0 | 1 | 0 | 0 | 1 | 0 |
| 08:15 | 0 | 9 | 6 | 0 | 15 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:30 | 0 | 8 | 12 | 0 | 20 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:45 | 0 | 10 | 15 | 0 | 25 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| SUBTOTAL | 0 | 66 | 100 | 0 | 166 | 0 | 4 | 3 | 0 | 7 | 0 | 1 | 0 | 0 | 1 | 0 |

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

# Traffic Count Data

Intersection: Grahams Ln & Legion Rd
Site Code: 2340100004
Municipality: Burlington
Count Date: Dec 05, 2023

## East Approach - Grahams Ln

| Start Time | Cars | | | | | Trucks | | | | | Bicycles | | | | | Total Peds |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ↰ | ↑ | ↱ | ↻ | Total | ↰ | ↑ | ↱ | ↻ | Total | ↰ | ↑ | ↱ | ↻ | Total | |
| 16:00 | 0 | 4 | 14 | 0 | 18 | 0 | 1 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16:15 | 0 | 4 | 7 | 0 | 11 | 0 | 2 | 1 | 0 | 3 | 0 | 1 | 0 | 0 | 1 | 0 |
| 16:30 | 0 | 3 | 10 | 0 | 13 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 16:45 | 0 | 8 | 4 | 0 | 12 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:00 | 0 | 7 | 7 | 0 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:15 | 0 | 3 | 12 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:30 | 0 | 3 | 8 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:45 | 0 | 1 | 3 | 0 | 4 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| SUBTOTAL | 0 | 33 | 65 | 0 | 98 | 0 | 8 | 2 | 0 | 10 | 0 | 1 | 0 | 0 | 1 | 1 |
| GRAND TOTAL | 0 | 99 | 165 | 0 | 264 | 0 | 12 | 5 | 0 | 17 | 0 | 2 | 0 | 0 | 2 | 1 |

Ontario Traffic Inc.
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# Traffic Count Data

Intersection: Grahams Ln & Legion Rd
Site Code: 2340100004
Municipality: Burlington
Count Date: Dec 05, 2023

## West Approach - Grahams Ln

| Start Time | Cars | | | | | Trucks | | | | | Bicycles | | | | | Total Peds |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ↰ | ↑ | ↱ | ↻ | Total | ↰ | ↑ | ↱ | ↻ | Total | ↰ | ↑ | ↱ | ↻ | Total | |
| 07:00 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:15 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:30 | 0 | 4 | 0 | 0 | 4 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:45 | 0 | 6 | 0 | 0 | 6 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:00 | 1 | 4 | 0 | 0 | 5 | 0 | 4 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:15 | 1 | 4 | 0 | 0 | 5 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:30 | 2 | 6 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 08:45 | 1 | 6 | 0 | 0 | 7 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| SUBTOTAL | 6 | 31 | 0 | 0 | 37 | 0 | 12 | 0 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 0 |

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

# Traffic Count Data

Intersection: Grahams Ln & Legion Rd
Site Code: 2340100004
Municipality: Burlington
Count Date: Dec 05, 2023

## West Approach - Grahams Ln

| Start Time | Cars | | | | | Trucks | | | | | Bicycles | | | | | Total Peds |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ↰ | ↑ | ↱ | ↻ | Total | ↰ | ↑ | ↱ | ↻ | Total | ↰ | ↑ | ↱ | ↻ | Total | |
| 16:00 | 1 | 7 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16:15 | 0 | 16 | 0 | 0 | 16 | 0 | 4 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16:30 | 0 | 14 | 0 | 0 | 14 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 16:45 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |
| 17:00 | 0 | 17 | 0 | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 17:15 | 0 | 8 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:30 | 0 | 9 | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17:45 | 0 | 8 | 0 | 0 | 8 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| SUBTOTAL | 1 | 89 | 0 | 0 | 90 | 0 | 6 | 0 | 0 | 6 | 0 | 1 | 0 | 0 | 1 | 2 |
| GRAND TOTAL | 7 | 120 | 0 | 0 | 127 | 0 | 18 | 0 | 0 | 18 | 0 | 1 | 0 | 0 | 1 | 2 |

Ontario Traffic Inc.
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# Peak Hour Diagram

| Specified Period | | One Hour Peak | |
|---|---|---|---|
| From: | 07:00:00 | From: | 07:45:00 |
| To: | 09:00:00 | To: | 08:45:00 |

**Intersection:** Grahams Ln & Legion Rd
**Site Code:** 2340100004
**Count Date:** Dec 05, 2023

**Weather conditions:** Clear

**** Unsignalized Intersection **** **Major Road:** Grahams Ln runs E/W

## North Approach

| | Out | In | Total |
|---|---|---|---|
| Cars | 35 | 61 | 96 |
| Trucks | 6 | 2 | 8 |
| Bicycles | 0 | 0 | 0 |
| | **41** | **63** | **104** |

## Legion Rd

| | | | |
|---|---|---|---|
| Bicycles | 0 | 0 | 0 |
| Trucks | 0 | 6 | 0 |
| Cars | 3 | 32 | 0 |
| **Totals** | **3** | **38** | **0** |

## East Approach

| | Out | In | Total |
|---|---|---|---|
| Cars | 89 | 52 | 141 |
| Trucks | 4 | 13 | 17 |
| Bicycles | 1 | 0 | 1 |
| | **94** | **65** | **159** |

## Grahams Ln

| | | | Totals |
|---|---|---|---|
| 0 | 0 | 0 | **0** |
| 0 | 0 | 4 | **4** |
| 0 | 7 | 20 | **27** |

Peds: 0

Peds: 16




Peds: 0

Peds: 0

## Grahams Ln

| Totals | | | |
|---|---|---|---|
| **0** | 0 | 0 | 0 |
| **59** | 57 | 2 | 0 |
| **35** | 32 | 2 | 1 |

## West Approach

| | Out | In | Total |
|---|---|---|---|
| Cars | 24 | 35 | 59 |
| Trucks | 7 | 2 | 9 |
| Bicycles | 0 | 1 | 1 |
| | **31** | **38** | **69** |

Cars - Trucks - Bicycles

## Comments

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

# Peak Hour Summary

Intersection: Grahams Ln & Legion Rd
Site Code: 2340100004
Count Date: Dec 05, 2023
Period: 07:00 - 09:00

## Peak Hour Data (07:45 - 08:45)

| Start Time | North Approach Legion Rd | | | | | | South Approach | | | | | | East Approach Grahams Ln | | | | | | West Approach Grahams Ln | | | | | | Total Vehicles |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ↰ | ↑ | ↱ | ↩ | Peds | Total | ↰ | ↑ | ↱ | ↩ | Peds | Total | ↰ | ↑ | ↱ | ↩ | Peds | Total | ↰ | ↑ | ↱ | ↩ | Peds | Total | |
| 07:45 | 8 | | 0 | 0 | 2 | 8 | | | | | 0 | | | 12 | 20 | 0 | 0 | 32 | 0 | 8 | | 0 | 0 | 8 | 48 |
| 08:00 | 14 | | 1 | 0 | 0 | 15 | | | | | 0 | | | 5 | 20 | 0 | 0 | 25 | 1 | 8 | | 0 | 0 | 9 | 49 |
| 08:15 | 8 | | 1 | 0 | 8 | 9 | | | | | 0 | | | 9 | 7 | 0 | 0 | 16 | 1 | 5 | | 0 | 0 | 6 | 31 |
| 08:30 | 8 | | 1 | 0 | 6 | 9 | | | | | 0 | | | 9 | 12 | 0 | 0 | 21 | 2 | 6 | | 0 | 0 | 8 | 38 |
| **Grand Total** | **38** | | **3** | **0** | **16** | **41** | | | | | **0** | **0** | | **35** | **59** | **0** | **0** | **94** | **4** | **27** | | **0** | **0** | **31** | **166** |
| **Approach %** | 92.7 | | 7.3 | 0 | | - | | | | | | - | | 37.2 | 62.8 | 0 | | - | 12.9 | 87.1 | | 0 | | - | |
| **Totals %** | 22.9 | | 1.8 | 0 | | 24.7 | | | | | | 0 | | 21.1 | 35.5 | 0 | | 56.6 | 2.4 | 16.3 | | 0 | | 18.7 | |
| **PHF** | **0.68** | | **0.75** | **0** | | **0.68** | | | | | | **0** | | **0.73** | **0.74** | **0** | | **0.73** | **0.5** | **0.84** | | **0** | | **0.86** | **0.85** |
| **Cars** | 32 | | 3 | 0 | | 35 | | | | | | 0 | | 32 | 57 | 0 | | 89 | 4 | 20 | | 0 | | 24 | 148 |
| **% Cars** | 84.2 | | 100 | 0 | | 85.4 | | | | | | 0 | | 91.4 | 96.6 | 0 | | 94.7 | 100 | 74.1 | | 0 | | 77.4 | 89.2 |
| **Trucks** | 6 | | 0 | 0 | | 6 | | | | | | 0 | | 2 | 2 | 0 | | 4 | 0 | 7 | | 0 | | 7 | 17 |
| **% Trucks** | 15.8 | | 0 | 0 | | 14.6 | | | | | | 0 | | 5.7 | 3.4 | 0 | | 4.3 | 0 | 25.9 | | 0 | | 22.6 | 10.2 |
| **Bicycles** | 0 | | 0 | 0 | | 0 | | | | | | 0 | | 1 | 0 | 0 | | 1 | 0 | 0 | | 0 | | 0 | 1 |
| **% Bicycles** | 0 | | 0 | 0 | | 0 | | | | | | 0 | | 2.9 | 0 | 0 | | 1.1 | 0 | 0 | | 0 | | 0 | 0.6 |
| **Peds** | | | | | 16 | - | | | | | 0 | - | | | | | 0 | - | | | | | 0 | - | 16 |
| **% Peds** | | | | | 100 | - | | | | | 0 | - | | | | | 0 | - | | | | | 0 | - | |

Ontario Traffic Inc.
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# Peak Hour Diagram

| Specified Period | | One Hour Peak | |
|---|---|---|---|
| From: | 16:00:00 | From: | 16:15:00 |
| To: | 18:00:00 | To: | 17:15:00 |

**Intersection:** Grahams Ln & Legion Rd
**Site Code:** 2340100004
**Count Date:** Dec 05, 2023

**Weather conditions:** Clear

**** Unsignalized Intersection ****

**Major Road:** Grahams Ln runs E/W

## North Approach

| | Out | In | Total |
|---|---|---|---|
| Cars | 73 | 28 | 101 |
| Trucks | 3 | 1 | 4 |
| Bicycles | 0 | 0 | 0 |
| | **76** | **29** | **105** |

## Legion Rd

| | | | |
|---|---|---|---|
| Bicycles | 0 | 0 | 0 |
| Trucks | 0 | 3 | 0 |
| Cars | 0 | 73 | 0 |
| **Totals** | **0** | **76** | **0** |

## East Approach

| | Out | In | Total |
|---|---|---|---|
| Cars | 50 | 130 | 180 |
| Trucks | 7 | 8 | 15 |
| Bicycles | 1 | 1 | 2 |
| | **58** | **139** | **197** |

## Grahams Ln

| Bicycles | Trucks | Cars | Totals | |
|---|---|---|---|---|
| 0 | 0 | 0 | **0** | |
| 0 | 0 | 0 | **0** | |
| 1 | 5 | 57 | **63** | |

Peds: 2

Peds: 9

Peds: 1

Peds: 0

N
W
E
S

## Grahams Ln

| | Totals | Cars | Trucks | Bicycles |
|---|---|---|---|---|
| | **0** | 0 | 0 | 0 |
| | **29** | 28 | 1 | 0 |
| | **29** | 22 | 6 | 1 |

## West Approach

| | Out | In | Total |
|---|---|---|---|
| Cars | 57 | 22 | 79 |
| Trucks | 5 | 6 | 11 |
| Bicycles | 1 | 1 | 2 |
| | **63** | **29** | **92** |

Cars - Trucks - Bicycles

## Comments

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

# Peak Hour Summary

Intersection: Grahams Ln & Legion Rd
Site Code: 2340100004
Count Date: Dec 05, 2023
Period: 16:00 - 18:00

## Peak Hour Data (16:15 - 17:15)

| Start Time | North Approach Legion Rd | | | | | | South Approach | | | | | | East Approach Grahams Ln | | | | | | West Approach Grahams Ln | | | | | | Total Vehicles |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Peds | Total | | | | | Peds | Total | | | | | Peds | Total | | | | | Peds | Total | |
| 16:15 | 13 | | 0 | 0 | 3 | 13 | | | | | 0 | | | 7 | 8 | 0 | 0 | 15 | 0 | 20 | | 0 | 0 | 20 | 48 |
| 16:30 | 22 | | 0 | 0 | 3 | 22 | | | | | 0 | | | 5 | 10 | 0 | 1 | 15 | 0 | 15 | | 0 | 1 | 15 | 52 |
| 16:45 | 14 | | 0 | 0 | 1 | 14 | | | | | 0 | | | 10 | 4 | 0 | 0 | 14 | 0 | 11 | | 0 | 0 | 11 | 39 |
| 17:00 | 27 | | 0 | 0 | 2 | 27 | | | | | 0 | | | 7 | 7 | 0 | 0 | 14 | 0 | 17 | | 0 | 1 | 17 | 58 |
| **Grand Total** | **76** | | **0** | **0** | **9** | **76** | | | | | **0** | **0** | | **29** | **29** | **0** | **1** | **58** | **0** | **63** | | **0** | **2** | **63** | **197** |
| **Approach %** | 100 | | 0 | 0 | | - | | | | | | - | | 50 | 50 | 0 | | - | 0 | 100 | | 0 | | - | |
| **Totals %** | 38.6 | | 0 | 0 | | 38.6 | | | | | | 0 | | 14.7 | 14.7 | 0 | | 29.4 | 0 | 32 | | 0 | | 32 | |
| **PHF** | **0.7** | | **0** | **0** | | **0.7** | | | | | | **0** | | **0.73** | **0.73** | **0** | | **0.97** | **0** | **0.79** | | **0** | | **0.79** | **0.85** |
| **Cars** | 73 | | 0 | 0 | | 73 | | | | | | 0 | | 22 | 28 | 0 | | 50 | 0 | 57 | | 0 | | 57 | 180 |
| **% Cars** | 96.1 | | 0 | 0 | | 96.1 | | | | | | 0 | | 75.9 | 96.6 | 0 | | 86.2 | 0 | 90.5 | | 0 | | 90.5 | 91.4 |
| **Trucks** | 3 | | 0 | 0 | | 3 | | | | | | 0 | | 6 | 1 | 0 | | 7 | 0 | 5 | | 0 | | 5 | 15 |
| **% Trucks** | 3.9 | | 0 | 0 | | 3.9 | | | | | | 0 | | 20.7 | 3.4 | 0 | | 12.1 | 0 | 7.9 | | 0 | | 7.9 | 7.6 |
| **Bicycles** | 0 | | 0 | 0 | | 0 | | | | | | 0 | | 1 | 0 | 0 | | 1 | 0 | 1 | | 0 | | 1 | 2 |
| **% Bicycles** | 0 | | 0 | 0 | | 0 | | | | | | 0 | | 3.4 | 0 | 0 | | 1.7 | 0 | 1.6 | | 0 | | 1.6 | 1 |
| **Peds** | | | | | 9 | - | | | | | 0 | - | | | | | 1 | - | | | | | 2 | - | 12 |
| **% Peds** | | | | | 75 | - | | | | | 0 | - | | | | | 8.3 | - | | | | | 16.7 | - | |

# Appendix C – Signal Timing Plans

| Intersection Name: | TS ID: | Line No: | Model: | IP address: | Controller Make: |
|---|---|---|---|---|---|
| Brant St @ Fairview St | 151 | 1 | ACS/3 | 172.22.66.2 | Econolite |

**Type of Operation:** 8 Phase Semi-Actuated

*-Start from Main Menu

| No | Date | | | Description | Prepared by |
|---|---|---|---|---|---|
| | Y | M | D | | MA |
| 1 | 2016 | 12 | 6 | Timing Changed(optimization) Amber & Allred changed as per OTM Book 12 | |
| | | | | | |
| | | | | | |

**PHASE DESCRIPTION**

| | | | |
|---|---|---|---|
| Ph1 | SBLT- Brant Street | Ph5 | NBLT- Brant Street |
| Ph2 | NB- Brant Street | Ph6 | SB- Brant Street |
| Ph3 | WBLT-Fairview Street | Ph7 | EBLT-Fairview Street |
| Ph4 | EB-Fairview Street | Ph8 | WB-Fairview Street |

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

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

**CONTROLLER TIMING DATA - VEHICLE TIMING** * - 2 - 1

Timing Plan: 1

| | Phase: 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Minimum Green | 7 | 8 | 7 | 8 | 7 | 8 | 7 | 8 |
| Walk | | 7 | | 7 | | 7 | | 7 |
| Ped. Clearance | | 17 | | 17 | | 17 | | 17 |
| Pedestrian Carry Over | | | | | | | | |
| Vehicle Extension | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| MAX 1 | 15 | 40 | 15 | 35 | 15 | 40 | 15 | 35 |
| MAX 2 | 15 | 40 | 15 | 35 | 15 | 40 | 15 | 35 |
| Yellow Change | 3 | 3.3 | 3 | 3.7 | 3 | 3.3 | 3 | 3.7 |
| Red Clearance | 1 | 3.2 | 1 | 2.7 | 1 | 3.2 | 1 | 2.7 |
| **Phase Minimum:** | 12 | 31.5 | 12 | 31.4 | 12 | 31.5 | 12 | 31.4 |

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

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

**COORDINATION: COORDINATOR PATTERN, SPLIT PATTERN** *** - 3 - 2, - 3 - 3**

| Coordinator Pattern (CP) | Cycle Length | Offset (sec) | Timing Plan | Split Pattern | Phases (sec) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 1 | 110 | 107 | 1 | 1 | 18 | 36 | 12 | 44 | 12 | 42 | 21 | 35 |
| 2 | 110 | 70 | 1 | 2 | 19 | 34 | 12 | 45 | 19 | 34 | 17 | 40 |
| 3 | 120 | 89 | 1 | 3 | 22 | 36 | 20 | 42 | 22 | 36 | 13 | 49 |
| 4 | 100 | 0 | 1 | 4 | 15 | 36 | 15 | 34 | 15 | 36 | 15 | 34 |
| 5 | 120 | 0 | 1 | 5 | 17 | 37 | 19 | 47 | 17 | 37 | 14 | 52 |
| 10 | 0 | 0 | 1 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | | | | | | | | | |

**TIME BASE: ACTION PLAN, DAY PLAN** *** - 5 - 2, - 5 - 3, -5 - 4**

| Day Plan | Sched. # | Action Plan | Time Period | Pattern | Timing Plan |
|---|---|---|---|---|---|
| 1 | 1 | 1 | 06:00 | 1 | 1 |
| 1 | 1 | 2 | 09:00 | 2 | 1 |
| 1 | 1 | 3 | 15:15 | 3 | 1 |
| 1 | 1 | 5 | 17:15 | 5 | 1 |
| 1 | 1 | 3 | 17:30 | 3 | 1 |
| 1 | 1 | 5 | 18:00 | 5 | 1 |
| 1 | 1 | 3 | 18:15 | 3 | 1 |
| 1 | 1 | 2 | 19:00 | 2 | 1 |
| 1 | 1 | 10 | 21:30 | 254 | 1 |
| 2 | 2 | 4 | 07:00 | 4 | 1 |
| 2 | 2 | 1 | 08:30 | 1 | 1 |
| 2 | 2 | 4 | 17:30 | 4 | 1 |
| 2 | 2 | 10 | 23:00 | 254 | 1 |
| 3 | 3 | 4 | 07:30 | 4 | 1 |
| 3 | 3 | 1 | 12:00 | 1 | 1 |
| 3 | 3 | 4 | 17:30 | 4 | 1 |
| 3 | 3 | 10 | 22:00 | 254 | 1 |

Schedule 1 = Day Plan 1
Schedule 2 = Day Plan 2
Schedule 3 = Day Plan 3

Day Plan 1 (Weekday)
Day Plan 2 (Saturday)
Day Plan 3 (Sunday, Holidays)

Action Plan 10 = free (254)

Special Programming:

**TIME BASE DATA - TIME OF YEAR EVENTS** *** - 5 - 5**

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

| Sum of 1&2 | | Sum of 3&4 | | Calculated | |
|---|---|---|---|---|---|
| | | | | Total 1-4 | Total 5-8 |
| | | | | Actual | Actual |
| 1&2 | 5&6 | 3&4 | 7&8 | | |
| 54 | 54 | 56 | 56 | 110 | 110 |
| 53 | 53 | 57 | 57 | 110 | 110 |
| 58 | 58 | 62 | 62 | 120 | 120 |
| 51 | 51 | 49 | 49 | 100 | 100 |
| 54 | 54 | 66 | 66 | 120 | 120 |
| 0 | 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 | 0 | 0 |

| Intersection Name: | TS ID: | Line No: | Model: | IP address: | Controller Make: |
|---|---|---|---|---|---|
| Brant St @ Ghent Avenue | 142 | | ACS/3 | 172.24.64.2 | Econolite |

**Type of Operation:** 8 Phase Semi-Actuated

*-Start from Main Menu

| No | Date | | | Description | Prepared by |
|---|---|---|---|---|---|
| | Y | M | D | | PT |
| 3 | 2023 | 11 | 13 | Updated clearance intervals and coordination timings | |
| | | | | | |
| | | | | | |

**PHASE DESCRIPTION**

| | | | |
|---|---|---|---|
| Ph1 | | Ph5 | |
| Ph2 | NB - Brant St | Ph6 | SB - Brant St |
| Ph3 | | Ph7 | |
| Ph4 | EB / WB Ghent Ave | Ph8 | |

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

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

**CONTROLLER TIMING DATA - VEHICLE TIMING** * - 2 - 1

Timing Plan: 1

| | Phase: 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Minimum Green | | 8 | | 8 | | 8 | | |
| Walk | | 16 | | 15 | | 16 | | |
| Ped. Clearance | | 10 | | 16 | | 10 | | |
| Pedestrian Carry Over | | | | | | | | |
| Vehicle Extension | | 3 | | 3 | | 3 | | |
| MAX 1 | | 35 | | 25 | | 35 | | |
| MAX 2 | | 35 | | 25 | | 35 | | |
| Yellow Change | | 3.3 | | 3.0 | | 3.3 | | |
| Red Clearance | | 2.6 | | 3.5 | | 2.6 | | |
| **Phase Minimum:** | | 32.9 | | 38.5 | | 32.9 | | |

51

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

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

## COORDINATION: COORDINATOR PATTERN, SPLIT PATTERN * - 3 - 2, - 3 - 3

| Coordinator Pattern (CP) | Cycle Length | Offset (sec) | Timing Plan | Split Pattern | Phases (sec) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 1 | 90 | 63 | 1 | 1 | | 50 | | 40 | | 50 | | |
| 2 | 90 | 82 | 1 | 2 | | 50 | | 40 | | 50 | | |
| 3 | 90 | 87 | 1 | 3 | | 50 | | 40 | | 50 | | |
| 4 | 85 | 12 | 1 | 4 | | 45 | | 40 | | 45 | | |
| 10 | 0 | 0 | 1 | 10 | | 0 | | 0 | | 0 | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

## TIME BASE: ACTION PLAN, DAY PLAN * - 5 - 2, - 5 - 3, -5 - 4

| Day Plan | Sched. # | Action Plan | Time Period | Pattern | Timing Plan |
|---|---|---|---|---|---|
| 1 | 1 | 1 | 07:30 | 1 | 1 |
| 1 | 1 | 2 | 09:30 | 2 | 1 |
| 1 | 1 | 3 | 15:30 | 3 | 1 |
| 1 | 1 | 4 | 19:00 | 4 | 1 |
| 1 | 1 | 10 | 22:00 | 254 | 1 |
| 2 | 2 | 4 | 07:30 | 4 | 1 |
| 2 | 2 | 1 | 09:30 | 1 | 1 |
| 2 | 2 | 4 | 16:00 | 4 | 1 |
| 2 | 2 | 10 | 23:00 | 254 | 1 |
| 3 | 3 | 4 | 08:30 | 4 | 1 |
| 3 | 3 | 1 | 10:30 | 1 | 1 |
| 3 | 3 | 4 | 17:00 | 4 | 1 |
| 3 | 3 | 10 | 20:30 | 254 | 1 |

Schedule 1 = Day Plan 1
Schedule 2 = Day Plan 2
Schedule 3 = Day Plan 3

Day Plan 1 (Weekday)
Day Plan 2 (Saturday)
Day Plan 3 (Sunday, Holidays)

Action Plan 10 = free (254)

Special Programming:

## TIME BASE DATA - TIME OF YEAR EVENTS * - 5 - 5

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

| Intersection Name: | TS ID: | Line No: | Model: | IP address: | Controller Make: |
|---|---|---|---|---|---|
| Brant St @ Prospect St | 141 | | ACS/3 | 172.24.65.2 | Econolite |

**Type of Operation:** 8 Phase Semi-Actuated

*-Start from Main Menu

| No | Date | | | Description | Prepared by |
|---|---|---|---|---|---|
| | Y | M | D | | PT |
| 2 | 2023 | 11 | 13 | Updated base timing plan and coordination timings | |
| | | | | | |
| | | | | | |

**PHASE DESCRIPTION**

| | | | |
|---|---|---|---|
| Ph1 | SBLT - Brant St | Ph5 | |
| Ph2 | NB / SB - Brant St | Ph6 | |
| Ph3 | | Ph7 | |
| Ph4 | EB / WB Prospect St | Ph8 | |

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

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

**CONTROLLER TIMING DATA - VEHICLE TIMING** * - 2 - 1

Timing Plan: 1

| | Phase: 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Minimum Green | 6 | 8 | | 8 | | | | |
| Walk | | 23 | | 11 | | | | |
| Ped. Clearance | | 11 | | 14 | | | | |
| Pedestrian Carry Over | | | | | | | | |
| Vehicle Extension | 3 | 3 | | 3 | | | | |
| MAX 1 | 10 | 35 | | 25 | | | | |
| MAX 2 | 10 | 35 | | 25 | | | | |
| Yellow Change | 3 | 3.3 | | 3.3 | | | | |
| Red Clearance | | 2.5 | | 2.7 | | | | |
| **Phase Minimum:** | 10 | 40.8 | | 32 | | | | |

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

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

## COORDINATION: COORDINATOR PATTERN, SPLIT PATTERN

* - 3 - 2, - 3 - 3

| Coordinator Pattern (CP) | Cycle Length | Offset (sec) | Timing Plan | Split Pattern | Phases (sec) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 1 | 90 | 43 | 1 | 1 | 12 | 45 | | 33 | | | | |
| 2 | 90 | 83 | 1 | 2 | 10 | 48 | | 32 | | | | |
| 3 | 90 | 85 | 1 | 3 | 12 | 45 | | 33 | | | | |
| 4 | 85 | 0 | 1 | 4 | 12 | 40 | | 33 | | | | |
| 10 | 0 | 0 | 1 | 10 | 0 | 0 | | 0 | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

## TIME BASE: ACTION PLAN, DAY PLAN

* - 5 - 2, - 5 - 3, -5 - 4

| Day Plan | Sched. # | Action Plan | Time Period | Pattern | Timing Plan | |
|---|---|---|---|---|---|---|
| 1 | 1 | 1 | 07:30 | 1 | 1 | |
| 1 | 1 | 2 | 09:30 | 2 | 1 | Schedule 1 = Day Plan 1 |
| 1 | 1 | 3 | 15:30 | 3 | 1 | Schedule 2 = Day Plan 2 |
| 1 | 1 | 4 | 19:00 | 4 | 1 | Schedule 3 = Day Plan 3 |
| 1 | 1 | 10 | 22:00 | 254 | 1 | |
| 2 | 2 | 4 | 07:30 | 4 | 1 | Day Plan 1 (Weekday) |
| 2 | 2 | 1 | 09:30 | 1 | 1 | Day Plan 2 (Saturday) |
| 2 | 2 | 4 | 16:00 | 4 | 1 | Day Plan 3 (Sunday, Holidays) |
| 2 | 2 | 10 | 23:00 | 254 | 1 | |
| 3 | 3 | 4 | 08:30 | 4 | 1 | |
| 3 | 3 | 1 | 10:30 | 1 | 1 | |
| 3 | 3 | 4 | 17:00 | 4 | 1 | Action Plan 10 = free (254) |
| 3 | 3 | 10 | 20:30 | 254 | 1 | |
| | | | | | | |

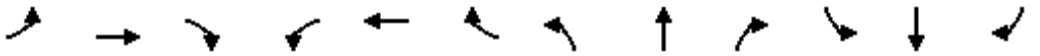
Special Programming:

## TIME BASE DATA - TIME OF YEAR EVENTS

* - 5 - 5

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

# Appendix D – Existing (2024) Conditions Synchro Reports



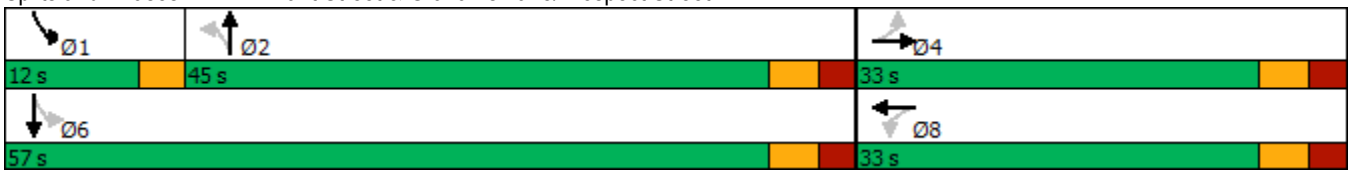
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 55 | 7 | 11 | 51 | 7 | 77 | 19 | 685 | 48 | 75 | 664 | 76 |
| Future Volume (vph) | 55 | 7 | 11 | 51 | 7 | 77 | 19 | 685 | 48 | 75 | 664 | 76 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (m) | 0.0 | | 100.0 | 15.0 | | 0.0 | 20.0 | | 0.0 | 20.0 | | 0.0 |
| Storage Lanes | 1 | | 1 | 1 | | 0 | 1 | | 0 | 1 | | 0 |
| Taper Length (m) | 2.5 | | | 20.0 | | | 5.0 | | | 5.0 | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.95 | 0.95 | 1.00 | 0.95 | 0.95 |
| Ped Bike Factor | 0.99 | 0.99 | | 0.99 | 0.98 | | 0.99 | 1.00 | | 0.99 | 0.99 | |
| Frt | | 0.908 | | | 0.862 | | | 0.990 | | | 0.985 | |
| Flt Protected | 0.950 | | | 0.950 | | | 0.950 | | | 0.950 | | |
| Satd. Flow (prot) | 1644 | 1415 | 0 | 1789 | 1592 | 0 | 1825 | 3469 | 0 | 1772 | 3439 | 0 |
| Flt Permitted | 0.701 | | | 0.746 | | | 0.359 | | | 0.324 | | |
| Satd. Flow (perm) | 1204 | 1415 | 0 | 1398 | 1592 | 0 | 682 | 3469 | 0 | 600 | 3439 | 0 |
| Right Turn on Red | | | Yes | | | Yes | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | 11 | | | 80 | | | 10 | | | 22 | |
| Link Speed (k/h) | | 40 | | | 48 | | | 48 | | | 50 | |
| Link Distance (m) | | 152.2 | | | 116.2 | | | 153.2 | | | 295.0 | |
| Travel Time (s) | | 13.7 | | | 8.7 | | | 11.5 | | | 21.2 | |
| Confl. Peds. (#/hr) | 8 | | 5 | 5 | | 8 | 24 | | 20 | 20 | | 24 |
| Peak Hour Factor | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Heavy Vehicles (%) | 11% | 14% | 27% | 2% | 14% | 1% | 0% | 4% | 2% | 3% | 4% | 4% |
| Adj. Flow (vph) | 57 | 7 | 11 | 53 | 7 | 80 | 20 | 714 | 50 | 78 | 692 | 79 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 57 | 18 | 0 | 53 | 87 | 0 | 20 | 764 | 0 | 78 | 771 | 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) | | 3.7 | | | 3.7 | | | 3.7 | | | 3.7 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 1.6 | | | 1.6 | | | 1.6 | | | 1.6 | |
| Two way Left Turn Lane | | | | | | | | Yes | | | Yes | |
| Headway Factor | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 |
| Turning Speed (k/h) | 24 | | 14 | 24 | | 14 | 24 | | 14 | 24 | | 14 |
| Number of Detectors | 1 | 2 | | 1 | 2 | | 1 | 2 | | 1 | 2 | |
| Detector Template | Left | Thru | | Left | Thru | | Left | Thru | | Left | Thru | |
| Leading Detector (m) | 6.1 | 30.5 | | 6.1 | 30.5 | | 6.1 | 30.5 | | 6.1 | 30.5 | |
| Trailing Detector (m) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Position(m) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Size(m) | 6.1 | 1.8 | | 6.1 | 1.8 | | 6.1 | 1.8 | | 6.1 | 1.8 | |
| Detector 1 Type | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Queue (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Delay (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 2 Position(m) | | 28.7 | | | 28.7 | | | 28.7 | | | 28.7 | |
| Detector 2 Size(m) | | 1.8 | | | 1.8 | | | 1.8 | | | 1.8 | |
| Detector 2 Type | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |

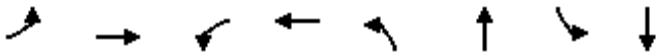
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | pm+pt | NA | |
| Protected Phases | | 4 | | | 8 | | | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Detector Phase | 4 | 4 | | 8 | 8 | | 2 | 2 | | 1 | 6 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 8.0 | 8.0 | | 8.0 | 8.0 | | 8.0 | 8.0 | | 6.0 | 8.0 | |
| Minimum Split (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | 39.8 | 39.8 | | 9.0 | 39.8 | |
| Total Split (s) | 33.0 | 33.0 | | 33.0 | 33.0 | | 45.0 | 45.0 | | 12.0 | 57.0 | |
| Total Split (%) | 36.7% | 36.7% | | 36.7% | 36.7% | | 50.0% | 50.0% | | 13.3% | 63.3% | |
| Maximum Green (s) | 27.0 | 27.0 | | 27.0 | 27.0 | | 39.2 | 39.2 | | 9.0 | 51.2 | |
| Yellow Time (s) | 3.3 | 3.3 | | 3.3 | 3.3 | | 3.3 | 3.3 | | 3.0 | 3.3 | |
| All-Red Time (s) | 2.7 | 2.7 | | 2.7 | 2.7 | | 2.5 | 2.5 | | 0.0 | 2.5 | |
| Lost Time Adjust (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Total Lost Time (s) | 6.0 | 6.0 | | 6.0 | 6.0 | | 5.8 | 5.8 | | 3.0 | 5.8 | |
| Lead/Lag | | | | | | | Lag | Lag | | Lead | | |
| Lead-Lag Optimize? | | | | | | | Yes | Yes | | Yes | | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Recall Mode | None | None | | None | None | | Max | Max | | None | Max | |
| Walk Time (s) | 11.0 | 11.0 | | 11.0 | 11.0 | | 23.0 | 23.0 | | | 23.0 | |
| Flash Dont Walk (s) | 14.0 | 14.0 | | 14.0 | 14.0 | | 11.0 | 11.0 | | | 11.0 | |
| Pedestrian Calls (#/hr) | 0 | 0 | | 0 | 0 | | 0 | 0 | | | 0 | |
| Act Effct Green (s) | 9.5 | 9.5 | | 9.5 | 9.5 | | 47.8 | 47.8 | | 57.1 | 55.4 | |
| Actuated g/C Ratio | 0.13 | 0.13 | | 0.13 | 0.13 | | 0.66 | 0.66 | | 0.79 | 0.76 | |
| v/c Ratio | 0.37 | 0.09 | | 0.29 | 0.31 | | 0.04 | 0.33 | | 0.14 | 0.29 | |
| Control Delay | 35.6 | 19.6 | | 32.7 | 11.9 | | 8.0 | 8.2 | | 3.3 | 4.0 | |
| Queue Delay | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Total Delay | 35.6 | 19.6 | | 32.7 | 11.9 | | 8.0 | 8.2 | | 3.3 | 4.0 | |
| LOS | D | B | | C | B | | A | A | | A | A | |
| Approach Delay | | 31.7 | | | 19.7 | | | 8.2 | | | 3.9 | |
| Approach LOS | | C | | | B | | | A | | | A | |

**Intersection Summary**

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 72.7
Natural Cycle: 80
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.37
Intersection Signal Delay: 8.1 Intersection LOS: A
Intersection Capacity Utilization 61.8% ICU Level of Service B
Analysis Period (min) 15

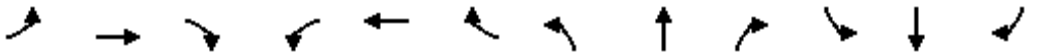
Splits and Phases: 141: Brant Street & Grahams Lane/Prospect Street





| Lane Group | EBL | EBT | WBL | WBT | NBL | NBT | SBL | SBT |
|---|---|---|---|---|---|---|---|---|
| Lane Group Flow (vph) | 57 | 18 | 53 | 87 | 20 | 764 | 78 | 771 |
| v/c Ratio | 0.37 | 0.09 | 0.29 | 0.31 | 0.04 | 0.33 | 0.14 | 0.29 |
| Control Delay | 35.6 | 19.6 | 32.7 | 11.9 | 8.0 | 8.2 | 3.3 | 4.0 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 35.6 | 19.6 | 32.7 | 11.9 | 8.0 | 8.2 | 3.3 | 4.0 |
| Queue Length 50th (m) | 7.2 | 0.9 | 6.6 | 0.9 | 1.0 | 25.5 | 2.0 | 15.4 |
| Queue Length 95th (m) | 17.4 | 6.0 | 16.1 | 12.0 | 4.3 | 42.5 | 5.8 | 27.1 |
| Internal Link Dist (m) | | 128.2 | | 92.2 | | 129.2 | | 271.0 |
| Turn Bay Length (m) | | | 15.0 | | 20.0 | | 20.0 | |
| Base Capacity (vph) | 447 | 532 | 519 | 641 | 448 | 2282 | 615 | 2627 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.13 | 0.03 | 0.10 | 0.14 | 0.04 | 0.33 | 0.13 | 0.29 |

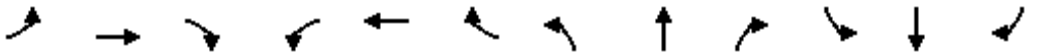
Intersection Summary



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 55 | 7 | 11 | 51 | 7 | 77 | 19 | 685 | 48 | 75 | 664 | 76 |
| Future Volume (vph) | 55 | 7 | 11 | 51 | 7 | 77 | 19 | 685 | 48 | 75 | 664 | 76 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 6.0 | 6.0 | | 6.0 | 6.0 | | 5.8 | 5.8 | | 3.0 | 5.8 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.91 | | 1.00 | 0.86 | | 1.00 | 0.99 | | 1.00 | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1634 | 1417 | | 1781 | 1595 | | 1809 | 3470 | | 1768 | 3440 | |
| Flt Permitted | 0.70 | 1.00 | | 0.75 | 1.00 | | 0.36 | 1.00 | | 0.32 | 1.00 | |
| Satd. Flow (perm) | 1205 | 1417 | | 1398 | 1595 | | 684 | 3470 | | 602 | 3440 | |
| Peak-hour factor, PHF | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Adj. Flow (vph) | 57 | 7 | 11 | 53 | 7 | 80 | 20 | 714 | 50 | 78 | 692 | 79 |
| RTOR Reduction (vph) | 0 | 10 | 0 | 0 | 72 | 0 | 0 | 4 | 0 | 0 | 6 | 0 |
| Lane Group Flow (vph) | 57 | 8 | 0 | 53 | 15 | 0 | 20 | 760 | 0 | 78 | 765 | 0 |
| Confl. Peds. (#/hr) | 8 | | 5 | 5 | | 8 | 24 | | 20 | 20 | | 24 |
| Heavy Vehicles (%) | 11% | 14% | 27% | 2% | 14% | 1% | 0% | 4% | 2% | 3% | 4% | 4% |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | pm+pt | NA | |
| Protected Phases | | 4 | | | 8 | | | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 7.9 | 7.9 | | 7.9 | 7.9 | | 46.6 | 46.6 | | 54.9 | 54.9 | |
| Effective Green, g (s) | 7.9 | 7.9 | | 7.9 | 7.9 | | 46.6 | 46.6 | | 54.9 | 54.9 | |
| Actuated g/C Ratio | 0.11 | 0.11 | | 0.11 | 0.11 | | 0.62 | 0.62 | | 0.74 | 0.74 | |
| Clearance Time (s) | 6.0 | 6.0 | | 6.0 | 6.0 | | 5.8 | 5.8 | | 3.0 | 5.8 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 127 | 150 | | 148 | 168 | | 427 | 2167 | | 525 | 2531 | |
| v/s Ratio Prot | | 0.01 | | | 0.01 | | | c0.22 | | 0.01 | c0.22 | |
| v/s Ratio Perm | c0.05 | | | 0.04 | | | 0.03 | | | 0.10 | | |
| v/c Ratio | 0.45 | 0.05 | | 0.36 | 0.09 | | 0.05 | 0.35 | | 0.15 | 0.30 | |
| Uniform Delay, d1 | 31.3 | 30.0 | | 31.0 | 30.1 | | 5.4 | 6.7 | | 2.9 | 3.3 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 2.5 | 0.2 | | 1.5 | 0.2 | | 0.2 | 0.4 | | 0.1 | 0.3 | |
| Delay (s) | 33.8 | 30.1 | | 32.5 | 30.4 | | 5.6 | 7.2 | | 3.1 | 3.7 | |
| Level of Service | C | C | | C | C | | A | A | | A | A | |
| Approach Delay (s) | | 32.9 | | | 31.2 | | | 7.1 | | | 3.6 | |
| Approach LOS | | C | | | C | | | A | | | A | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 8.4 | HCM 2000 Level of Service | A |
| HCM 2000 Volume to Capacity ratio | 0.36 | | |
| Actuated Cycle Length (s) | 74.6 | Sum of lost time (s) | 14.8 |
| Intersection Capacity Utilization | 61.8% | ICU Level of Service | B |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

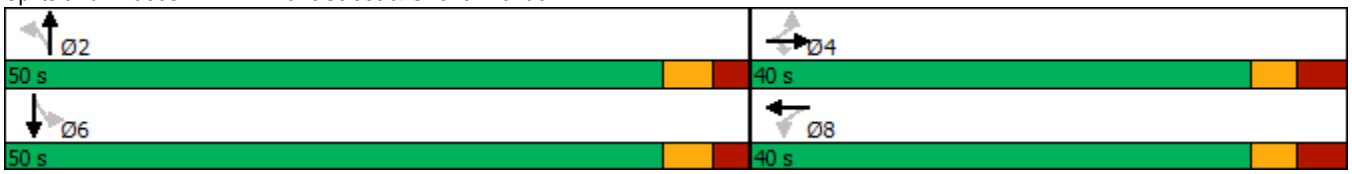


| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 108 | 16 | 9 | 12 | 10 | 32 | 10 | 668 | 15 | 23 | 703 | 60 |
| Future Volume (vph) | 108 | 16 | 9 | 12 | 10 | 32 | 10 | 668 | 15 | 23 | 703 | 60 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (m) | 0.0 | | 35.0 | 0.0 | | 0.0 | 45.0 | | 0.0 | 25.0 | | 0.0 |
| Storage Lanes | 0 | | 0 | 0 | | 0 | 1 | | 0 | 1 | | 0 |
| Taper Length (m) | 2.5 | | | 2.5 | | | 5.0 | | | 5.0 | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.95 | 0.95 | 1.00 | 0.95 | 0.95 |
| Ped Bike Factor | | 0.99 | 0.98 | | 0.99 | | 0.99 | 1.00 | | 0.98 | 1.00 | |
| Frt | | | 0.850 | | 0.920 | | | 0.997 | | | 0.990 | |
| Flt Protected | | 0.958 | | | 0.989 | | 0.950 | | | 0.950 | | |
| Satd. Flow (prot) | 0 | 1809 | 1633 | 0 | 1640 | 0 | 1825 | 3486 | 0 | 1615 | 3497 | 0 |
| Flt Permitted | | 0.710 | | | 0.900 | | 0.312 | | | 0.346 | | |
| Satd. Flow (perm) | 0 | 1332 | 1597 | 0 | 1489 | 0 | 595 | 3486 | 0 | 578 | 3497 | 0 |
| Right Turn on Red | | | Yes | | | Yes | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | | 35 | | 36 | | | 3 | | | 12 | |
| Link Speed (k/h) | | 40 | | | 40 | | | 48 | | | 50 | |
| Link Distance (m) | | 111.7 | | | 105.0 | | | 155.1 | | | 153.2 | |
| Travel Time (s) | | 10.1 | | | 9.5 | | | 11.6 | | | 11.0 | |
| Confl. Peds. (#/hr) | 9 | | 12 | 12 | | 9 | 16 | | 35 | 35 | | 16 |
| 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 | 1.00 |
| Heavy Vehicles (%) | 2% | 0% | 0% | 8% | 0% | 6% | 0% | 4% | 13% | 13% | 3% | 3% |
| Adj. Flow (vph) | 123 | 18 | 10 | 14 | 11 | 36 | 11 | 759 | 17 | 26 | 799 | 60 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 141 | 10 | 0 | 61 | 0 | 11 | 776 | 0 | 26 | 859 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(m) | | 0.0 | | | 0.0 | | | 3.7 | | | 3.7 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 1.6 | | | 1.6 | | | 1.6 | | | 1.6 | |
| Two way Left Turn Lane | | | | | | | | Yes | | | Yes | |
| Headway Factor | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 |
| Turning Speed (k/h) | 24 | | 14 | 24 | | 14 | 24 | | 14 | 24 | | 14 |
| Number of Detectors | 1 | 2 | 1 | 1 | 2 | | 1 | 2 | | 1 | 2 | |
| Detector Template | Left | Thru | Right | Left | Thru | | Left | Thru | | Left | Thru | |
| Leading Detector (m) | 6.1 | 30.5 | 6.1 | 6.1 | 30.5 | | 6.1 | 30.5 | | 6.1 | 30.5 | |
| Trailing Detector (m) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Position(m) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Size(m) | 6.1 | 1.8 | 6.1 | 6.1 | 1.8 | | 6.1 | 1.8 | | 6.1 | 1.8 | |
| Detector 1 Type | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Queue (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Delay (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 2 Position(m) | | 28.7 | | | 28.7 | | | 28.7 | | | 28.7 | |
| Detector 2 Size(m) | | 1.8 | | | 1.8 | | | 1.8 | | | 1.8 | |
| Detector 2 Type | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Turn Type | Perm | NA | Perm | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | | 6 | | |
| Detector Phase | 4 | 4 | 4 | 8 | 8 | | 2 | 2 | | 6 | 6 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | | 8.0 | 8.0 | | 8.0 | 8.0 | |
| Minimum Split (s) | 37.5 | 37.5 | 37.5 | 37.5 | 37.5 | | 32.9 | 32.9 | | 32.9 | 32.9 | |
| Total Split (s) | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | | 50.0 | 50.0 | | 50.0 | 50.0 | |
| Total Split (%) | 44.4% | 44.4% | 44.4% | 44.4% | 44.4% | | 55.6% | 55.6% | | 55.6% | 55.6% | |
| Maximum Green (s) | 33.5 | 33.5 | 33.5 | 33.5 | 33.5 | | 44.1 | 44.1 | | 44.1 | 44.1 | |
| Yellow Time (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.3 | 3.3 | | 3.3 | 3.3 | |
| All-Red Time (s) | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | | 2.6 | 2.6 | | 2.6 | 2.6 | |
| Lost Time Adjust (s) | | 0.0 | 0.0 | | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Total Lost Time (s) | | 6.5 | 6.5 | | 6.5 | | 5.9 | 5.9 | | 5.9 | 5.9 | |
| Lead/Lag | | | | | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Recall Mode | None | None | None | None | None | | Max | Max | | Max | Max | |
| Walk Time (s) | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | | 16.0 | 16.0 | | 16.0 | 16.0 | |
| Flash Dont Walk (s) | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | | 10.0 | 10.0 | | 10.0 | 10.0 | |
| Pedestrian Calls (#/hr) | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Act Effct Green (s) | | 12.8 | 12.8 | | 12.8 | | 47.0 | 47.0 | | 47.0 | 47.0 | |
| Actuated g/C Ratio | | 0.18 | 0.18 | | 0.18 | | 0.65 | 0.65 | | 0.65 | 0.65 | |
| v/c Ratio | | 0.60 | 0.03 | | 0.21 | | 0.03 | 0.34 | | 0.07 | 0.38 | |
| Control Delay | | 37.2 | 1.1 | | 14.4 | | 6.1 | 6.7 | | 6.4 | 6.8 | |
| Queue Delay | | 0.0 | 0.0 | | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Total Delay | | 37.2 | 1.1 | | 14.4 | | 6.1 | 6.7 | | 6.4 | 6.8 | |
| LOS | | D | A | | B | | A | A | | A | A | |
| Approach Delay | | 34.8 | | | 14.4 | | | 6.7 | | | 6.8 | |
| Approach LOS | | C | | | B | | | A | | | A | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Cycle Length: 90 | | | |
| Actuated Cycle Length: 72.2 | | | |
| Natural Cycle: 75 | | | |
| Control Type: Semi Act-Uncoord | | | |
| Maximum v/c Ratio: 0.60 | | | |
| Intersection Signal Delay: 9.2 | | Intersection LOS: A | |
| Intersection Capacity Utilization 62.0% | | ICU Level of Service B | |
| Analysis Period (min) 15 | | | |

Splits and Phases: 142: Brant Street & Ghent Avenue





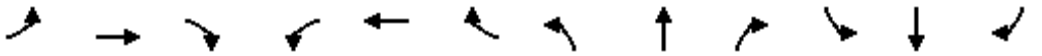
| Lane Group | EBT | EBR | WBT | NBL | NBT | SBL | SBT |
|---|---|---|---|---|---|---|---|
| Lane Group Flow (vph) | 141 | 10 | 61 | 11 | 776 | 26 | 859 |
| v/c Ratio | 0.60 | 0.03 | 0.21 | 0.03 | 0.34 | 0.07 | 0.38 |
| Control Delay | 37.2 | 1.1 | 14.4 | 6.1 | 6.7 | 6.4 | 6.8 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 37.2 | 1.1 | 14.4 | 6.1 | 6.7 | 6.4 | 6.8 |
| Queue Length 50th (m) | 16.8 | 0.0 | 2.7 | 0.5 | 20.7 | 1.1 | 23.3 |
| Queue Length 95th (m) | 31.9 | 0.5 | 11.0 | 2.4 | 36.3 | 4.4 | 40.5 |
| Internal Link Dist (m) | 87.7 | | 81.0 | | 131.1 | | 129.2 |
| Turn Bay Length (m) | | 35.0 | | 45.0 | | 25.0 | |
| Base Capacity (vph) | 620 | 762 | 712 | 387 | 2269 | 376 | 2279 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.23 | 0.01 | 0.09 | 0.03 | 0.34 | 0.07 | 0.38 |

Intersection Summary

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 108 | 16 | 9 | 12 | 10 | 32 | 10 | 668 | 15 | 23 | 703 | 60 |
| Future Volume (vph) | 108 | 16 | 9 | 12 | 10 | 32 | 10 | 668 | 15 | 23 | 703 | 60 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | | 6.5 | 6.5 | | 6.5 | | 5.9 | 5.9 | | 5.9 | 5.9 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | 0.98 | | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 0.99 | 1.00 | | 1.00 | | 0.99 | 1.00 | | 0.98 | 1.00 | |
| Frt | | 1.00 | 0.85 | | 0.92 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flt Protected | | 0.96 | 1.00 | | 0.99 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 1800 | 1600 | | 1638 | | 1813 | 3486 | | 1589 | 3496 | |
| Flt Permitted | | 0.71 | 1.00 | | 0.90 | | 0.31 | 1.00 | | 0.35 | 1.00 | |
| Satd. Flow (perm) | | 1334 | 1600 | | 1492 | | 595 | 3486 | | 579 | 3496 | |
| Peak-hour factor, PHF | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 1.00 |
| Adj. Flow (vph) | 123 | 18 | 10 | 14 | 11 | 36 | 11 | 759 | 17 | 26 | 799 | 60 |
| RTOR Reduction (vph) | 0 | 0 | 8 | 0 | 30 | 0 | 0 | 1 | 0 | 0 | 4 | 0 |
| Lane Group Flow (vph) | 0 | 141 | 2 | 0 | 31 | 0 | 11 | 775 | 0 | 26 | 855 | 0 |
| Confl. Peds. (#/hr) | 9 | | 12 | 12 | | 9 | 16 | | 35 | 35 | | 16 |
| Heavy Vehicles (%) | 2% | 0% | 0% | 8% | 0% | 6% | 0% | 4% | 13% | 13% | 3% | 3% |
| Turn Type | Perm | NA | Perm | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 12.8 | 12.8 | | 12.8 | | 47.0 | 47.0 | | 47.0 | 47.0 | |
| Effective Green, g (s) | | 12.8 | 12.8 | | 12.8 | | 47.0 | 47.0 | | 47.0 | 47.0 | |
| Actuated g/C Ratio | | 0.18 | 0.18 | | 0.18 | | 0.65 | 0.65 | | 0.65 | 0.65 | |
| Clearance Time (s) | | 6.5 | 6.5 | | 6.5 | | 5.9 | 5.9 | | 5.9 | 5.9 | |
| Vehicle Extension (s) | | 3.0 | 3.0 | | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | | 236 | 283 | | 264 | | 387 | 2269 | | 376 | 2275 | |
| v/s Ratio Prot | | | | | | | | 0.22 | | | c0.24 | |
| v/s Ratio Perm | | c0.11 | 0.00 | | 0.02 | | 0.02 | | | 0.04 | | |
| v/c Ratio | | 0.60 | 0.01 | | 0.12 | | 0.03 | 0.34 | | 0.07 | 0.38 | |
| Uniform Delay, d1 | | 27.3 | 24.5 | | 25.0 | | 4.5 | 5.7 | | 4.6 | 5.8 | |
| Progression Factor | | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 4.0 | 0.0 | | 0.2 | | 0.1 | 0.4 | | 0.4 | 0.5 | |
| Delay (s) | | 31.4 | 24.5 | | 25.2 | | 4.6 | 6.1 | | 5.0 | 6.3 | |
| Level of Service | | C | C | | C | | A | A | | A | A | |
| Approach Delay (s) | | 30.9 | | | 25.2 | | | 6.0 | | | 6.3 | |
| Approach LOS | | C | | | C | | | A | | | A | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 8.8 | HCM 2000 Level of Service | A |
| HCM 2000 Volume to Capacity ratio | 0.42 | | |
| Actuated Cycle Length (s) | 72.2 | Sum of lost time (s) | 12.4 |
| Intersection Capacity Utilization | 62.0% | ICU Level of Service | B |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

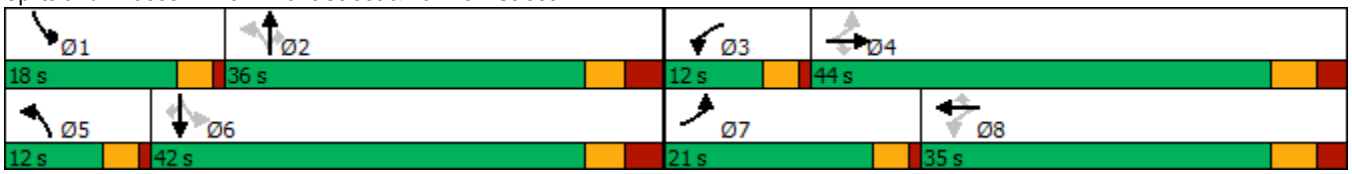


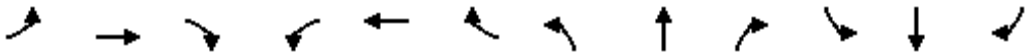
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 217 | 748 | 174 | 144 | 340 | 153 | 159 | 506 | 201 | 151 | 511 | 49 |
| Future Volume (vph) | 217 | 748 | 174 | 144 | 340 | 153 | 159 | 506 | 201 | 151 | 511 | 49 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (m) | 0.0 | | 150.0 | 65.0 | | 0.0 | 85.0 | | 70.0 | 50.0 | | 0.0 |
| Storage Lanes | 1 | | 1 | 1 | | 1 | 1 | | 1 | 1 | | 1 |
| Taper Length (m) | 2.5 | | | 45.0 | | | 10.0 | | | 15.0 | | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Ped Bike Factor | 1.00 | | 0.97 | 1.00 | | 0.98 | 0.99 | | 0.94 | 0.98 | | 0.97 |
| Frt | | | 0.850 | | | 0.850 | | | 0.850 | | | 0.850 |
| Flt Protected | 0.950 | | | 0.950 | | | 0.950 | | | 0.950 | | |
| Satd. Flow (prot) | 1755 | 3544 | 1585 | 1630 | 3411 | 1420 | 1755 | 3510 | 1512 | 1674 | 3579 | 1484 |
| Flt Permitted | 0.405 | | | 0.209 | | | 0.399 | | | 0.324 | | |
| Satd. Flow (perm) | 747 | 3544 | 1541 | 357 | 3411 | 1397 | 732 | 3510 | 1429 | 562 | 3579 | 1445 |
| Right Turn on Red | | | Yes | | | Yes | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | | 187 | | | 193 | | | 216 | | | 153 |
| Link Speed (k/h) | | 50 | | | 50 | | | 50 | | | 50 | |
| Link Distance (m) | | 373.6 | | | 286.0 | | | 295.0 | | | 107.5 | |
| Travel Time (s) | | 26.9 | | | 20.6 | | | 21.2 | | | 7.7 | |
| Confl. Peds. (#/hr) | 3 | | 12 | 12 | | 3 | 11 | | 32 | 32 | | 11 |
| Peak Hour Factor | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Heavy Vehicles (%) | 4% | 3% | 3% | 12% | 7% | 15% | 4% | 4% | 8% | 9% | 2% | 10% |
| Adj. Flow (vph) | 233 | 804 | 187 | 155 | 366 | 165 | 171 | 544 | 216 | 162 | 549 | 53 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 233 | 804 | 187 | 155 | 366 | 165 | 171 | 544 | 216 | 162 | 549 | 53 |
| 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) | | 3.7 | | | 3.7 | | | 3.7 | | | 3.7 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 1.6 | | | 1.6 | | | 1.6 | | | 1.6 | |
| Two way Left Turn Lane | | | | | | | | Yes | | | | |
| Headway Factor | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 |
| Turning Speed (k/h) | 24 | | 14 | 24 | | 14 | 24 | | 14 | 24 | | 14 |
| Number of Detectors | 1 | 2 | 1 | 1 | 2 | 1 | 1 | 2 | 1 | 1 | 2 | 1 |
| Detector Template | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Leading Detector (m) | 6.1 | 30.5 | 6.1 | 6.1 | 30.5 | 6.1 | 6.1 | 30.5 | 6.1 | 6.1 | 30.5 | 6.1 |
| Trailing Detector (m) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector 1 Position(m) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector 1 Size(m) | 6.1 | 1.8 | 6.1 | 6.1 | 1.8 | 6.1 | 6.1 | 1.8 | 6.1 | 6.1 | 1.8 | 6.1 |
| Detector 1 Type | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector 1 Queue (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector 1 Delay (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector 2 Position(m) | | 28.7 | | | 28.7 | | | 28.7 | | | 28.7 | |
| Detector 2 Size(m) | | 1.8 | | | 1.8 | | | 1.8 | | | 1.8 | |
| Detector 2 Type | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Turn Type | pm+pt | NA | Perm | pm+pt | NA | Perm | pm+pt | NA | Perm | pm+pt | NA | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | 6 |
| Detector Phase | 7 | 4 | 4 | 3 | 8 | 8 | 5 | 2 | 2 | 1 | 6 | 6 |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 7.0 | 8.0 | 8.0 | 7.0 | 8.0 | 8.0 | 7.0 | 8.0 | 8.0 | 7.0 | 8.0 | 8.0 |
| Minimum Split (s) | 11.0 | 30.4 | 30.4 | 11.0 | 30.4 | 30.4 | 11.0 | 30.5 | 30.5 | 11.0 | 30.5 | 30.5 |
| Total Split (s) | 21.0 | 44.0 | 44.0 | 12.0 | 35.0 | 35.0 | 12.0 | 36.0 | 36.0 | 18.0 | 42.0 | 42.0 |
| Total Split (%) | 19.1% | 40.0% | 40.0% | 10.9% | 31.8% | 31.8% | 10.9% | 32.7% | 32.7% | 16.4% | 38.2% | 38.2% |
| Maximum Green (s) | 17.0 | 37.6 | 37.6 | 8.0 | 28.6 | 28.6 | 8.0 | 29.5 | 29.5 | 14.0 | 35.5 | 35.5 |
| Yellow Time (s) | 3.0 | 3.7 | 3.7 | 3.0 | 3.7 | 3.7 | 3.0 | 3.3 | 3.3 | 3.0 | 3.3 | 3.3 |
| All-Red Time (s) | 1.0 | 2.7 | 2.7 | 1.0 | 2.7 | 2.7 | 1.0 | 3.2 | 3.2 | 1.0 | 3.2 | 3.2 |
| Lost Time Adjust (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 4.0 | 6.4 | 6.4 | 4.0 | 6.4 | 6.4 | 4.0 | 6.5 | 6.5 | 4.0 | 6.5 | 6.5 |
| Lead/Lag | Lead | Lag | Lag | Lead | Lag | Lag | Lead | Lag | Lag | Lead | Lag | Lag |
| Lead-Lag Optimize? | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Recall Mode | None | None | None | None | None | None | None | Max | Max | None | Max | Max |
| Walk Time (s) | | 7.0 | 7.0 | | 7.0 | 7.0 | | 7.0 | 7.0 | | 7.0 | 7.0 |
| Flash Dont Walk (s) | | 17.0 | 17.0 | | 17.0 | 17.0 | | 17.0 | 17.0 | | 17.0 | 17.0 |
| Pedestrian Calls (#/hr) | | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 |
| Act Effct Green (s) | 44.8 | 30.9 | 30.9 | 35.4 | 25.0 | 25.0 | 43.1 | 32.6 | 32.6 | 48.4 | 35.6 | 35.6 |
| Actuated g/C Ratio | 0.43 | 0.30 | 0.30 | 0.34 | 0.24 | 0.24 | 0.42 | 0.32 | 0.32 | 0.47 | 0.34 | 0.34 |
| v/c Ratio | 0.51 | 0.76 | 0.32 | 0.70 | 0.44 | 0.34 | 0.45 | 0.49 | 0.36 | 0.43 | 0.45 | 0.09 |
| Control Delay | 22.7 | 37.9 | 5.3 | 38.4 | 35.4 | 4.9 | 21.7 | 32.1 | 6.2 | 20.1 | 28.5 | 0.3 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 22.7 | 37.9 | 5.3 | 38.4 | 35.4 | 4.9 | 21.7 | 32.1 | 6.2 | 20.1 | 28.5 | 0.3 |
| LOS | C | D | A | D | D | A | C | C | A | C | C | A |
| Approach Delay | | 30.0 | | | 28.7 | | | 24.2 | | | 24.8 | |
| Approach LOS | | C | | | C | | | C | | | C | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Cycle Length: 110 | | | |
| Actuated Cycle Length: 103.4 | | | |
| Natural Cycle: 85 | | | |
| Control Type: Semi Act-Uncoord | | | |
| Maximum v/c Ratio: 0.76 | | | |
| Intersection Signal Delay: 27.2 | | Intersection LOS: C | |
| Intersection Capacity Utilization 74.9% | | ICU Level of Service D | |
| Analysis Period (min) 15 | | | |

Splits and Phases: 151: Brant Street & Fairview Street

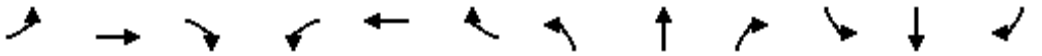




| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Group Flow (vph) | 233 | 804 | 187 | 155 | 366 | 165 | 171 | 544 | 216 | 162 | 549 | 53 |
| v/c Ratio | 0.51 | 0.76 | 0.32 | 0.70 | 0.44 | 0.34 | 0.45 | 0.49 | 0.36 | 0.43 | 0.45 | 0.09 |
| Control Delay | 22.7 | 37.9 | 5.3 | 38.4 | 35.4 | 4.9 | 21.7 | 32.1 | 6.2 | 20.1 | 28.5 | 0.3 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 22.7 | 37.9 | 5.3 | 38.4 | 35.4 | 4.9 | 21.7 | 32.1 | 6.2 | 20.1 | 28.5 | 0.3 |
| Queue Length 50th (m) | 29.5 | 76.7 | 0.0 | 18.8 | 33.1 | 0.0 | 19.2 | 46.8 | 0.0 | 18.1 | 44.8 | 0.0 |
| Queue Length 95th (m) | 46.1 | 97.7 | 14.5 | #37.2 | 48.0 | 10.7 | 35.6 | 70.7 | 17.5 | 34.1 | 65.3 | 0.0 |
| Internal Link Dist (m) | | 349.6 | | | 262.0 | | | 271.0 | | | 83.5 | |
| Turn Bay Length (m) | | | 150.0 | 65.0 | | | 85.0 | | 70.0 | 50.0 | | |
| Base Capacity (vph) | 493 | 1292 | 680 | 221 | 946 | 527 | 384 | 1106 | 598 | 423 | 1232 | 597 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.47 | 0.62 | 0.28 | 0.70 | 0.39 | 0.31 | 0.45 | 0.49 | 0.36 | 0.38 | 0.45 | 0.09 |

Intersection Summary

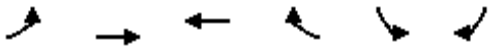
# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 217 | 748 | 174 | 144 | 340 | 153 | 159 | 506 | 201 | 151 | 511 | 49 |
| Future Volume (vph) | 217 | 748 | 174 | 144 | 340 | 153 | 159 | 506 | 201 | 151 | 511 | 49 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.0 | 6.4 | 6.4 | 4.0 | 6.4 | 6.4 | 4.0 | 6.5 | 6.5 | 4.0 | 6.5 | 6.5 |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.97 |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1754 | 3544 | 1542 | 1628 | 3411 | 1398 | 1751 | 3510 | 1433 | 1667 | 3579 | 1446 |
| Flt Permitted | 0.40 | 1.00 | 1.00 | 0.21 | 1.00 | 1.00 | 0.40 | 1.00 | 1.00 | 0.32 | 1.00 | 1.00 |
| Satd. Flow (perm) | 747 | 3544 | 1542 | 358 | 3411 | 1398 | 736 | 3510 | 1433 | 569 | 3579 | 1446 |
| Peak-hour factor, PHF | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Adj. Flow (vph) | 233 | 804 | 187 | 155 | 366 | 165 | 171 | 544 | 216 | 162 | 549 | 53 |
| RTOR Reduction (vph) | 0 | 0 | 131 | 0 | 0 | 125 | 0 | 0 | 148 | 0 | 0 | 35 |
| Lane Group Flow (vph) | 233 | 804 | 56 | 155 | 366 | 40 | 171 | 544 | 68 | 162 | 549 | 18 |
| Confl. Peds. (#/hr) | 3 | | 12 | 12 | | 3 | 11 | | 32 | 32 | | 11 |
| Heavy Vehicles (%) | 4% | 3% | 3% | 12% | 7% | 15% | 4% | 4% | 8% | 9% | 2% | 10% |
| Turn Type | pm+pt | NA | Perm | pm+pt | NA | Perm | pm+pt | NA | Perm | pm+pt | NA | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 42.9 | 30.9 | 30.9 | 33.0 | 25.0 | 25.0 | 40.6 | 32.6 | 32.6 | 46.6 | 35.6 | 35.6 |
| Effective Green, g (s) | 42.9 | 30.9 | 30.9 | 33.0 | 25.0 | 25.0 | 40.6 | 32.6 | 32.6 | 46.6 | 35.6 | 35.6 |
| Actuated g/C Ratio | 0.41 | 0.30 | 0.30 | 0.32 | 0.24 | 0.24 | 0.39 | 0.32 | 0.32 | 0.45 | 0.34 | 0.34 |
| Clearance Time (s) | 4.0 | 6.4 | 6.4 | 4.0 | 6.4 | 6.4 | 4.0 | 6.5 | 6.5 | 4.0 | 6.5 | 6.5 |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 445 | 1059 | 460 | 212 | 824 | 338 | 367 | 1106 | 451 | 373 | 1232 | 497 |
| v/s Ratio Prot | c0.07 | c0.23 | | c0.06 | 0.11 | | 0.04 | c0.15 | | c0.05 | 0.15 | |
| v/s Ratio Perm | 0.15 | | 0.04 | 0.18 | | 0.03 | 0.15 | | 0.05 | 0.15 | | 0.01 |
| v/c Ratio | 0.52 | 0.76 | 0.12 | 0.73 | 0.44 | 0.12 | 0.47 | 0.49 | 0.15 | 0.43 | 0.45 | 0.04 |
| Uniform Delay, d1 | 20.7 | 32.9 | 26.4 | 27.1 | 33.3 | 30.6 | 21.2 | 28.7 | 25.5 | 17.9 | 26.3 | 22.5 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 1.1 | 3.2 | 0.1 | 12.2 | 0.4 | 0.2 | 0.9 | 1.6 | 0.7 | 0.8 | 1.2 | 0.1 |
| Delay (s) | 21.8 | 36.1 | 26.5 | 39.3 | 33.7 | 30.8 | 22.1 | 30.3 | 26.2 | 18.7 | 27.4 | 22.7 |
| Level of Service | C | D | C | D | C | C | C | C | C | B | C | C |
| Approach Delay (s) | | 31.9 | | | 34.3 | | | 27.8 | | | 25.2 | |
| Approach LOS | | C | | | C | | | C | | | C | |

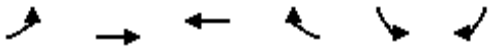
| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 29.9 | HCM 2000 Level of Service | C |
| HCM 2000 Volume to Capacity ratio | 0.61 | | |
| Actuated Cycle Length (s) | 103.4 | Sum of lost time (s) | 20.9 |
| Intersection Capacity Utilization | 74.9% | ICU Level of Service | D |
| Analysis Period (min) | 15 | | |

c Critical Lane Group



| Lane Group | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (vph) | 4 | 27 | 34 | 57 | 38 | 3 |
| Future Volume (vph) | 4 | 27 | 34 | 57 | 38 | 3 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | | | | | | |
| Frt | | | 0.915 | | 0.989 | |
| Flt Protected | | 0.993 | | | 0.956 | |
| Satd. Flow (prot) | 0 | 1557 | 1688 | 0 | 1584 | 0 |
| Flt Permitted | | 0.993 | | | 0.956 | |
| Satd. Flow (perm) | 0 | 1557 | 1688 | 0 | 1584 | 0 |
| Link Speed (k/h) | | 40 | 40 | | 40 | |
| Link Distance (m) | | 86.9 | 152.2 | | 135.3 | |
| Travel Time (s) | | 7.8 | 13.7 | | 12.2 | |
| Confl. Peds. (#/hr) | 16 | | | 16 | | |
| Peak Hour Factor | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Heavy Vehicles (%) | 0% | 26% | 6% | 3% | 16% | 0% |
| Adj. Flow (vph) | 5 | 32 | 40 | 67 | 45 | 4 |
| Shared Lane Traffic (%) | | | | | | |
| Lane Group Flow (vph) | 0 | 37 | 107 | 0 | 49 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Left | Right | Left | Right |
| Median Width(m) | | 0.0 | 0.0 | | 3.7 | |
| Link Offset(m) | | 0.0 | 0.0 | | 0.0 | |
| Crosswalk Width(m) | | 1.6 | 1.6 | | 1.6 | |
| Two way Left Turn Lane | | | | | | |
| Headway Factor | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 |
| Turning Speed (k/h) | 24 | | | 14 | 24 | 14 |
| Sign Control | | Free | Free | | Stop | |

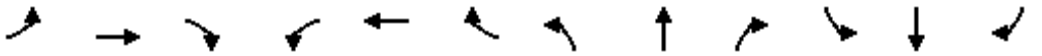
| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Control Type: Unsignalized | | | |
| Intersection Capacity Utilization 19.2% | | ICU Level of Service A | |
| Analysis Period (min) 15 | | | |



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 4 | 27 | 34 | 57 | 38 | 3 |
| Future Volume (Veh/h) | 4 | 27 | 34 | 57 | 38 | 3 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Hourly flow rate (vph) | 5 | 32 | 40 | 67 | 45 | 4 |
| Pedestrians | | | | | 16 | |
| Lane Width (m) | | | | | 3.7 | |
| Walking Speed (m/s) | | | | | 1.1 | |
| Percent Blockage | | | | | 2 | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage veh) | | | | | | |
| Upstream signal (m) | | | 152 | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 123 | | | | 132 | 90 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 123 | | | | 132 | 90 |
| tC, single (s) | 4.1 | | | | 6.6 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.2 | | | | 3.6 | 3.3 |
| p0 queue free % | 100 | | | | 94 | 100 |
| cM capacity (veh/h) | 1453 | | | | 814 | 959 |

| Direction, Lane # | EB 1 | WB 1 | SB 1 |
|---|---|---|---|
| Volume Total | 37 | 107 | 49 |
| Volume Left | 5 | 0 | 45 |
| Volume Right | 0 | 67 | 4 |
| cSH | 1453 | 1700 | 825 |
| Volume to Capacity | 0.00 | 0.06 | 0.06 |
| Queue Length 95th (m) | 0.1 | 0.0 | 1.4 |
| Control Delay (s) | 1.0 | 0.0 | 9.6 |
| Lane LOS | A | | A |
| Approach Delay (s) | 1.0 | 0.0 | 9.6 |
| Approach LOS | | | A |

| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 2.6 | | |
| Intersection Capacity Utilization | 19.2% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |

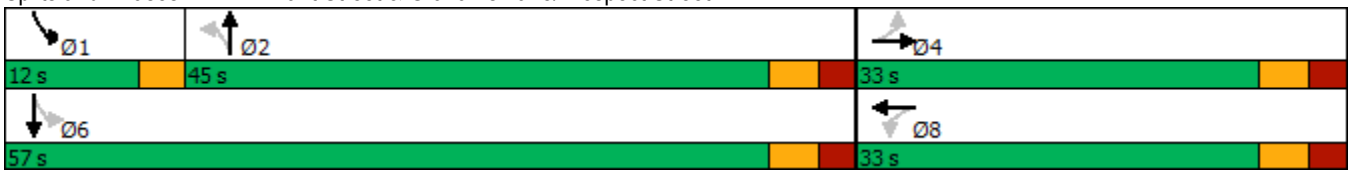


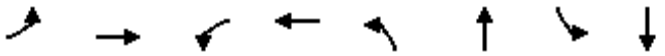
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 127 | 30 | 36 | 109 | 23 | 151 | 19 | 778 | 37 | 84 | 702 | 53 |
| Future Volume (vph) | 127 | 30 | 36 | 109 | 23 | 151 | 19 | 778 | 37 | 84 | 702 | 53 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (m) | 0.0 | | 100.0 | 15.0 | | 0.0 | 20.0 | | 0.0 | 20.0 | | 0.0 |
| Storage Lanes | 1 | | 1 | 1 | | 0 | 1 | | 0 | 1 | | 0 |
| Taper Length (m) | 2.5 | | | 20.0 | | | 5.0 | | | 5.0 | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.95 | 0.95 | 1.00 | 0.95 | 0.95 |
| Ped Bike Factor | 1.00 | 0.99 | | 1.00 | 0.98 | | 0.99 | 1.00 | | 1.00 | 1.00 | |
| Frt | | 0.917 | | | 0.870 | | | 0.993 | | | 0.990 | |
| Flt Protected | 0.950 | | | 0.950 | | | 0.950 | | | 0.950 | | |
| Satd. Flow (prot) | 1755 | 1650 | 0 | 1825 | 1585 | 0 | 1659 | 3584 | 0 | 1807 | 3523 | 0 |
| Flt Permitted | 0.591 | | | 0.712 | | | 0.354 | | | 0.271 | | |
| Satd. Flow (perm) | 1086 | 1650 | 0 | 1361 | 1585 | 0 | 614 | 3584 | 0 | 513 | 3523 | 0 |
| Right Turn on Red | | | Yes | | | Yes | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | 38 | | | 157 | | | 7 | | | 14 | |
| Link Speed (k/h) | | 40 | | | 48 | | | 48 | | | 50 | |
| Link Distance (m) | | 152.2 | | | 116.2 | | | 153.2 | | | 295.0 | |
| Travel Time (s) | | 13.7 | | | 8.7 | | | 11.5 | | | 21.2 | |
| Confl. Peds. (#/hr) | 6 | | 5 | 5 | | 6 | 15 | | 14 | 14 | | 15 |
| Peak Hour Factor | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Heavy Vehicles (%) | 4% | 3% | 8% | 0% | 9% | 3% | 10% | 1% | 0% | 1% | 2% | 6% |
| Adj. Flow (vph) | 132 | 31 | 38 | 114 | 24 | 157 | 20 | 810 | 39 | 88 | 731 | 55 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 132 | 69 | 0 | 114 | 181 | 0 | 20 | 849 | 0 | 88 | 786 | 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) | | 3.7 | | | 3.7 | | | 3.7 | | | 3.7 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 1.6 | | | 1.6 | | | 1.6 | | | 1.6 | |
| Two way Left Turn Lane | | | | | | | | Yes | | | Yes | |
| Headway Factor | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 |
| Turning Speed (k/h) | 24 | | 14 | 24 | | 14 | 24 | | 14 | 24 | | 14 |
| Number of Detectors | 1 | 2 | | 1 | 2 | | 1 | 2 | | 1 | 2 | |
| Detector Template | Left | Thru | | Left | Thru | | Left | Thru | | Left | Thru | |
| Leading Detector (m) | 6.1 | 30.5 | | 6.1 | 30.5 | | 6.1 | 30.5 | | 6.1 | 30.5 | |
| Trailing Detector (m) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Position(m) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Size(m) | 6.1 | 1.8 | | 6.1 | 1.8 | | 6.1 | 1.8 | | 6.1 | 1.8 | |
| Detector 1 Type | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Queue (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Delay (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 2 Position(m) | | 28.7 | | | 28.7 | | | 28.7 | | | 28.7 | |
| Detector 2 Size(m) | | 1.8 | | | 1.8 | | | 1.8 | | | 1.8 | |
| Detector 2 Type | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | pm+pt | NA | |
| Protected Phases | | 4 | | | 8 | | | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Detector Phase | 4 | 4 | | 8 | 8 | | 2 | 2 | | 1 | 6 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 8.0 | 8.0 | | 8.0 | 8.0 | | 8.0 | 8.0 | | 6.0 | 8.0 | |
| Minimum Split (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | 39.8 | 39.8 | | 10.5 | 39.8 | |
| Total Split (s) | 33.0 | 33.0 | | 33.0 | 33.0 | | 45.0 | 45.0 | | 12.0 | 57.0 | |
| Total Split (%) | 36.7% | 36.7% | | 36.7% | 36.7% | | 50.0% | 50.0% | | 13.3% | 63.3% | |
| Maximum Green (s) | 27.0 | 27.0 | | 27.0 | 27.0 | | 39.2 | 39.2 | | 9.0 | 51.2 | |
| Yellow Time (s) | 3.3 | 3.3 | | 3.3 | 3.3 | | 3.3 | 3.3 | | 3.0 | 3.3 | |
| All-Red Time (s) | 2.7 | 2.7 | | 2.7 | 2.7 | | 2.5 | 2.5 | | 0.0 | 2.5 | |
| Lost Time Adjust (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Total Lost Time (s) | 6.0 | 6.0 | | 6.0 | 6.0 | | 5.8 | 5.8 | | 3.0 | 5.8 | |
| Lead/Lag | | | | | | | Lag | Lag | | Lead | | |
| Lead-Lag Optimize? | | | | | | | Yes | Yes | | Yes | | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Recall Mode | None | None | | None | None | | Max | Max | | None | Max | |
| Walk Time (s) | 11.0 | 11.0 | | 11.0 | 11.0 | | 23.0 | 23.0 | | | 23.0 | |
| Flash Dont Walk (s) | 14.0 | 14.0 | | 14.0 | 14.0 | | 11.0 | 11.0 | | | 11.0 | |
| Pedestrian Calls (#/hr) | 0 | 0 | | 0 | 0 | | 0 | 0 | | | 0 | |
| Act Effct Green (s) | 14.2 | 14.2 | | 14.2 | 14.2 | | 43.5 | 43.5 | | 54.2 | 51.4 | |
| Actuated g/C Ratio | 0.18 | 0.18 | | 0.18 | 0.18 | | 0.56 | 0.56 | | 0.70 | 0.66 | |
| v/c Ratio | 0.66 | 0.21 | | 0.46 | 0.43 | | 0.06 | 0.42 | | 0.19 | 0.34 | |
| Control Delay | 45.6 | 15.6 | | 33.8 | 10.0 | | 11.5 | 12.1 | | 5.6 | 6.6 | |
| Queue Delay | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Total Delay | 45.6 | 15.6 | | 33.8 | 10.0 | | 11.5 | 12.1 | | 5.6 | 6.6 | |
| LOS | D | B | | C | A | | B | B | | A | A | |
| Approach Delay | | 35.3 | | | 19.2 | | | 12.1 | | | 6.5 | |
| Approach LOS | | D | | | B | | | B | | | A | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Cycle Length: 90 | | | |
| Actuated Cycle Length: 77.4 | | | |
| Natural Cycle: 85 | | | |
| Control Type: Semi Act-Uncoord | | | |
| Maximum v/c Ratio: 0.66 | | | |
| Intersection Signal Delay: 12.9 | | Intersection LOS: B | |
| Intersection Capacity Utilization 74.6% | | ICU Level of Service D | |
| Analysis Period (min) 15 | | | |

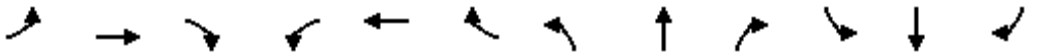
Splits and Phases: 141: Brant Street & Grahams Lane/Prospect Street





| Lane Group | EBL | EBT | WBL | WBT | NBL | NBT | SBL | SBT |
|---|---|---|---|---|---|---|---|---|
| Lane Group Flow (vph) | 132 | 69 | 114 | 181 | 20 | 849 | 88 | 786 |
| v/c Ratio | 0.66 | 0.21 | 0.46 | 0.43 | 0.06 | 0.42 | 0.19 | 0.34 |
| Control Delay | 45.6 | 15.6 | 33.8 | 10.0 | 11.5 | 12.1 | 5.6 | 6.6 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 45.6 | 15.6 | 33.8 | 10.0 | 11.5 | 12.1 | 5.6 | 6.6 |
| Queue Length 50th (m) | 18.1 | 3.8 | 15.0 | 2.9 | 1.3 | 36.2 | 3.4 | 21.9 |
| Queue Length 95th (m) | 35.1 | 13.4 | 29.2 | 17.9 | 5.6 | 63.4 | 9.8 | 40.5 |
| Internal Link Dist (m) | | 128.2 | | 92.2 | | 129.2 | | 271.0 |
| Turn Bay Length (m) | | | 15.0 | | 20.0 | | 20.0 | |
| Base Capacity (vph) | 380 | 602 | 476 | 656 | 344 | 2015 | 510 | 2342 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.35 | 0.11 | 0.24 | 0.28 | 0.06 | 0.42 | 0.17 | 0.34 |

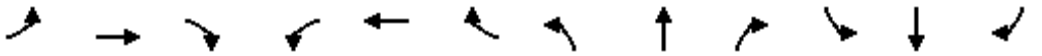
Intersection Summary



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 127 | 30 | 36 | 109 | 23 | 151 | 19 | 778 | 37 | 84 | 702 | 53 |
| Future Volume (vph) | 127 | 30 | 36 | 109 | 23 | 151 | 19 | 778 | 37 | 84 | 702 | 53 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 6.0 | 6.0 | | 6.0 | 6.0 | | 5.8 | 5.8 | | 3.0 | 5.8 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.92 | | 1.00 | 0.87 | | 1.00 | 0.99 | | 1.00 | 0.99 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1747 | 1651 | | 1817 | 1586 | | 1650 | 3585 | | 1805 | 3522 | |
| Flt Permitted | 0.59 | 1.00 | | 0.71 | 1.00 | | 0.35 | 1.00 | | 0.27 | 1.00 | |
| Satd. Flow (perm) | 1088 | 1651 | | 1362 | 1586 | | 615 | 3585 | | 515 | 3522 | |
| Peak-hour factor, PHF | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Adj. Flow (vph) | 132 | 31 | 38 | 114 | 24 | 157 | 20 | 810 | 39 | 88 | 731 | 55 |
| RTOR Reduction (vph) | 0 | 31 | 0 | 0 | 128 | 0 | 0 | 3 | 0 | 0 | 5 | 0 |
| Lane Group Flow (vph) | 132 | 38 | 0 | 114 | 53 | 0 | 20 | 846 | 0 | 88 | 781 | 0 |
| Confl. Peds. (#/hr) | 6 | | 5 | 5 | | 6 | 15 | | 14 | 14 | | 15 |
| Heavy Vehicles (%) | 4% | 3% | 8% | 0% | 9% | 3% | 10% | 1% | 0% | 1% | 2% | 6% |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | pm+pt | NA | |
| Protected Phases | | 4 | | | 8 | | | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 14.2 | 14.2 | | 14.2 | 14.2 | | 43.5 | 43.5 | | 52.1 | 52.1 | |
| Effective Green, g (s) | 14.2 | 14.2 | | 14.2 | 14.2 | | 43.5 | 43.5 | | 52.1 | 52.1 | |
| Actuated g/C Ratio | 0.18 | 0.18 | | 0.18 | 0.18 | | 0.56 | 0.56 | | 0.67 | 0.67 | |
| Clearance Time (s) | 6.0 | 6.0 | | 6.0 | 6.0 | | 5.8 | 5.8 | | 3.0 | 5.8 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 197 | 300 | | 247 | 288 | | 342 | 1996 | | 436 | 2349 | |
| v/s Ratio Prot | | 0.02 | | | 0.03 | | | c0.24 | | 0.01 | c0.22 | |
| v/s Ratio Perm | c0.12 | | | 0.08 | | | 0.03 | | | 0.12 | | |
| v/c Ratio | 0.67 | 0.13 | | 0.46 | 0.18 | | 0.06 | 0.42 | | 0.20 | 0.33 | |
| Uniform Delay, d1 | 29.8 | 26.8 | | 28.5 | 27.0 | | 7.9 | 10.0 | | 5.1 | 5.6 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 8.6 | 0.2 | | 1.4 | 0.3 | | 0.3 | 0.7 | | 0.2 | 0.4 | |
| Delay (s) | 38.4 | 26.9 | | 29.9 | 27.3 | | 8.2 | 10.7 | | 5.3 | 5.9 | |
| Level of Service | D | C | | C | C | | A | B | | A | A | |
| Approach Delay (s) | | 34.5 | | | 28.3 | | | 10.6 | | | 5.9 | |
| Approach LOS | | C | | | C | | | B | | | A | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 13.3 | HCM 2000 Level of Service | B |
| HCM 2000 Volume to Capacity ratio | 0.47 | | |
| Actuated Cycle Length (s) | 78.1 | Sum of lost time (s) | 14.8 |
| Intersection Capacity Utilization | 74.6% | ICU Level of Service | D |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

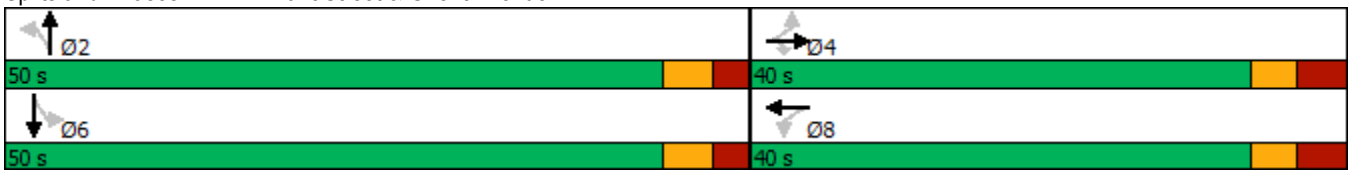


| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 83 | 9 | 13 | 23 | 49 | 38 | 11 | 757 | 15 | 37 | 693 | 177 |
| Future Volume (vph) | 83 | 9 | 13 | 23 | 49 | 38 | 11 | 757 | 15 | 37 | 693 | 177 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (m) | 0.0 | | 35.0 | 0.0 | | 0.0 | 45.0 | | 0.0 | 25.0 | | 0.0 |
| Storage Lanes | 0 | | 0 | 0 | | 0 | 1 | | 0 | 1 | | 0 |
| Taper Length (m) | 2.5 | | | 2.5 | | | 5.0 | | | 5.0 | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.95 | 0.95 | 1.00 | 0.95 | 0.95 |
| Ped Bike Factor | | 0.99 | 0.97 | | 0.99 | | 0.99 | 1.00 | | 0.99 | 0.99 | |
| Frt | | | 0.850 | | 0.953 | | | 0.997 | | | 0.970 | |
| Flt Protected | | 0.957 | | | 0.990 | | 0.950 | | | 0.950 | | |
| Satd. Flow (prot) | 0 | 1822 | 1512 | 0 | 1770 | 0 | 1825 | 3566 | 0 | 1825 | 3446 | 0 |
| Flt Permitted | | 0.774 | | | 0.902 | | 0.295 | | | 0.336 | | |
| Satd. Flow (perm) | 0 | 1465 | 1473 | 0 | 1608 | 0 | 564 | 3566 | 0 | 640 | 3446 | 0 |
| Right Turn on Red | | | Yes | | | Yes | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | | 35 | | 34 | | | 3 | | | 49 | |
| Link Speed (k/h) | | 40 | | | 40 | | | 48 | | | 50 | |
| Link Distance (m) | | 111.7 | | | 105.0 | | | 155.1 | | | 153.2 | |
| Travel Time (s) | | 10.1 | | | 9.5 | | | 11.6 | | | 11.0 | |
| Confl. Peds. (#/hr) | 9 | | 16 | 16 | | 9 | 15 | | 17 | 17 | | 15 |
| 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 |
| Heavy Vehicles (%) | 1% | 0% | 8% | 4% | 2% | 0% | 0% | 2% | 0% | 0% | 2% | 1% |
| Adj. Flow (vph) | 88 | 10 | 14 | 24 | 52 | 40 | 12 | 805 | 16 | 39 | 737 | 188 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 98 | 14 | 0 | 116 | 0 | 12 | 821 | 0 | 39 | 925 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(m) | | 0.0 | | | 0.0 | | | 3.7 | | | 3.7 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 1.6 | | | 1.6 | | | 1.6 | | | 1.6 | |
| Two way Left Turn Lane | | | | | | | | Yes | | | Yes | |
| Headway Factor | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 |
| Turning Speed (k/h) | 24 | | 14 | 24 | | 14 | 24 | | 14 | 24 | | 14 |
| Number of Detectors | 1 | 2 | 1 | 1 | 2 | | 1 | 2 | | 1 | 2 | |
| Detector Template | Left | Thru | Right | Left | Thru | | Left | Thru | | Left | Thru | |
| Leading Detector (m) | 6.1 | 30.5 | 6.1 | 6.1 | 30.5 | | 6.1 | 30.5 | | 6.1 | 30.5 | |
| Trailing Detector (m) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Position(m) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Size(m) | 6.1 | 1.8 | 6.1 | 6.1 | 1.8 | | 6.1 | 1.8 | | 6.1 | 1.8 | |
| Detector 1 Type | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Queue (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Delay (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 2 Position(m) | | 28.7 | | | 28.7 | | | 28.7 | | | 28.7 | |
| Detector 2 Size(m) | | 1.8 | | | 1.8 | | | 1.8 | | | 1.8 | |
| Detector 2 Type | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Turn Type | Perm | NA | Perm | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | | 6 | | |
| Detector Phase | 4 | 4 | 4 | 8 | 8 | | 2 | 2 | | 6 | 6 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | | 8.0 | 8.0 | | 8.0 | 8.0 | |
| Minimum Split (s) | 37.5 | 37.5 | 37.5 | 37.5 | 37.5 | | 32.9 | 32.9 | | 32.9 | 32.9 | |
| Total Split (s) | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | | 50.0 | 50.0 | | 50.0 | 50.0 | |
| Total Split (%) | 44.4% | 44.4% | 44.4% | 44.4% | 44.4% | | 55.6% | 55.6% | | 55.6% | 55.6% | |
| Maximum Green (s) | 33.5 | 33.5 | 33.5 | 33.5 | 33.5 | | 44.1 | 44.1 | | 44.1 | 44.1 | |
| Yellow Time (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.3 | 3.3 | | 3.3 | 3.3 | |
| All-Red Time (s) | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | | 2.6 | 2.6 | | 2.6 | 2.6 | |
| Lost Time Adjust (s) | | 0.0 | 0.0 | | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Total Lost Time (s) | | 6.5 | 6.5 | | 6.5 | | 5.9 | 5.9 | | 5.9 | 5.9 | |
| Lead/Lag | | | | | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Recall Mode | None | None | None | None | None | | Max | Max | | Max | Max | |
| Walk Time (s) | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | | 16.0 | 16.0 | | 16.0 | 16.0 | |
| Flash Dont Walk (s) | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | | 10.0 | 10.0 | | 10.0 | 10.0 | |
| Pedestrian Calls (#/hr) | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Act Effct Green (s) | | 10.7 | 10.7 | | 10.7 | | 48.5 | 48.5 | | 48.5 | 48.5 | |
| Actuated g/C Ratio | | 0.16 | 0.16 | | 0.16 | | 0.72 | 0.72 | | 0.72 | 0.72 | |
| v/c Ratio | | 0.42 | 0.05 | | 0.41 | | 0.03 | 0.32 | | 0.08 | 0.37 | |
| Control Delay | | 31.1 | 3.6 | | 23.0 | | 5.2 | 5.4 | | 5.6 | 5.4 | |
| Queue Delay | | 0.0 | 0.0 | | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Total Delay | | 31.1 | 3.6 | | 23.0 | | 5.2 | 5.4 | | 5.6 | 5.4 | |
| LOS | | C | A | | C | | A | A | | A | A | |
| Approach Delay | | 27.7 | | | 23.0 | | | 5.4 | | | 5.4 | |
| Approach LOS | | C | | | C | | | A | | | A | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Cycle Length: 90 | | | |
| Actuated Cycle Length: 67.4 | | | |
| Natural Cycle: 75 | | | |
| Control Type: Semi Act-Uncoord | | | |
| Maximum v/c Ratio: 0.42 | | | |
| Intersection Signal Delay: 7.6 | | Intersection LOS: A | |
| Intersection Capacity Utilization 67.1% | | ICU Level of Service C | |
| Analysis Period (min) 15 | | | |

Splits and Phases: 142: Brant Street & Ghent Avenue





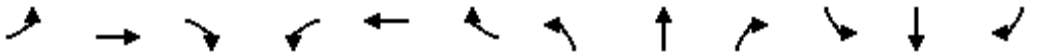
| Lane Group | EBT | EBR | WBT | NBL | NBT | SBL | SBT |
|---|---|---|---|---|---|---|---|
| Lane Group Flow (vph) | 98 | 14 | 116 | 12 | 821 | 39 | 925 |
| v/c Ratio | 0.42 | 0.05 | 0.41 | 0.03 | 0.32 | 0.08 | 0.37 |
| Control Delay | 31.1 | 3.6 | 23.0 | 5.2 | 5.4 | 5.6 | 5.4 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 31.1 | 3.6 | 23.0 | 5.2 | 5.4 | 5.6 | 5.4 |
| Queue Length 50th (m) | 11.2 | 0.0 | 9.2 | 0.4 | 19.6 | 1.5 | 21.8 |
| Queue Length 95th (m) | 23.7 | 1.8 | 22.2 | 2.3 | 34.7 | 5.4 | 38.7 |
| Internal Link Dist (m) | 87.7 | | 81.0 | | 131.1 | | 129.2 |
| Turn Bay Length (m) | | 35.0 | | 45.0 | | 25.0 | |
| Base Capacity (vph) | 729 | 750 | 817 | 406 | 2567 | 460 | 2493 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.13 | 0.02 | 0.14 | 0.03 | 0.32 | 0.08 | 0.37 |

Intersection Summary

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 83 | 9 | 13 | 23 | 49 | 38 | 11 | 757 | 15 | 37 | 693 | 177 |
| Future Volume (vph) | 83 | 9 | 13 | 23 | 49 | 38 | 11 | 757 | 15 | 37 | 693 | 177 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | | 6.5 | 6.5 | | 6.5 | | 5.9 | 5.9 | | 5.9 | 5.9 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | 0.98 | | 0.99 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | | 0.99 | 1.00 | | 0.99 | 1.00 | |
| Frt | | 1.00 | 0.85 | | 0.95 | | 1.00 | 1.00 | | 1.00 | 0.97 | |
| Flt Protected | | 0.96 | 1.00 | | 0.99 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 1814 | 1478 | | 1768 | | 1815 | 3567 | | 1812 | 3449 | |
| Flt Permitted | | 0.77 | 1.00 | | 0.90 | | 0.30 | 1.00 | | 0.34 | 1.00 | |
| Satd. Flow (perm) | | 1468 | 1478 | | 1611 | | 565 | 3567 | | 641 | 3449 | |
| Peak-hour factor, PHF | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Adj. Flow (vph) | 88 | 10 | 14 | 24 | 52 | 40 | 12 | 805 | 16 | 39 | 737 | 188 |
| RTOR Reduction (vph) | 0 | 0 | 12 | 0 | 30 | 0 | 0 | 1 | 0 | 0 | 15 | 0 |
| Lane Group Flow (vph) | 0 | 98 | 2 | 0 | 86 | 0 | 12 | 820 | 0 | 39 | 910 | 0 |
| Confl. Peds. (#/hr) | 9 | | 16 | 16 | | 9 | 15 | | 17 | 17 | | 15 |
| Heavy Vehicles (%) | 1% | 0% | 8% | 4% | 2% | 0% | 0% | 2% | 0% | 0% | 2% | 1% |
| Turn Type | Perm | NA | Perm | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 9.0 | 9.0 | | 9.0 | | 47.3 | 47.3 | | 47.3 | 47.3 | |
| Effective Green, g (s) | | 9.0 | 9.0 | | 9.0 | | 47.3 | 47.3 | | 47.3 | 47.3 | |
| Actuated g/C Ratio | | 0.13 | 0.13 | | 0.13 | | 0.69 | 0.69 | | 0.69 | 0.69 | |
| Clearance Time (s) | | 6.5 | 6.5 | | 6.5 | | 5.9 | 5.9 | | 5.9 | 5.9 | |
| Vehicle Extension (s) | | 3.0 | 3.0 | | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | | 192 | 193 | | 211 | | 389 | 2455 | | 441 | 2374 | |
| v/s Ratio Prot | | | | | | | | 0.23 | | | c0.26 | |
| v/s Ratio Perm | | c0.07 | 0.00 | | 0.05 | | 0.02 | | | 0.06 | | |
| v/c Ratio | | 0.51 | 0.01 | | 0.41 | | 0.03 | 0.33 | | 0.09 | 0.38 | |
| Uniform Delay, d1 | | 27.8 | 26.0 | | 27.4 | | 3.4 | 4.3 | | 3.5 | 4.5 | |
| Progression Factor | | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 2.3 | 0.0 | | 1.3 | | 0.1 | 0.4 | | 0.4 | 0.5 | |
| Delay (s) | | 30.1 | 26.0 | | 28.7 | | 3.6 | 4.7 | | 3.9 | 5.0 | |
| Level of Service | | C | C | | C | | A | A | | A | A | |
| Approach Delay (s) | | 29.6 | | | 28.7 | | | 4.7 | | | 5.0 | |
| Approach LOS | | C | | | C | | | A | | | A | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 7.6 | HCM 2000 Level of Service | A |
| HCM 2000 Volume to Capacity ratio | 0.40 | | |
| Actuated Cycle Length (s) | 68.7 | Sum of lost time (s) | 12.4 |
| Intersection Capacity Utilization | 67.1% | ICU Level of Service | C |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

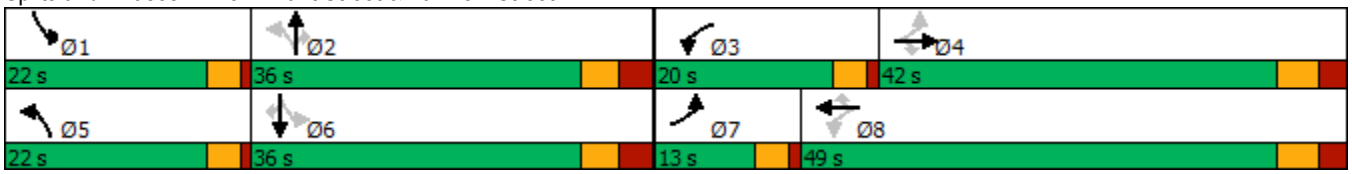


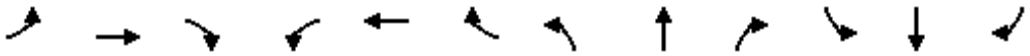
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 206 | 621 | 203 | 176 | 1171 | 336 | 230 | 706 | 172 | 158 | 511 | 185 |
| Future Volume (vph) | 206 | 621 | 203 | 176 | 1171 | 336 | 230 | 706 | 172 | 158 | 511 | 185 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (m) | 0.0 | | 150.0 | 65.0 | | 0.0 | 85.0 | | 70.0 | 50.0 | | 0.0 |
| Storage Lanes | 1 | | 1 | 1 | | 1 | 1 | | 1 | 1 | | 1 |
| Taper Length (m) | 2.5 | | | 45.0 | | | 10.0 | | | 15.0 | | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Ped Bike Factor | | | 0.97 | 1.00 | | 0.97 | 0.99 | | 0.94 | 0.99 | | 0.97 |
| Frt | | | 0.850 | | | 0.850 | | | 0.850 | | | 0.850 |
| Flt Protected | 0.950 | | | 0.950 | | | 0.950 | | | 0.950 | | |
| Satd. Flow (prot) | 1807 | 3544 | 1601 | 1772 | 3579 | 1570 | 1807 | 3614 | 1570 | 1755 | 3614 | 1570 |
| Flt Permitted | 0.102 | | | 0.262 | | | 0.279 | | | 0.194 | | |
| Satd. Flow (perm) | 194 | 3544 | 1556 | 487 | 3579 | 1519 | 527 | 3614 | 1475 | 354 | 3614 | 1524 |
| Right Turn on Red | | | Yes | | | Yes | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | | 211 | | | 279 | | | 179 | | | 193 |
| Link Speed (k/h) | | 50 | | | 50 | | | 50 | | | 50 | |
| Link Distance (m) | | 373.6 | | | 286.0 | | | 295.0 | | | 107.5 | |
| Travel Time (s) | | 26.9 | | | 20.6 | | | 21.2 | | | 7.7 | |
| Confl. Peds. (#/hr) | 14 | | 11 | 11 | | 14 | 12 | | 33 | 33 | | 12 |
| Peak Hour Factor | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Heavy Vehicles (%) | 1% | 3% | 2% | 3% | 2% | 4% | 1% | 1% | 4% | 4% | 1% | 4% |
| Adj. Flow (vph) | 215 | 647 | 211 | 183 | 1220 | 350 | 240 | 735 | 179 | 165 | 532 | 193 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 215 | 647 | 211 | 183 | 1220 | 350 | 240 | 735 | 179 | 165 | 532 | 193 |
| 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) | | 3.7 | | | 3.7 | | | 3.7 | | | 3.7 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 1.6 | | | 1.6 | | | 1.6 | | | 1.6 | |
| Two way Left Turn Lane | | | | | | | | Yes | | | | |
| Headway Factor | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 |
| Turning Speed (k/h) | 24 | | 14 | 24 | | 14 | 24 | | 14 | 24 | | 14 |
| Number of Detectors | 1 | 2 | 1 | 1 | 2 | 1 | 1 | 2 | 1 | 1 | 2 | 1 |
| Detector Template | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Leading Detector (m) | 6.1 | 30.5 | 6.1 | 6.1 | 30.5 | 6.1 | 6.1 | 30.5 | 6.1 | 6.1 | 30.5 | 6.1 |
| Trailing Detector (m) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector 1 Position(m) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector 1 Size(m) | 6.1 | 1.8 | 6.1 | 6.1 | 1.8 | 6.1 | 6.1 | 1.8 | 6.1 | 6.1 | 1.8 | 6.1 |
| Detector 1 Type | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector 1 Queue (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector 1 Delay (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector 2 Position(m) | | 28.7 | | | 28.7 | | | 28.7 | | | 28.7 | |
| Detector 2 Size(m) | | 1.8 | | | 1.8 | | | 1.8 | | | 1.8 | |
| Detector 2 Type | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Turn Type | pm+pt | NA | Perm | pm+pt | NA | Perm | pm+pt | NA | Perm | pm+pt | NA | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | 6 |
| Detector Phase | 7 | 4 | 4 | 3 | 8 | 8 | 5 | 2 | 2 | 1 | 6 | 6 |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 7.0 | 8.0 | 8.0 | 7.0 | 8.0 | 8.0 | 7.0 | 8.0 | 8.0 | 7.0 | 8.0 | 8.0 |
| Minimum Split (s) | 11.5 | 30.4 | 30.4 | 11.5 | 30.4 | 30.4 | 11.5 | 30.5 | 30.5 | 11.5 | 30.5 | 30.5 |
| Total Split (s) | 13.0 | 42.0 | 42.0 | 20.0 | 49.0 | 49.0 | 22.0 | 36.0 | 36.0 | 22.0 | 36.0 | 36.0 |
| Total Split (%) | 10.8% | 35.0% | 35.0% | 16.7% | 40.8% | 40.8% | 18.3% | 30.0% | 30.0% | 18.3% | 30.0% | 30.0% |
| Maximum Green (s) | 9.0 | 35.6 | 35.6 | 16.0 | 42.6 | 42.6 | 18.0 | 29.5 | 29.5 | 18.0 | 29.5 | 29.5 |
| Yellow Time (s) | 3.0 | 3.7 | 3.7 | 3.0 | 3.7 | 3.7 | 3.0 | 3.3 | 3.3 | 3.0 | 3.3 | 3.3 |
| All-Red Time (s) | 1.0 | 2.7 | 2.7 | 1.0 | 2.7 | 2.7 | 1.0 | 3.2 | 3.2 | 1.0 | 3.2 | 3.2 |
| Lost Time Adjust (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 4.0 | 6.4 | 6.4 | 4.0 | 6.4 | 6.4 | 4.0 | 6.5 | 6.5 | 4.0 | 6.5 | 6.5 |
| Lead/Lag | Lead | Lag | Lag | Lead | Lag | Lag | Lead | Lag | Lag | Lead | Lag | Lag |
| Lead-Lag Optimize? | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Recall Mode | None | None | None | None | None | None | None | Max | Max | None | Max | Max |
| Walk Time (s) | | 7.0 | 7.0 | | 7.0 | 7.0 | | 7.0 | 7.0 | | 7.0 | 7.0 |
| Flash Dont Walk (s) | | 17.0 | 17.0 | | 17.0 | 17.0 | | 17.0 | 17.0 | | 17.0 | 17.0 |
| Pedestrian Calls (#/hr) | | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 |
| Act Effct Green (s) | 50.8 | 39.4 | 39.4 | 56.4 | 42.6 | 42.6 | 50.0 | 32.2 | 32.2 | 44.6 | 29.5 | 29.5 |
| Actuated g/C Ratio | 0.43 | 0.34 | 0.34 | 0.48 | 0.36 | 0.36 | 0.43 | 0.27 | 0.27 | 0.38 | 0.25 | 0.25 |
| v/c Ratio | 1.04 | 0.54 | 0.32 | 0.50 | 0.94 | 0.48 | 0.61 | 0.74 | 0.34 | 0.58 | 0.59 | 0.37 |
| Control Delay | 101.8 | 34.8 | 5.6 | 22.2 | 50.9 | 8.9 | 28.7 | 44.6 | 6.9 | 29.4 | 42.0 | 7.2 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 101.8 | 34.8 | 5.6 | 22.2 | 50.9 | 8.9 | 28.7 | 44.6 | 6.9 | 29.4 | 42.0 | 7.2 |
| LOS | F | C | A | C | D | A | C | D | A | C | D | A |
| Approach Delay | | 42.5 | | | 39.5 | | | 35.4 | | | 32.1 | |
| Approach LOS | | D | | | D | | | D | | | C | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Cycle Length: 120 | | | |
| Actuated Cycle Length: 117.3 | | | |
| Natural Cycle: 85 | | | |
| Control Type: Semi Act-Uncoord | | | |
| Maximum v/c Ratio: 1.04 | | | |
| Intersection Signal Delay: 37.8 | | Intersection LOS: D | |
| Intersection Capacity Utilization 93.9% | | ICU Level of Service F | |
| Analysis Period (min) 15 | | | |

Splits and Phases: 151: Brant Street & Fairview Street





| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Group Flow (vph) | 215 | 647 | 211 | 183 | 1220 | 350 | 240 | 735 | 179 | 165 | 532 | 193 |
| v/c Ratio | 1.04 | 0.54 | 0.32 | 0.50 | 0.94 | 0.48 | 0.61 | 0.74 | 0.34 | 0.58 | 0.59 | 0.37 |
| Control Delay | 101.8 | 34.8 | 5.6 | 22.2 | 50.9 | 8.9 | 28.7 | 44.6 | 6.9 | 29.4 | 42.0 | 7.2 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 101.8 | 34.8 | 5.6 | 22.2 | 50.9 | 8.9 | 28.7 | 44.6 | 6.9 | 29.4 | 42.0 | 7.2 |
| Queue Length 50th (m) | ~37.0 | 64.1 | 0.0 | 23.3 | 142.9 | 10.9 | 35.1 | 80.7 | 0.0 | 23.1 | 57.2 | 0.0 |
| Queue Length 95th (m) | #90.0 | 88.3 | 17.1 | 38.5 | #192.5 | 35.9 | 53.5 | 109.0 | 17.3 | 37.5 | 76.6 | 17.7 |
| Internal Link Dist (m) | | 349.6 | | | 262.0 | | | 271.0 | | | 83.5 | |
| Turn Bay Length (m) | | | 150.0 | 65.0 | | | 85.0 | | 70.0 | 50.0 | | |
| Base Capacity (vph) | 207 | 1188 | 662 | 416 | 1299 | 729 | 423 | 992 | 534 | 363 | 909 | 528 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 1.04 | 0.54 | 0.32 | 0.44 | 0.94 | 0.48 | 0.57 | 0.74 | 0.34 | 0.45 | 0.59 | 0.37 |

Intersection Summary

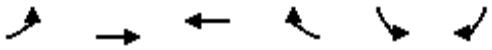
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 206 | 621 | 203 | 176 | 1171 | 336 | 230 | 706 | 172 | 158 | 511 | 185 |
| Future Volume (vph) | 206 | 621 | 203 | 176 | 1171 | 336 | 230 | 706 | 172 | 158 | 511 | 185 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.0 | 6.4 | 6.4 | 4.0 | 6.4 | 6.4 | 4.0 | 6.5 | 6.5 | 4.0 | 6.5 | 6.5 |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.94 | 1.00 | 1.00 | 0.97 |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1807 | 3544 | 1556 | 1770 | 3579 | 1520 | 1804 | 3614 | 1477 | 1752 | 3614 | 1524 |
| Flt Permitted | 0.10 | 1.00 | 1.00 | 0.26 | 1.00 | 1.00 | 0.28 | 1.00 | 1.00 | 0.19 | 1.00 | 1.00 |
| Satd. Flow (perm) | 193 | 3544 | 1556 | 489 | 3579 | 1520 | 531 | 3614 | 1477 | 358 | 3614 | 1524 |
| Peak-hour factor, PHF | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Adj. Flow (vph) | 215 | 647 | 211 | 183 | 1220 | 350 | 240 | 735 | 179 | 165 | 532 | 193 |
| RTOR Reduction (vph) | 0 | 0 | 140 | 0 | 0 | 178 | 0 | 0 | 130 | 0 | 0 | 145 |
| Lane Group Flow (vph) | 215 | 647 | 71 | 183 | 1220 | 172 | 240 | 735 | 49 | 165 | 532 | 48 |
| Confl. Peds. (#/hr) | 14 | | 11 | 11 | | 14 | 12 | | 33 | 33 | | 12 |
| Heavy Vehicles (%) | 1% | 3% | 2% | 3% | 2% | 4% | 1% | 1% | 4% | 4% | 1% | 4% |
| Turn Type | pm+pt | NA | Perm | pm+pt | NA | Perm | pm+pt | NA | Perm | pm+pt | NA | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 48.4 | 39.4 | 39.4 | 55.0 | 42.7 | 42.7 | 47.5 | 32.2 | 32.2 | 42.1 | 29.5 | 29.5 |
| Effective Green, g (s) | 48.4 | 39.4 | 39.4 | 55.0 | 42.7 | 42.7 | 47.5 | 32.2 | 32.2 | 42.1 | 29.5 | 29.5 |
| Actuated g/C Ratio | 0.41 | 0.34 | 0.34 | 0.47 | 0.36 | 0.36 | 0.40 | 0.27 | 0.27 | 0.36 | 0.25 | 0.25 |
| Clearance Time (s) | 4.0 | 6.4 | 6.4 | 4.0 | 6.4 | 6.4 | 4.0 | 6.5 | 6.5 | 4.0 | 6.5 | 6.5 |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 203 | 1189 | 522 | 363 | 1301 | 552 | 380 | 991 | 405 | 277 | 908 | 382 |
| v/s Ratio Prot | c0.08 | 0.18 | | c0.05 | 0.34 | | c0.08 | c0.20 | | 0.06 | 0.15 | |
| v/s Ratio Perm | c0.35 | | 0.05 | 0.18 | | 0.11 | 0.17 | | 0.03 | 0.15 | | 0.03 |
| v/c Ratio | 1.06 | 0.54 | 0.14 | 0.50 | 0.94 | 0.31 | 0.63 | 0.74 | 0.12 | 0.60 | 0.59 | 0.13 |
| Uniform Delay, d1 | 29.5 | 31.7 | 27.1 | 19.8 | 36.1 | 26.8 | 24.9 | 38.8 | 32.0 | 27.8 | 38.6 | 34.0 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 79.7 | 0.5 | 0.1 | 1.1 | 12.7 | 0.3 | 3.4 | 5.0 | 0.6 | 3.4 | 2.8 | 0.7 |
| Delay (s) | 109.2 | 32.2 | 27.3 | 20.9 | 48.8 | 27.1 | 28.3 | 43.8 | 32.6 | 31.2 | 41.4 | 34.7 |
| Level of Service | F | C | C | C | D | C | C | D | C | C | D | C |
| Approach Delay (s) | | 46.7 | | | 41.6 | | | 38.8 | | | 38.0 | |
| Approach LOS | | D | | | D | | | D | | | D | |

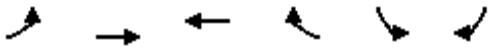
| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 41.4 | HCM 2000 Level of Service | D |
| HCM 2000 Volume to Capacity ratio | 0.89 | | |
| Actuated Cycle Length (s) | 117.4 | Sum of lost time (s) | 20.9 |
| Intersection Capacity Utilization | 93.9% | ICU Level of Service | F |
| Analysis Period (min) | 15 | | |

c Critical Lane Group



| Lane Group | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (vph) | 0 | 62 | 28 | 29 | 76 | 0 |
| Future Volume (vph) | 0 | 62 | 28 | 29 | 76 | 0 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | | | 0.931 | | | |
| Flt Protected | | | | | 0.950 | |
| Satd. Flow (prot) | 0 | 1865 | 1719 | 0 | 1755 | 0 |
| Flt Permitted | | | | | 0.950 | |
| Satd. Flow (perm) | 0 | 1865 | 1719 | 0 | 1755 | 0 |
| Link Speed (k/h) | | 40 | 40 | | 40 | |
| Link Distance (m) | | 86.9 | 152.2 | | 135.3 | |
| Travel Time (s) | | 7.8 | 13.7 | | 12.2 | |
| Peak Hour Factor | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Heavy Vehicles (%) | 21% | 3% | 0% | 8% | 4% | 0% |
| Adj. Flow (vph) | 0 | 73 | 33 | 34 | 89 | 0 |
| Shared Lane Traffic (%) | | | | | | |
| Lane Group Flow (vph) | 0 | 73 | 67 | 0 | 89 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Left | Right | Left | Right |
| Median Width(m) | | 0.0 | 0.0 | | 3.7 | |
| Link Offset(m) | | 0.0 | 0.0 | | 0.0 | |
| Crosswalk Width(m) | | 1.6 | 1.6 | | 1.6 | |
| Two way Left Turn Lane | | | | | | |
| Headway Factor | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 |
| Turning Speed (k/h) | 24 | | | 14 | 24 | 14 |
| Sign Control | | Free | Free | | Stop | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Control Type: Unsignalized | | | |
| Intersection Capacity Utilization 14.2% | | ICU Level of Service A | |
| Analysis Period (min) 15 | | | |



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 0 | 62 | 28 | 29 | 76 | 0 |
| Future Volume (Veh/h) | 0 | 62 | 28 | 29 | 76 | 0 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Hourly flow rate (vph) | 0 | 73 | 33 | 34 | 89 | 0 |
| Pedestrians | | | | | | |
| Lane Width (m) | | | | | | |
| Walking Speed (m/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage veh) | | | | | | |
| Upstream signal (m) | | | 152 | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 67 | | | | 123 | 50 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 67 | | | | 123 | 50 |
| tC, single (s) | 4.3 | | | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.4 | | | | 3.5 | 3.3 |
| p0 queue free % | 100 | | | | 90 | 100 |
| cM capacity (veh/h) | 1422 | | | | 867 | 1024 |

| Direction, Lane # | EB 1 | WB 1 | SB 1 |
|---|---|---|---|
| Volume Total | 73 | 67 | 89 |
| Volume Left | 0 | 0 | 89 |
| Volume Right | 0 | 34 | 0 |
| cSH | 1422 | 1700 | 867 |
| Volume to Capacity | 0.00 | 0.04 | 0.10 |
| Queue Length 95th (m) | 0.0 | 0.0 | 2.6 |
| Control Delay (s) | 0.0 | 0.0 | 9.6 |
| Lane LOS | | | A |
| Approach Delay (s) | 0.0 | 0.0 | 9.6 |
| Approach LOS | | | A |

| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 3.7 | | |
| Intersection Capacity Utilization | 14.2% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |

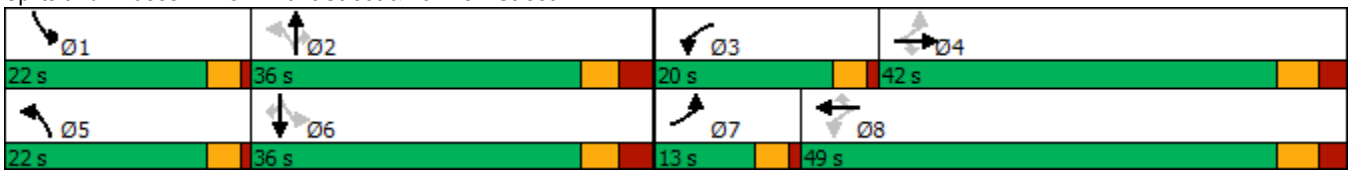
# Appendix E – Existing (2024) Conditions Calibrated Synchro Reports

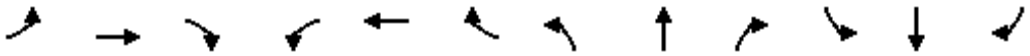
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 206 | 621 | 203 | 176 | 1171 | 336 | 230 | 706 | 172 | 158 | 511 | 185 |
| Future Volume (vph) | 206 | 621 | 203 | 176 | 1171 | 336 | 230 | 706 | 172 | 158 | 511 | 185 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (m) | 0.0 | | 150.0 | 65.0 | | 0.0 | 85.0 | | 70.0 | 50.0 | | 0.0 |
| Storage Lanes | 1 | | 1 | 1 | | 1 | 1 | | 1 | 1 | | 1 |
| Taper Length (m) | 2.5 | | | 45.0 | | | 10.0 | | | 15.0 | | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Ped Bike Factor | | | 0.97 | 1.00 | | 0.97 | 0.99 | | 0.94 | 0.99 | | 0.97 |
| Frt | | | 0.850 | | | 0.850 | | | 0.850 | | | 0.850 |
| Flt Protected | 0.950 | | | 0.950 | | | 0.950 | | | 0.950 | | |
| Satd. Flow (prot) | 1807 | 3544 | 1601 | 1772 | 3579 | 1570 | 1807 | 3614 | 1570 | 1755 | 3614 | 1570 |
| Flt Permitted | 0.099 | | | 0.262 | | | 0.279 | | | 0.194 | | |
| Satd. Flow (perm) | 188 | 3544 | 1556 | 487 | 3579 | 1519 | 527 | 3614 | 1475 | 354 | 3614 | 1524 |
| Right Turn on Red | | | Yes | | | Yes | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | | 211 | | | 279 | | | 179 | | | 193 |
| Link Speed (k/h) | | 50 | | | 50 | | | 50 | | | 50 | |
| Link Distance (m) | | 373.6 | | | 286.0 | | | 295.0 | | | 107.5 | |
| Travel Time (s) | | 26.9 | | | 20.6 | | | 21.2 | | | 7.7 | |
| Confl. Peds. (#/hr) | 14 | | 11 | 11 | | 14 | 12 | | 33 | 33 | | 12 |
| Peak Hour Factor | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Heavy Vehicles (%) | 1% | 3% | 2% | 3% | 2% | 4% | 1% | 1% | 4% | 4% | 1% | 4% |
| Adj. Flow (vph) | 215 | 647 | 211 | 183 | 1220 | 350 | 240 | 735 | 179 | 165 | 532 | 193 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 215 | 647 | 211 | 183 | 1220 | 350 | 240 | 735 | 179 | 165 | 532 | 193 |
| 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) | | 3.7 | | | 3.7 | | | 3.7 | | | 3.7 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 1.6 | | | 1.6 | | | 1.6 | | | 1.6 | |
| Two way Left Turn Lane | | | | | | | | Yes | | | | |
| Headway Factor | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 |
| Turning Speed (k/h) | 24 | | 14 | 24 | | 14 | 24 | | 14 | 24 | | 14 |
| Number of Detectors | 1 | 2 | 1 | 1 | 2 | 1 | 1 | 2 | 1 | 1 | 2 | 1 |
| Detector Template | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Leading Detector (m) | 6.1 | 30.5 | 6.1 | 6.1 | 30.5 | 6.1 | 6.1 | 30.5 | 6.1 | 6.1 | 30.5 | 6.1 |
| Trailing Detector (m) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector 1 Position(m) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector 1 Size(m) | 6.1 | 1.8 | 6.1 | 6.1 | 1.8 | 6.1 | 6.1 | 1.8 | 6.1 | 6.1 | 1.8 | 6.1 |
| Detector 1 Type | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector 1 Queue (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector 1 Delay (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector 2 Position(m) | | 28.7 | | | 28.7 | | | 28.7 | | | 28.7 | |
| Detector 2 Size(m) | | 1.8 | | | 1.8 | | | 1.8 | | | 1.8 | |
| Detector 2 Type | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Turn Type | pm+pt | NA | Perm | pm+pt | NA | Perm | pm+pt | NA | Perm | pm+pt | NA | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | 6 |
| Detector Phase | 7 | 4 | 4 | 3 | 8 | 8 | 5 | 2 | 2 | 1 | 6 | 6 |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 7.0 | 8.0 | 8.0 | 7.0 | 8.0 | 8.0 | 7.0 | 8.0 | 8.0 | 7.0 | 8.0 | 8.0 |
| Minimum Split (s) | 11.5 | 30.4 | 30.4 | 11.5 | 30.4 | 30.4 | 11.5 | 30.5 | 30.5 | 11.5 | 30.5 | 30.5 |
| Total Split (s) | 13.0 | 42.0 | 42.0 | 20.0 | 49.0 | 49.0 | 22.0 | 36.0 | 36.0 | 22.0 | 36.0 | 36.0 |
| Total Split (%) | 10.8% | 35.0% | 35.0% | 16.7% | 40.8% | 40.8% | 18.3% | 30.0% | 30.0% | 18.3% | 30.0% | 30.0% |
| Maximum Green (s) | 9.0 | 35.6 | 35.6 | 16.0 | 42.6 | 42.6 | 18.0 | 29.5 | 29.5 | 18.0 | 29.5 | 29.5 |
| Yellow Time (s) | 3.0 | 3.7 | 3.7 | 3.0 | 3.7 | 3.7 | 3.0 | 3.3 | 3.3 | 3.0 | 3.3 | 3.3 |
| All-Red Time (s) | 1.0 | 2.7 | 2.7 | 1.0 | 2.7 | 2.7 | 1.0 | 3.2 | 3.2 | 1.0 | 3.2 | 3.2 |
| Lost Time Adjust (s) | -1.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 3.0 | 6.4 | 6.4 | 4.0 | 6.4 | 6.4 | 4.0 | 6.5 | 6.5 | 4.0 | 6.5 | 6.5 |
| Lead/Lag | Lead | Lag | Lag | Lead | Lag | Lag | Lead | Lag | Lag | Lead | Lag | Lag |
| Lead-Lag Optimize? | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Recall Mode | None | None | None | None | None | None | None | Max | Max | None | Max | Max |
| Walk Time (s) | | 7.0 | 7.0 | | 7.0 | 7.0 | | 7.0 | 7.0 | | 7.0 | 7.0 |
| Flash Dont Walk (s) | | 17.0 | 17.0 | | 17.0 | 17.0 | | 17.0 | 17.0 | | 17.0 | 17.0 |
| Pedestrian Calls (#/hr) | | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 |
| Act Effct Green (s) | 52.8 | 39.4 | 39.4 | 56.4 | 42.6 | 42.6 | 50.0 | 32.2 | 32.2 | 44.6 | 29.5 | 29.5 |
| Actuated g/C Ratio | 0.45 | 0.34 | 0.34 | 0.48 | 0.36 | 0.36 | 0.43 | 0.27 | 0.27 | 0.38 | 0.25 | 0.25 |
| v/c Ratio | 0.97 | 0.54 | 0.32 | 0.50 | 0.94 | 0.48 | 0.61 | 0.74 | 0.34 | 0.58 | 0.59 | 0.37 |
| Control Delay | 82.2 | 34.8 | 5.6 | 22.2 | 50.9 | 8.9 | 28.7 | 44.6 | 6.9 | 29.4 | 42.0 | 7.2 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 82.2 | 34.8 | 5.6 | 22.2 | 50.9 | 8.9 | 28.7 | 44.6 | 6.9 | 29.4 | 42.0 | 7.2 |
| LOS | F | C | A | C | D | A | C | D | A | C | D | A |
| Approach Delay | | 38.5 | | | 39.5 | | | 35.4 | | | 32.1 | |
| Approach LOS | | D | | | D | | | D | | | C | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Cycle Length: 120 | | | |
| Actuated Cycle Length: 117.3 | | | |
| Natural Cycle: 85 | | | |
| Control Type: Semi Act-Uncoord | | | |
| Maximum v/c Ratio: 0.97 | | | |
| Intersection Signal Delay: 37.0 | | Intersection LOS: D | |
| Intersection Capacity Utilization 93.9% | | ICU Level of Service F | |
| Analysis Period (min) 15 | | | |

Splits and Phases: 151: Brant Street & Fairview Street





| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Group Flow (vph) | 215 | 647 | 211 | 183 | 1220 | 350 | 240 | 735 | 179 | 165 | 532 | 193 |
| v/c Ratio | 0.97 | 0.54 | 0.32 | 0.50 | 0.94 | 0.48 | 0.61 | 0.74 | 0.34 | 0.58 | 0.59 | 0.37 |
| Control Delay | 82.2 | 34.8 | 5.6 | 22.2 | 50.9 | 8.9 | 28.7 | 44.6 | 6.9 | 29.4 | 42.0 | 7.2 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 82.2 | 34.8 | 5.6 | 22.2 | 50.9 | 8.9 | 28.7 | 44.6 | 6.9 | 29.4 | 42.0 | 7.2 |
| Queue Length 50th (m) | 33.4 | 64.1 | 0.0 | 23.3 | 142.9 | 10.9 | 35.1 | 80.7 | 0.0 | 23.1 | 57.2 | 0.0 |
| Queue Length 95th (m) | #86.4 | 88.3 | 17.1 | 38.5 | #192.5 | 35.9 | 53.5 | 109.0 | 17.3 | 37.5 | 76.6 | 17.7 |
| Internal Link Dist (m) | | 349.6 | | | 262.0 | | | 271.0 | | | 83.5 | |
| Turn Bay Length (m) | | | 150.0 | 65.0 | | | 85.0 | | 70.0 | 50.0 | | |
| Base Capacity (vph) | 222 | 1188 | 662 | 416 | 1299 | 729 | 423 | 992 | 534 | 363 | 909 | 528 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.97 | 0.54 | 0.32 | 0.44 | 0.94 | 0.48 | 0.57 | 0.74 | 0.34 | 0.45 | 0.59 | 0.37 |

Intersection Summary

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

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 206 | 621 | 203 | 176 | 1171 | 336 | 230 | 706 | 172 | 158 | 511 | 185 |
| Future Volume (vph) | 206 | 621 | 203 | 176 | 1171 | 336 | 230 | 706 | 172 | 158 | 511 | 185 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 3.0 | 6.4 | 6.4 | 4.0 | 6.4 | 6.4 | 4.0 | 6.5 | 6.5 | 4.0 | 6.5 | 6.5 |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.94 | 1.00 | 1.00 | 0.97 |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1807 | 3544 | 1556 | 1770 | 3579 | 1520 | 1804 | 3614 | 1477 | 1752 | 3614 | 1524 |
| Flt Permitted | 0.10 | 1.00 | 1.00 | 0.26 | 1.00 | 1.00 | 0.28 | 1.00 | 1.00 | 0.19 | 1.00 | 1.00 |
| Satd. Flow (perm) | 188 | 3544 | 1556 | 489 | 3579 | 1520 | 531 | 3614 | 1477 | 358 | 3614 | 1524 |
| Peak-hour factor, PHF | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Adj. Flow (vph) | 215 | 647 | 211 | 183 | 1220 | 350 | 240 | 735 | 179 | 165 | 532 | 193 |
| RTOR Reduction (vph) | 0 | 0 | 140 | 0 | 0 | 178 | 0 | 0 | 130 | 0 | 0 | 145 |
| Lane Group Flow (vph) | 215 | 647 | 71 | 183 | 1220 | 172 | 240 | 735 | 49 | 165 | 532 | 48 |
| Confl. Peds. (#/hr) | 14 | | 11 | 11 | | 14 | 12 | | 33 | 33 | | 12 |
| Heavy Vehicles (%) | 1% | 3% | 2% | 3% | 2% | 4% | 1% | 1% | 4% | 4% | 1% | 4% |
| Turn Type | pm+pt | NA | Perm | pm+pt | NA | Perm | pm+pt | NA | Perm | pm+pt | NA | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 48.4 | 39.4 | 39.4 | 55.0 | 42.7 | 42.7 | 47.5 | 32.2 | 32.2 | 42.1 | 29.5 | 29.5 |
| Effective Green, g (s) | 50.4 | 39.4 | 39.4 | 55.0 | 42.7 | 42.7 | 47.5 | 32.2 | 32.2 | 42.1 | 29.5 | 29.5 |
| Actuated g/C Ratio | 0.43 | 0.34 | 0.34 | 0.47 | 0.36 | 0.36 | 0.40 | 0.27 | 0.27 | 0.36 | 0.25 | 0.25 |
| Clearance Time (s) | 4.0 | 6.4 | 6.4 | 4.0 | 6.4 | 6.4 | 4.0 | 6.5 | 6.5 | 4.0 | 6.5 | 6.5 |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 218 | 1189 | 522 | 363 | 1301 | 552 | 380 | 991 | 405 | 277 | 908 | 382 |
| v/s Ratio Prot | c0.08 | 0.18 | | c0.05 | 0.34 | | c0.08 | c0.20 | | 0.06 | 0.15 | |
| v/s Ratio Perm | c0.34 | | 0.05 | 0.18 | | 0.11 | 0.17 | | 0.03 | 0.15 | | 0.03 |
| v/c Ratio | 0.99 | 0.54 | 0.14 | 0.50 | 0.94 | 0.31 | 0.63 | 0.74 | 0.12 | 0.60 | 0.59 | 0.13 |
| Uniform Delay, d1 | 30.6 | 31.7 | 27.1 | 19.8 | 36.1 | 26.8 | 24.9 | 38.8 | 32.0 | 27.8 | 38.6 | 34.0 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 56.5 | 0.5 | 0.1 | 1.1 | 12.7 | 0.3 | 3.4 | 5.0 | 0.6 | 3.4 | 2.8 | 0.7 |
| Delay (s) | 87.1 | 32.2 | 27.3 | 20.9 | 48.8 | 27.1 | 28.3 | 43.8 | 32.6 | 31.2 | 41.4 | 34.7 |
| Level of Service | F | C | C | C | D | C | C | D | C | C | D | C |
| Approach Delay (s) | | 42.2 | | | 41.6 | | | 38.8 | | | 38.0 | |
| Approach LOS | | D | | | D | | | D | | | D | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 40.4 | HCM 2000 Level of Service | D |
| HCM 2000 Volume to Capacity ratio | 0.87 | | |
| Actuated Cycle Length (s) | 117.4 | Sum of lost time (s) | 20.9 |
| Intersection Capacity Utilization | 93.9% | ICU Level of Service | F |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

# Appendix F – Background Developments Information

## Liubeznii, Dumitru

**From:** Ozimkovic , Danijel <Danijel.Ozimkovic@burlington.ca>
**Sent:** Tuesday, February 13, 2024 1:42 PM
**To:** Liubeznii, Dumitru
**Cc:** Lucas, Sandra
**Subject:** RE: Information Inquiry - Background Developments and Growth Rate for TIS at 1393 Grahams Lane

You don't often get email from danijel.ozimkovic@burlington.ca. Learn why this is important

Hi Dumitru,
Hope you are doing well. Below are the answers to your two questions:

- Transportation Planning does not have a TIS for 849 & 855 Brant Street. This application is no longer listed on the City's Development website so we are not sure what the status of the application is.
- 1% growth rate is acceptable by Transportation Planning.

**Dan Ozimkovic, C.E.T., A.Sc.T.**
**Transportation Planning Technologist**
**Transportation Services Department**
**City of Burlington**
*Our working hours may be different. You are not obligated to reply outside of your typical working hours.*

---

**From:** Liubeznii, Dumitru <dumitru.liubeznii@arcadis.com>
**Sent:** Tuesday, January 30, 2024 10:56 AM
**To:** Lucas, Sandra <Sandra.Lucas@burlington.ca>
**Cc:** Griffith, Andrae <andrae.griffith@arcadis.com>
**Subject:** RE: Information Inquiry - Background Developments and Growth Rate for TIS at 1393 Grahams Lane
**Importance:** High

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

Good morning Sandra,

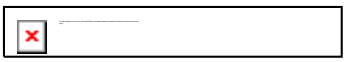
We hope this email finds you well. How soon can we get a response to the following questions?

1. Does the City have any records of a TIS submitted for 849 & 855 Brant Street, 2013-2019 Edinburgh Drive? If there is one, can you kindly share it with us?
2. For the purpose of our study we plan to use 1% growth rate compounded annually, as done by Crozier in TIS for 789-795 Brant Street. Can you provide concurrence with our approach or advise if a different growth rate should be used?

**We need to get this information as soon as possible. If we don't hear back by end of day today, we will proceed with our study by excluding one background development and will be using 1% growth rate.**

Regards,

**Dumitru Liubezni** P.Eng.
Traffic Operations and Safety Analyst
Arcadis Professional Services (Canada) Inc.
8133 Warden Ave, Unit 300 | Markham | ON | L6G 1B3 | Canada
T: +1 905 763 2322 ext 63523
www.arcadis.com





Please note my new email address and update for your records.

**From:** Lucas, Sandra <Sandra.Lucas@burlington.ca>
**Sent:** Wednesday, January 24, 2024 10:34 AM
**To:** Liubeznii, Dumitru <dumitru.liubeznii@arcadis.com>
**Cc:** Griffith, Andrae <andrae.griffith@arcadis.com>
**Subject:** RE: Information Inquiry - Background Developments and Growth Rate for TIS at 1393 Grahams Lane

> You don't often get email from sandra.lucas@burlington.ca. Learn why this is important

Good morning…ETA is end of the week. Thank you for your patience.

Regards

**Sandra Lucas (she/her)**
Supervisor of Transportation Planning
Transportation Services Department

MAIN: 905-335-7600 ext 7401
**sandra.lucas@burlington.ca**

426 Brant Street P.O. Box 5013, Burlington, Ontario, L7R 3Z6

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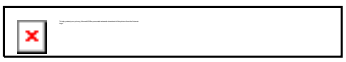
**From:** Liubeznii, Dumitru <dumitru.liubeznii@arcadis.com>
**Sent:** January 24, 2024 10:27 AM
**To:** Lucas, Sandra <Sandra.Lucas@burlington.ca>
**Cc:** Griffith, Andrae <andrae.griffith@arcadis.com>
**Subject:** RE: Information Inquiry - Background Developments and Growth Rate for TIS at 1393 Grahams Lane

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Good morning Sandra, following up on this inquiry we sent last week, can you let us know approximate timeline for providing the information?

Thank you,

**Dumitru Liubezni** P.Eng.
Traffic Operations and Safety Analyst
Arcadis Professional Services (Canada) Inc.
8133 Warden Ave, Unit 300 | Markham | ON | L6G 1B3 | Canada
T: +1 905 763 2322 ext 63523
www.arcadis.com





Please note my new email address and update for your records.

**From:** Lucas, Sandra <Sandra.Lucas@burlington.ca>
**Sent:** Thursday, January 18, 2024 8:18 AM
**To:** Liubeznii, Dumitru <dumitru.liubeznii@arcadis.com>
**Cc:** Griffith, Andrae <andrae.griffith@arcadis.com>
**Subject:** RE: Information Inquiry - Background Developments and Growth Rate for TIS at 1393 Grahams Lane

> You don't often get email from sandra.lucas@burlington.ca. Learn why this is important

Good morning Dumitru, we will take a look and get back to you.

Regards

**Sandra Lucas (she/her)**
Supervisor of Transportation Planning
Transportation Services Department

MAIN: 905-335-7600 ext 7401
**sandra.lucas@burlington.ca**

426 Brant Street P.O. Box 5013, Burlington, Ontario, L7R 3Z6

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**From:** Liubeznii, Dumitru <dumitru.liubeznii@arcadis.com>
**Sent:** January 17, 2024 4:27 PM
**To:** Lucas, Sandra <Sandra.Lucas@burlington.ca>
**Cc:** Griffith, Andrae <andrae.griffith@arcadis.com>
**Subject:** Information Inquiry - Background Developments and Growth Rate for TIS at 1393 Grahams Lane

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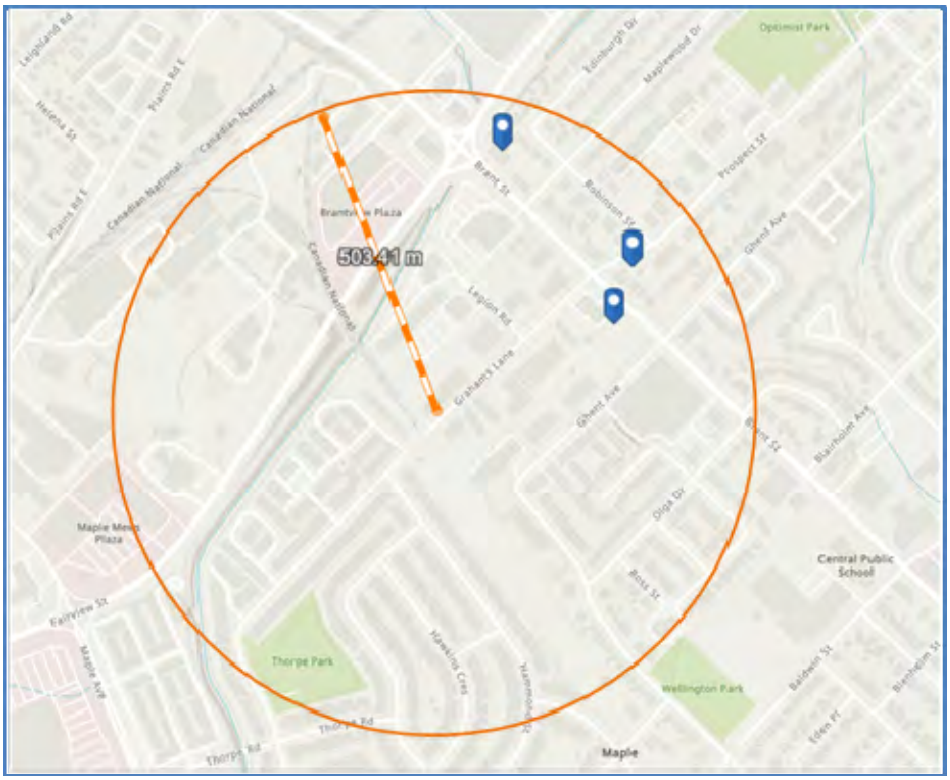
Hello Sandra, we hope all is going well!

Arcadis is in process of gathering background information for TIS work related to proposed development at 1393 Grahams Lane and we are in need of your assistance. As per scope of work previously shared with you, we will be conducting analysis of future conditions for ultimate horizon year of 2028. We hope you can help us with this inquiry, otherwise please forward this to appropriate City staff.

Background Developments Inquiry:

**Does the City have any records of a TIS submitted for 849 & 855 Brant Street, 2013-2019 Edinburgh Drive? If there is one, can you kindly share it with us?**

We conducted online research (https://www.arcgis.com/home/item.html?id=85184a2c8203474ea05b30d3b4a7c678) and found three background developments in the area adjacent to our site which we are planning to include in our study. Those are shown geographically relative to our site and listed below as follows:




1. Mixed Use Residential at 789-795 Brant Street. TIS by Crozier, September 2022;
2. Mixed Use Residential at 774, 778, 780 and 782 Brant Street (Parcel A); 769, 779, 783 Brant Street & 2023, 2027, 2031-2033 Ghent Avenue (Parcel B); and, 747 and 761 Brant Street (Parcel C). TIS by Paradigm, May 2021.
3. 849 & 855 Brant St. 2013-2019 Edinburgh Dr. **TIS supporting info not available online**.

Background Growth Rate:

For the purpose of our study we plan to use 1% growth rate compounded annually, as done by Crozier in TIS for 789-795 Brant Street. Based on information found in TIS by Crozier, that growth rate was provided and agreed upon by City and the Region in 2022. Crozier study uses 2027 year as ultimate horizon for traffic analysis. We believe that this growth rate is still relevant and applicable for the purposes of our study considering just one year difference in future horizon.

**Can you provide concurrence with our approach or advise if a different growth rate should be used?**

Please let us know if you have any questions. We hope to hear back from you soon.

Thank you,

**Dumitru Liubezni** P.Eng.
Traffic Operations and Safety Analyst
Arcadis Professional Services (Canada) Inc.
8133 Warden Ave, Unit 300 | Markham | ON | L6G 1B3 | Canada
T: +1 905 763 2322 ext 63523
www.arcadis.com

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# TRANSPORTATION IMPACT STUDY

## 795 BRANT STREET

## CITY OF BURLINGTON
## REGION OF HALTON

**PREPARED FOR:**

**CAMARRO DEVELOPMENTS INC.**

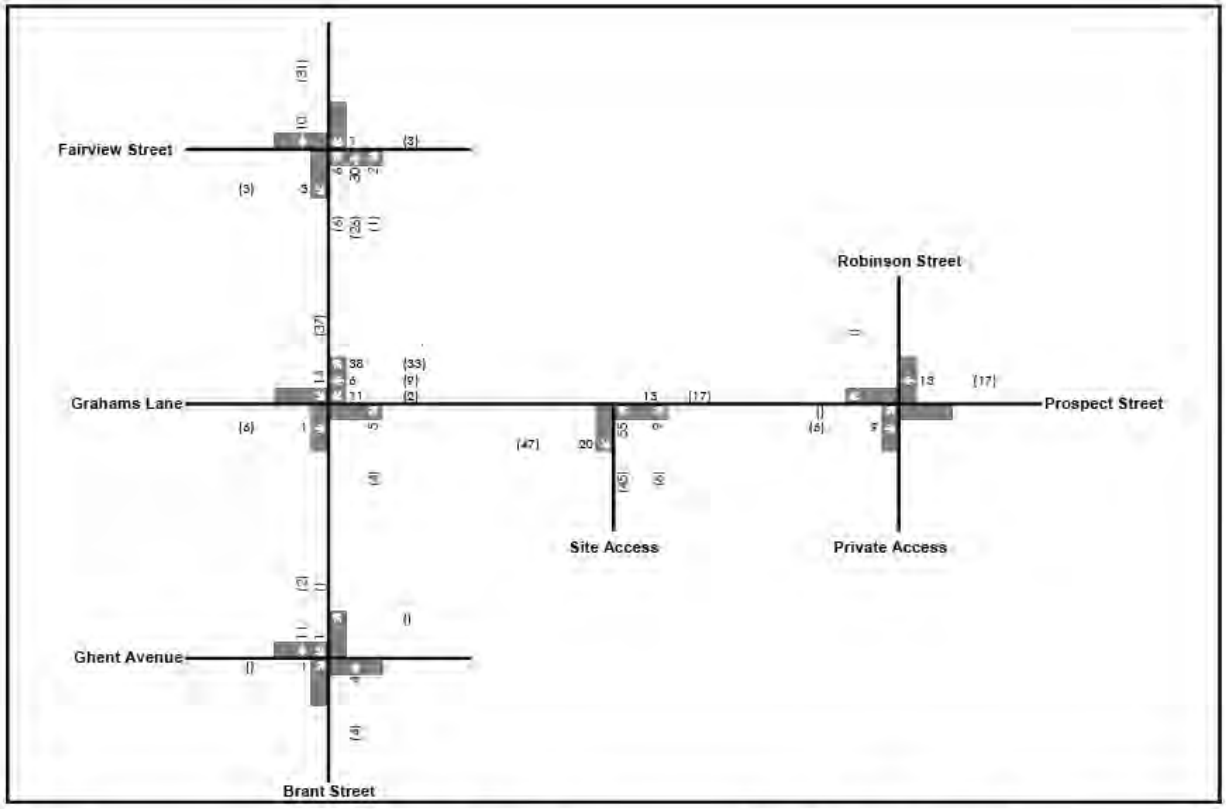
**PREPARED BY:**
**C.F. CROZIER & ASSOCIATES INC.**
**2800 HIGH POINT DRIVE, SUITE 100**
**MILTON, ON L9T 6P4**

**SEPTEMBER 2022**

**CFCA FILE NO. 2321-6440**

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CROZIER
CONSULTING ENGINEERS




**Legend**

xx A.M. Peak Hour Traffic Volumes
(xx) P.M. Peak Hour Traffic Volumes
(xx) Weekend Peak Hour Traffic Volumes

**795 Brant Street**

**Site Generated Trips**

CROZIER CONSULTING ENGINEERS

FIGURE 06

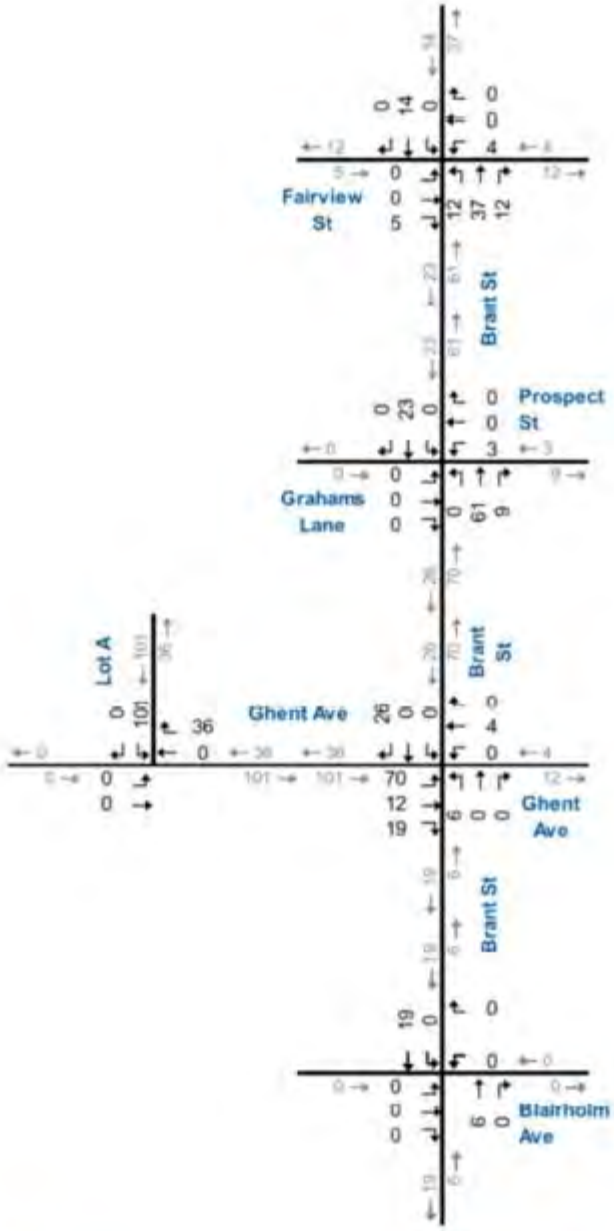
Project No. 2321-6440
Date: 44729
Analyst: Aarzoo D

# Brant Street and Ghent Avenue, Burlington, ON Transportation Impact Assessment

Paradigm Transportation Solutions Limited

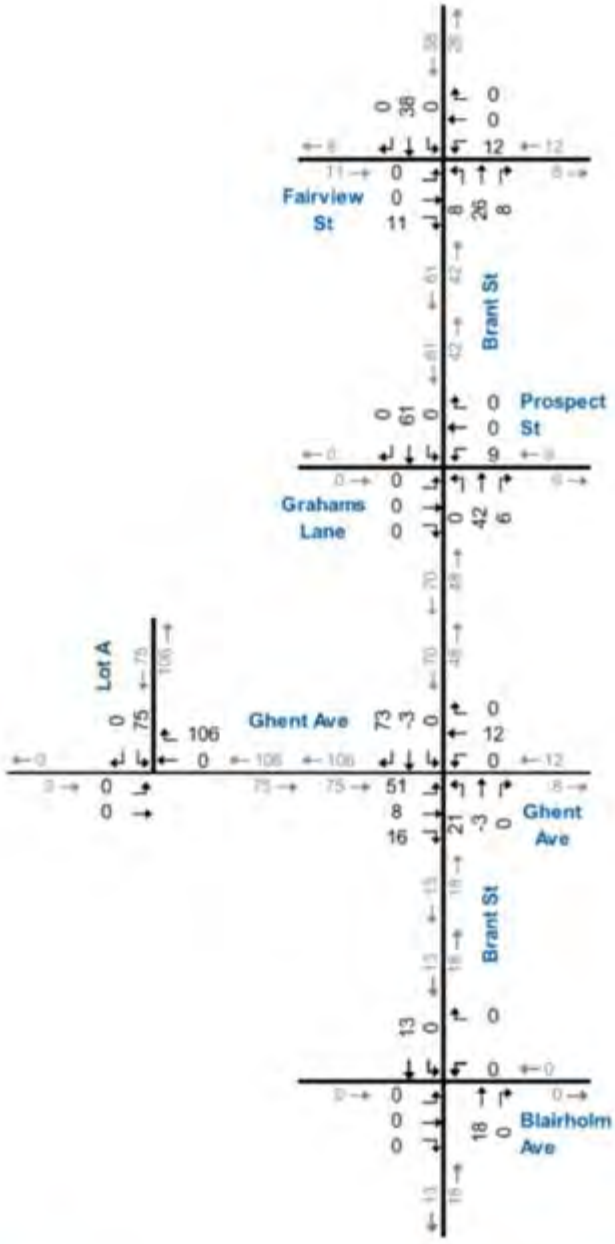
May 2021
200403

ptsl.com




paradigm

## Site Generated Traffic
## Phase 1 – AM Peak Hour

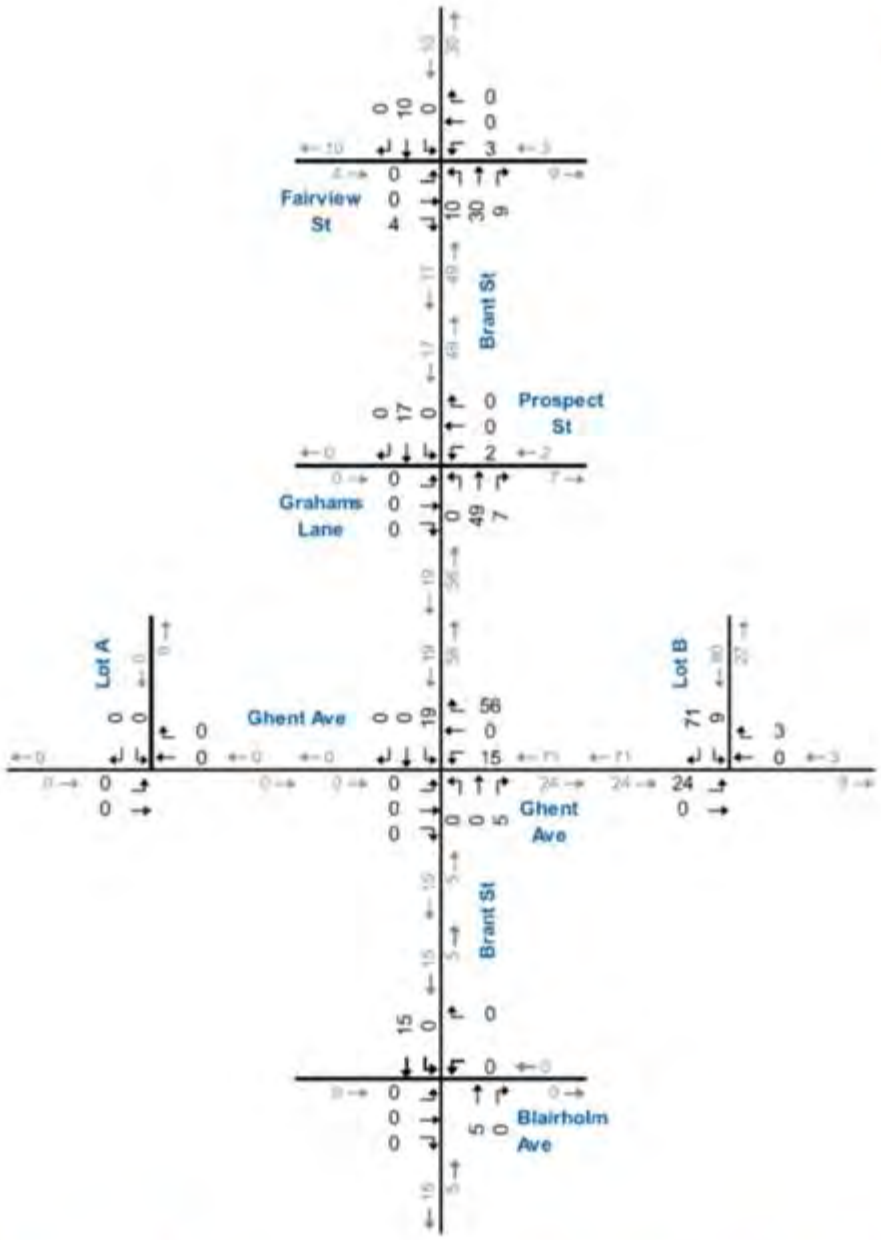



paradigm

## Site Generated Traffic
## Phase 1 – PM Peak Hour

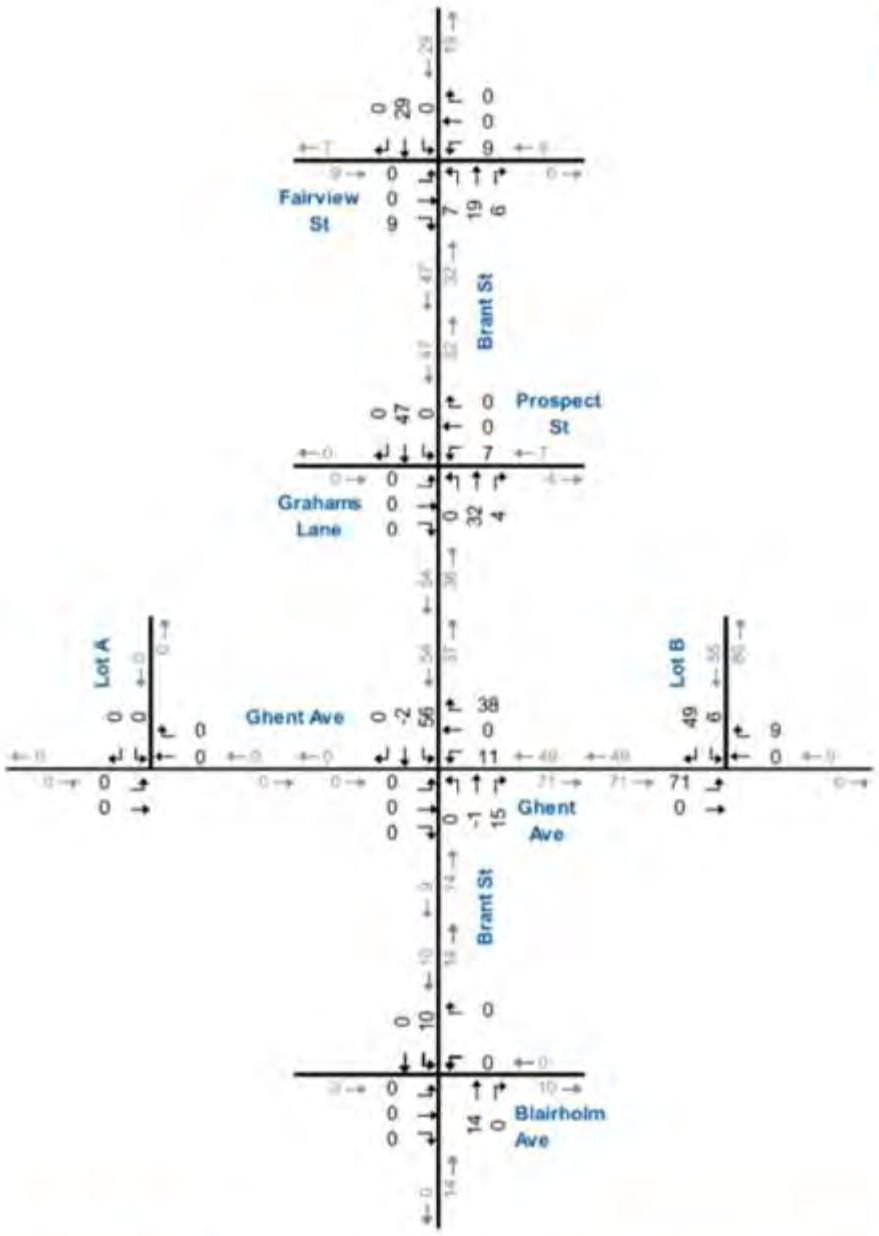
Brant Street & Ghent Avenue TIA
200403

Figure 3.5B



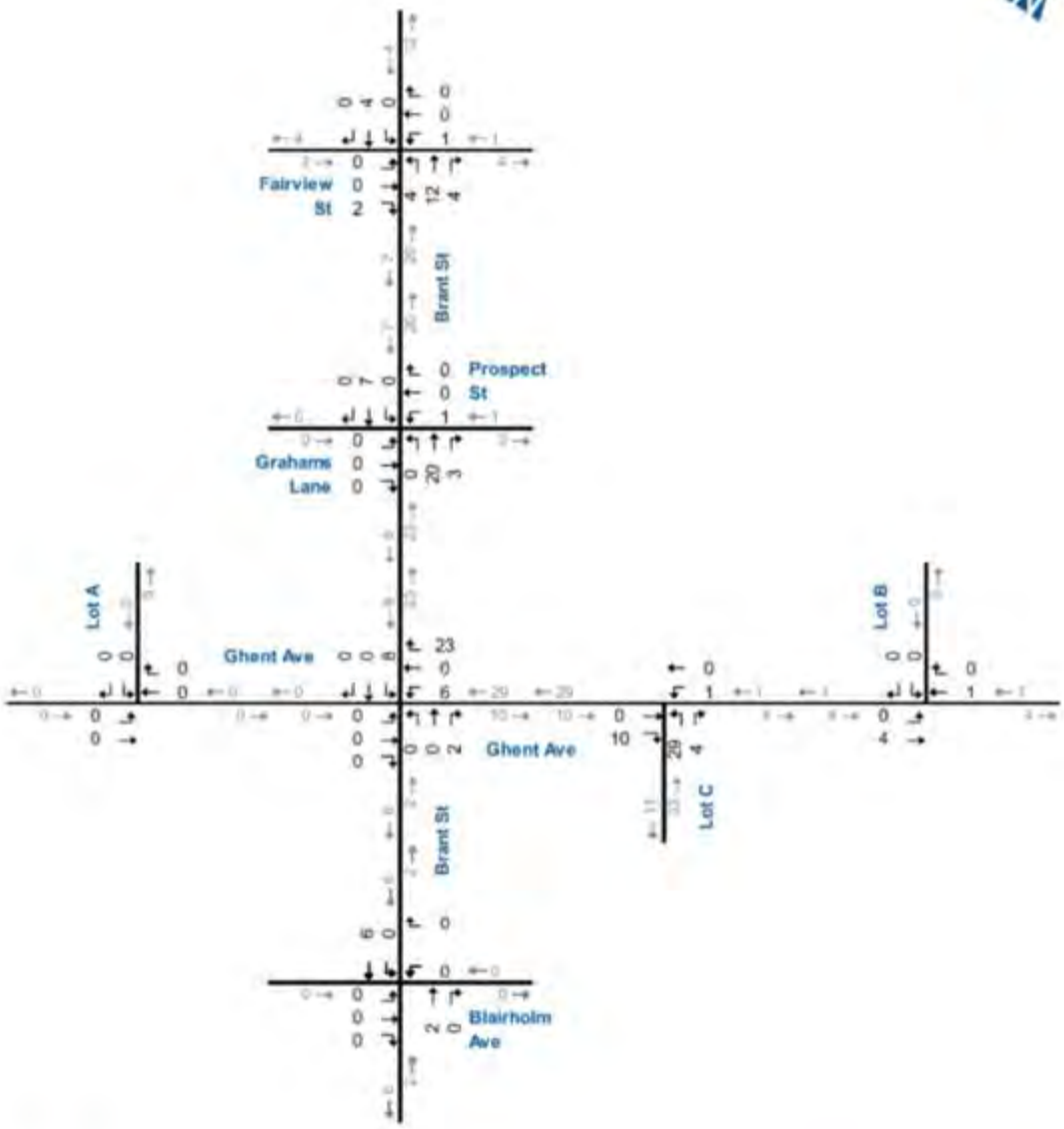

paradigm

# Site Generated Traffic
# Phase 2 – AM Peak Hour




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# Site Generated Traffic
# Phase 2 – PM Peak Hour




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## Site Generated Traffic
## Phase 3 – AM Peak Hour

Brant Street & Ghent Avenue TIA
200403

Figure 3.7A




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## Site Generated Traffic
## Phase 3 – PM Peak Hour

# Appendix G – Future (2029) Background Conditions Synchro Reports

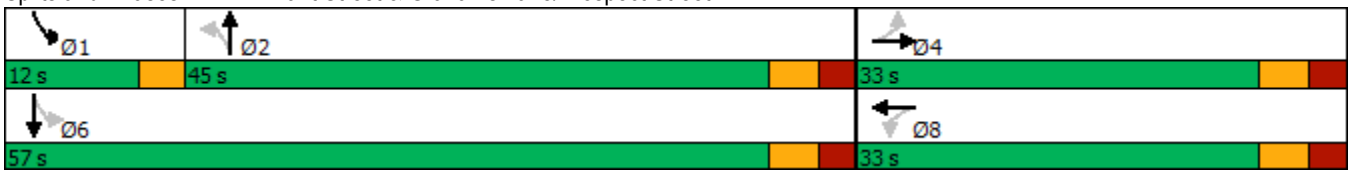
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 55 | 8 | 11 | 68 | 13 | 115 | 19 | 849 | 72 | 89 | 744 | 76 |
| Future Volume (vph) | 55 | 8 | 11 | 68 | 13 | 115 | 19 | 849 | 72 | 89 | 744 | 76 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (m) | 0.0 | | 100.0 | 15.0 | | 0.0 | 20.0 | | 0.0 | 20.0 | | 0.0 |
| Storage Lanes | 1 | | 1 | 1 | | 0 | 1 | | 0 | 1 | | 0 |
| Taper Length (m) | 2.5 | | | 20.0 | | | 5.0 | | | 5.0 | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.95 | 0.95 | 1.00 | 0.95 | 0.95 |
| Ped Bike Factor | 0.99 | 0.99 | | 0.99 | 0.98 | | 0.99 | 1.00 | | 0.99 | 1.00 | |
| Frt | | 0.913 | | | 0.866 | | | 0.988 | | | 0.986 | |
| Flt Protected | 0.950 | | | 0.950 | | | 0.950 | | | 0.950 | | |
| Satd. Flow (prot) | 1644 | 1429 | 0 | 1789 | 1596 | 0 | 1825 | 3460 | 0 | 1772 | 3444 | 0 |
| Flt Permitted | 0.671 | | | 0.745 | | | 0.331 | | | 0.244 | | |
| Satd. Flow (perm) | 1153 | 1429 | 0 | 1396 | 1596 | 0 | 630 | 3460 | 0 | 453 | 3444 | 0 |
| Right Turn on Red | | | Yes | | | Yes | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | 11 | | | 120 | | | 12 | | | 20 | |
| Link Speed (k/h) | | 40 | | | 48 | | | 48 | | | 50 | |
| Link Distance (m) | | 152.2 | | | 116.2 | | | 153.2 | | | 295.0 | |
| Travel Time (s) | | 13.7 | | | 8.7 | | | 11.5 | | | 21.2 | |
| Confl. Peds. (#/hr) | 8 | | 5 | 5 | | 8 | 24 | | 20 | 20 | | 24 |
| Peak Hour Factor | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Heavy Vehicles (%) | 11% | 14% | 27% | 2% | 14% | 1% | 0% | 4% | 2% | 3% | 4% | 4% |
| Adj. Flow (vph) | 57 | 8 | 11 | 71 | 14 | 120 | 20 | 884 | 75 | 93 | 775 | 79 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 57 | 19 | 0 | 71 | 134 | 0 | 20 | 959 | 0 | 93 | 854 | 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) | | 3.7 | | | 3.7 | | | 3.7 | | | 3.7 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 1.6 | | | 1.6 | | | 1.6 | | | 1.6 | |
| Two way Left Turn Lane | | | | | | | | Yes | | | Yes | |
| Headway Factor | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 |
| Turning Speed (k/h) | 24 | | 14 | 24 | | 14 | 24 | | 14 | 24 | | 14 |
| Number of Detectors | 1 | 2 | | 1 | 2 | | 1 | 2 | | 1 | 2 | |
| Detector Template | Left | Thru | | Left | Thru | | Left | Thru | | Left | Thru | |
| Leading Detector (m) | 6.1 | 30.5 | | 6.1 | 30.5 | | 6.1 | 30.5 | | 6.1 | 30.5 | |
| Trailing Detector (m) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Position(m) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Size(m) | 6.1 | 1.8 | | 6.1 | 1.8 | | 6.1 | 1.8 | | 6.1 | 1.8 | |
| Detector 1 Type | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Queue (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Delay (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 2 Position(m) | | 28.7 | | | 28.7 | | | 28.7 | | | 28.7 | |
| Detector 2 Size(m) | | 1.8 | | | 1.8 | | | 1.8 | | | 1.8 | |
| Detector 2 Type | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |

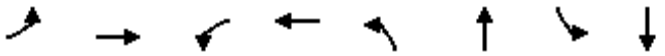
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | pm+pt | NA | |
| Protected Phases | | 4 | | | 8 | | | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Detector Phase | 4 | 4 | | 8 | 8 | | 2 | 2 | | 1 | 6 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 8.0 | 8.0 | | 8.0 | 8.0 | | 8.0 | 8.0 | | 6.0 | 8.0 | |
| Minimum Split (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | 39.8 | 39.8 | | 9.0 | 39.8 | |
| Total Split (s) | 33.0 | 33.0 | | 33.0 | 33.0 | | 45.0 | 45.0 | | 12.0 | 57.0 | |
| Total Split (%) | 36.7% | 36.7% | | 36.7% | 36.7% | | 50.0% | 50.0% | | 13.3% | 63.3% | |
| Maximum Green (s) | 27.0 | 27.0 | | 27.0 | 27.0 | | 39.2 | 39.2 | | 9.0 | 51.2 | |
| Yellow Time (s) | 3.3 | 3.3 | | 3.3 | 3.3 | | 3.3 | 3.3 | | 3.0 | 3.3 | |
| All-Red Time (s) | 2.7 | 2.7 | | 2.7 | 2.7 | | 2.5 | 2.5 | | 0.0 | 2.5 | |
| Lost Time Adjust (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Total Lost Time (s) | 6.0 | 6.0 | | 6.0 | 6.0 | | 5.8 | 5.8 | | 3.0 | 5.8 | |
| Lead/Lag | | | | | | | Lag | Lag | | Lead | | |
| Lead-Lag Optimize? | | | | | | | Yes | Yes | | Yes | | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Recall Mode | None | None | | None | None | | Max | Max | | None | Max | |
| Walk Time (s) | 11.0 | 11.0 | | 11.0 | 11.0 | | 23.0 | 23.0 | | | 23.0 | |
| Flash Dont Walk (s) | 14.0 | 14.0 | | 14.0 | 14.0 | | 11.0 | 11.0 | | | 11.0 | |
| Pedestrian Calls (#/hr) | 0 | 0 | | 0 | 0 | | 0 | 0 | | | 0 | |
| Act Effct Green (s) | 9.7 | 9.7 | | 9.7 | 9.7 | | 45.7 | 45.7 | | 56.6 | 53.8 | |
| Actuated g/C Ratio | 0.13 | 0.13 | | 0.13 | 0.13 | | 0.61 | 0.61 | | 0.75 | 0.71 | |
| v/c Ratio | 0.39 | 0.10 | | 0.39 | 0.43 | | 0.05 | 0.46 | | 0.20 | 0.35 | |
| Control Delay | 36.5 | 19.6 | | 35.5 | 12.2 | | 8.4 | 9.7 | | 3.9 | 4.7 | |
| Queue Delay | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Total Delay | 36.5 | 19.6 | | 35.5 | 12.2 | | 8.4 | 9.7 | | 3.9 | 4.7 | |
| LOS | D | B | | D | B | | A | A | | A | A | |
| Approach Delay | | 32.3 | | | 20.2 | | | 9.7 | | | 4.6 | |
| Approach LOS | | C | | | C | | | A | | | A | |

**Intersection Summary**

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 75.4
Natural Cycle: 80
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.46
Intersection Signal Delay: 9.2 Intersection LOS: A
Intersection Capacity Utilization 72.8% ICU Level of Service C
Analysis Period (min) 15

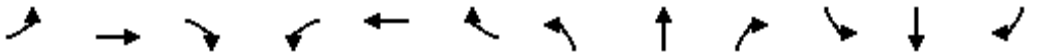
Splits and Phases: 141: Brant Street & Grahams Lane/Prospect Street





| Lane Group | EBL | EBT | WBL | WBT | NBL | NBT | SBL | SBT |
|---|---|---|---|---|---|---|---|---|
| Lane Group Flow (vph) | 57 | 19 | 71 | 134 | 20 | 959 | 93 | 854 |
| v/c Ratio | 0.39 | 0.10 | 0.39 | 0.43 | 0.05 | 0.46 | 0.20 | 0.35 |
| Control Delay | 36.5 | 19.6 | 35.5 | 12.2 | 8.4 | 9.7 | 3.9 | 4.7 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 36.5 | 19.6 | 35.5 | 12.2 | 8.4 | 9.7 | 3.9 | 4.7 |
| Queue Length 50th (m) | 7.2 | 1.0 | 9.0 | 1.7 | 1.1 | 35.1 | 2.5 | 18.1 |
| Queue Length 95th (m) | 17.5 | 6.2 | 20.1 | 15.5 | 4.5 | 57.8 | 6.8 | 31.3 |
| Internal Link Dist (m) | | 128.2 | | 92.2 | | 129.2 | | 271.0 |
| Turn Bay Length (m) | | | 15.0 | | 20.0 | | 20.0 | |
| Base Capacity (vph) | 414 | 520 | 501 | 650 | 382 | 2104 | 498 | 2464 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.14 | 0.04 | 0.14 | 0.21 | 0.05 | 0.46 | 0.19 | 0.35 |

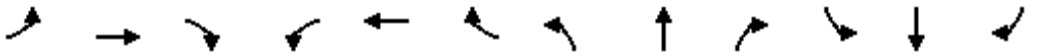
Intersection Summary



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 55 | 8 | 11 | 68 | 13 | 115 | 19 | 849 | 72 | 89 | 744 | 76 |
| Future Volume (vph) | 55 | 8 | 11 | 68 | 13 | 115 | 19 | 849 | 72 | 89 | 744 | 76 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 6.0 | 6.0 | | 6.0 | 6.0 | | 5.8 | 5.8 | | 3.0 | 5.8 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.91 | | 1.00 | 0.87 | | 1.00 | 0.99 | | 1.00 | 0.99 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1634 | 1430 | | 1781 | 1597 | | 1810 | 3462 | | 1770 | 3446 | |
| Flt Permitted | 0.67 | 1.00 | | 0.75 | 1.00 | | 0.33 | 1.00 | | 0.24 | 1.00 | |
| Satd. Flow (perm) | 1155 | 1430 | | 1397 | 1597 | | 631 | 3462 | | 454 | 3446 | |
| Peak-hour factor, PHF | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Adj. Flow (vph) | 57 | 8 | 11 | 71 | 14 | 120 | 20 | 884 | 75 | 93 | 775 | 79 |
| RTOR Reduction (vph) | 0 | 10 | 0 | 0 | 105 | 0 | 0 | 5 | 0 | 0 | 6 | 0 |
| Lane Group Flow (vph) | 57 | 9 | 0 | 71 | 29 | 0 | 20 | 954 | 0 | 93 | 848 | 0 |
| Confl. Peds. (#/hr) | 8 | | 5 | 5 | | 8 | 24 | | 20 | 20 | | 24 |
| Heavy Vehicles (%) | 11% | 14% | 27% | 2% | 14% | 1% | 0% | 4% | 2% | 3% | 4% | 4% |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | pm+pt | NA | |
| Protected Phases | | 4 | | | 8 | | | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 9.7 | 9.7 | | 9.7 | 9.7 | | 45.7 | 45.7 | | 54.3 | 54.3 | |
| Effective Green, g (s) | 9.7 | 9.7 | | 9.7 | 9.7 | | 45.7 | 45.7 | | 54.3 | 54.3 | |
| Actuated g/C Ratio | 0.13 | 0.13 | | 0.13 | 0.13 | | 0.60 | 0.60 | | 0.72 | 0.72 | |
| Clearance Time (s) | 6.0 | 6.0 | | 6.0 | 6.0 | | 5.8 | 5.8 | | 3.0 | 5.8 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 147 | 182 | | 178 | 204 | | 380 | 2087 | | 422 | 2468 | |
| v/s Ratio Prot | | 0.01 | | | 0.02 | | | c0.28 | | 0.02 | c0.25 | |
| v/s Ratio Perm | 0.05 | | | c0.05 | | | 0.03 | | | 0.14 | | |
| v/c Ratio | 0.39 | 0.05 | | 0.40 | 0.14 | | 0.05 | 0.46 | | 0.22 | 0.34 | |
| Uniform Delay, d1 | 30.3 | 29.0 | | 30.4 | 29.4 | | 6.2 | 8.3 | | 3.8 | 4.0 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 1.7 | 0.1 | | 1.5 | 0.3 | | 0.3 | 0.7 | | 0.3 | 0.4 | |
| Delay (s) | 32.0 | 29.1 | | 31.8 | 29.7 | | 6.4 | 9.0 | | 4.1 | 4.4 | |
| Level of Service | C | C | | C | C | | A | A | | A | A | |
| Approach Delay (s) | | 31.3 | | | 30.4 | | | 8.9 | | | 4.4 | |
| Approach LOS | | C | | | C | | | A | | | A | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 9.7 | HCM 2000 Level of Service | A |
| HCM 2000 Volume to Capacity ratio | 0.44 | | |
| Actuated Cycle Length (s) | 75.8 | Sum of lost time (s) | 14.8 |
| Intersection Capacity Utilization | 72.8% | ICU Level of Service | C |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

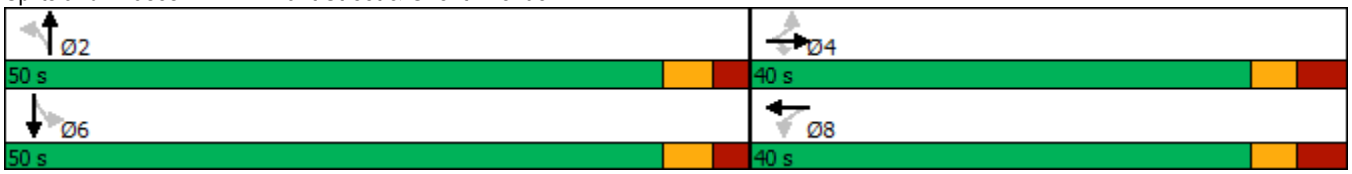


| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 179 | 28 | 28 | 33 | 14 | 111 | 16 | 705 | 22 | 51 | 749 | 86 |
| Future Volume (vph) | 179 | 28 | 28 | 33 | 14 | 111 | 16 | 705 | 22 | 51 | 749 | 86 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (m) | 0.0 | | 35.0 | 0.0 | | 0.0 | 45.0 | | 0.0 | 25.0 | | 0.0 |
| Storage Lanes | 0 | | 0 | 0 | | 0 | 1 | | 0 | 1 | | 0 |
| Taper Length (m) | 2.5 | | | 2.5 | | | 5.0 | | | 5.0 | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.95 | 0.95 | 1.00 | 0.95 | 0.95 |
| Ped Bike Factor | | 0.99 | 0.98 | | 0.98 | | 0.99 | 1.00 | | 0.98 | 1.00 | |
| Frt | | | 0.850 | | 0.905 | | | 0.995 | | | 0.986 | |
| Flt Protected | | 0.959 | | | 0.990 | | 0.950 | | | 0.950 | | |
| Satd. Flow (prot) | 0 | 1811 | 1633 | 0 | 1603 | 0 | 1825 | 3475 | 0 | 1615 | 3479 | 0 |
| Flt Permitted | | 0.639 | | | 0.882 | | 0.262 | | | 0.307 | | |
| Satd. Flow (perm) | 0 | 1201 | 1597 | 0 | 1426 | 0 | 500 | 3475 | 0 | 514 | 3479 | 0 |
| Right Turn on Red | | | Yes | | | Yes | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | | 35 | | 104 | | | 5 | | | 17 | |
| Link Speed (k/h) | | 40 | | | 40 | | | 48 | | | 50 | |
| Link Distance (m) | | 111.7 | | | 105.0 | | | 155.1 | | | 153.2 | |
| Travel Time (s) | | 10.1 | | | 9.5 | | | 11.6 | | | 11.0 | |
| Confl. Peds. (#/hr) | 9 | | 12 | 12 | | 9 | 16 | | 35 | 35 | | 16 |
| 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 | 1.00 |
| Heavy Vehicles (%) | 2% | 0% | 0% | 8% | 0% | 6% | 0% | 4% | 13% | 13% | 3% | 3% |
| Adj. Flow (vph) | 203 | 32 | 32 | 38 | 16 | 126 | 18 | 801 | 25 | 58 | 851 | 86 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 235 | 32 | 0 | 180 | 0 | 18 | 826 | 0 | 58 | 937 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(m) | | 0.0 | | | 0.0 | | | 3.7 | | | 3.7 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 1.6 | | | 1.6 | | | 1.6 | | | 1.6 | |
| Two way Left Turn Lane | | | | | | | | Yes | | | Yes | |
| Headway Factor | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 |
| Turning Speed (k/h) | 24 | | 14 | 24 | | 14 | 24 | | 14 | 24 | | 14 |
| Number of Detectors | 1 | 2 | 1 | 1 | 2 | | 1 | 2 | | 1 | 2 | |
| Detector Template | Left | Thru | Right | Left | Thru | | Left | Thru | | Left | Thru | |
| Leading Detector (m) | 6.1 | 30.5 | 6.1 | 6.1 | 30.5 | | 6.1 | 30.5 | | 6.1 | 30.5 | |
| Trailing Detector (m) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Position(m) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Size(m) | 6.1 | 1.8 | 6.1 | 6.1 | 1.8 | | 6.1 | 1.8 | | 6.1 | 1.8 | |
| Detector 1 Type | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Queue (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Delay (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 2 Position(m) | | 28.7 | | | 28.7 | | | 28.7 | | | 28.7 | |
| Detector 2 Size(m) | | 1.8 | | | 1.8 | | | 1.8 | | | 1.8 | |
| Detector 2 Type | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Turn Type | Perm | NA | Perm | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | | 6 | | |
| Detector Phase | 4 | 4 | 4 | 8 | 8 | | 2 | 2 | | 6 | 6 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | | 8.0 | 8.0 | | 8.0 | 8.0 | |
| Minimum Split (s) | 37.5 | 37.5 | 37.5 | 37.5 | 37.5 | | 32.9 | 32.9 | | 32.9 | 32.9 | |
| Total Split (s) | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | | 50.0 | 50.0 | | 50.0 | 50.0 | |
| Total Split (%) | 44.4% | 44.4% | 44.4% | 44.4% | 44.4% | | 55.6% | 55.6% | | 55.6% | 55.6% | |
| Maximum Green (s) | 33.5 | 33.5 | 33.5 | 33.5 | 33.5 | | 44.1 | 44.1 | | 44.1 | 44.1 | |
| Yellow Time (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.3 | 3.3 | | 3.3 | 3.3 | |
| All-Red Time (s) | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | | 2.6 | 2.6 | | 2.6 | 2.6 | |
| Lost Time Adjust (s) | | 0.0 | 0.0 | | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Total Lost Time (s) | | 6.5 | 6.5 | | 6.5 | | 5.9 | 5.9 | | 5.9 | 5.9 | |
| Lead/Lag | | | | | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Recall Mode | None | None | None | None | None | | Max | Max | | Max | Max | |
| Walk Time (s) | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | | 16.0 | 16.0 | | 16.0 | 16.0 | |
| Flash Dont Walk (s) | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | | 10.0 | 10.0 | | 10.0 | 10.0 | |
| Pedestrian Calls (#/hr) | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Act Effct Green (s) | | 20.0 | 20.0 | | 20.0 | | 44.4 | 44.4 | | 44.4 | 44.4 | |
| Actuated g/C Ratio | | 0.26 | 0.26 | | 0.26 | | 0.58 | 0.58 | | 0.58 | 0.58 | |
| v/c Ratio | | 0.76 | 0.07 | | 0.40 | | 0.06 | 0.41 | | 0.20 | 0.46 | |
| Control Delay | | 41.6 | 6.9 | | 12.8 | | 10.5 | 10.8 | | 12.2 | 11.2 | |
| Queue Delay | | 0.0 | 0.0 | | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Total Delay | | 41.6 | 6.9 | | 12.8 | | 10.5 | 10.8 | | 12.2 | 11.2 | |
| LOS | | D | A | | B | | B | B | | B | B | |
| Approach Delay | | 37.4 | | | 12.8 | | | 10.8 | | | 11.3 | |
| Approach LOS | | D | | | B | | | B | | | B | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Cycle Length: 90 | | | |
| Actuated Cycle Length: 76.9 | | | |
| Natural Cycle: 75 | | | |
| Control Type: Semi Act-Uncoord | | | |
| Maximum v/c Ratio: 0.76 | | | |
| Intersection Signal Delay: 14.3 | | Intersection LOS: B | |
| Intersection Capacity Utilization 81.2% | | ICU Level of Service D | |
| Analysis Period (min) 15 | | | |

Splits and Phases: 142: Brant Street & Ghent Avenue





| Lane Group | EBT | EBR | WBT | NBL | NBT | SBL | SBT |
|---|---|---|---|---|---|---|---|
| Lane Group Flow (vph) | 235 | 32 | 180 | 18 | 826 | 58 | 937 |
| v/c Ratio | 0.76 | 0.07 | 0.40 | 0.06 | 0.41 | 0.20 | 0.46 |
| Control Delay | 41.6 | 6.9 | 12.8 | 10.5 | 10.8 | 12.2 | 11.2 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 41.6 | 6.9 | 12.8 | 10.5 | 10.8 | 12.2 | 11.2 |
| Queue Length 50th (m) | 31.1 | 0.0 | 8.6 | 1.0 | 31.0 | 3.6 | 36.2 |
| Queue Length 95th (m) | 52.3 | 5.1 | 22.0 | 4.9 | 58.0 | 12.6 | 66.9 |
| Internal Link Dist (m) | 87.7 | | 81.0 | | 131.1 | | 129.2 |
| Turn Bay Length (m) | | 35.0 | | 45.0 | | 25.0 | |
| Base Capacity (vph) | 527 | 720 | 684 | 288 | 2010 | 296 | 2017 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.45 | 0.04 | 0.26 | 0.06 | 0.41 | 0.20 | 0.46 |

Intersection Summary

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 179 | 28 | 28 | 33 | 14 | 111 | 16 | 705 | 22 | 51 | 749 | 86 |
| Future Volume (vph) | 179 | 28 | 28 | 33 | 14 | 111 | 16 | 705 | 22 | 51 | 749 | 86 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | | 6.5 | 6.5 | | 6.5 | | 5.9 | 5.9 | | 5.9 | 5.9 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | 0.98 | | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | | 0.99 | 1.00 | | 0.98 | 1.00 | |
| Frt | | 1.00 | 0.85 | | 0.91 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flt Protected | | 0.96 | 1.00 | | 0.99 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 1803 | 1599 | | 1602 | | 1815 | 3477 | | 1591 | 3481 | |
| Flt Permitted | | 0.64 | 1.00 | | 0.88 | | 0.26 | 1.00 | | 0.31 | 1.00 | |
| Satd. Flow (perm) | | 1202 | 1599 | | 1428 | | 500 | 3477 | | 513 | 3481 | |
| Peak-hour factor, PHF | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 1.00 |
| Adj. Flow (vph) | 203 | 32 | 32 | 38 | 16 | 126 | 18 | 801 | 25 | 58 | 851 | 86 |
| RTOR Reduction (vph) | 0 | 0 | 24 | 0 | 77 | 0 | 0 | 2 | 0 | 0 | 7 | 0 |
| Lane Group Flow (vph) | 0 | 235 | 8 | 0 | 103 | 0 | 18 | 824 | 0 | 58 | 930 | 0 |
| Confl. Peds. (#/hr) | 9 | | 12 | 12 | | 9 | 16 | | 35 | 35 | | 16 |
| Heavy Vehicles (%) | 2% | 0% | 0% | 8% | 0% | 6% | 0% | 4% | 13% | 13% | 3% | 3% |
| Turn Type | Perm | NA | Perm | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 20.0 | 20.0 | | 20.0 | | 44.4 | 44.4 | | 44.4 | 44.4 | |
| Effective Green, g (s) | | 20.0 | 20.0 | | 20.0 | | 44.4 | 44.4 | | 44.4 | 44.4 | |
| Actuated g/C Ratio | | 0.26 | 0.26 | | 0.26 | | 0.58 | 0.58 | | 0.58 | 0.58 | |
| Clearance Time (s) | | 6.5 | 6.5 | | 6.5 | | 5.9 | 5.9 | | 5.9 | 5.9 | |
| Vehicle Extension (s) | | 3.0 | 3.0 | | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | | 313 | 416 | | 371 | | 289 | 2010 | | 296 | 2012 | |
| v/s Ratio Prot | | | | | | | | 0.24 | | | c0.27 | |
| v/s Ratio Perm | | c0.20 | 0.01 | | 0.07 | | 0.04 | | | 0.11 | | |
| v/c Ratio | | 0.75 | 0.02 | | 0.28 | | 0.06 | 0.41 | | 0.20 | 0.46 | |
| Uniform Delay, d1 | | 26.1 | 21.1 | | 22.6 | | 7.1 | 9.0 | | 7.7 | 9.3 | |
| Progression Factor | | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 9.7 | 0.0 | | 0.4 | | 0.4 | 0.6 | | 1.5 | 0.8 | |
| Delay (s) | | 35.8 | 21.1 | | 23.1 | | 7.5 | 9.6 | | 9.2 | 10.1 | |
| Level of Service | | D | C | | C | | A | A | | A | B | |
| Approach Delay (s) | | 34.1 | | | 23.1 | | | 9.5 | | | 10.0 | |
| Approach LOS | | C | | | C | | | A | | | B | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 13.7 | HCM 2000 Level of Service | B |
| HCM 2000 Volume to Capacity ratio | 0.55 | | |
| Actuated Cycle Length (s) | 76.8 | Sum of lost time (s) | 12.4 |
| Intersection Capacity Utilization | 81.2% | ICU Level of Service | D |
| Analysis Period (min) | 15 | | |

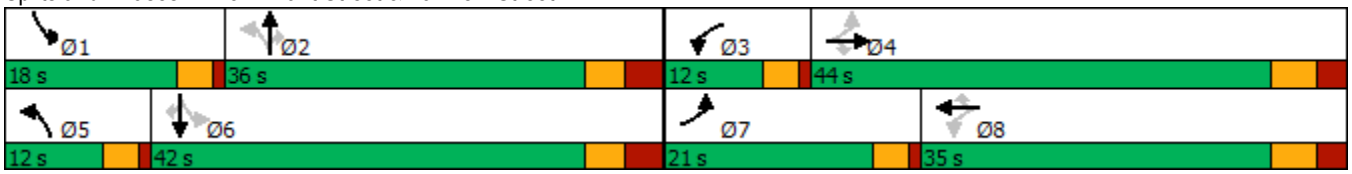
c Critical Lane Group

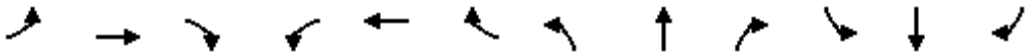
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 217 | 785 | 188 | 153 | 357 | 153 | 191 | 640 | 228 | 151 | 575 | 49 |
| Future Volume (vph) | 217 | 785 | 188 | 153 | 357 | 153 | 191 | 640 | 228 | 151 | 575 | 49 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (m) | 0.0 | | 150.0 | 65.0 | | 0.0 | 85.0 | | 70.0 | 50.0 | | 0.0 |
| Storage Lanes | 1 | | 1 | 1 | | 1 | 1 | | 1 | 1 | | 1 |
| Taper Length (m) | 2.5 | | | 45.0 | | | 10.0 | | | 15.0 | | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Ped Bike Factor | 1.00 | | 0.97 | 1.00 | | 0.98 | 0.99 | | 0.94 | 0.99 | | 0.97 |
| Frt | | | 0.850 | | | 0.850 | | | 0.850 | | | 0.850 |
| Flt Protected | 0.950 | | | 0.950 | | | 0.950 | | | 0.950 | | |
| Satd. Flow (prot) | 1755 | 3544 | 1585 | 1630 | 3411 | 1420 | 1755 | 3510 | 1512 | 1674 | 3579 | 1484 |
| Flt Permitted | 0.395 | | | 0.190 | | | 0.345 | | | 0.228 | | |
| Satd. Flow (perm) | 728 | 3544 | 1541 | 325 | 3411 | 1397 | 634 | 3510 | 1429 | 398 | 3579 | 1445 |
| Right Turn on Red | | | Yes | | | Yes | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | | 202 | | | 193 | | | 245 | | | 153 |
| Link Speed (k/h) | | 50 | | | 50 | | | 50 | | | 50 | |
| Link Distance (m) | | 373.6 | | | 286.0 | | | 295.0 | | | 107.5 | |
| Travel Time (s) | | 26.9 | | | 20.6 | | | 21.2 | | | 7.7 | |
| Confl. Peds. (#/hr) | 3 | | 12 | 12 | | 3 | 11 | | 32 | 32 | | 11 |
| Peak Hour Factor | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Heavy Vehicles (%) | 4% | 3% | 3% | 12% | 7% | 15% | 4% | 4% | 8% | 9% | 2% | 10% |
| Adj. Flow (vph) | 233 | 844 | 202 | 165 | 384 | 165 | 205 | 688 | 245 | 162 | 618 | 53 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 233 | 844 | 202 | 165 | 384 | 165 | 205 | 688 | 245 | 162 | 618 | 53 |
| 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) | | 3.7 | | | 3.7 | | | 3.7 | | | 3.7 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 1.6 | | | 1.6 | | | 1.6 | | | 1.6 | |
| Two way Left Turn Lane | | | | | | | | Yes | | | | |
| Headway Factor | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 |
| Turning Speed (k/h) | 24 | | 14 | 24 | | 14 | 24 | | 14 | 24 | | 14 |
| Number of Detectors | 1 | 2 | 1 | 1 | 2 | 1 | 1 | 2 | 1 | 1 | 2 | 1 |
| Detector Template | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Leading Detector (m) | 6.1 | 30.5 | 6.1 | 6.1 | 30.5 | 6.1 | 6.1 | 30.5 | 6.1 | 6.1 | 30.5 | 6.1 |
| Trailing Detector (m) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector 1 Position(m) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector 1 Size(m) | 6.1 | 1.8 | 6.1 | 6.1 | 1.8 | 6.1 | 6.1 | 1.8 | 6.1 | 6.1 | 1.8 | 6.1 |
| Detector 1 Type | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector 1 Queue (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector 1 Delay (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector 2 Position(m) | | 28.7 | | | 28.7 | | | 28.7 | | | 28.7 | |
| Detector 2 Size(m) | | 1.8 | | | 1.8 | | | 1.8 | | | 1.8 | |
| Detector 2 Type | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Turn Type | pm+pt | NA | Perm | pm+pt | NA | Perm | pm+pt | NA | Perm | pm+pt | NA | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | 6 |
| Detector Phase | 7 | 4 | 4 | 3 | 8 | 8 | 5 | 2 | 2 | 1 | 6 | 6 |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 7.0 | 8.0 | 8.0 | 7.0 | 8.0 | 8.0 | 7.0 | 8.0 | 8.0 | 7.0 | 8.0 | 8.0 |
| Minimum Split (s) | 11.0 | 30.4 | 30.4 | 11.0 | 30.4 | 30.4 | 11.0 | 30.5 | 30.5 | 11.0 | 30.5 | 30.5 |
| Total Split (s) | 21.0 | 44.0 | 44.0 | 12.0 | 35.0 | 35.0 | 12.0 | 36.0 | 36.0 | 18.0 | 42.0 | 42.0 |
| Total Split (%) | 19.1% | 40.0% | 40.0% | 10.9% | 31.8% | 31.8% | 10.9% | 32.7% | 32.7% | 16.4% | 38.2% | 38.2% |
| Maximum Green (s) | 17.0 | 37.6 | 37.6 | 8.0 | 28.6 | 28.6 | 8.0 | 29.5 | 29.5 | 14.0 | 35.5 | 35.5 |
| Yellow Time (s) | 3.0 | 3.7 | 3.7 | 3.0 | 3.7 | 3.7 | 3.0 | 3.3 | 3.3 | 3.0 | 3.3 | 3.3 |
| All-Red Time (s) | 1.0 | 2.7 | 2.7 | 1.0 | 2.7 | 2.7 | 1.0 | 3.2 | 3.2 | 1.0 | 3.2 | 3.2 |
| Lost Time Adjust (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 4.0 | 6.4 | 6.4 | 4.0 | 6.4 | 6.4 | 4.0 | 6.5 | 6.5 | 4.0 | 6.5 | 6.5 |
| Lead/Lag | Lead | Lag | Lag | Lead | Lag | Lag | Lead | Lag | Lag | Lead | Lag | Lag |
| Lead-Lag Optimize? | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Recall Mode | None | None | None | None | None | None | None | Max | Max | None | Max | Max |
| Walk Time (s) | | 7.0 | 7.0 | | 7.0 | 7.0 | | 7.0 | 7.0 | | 7.0 | 7.0 |
| Flash Dont Walk (s) | | 17.0 | 17.0 | | 17.0 | 17.0 | | 17.0 | 17.0 | | 17.0 | 17.0 |
| Pedestrian Calls (#/hr) | | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 |
| Act Effct Green (s) | 46.3 | 32.3 | 32.3 | 36.9 | 26.5 | 26.5 | 43.0 | 32.5 | 32.5 | 48.5 | 35.6 | 35.6 |
| Actuated g/C Ratio | 0.44 | 0.31 | 0.31 | 0.35 | 0.25 | 0.25 | 0.41 | 0.31 | 0.31 | 0.46 | 0.34 | 0.34 |
| v/c Ratio | 0.51 | 0.77 | 0.33 | 0.77 | 0.45 | 0.33 | 0.59 | 0.63 | 0.40 | 0.51 | 0.51 | 0.09 |
| Control Delay | 22.6 | 38.2 | 5.2 | 45.3 | 35.1 | 4.8 | 27.6 | 35.7 | 6.2 | 22.9 | 30.2 | 0.3 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 22.6 | 38.2 | 5.2 | 45.3 | 35.1 | 4.8 | 27.6 | 35.7 | 6.2 | 22.9 | 30.2 | 0.3 |
| LOS | C | D | A | D | D | A | C | D | A | C | C | A |
| Approach Delay | | 30.1 | | | 30.5 | | | 27.9 | | | 26.9 | |
| Approach LOS | | C | | | C | | | C | | | C | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Cycle Length: 110 | | | |
| Actuated Cycle Length: 104.9 | | | |
| Natural Cycle: 85 | | | |
| Control Type: Semi Act-Uncoord | | | |
| Maximum v/c Ratio: 0.77 | | | |
| Intersection Signal Delay: 28.9 | | Intersection LOS: C | |
| Intersection Capacity Utilization 78.2% | | ICU Level of Service D | |
| Analysis Period (min) 15 | | | |

Splits and Phases: 151: Brant Street & Fairview Street

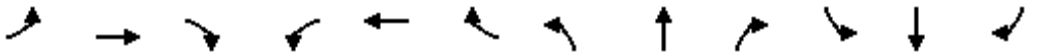




| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Group Flow (vph) | 233 | 844 | 202 | 165 | 384 | 165 | 205 | 688 | 245 | 162 | 618 | 53 |
| v/c Ratio | 0.51 | 0.77 | 0.33 | 0.77 | 0.45 | 0.33 | 0.59 | 0.63 | 0.40 | 0.51 | 0.51 | 0.09 |
| Control Delay | 22.6 | 38.2 | 5.2 | 45.3 | 35.1 | 4.8 | 27.6 | 35.7 | 6.2 | 22.9 | 30.2 | 0.3 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 22.6 | 38.2 | 5.2 | 45.3 | 35.1 | 4.8 | 27.6 | 35.7 | 6.2 | 22.9 | 30.2 | 0.3 |
| Queue Length 50th (m) | 29.5 | 81.7 | 0.0 | 20.2 | 34.9 | 0.0 | 24.7 | 64.9 | 0.0 | 19.1 | 53.7 | 0.0 |
| Queue Length 95th (m) | 46.1 | 103.5 | 15.0 | #46.4 | 50.3 | 10.7 | 42.3 | 91.7 | 18.5 | 34.1 | 74.3 | 0.0 |
| Internal Link Dist (m) | | 349.6 | | | 262.0 | | | 271.0 | | | 83.5 | |
| Turn Bay Length (m) | | | 150.0 | 65.0 | | | 85.0 | | 70.0 | 50.0 | | |
| Base Capacity (vph) | 491 | 1273 | 682 | 214 | 935 | 523 | 345 | 1087 | 611 | 360 | 1214 | 591 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.47 | 0.66 | 0.30 | 0.77 | 0.41 | 0.32 | 0.59 | 0.63 | 0.40 | 0.45 | 0.51 | 0.09 |

Intersection Summary

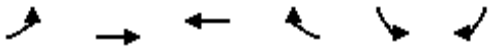
# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 217 | 785 | 188 | 153 | 357 | 153 | 191 | 640 | 228 | 151 | 575 | 49 |
| Future Volume (vph) | 217 | 785 | 188 | 153 | 357 | 153 | 191 | 640 | 228 | 151 | 575 | 49 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.0 | 6.4 | 6.4 | 4.0 | 6.4 | 6.4 | 4.0 | 6.5 | 6.5 | 4.0 | 6.5 | 6.5 |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.97 |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1754 | 3544 | 1542 | 1629 | 3411 | 1397 | 1752 | 3510 | 1432 | 1671 | 3579 | 1446 |
| Flt Permitted | 0.40 | 1.00 | 1.00 | 0.19 | 1.00 | 1.00 | 0.34 | 1.00 | 1.00 | 0.23 | 1.00 | 1.00 |
| Satd. Flow (perm) | 730 | 3544 | 1542 | 326 | 3411 | 1397 | 636 | 3510 | 1432 | 400 | 3579 | 1446 |
| Peak-hour factor, PHF | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Adj. Flow (vph) | 233 | 844 | 202 | 165 | 384 | 165 | 205 | 688 | 245 | 162 | 618 | 53 |
| RTOR Reduction (vph) | 0 | 0 | 140 | 0 | 0 | 123 | 0 | 0 | 169 | 0 | 0 | 35 |
| Lane Group Flow (vph) | 233 | 844 | 62 | 165 | 384 | 42 | 205 | 688 | 76 | 162 | 618 | 18 |
| Confl. Peds. (#/hr) | 3 | | 12 | 12 | | 3 | 11 | | 32 | 32 | | 11 |
| Heavy Vehicles (%) | 4% | 3% | 3% | 12% | 7% | 15% | 4% | 4% | 8% | 9% | 2% | 10% |
| Turn Type | pm+pt | NA | Perm | pm+pt | NA | Perm | pm+pt | NA | Perm | pm+pt | NA | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 44.4 | 32.4 | 32.4 | 34.5 | 26.5 | 26.5 | 40.5 | 32.5 | 32.5 | 46.7 | 35.6 | 35.6 |
| Effective Green, g (s) | 44.4 | 32.4 | 32.4 | 34.5 | 26.5 | 26.5 | 40.5 | 32.5 | 32.5 | 46.7 | 35.6 | 35.6 |
| Actuated g/C Ratio | 0.42 | 0.31 | 0.31 | 0.33 | 0.25 | 0.25 | 0.39 | 0.31 | 0.31 | 0.45 | 0.34 | 0.34 |
| Clearance Time (s) | 4.0 | 6.4 | 6.4 | 4.0 | 6.4 | 6.4 | 4.0 | 6.5 | 6.5 | 4.0 | 6.5 | 6.5 |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 444 | 1094 | 476 | 206 | 861 | 352 | 330 | 1087 | 443 | 312 | 1214 | 490 |
| v/s Ratio Prot | c0.07 | c0.24 | | c0.06 | 0.11 | | c0.05 | c0.20 | | c0.05 | 0.17 | |
| v/s Ratio Perm | 0.15 | | 0.04 | 0.20 | | 0.03 | 0.19 | | 0.05 | 0.18 | | 0.01 |
| v/c Ratio | 0.52 | 0.77 | 0.13 | 0.80 | 0.45 | 0.12 | 0.62 | 0.63 | 0.17 | 0.52 | 0.51 | 0.04 |
| Uniform Delay, d1 | 20.5 | 32.9 | 26.1 | 27.2 | 33.0 | 30.2 | 22.9 | 31.1 | 26.4 | 19.3 | 27.7 | 23.2 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 1.1 | 3.4 | 0.1 | 19.6 | 0.4 | 0.2 | 3.6 | 2.8 | 0.8 | 1.5 | 1.5 | 0.1 |
| Delay (s) | 21.6 | 36.3 | 26.2 | 46.8 | 33.4 | 30.4 | 26.5 | 33.9 | 27.2 | 20.7 | 29.2 | 23.3 |
| Level of Service | C | D | C | D | C | C | C | C | C | C | C | C |
| Approach Delay (s) | | 32.0 | | | 35.8 | | | 31.1 | | | 27.2 | |
| Approach LOS | | C | | | D | | | C | | | C | |

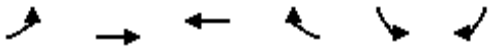
| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 31.4 | HCM 2000 Level of Service | C |
| HCM 2000 Volume to Capacity ratio | 0.69 | | |
| Actuated Cycle Length (s) | 104.9 | Sum of lost time (s) | 20.9 |
| Intersection Capacity Utilization | 78.2% | ICU Level of Service | D |
| Analysis Period (min) | 15 | | |

c Critical Lane Group



| Lane Group | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (vph) | 4 | 27 | 34 | 57 | 38 | 3 |
| Future Volume (vph) | 4 | 27 | 34 | 57 | 38 | 3 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | | | | | | |
| Frt | | | 0.915 | | 0.989 | |
| Flt Protected | | 0.993 | | | 0.956 | |
| Satd. Flow (prot) | 0 | 1557 | 1688 | 0 | 1584 | 0 |
| Flt Permitted | | 0.993 | | | 0.956 | |
| Satd. Flow (perm) | 0 | 1557 | 1688 | 0 | 1584 | 0 |
| Link Speed (k/h) | | 40 | 40 | | 40 | |
| Link Distance (m) | | 86.9 | 152.2 | | 135.3 | |
| Travel Time (s) | | 7.8 | 13.7 | | 12.2 | |
| Confl. Peds. (#/hr) | 16 | | | 16 | | |
| Peak Hour Factor | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Heavy Vehicles (%) | 0% | 26% | 6% | 3% | 16% | 0% |
| Adj. Flow (vph) | 5 | 32 | 40 | 67 | 45 | 4 |
| Shared Lane Traffic (%) | | | | | | |
| Lane Group Flow (vph) | 0 | 37 | 107 | 0 | 49 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Left | Right | Left | Right |
| Median Width(m) | | 0.0 | 0.0 | | 3.7 | |
| Link Offset(m) | | 0.0 | 0.0 | | 0.0 | |
| Crosswalk Width(m) | | 1.6 | 1.6 | | 1.6 | |
| Two way Left Turn Lane | | | | | | |
| Headway Factor | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 |
| Turning Speed (k/h) | 24 | | | 14 | 24 | 14 |
| Sign Control | | Free | Free | | Stop | |

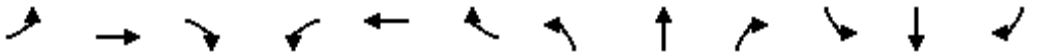
| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Control Type: Unsignalized | | | |
| Intersection Capacity Utilization 19.2% | | ICU Level of Service A | |
| Analysis Period (min) 15 | | | |



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 4 | 27 | 34 | 57 | 38 | 3 |
| Future Volume (Veh/h) | 4 | 27 | 34 | 57 | 38 | 3 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Hourly flow rate (vph) | 5 | 32 | 40 | 67 | 45 | 4 |
| Pedestrians | | | | | 16 | |
| Lane Width (m) | | | | | 3.7 | |
| Walking Speed (m/s) | | | | | 1.1 | |
| Percent Blockage | | | | | 2 | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage veh) | | | | | | |
| Upstream signal (m) | | | 152 | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 123 | | | | 132 | 90 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 123 | | | | 132 | 90 |
| tC, single (s) | 4.1 | | | | 6.6 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.2 | | | | 3.6 | 3.3 |
| p0 queue free % | 100 | | | | 94 | 100 |
| cM capacity (veh/h) | 1453 | | | | 814 | 959 |

| Direction, Lane # | EB 1 | WB 1 | SB 1 |
|---|---|---|---|
| Volume Total | 37 | 107 | 49 |
| Volume Left | 5 | 0 | 45 |
| Volume Right | 0 | 67 | 4 |
| cSH | 1453 | 1700 | 825 |
| Volume to Capacity | 0.00 | 0.06 | 0.06 |
| Queue Length 95th (m) | 0.1 | 0.0 | 1.4 |
| Control Delay (s) | 1.0 | 0.0 | 9.6 |
| Lane LOS | A | | A |
| Approach Delay (s) | 1.0 | 0.0 | 9.6 |
| Approach LOS | | | A |

| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 2.6 | | |
| Intersection Capacity Utilization | 19.2% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |



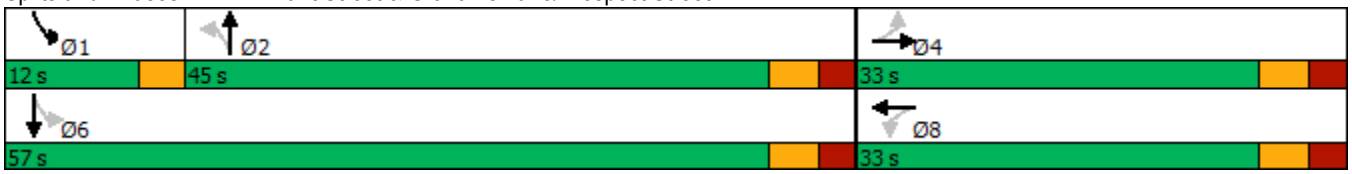
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 127 | 36 | 36 | 127 | 35 | 184 | 19 | 904 | 53 | 121 | 866 | 53 |
| Future Volume (vph) | 127 | 36 | 36 | 127 | 35 | 184 | 19 | 904 | 53 | 121 | 866 | 53 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (m) | 0.0 | | 100.0 | 15.0 | | 0.0 | 20.0 | | 0.0 | 20.0 | | 0.0 |
| Storage Lanes | 1 | | 1 | 1 | | 0 | 1 | | 0 | 1 | | 0 |
| Taper Length (m) | 2.5 | | | 20.0 | | | 5.0 | | | 5.0 | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.95 | 0.95 | 1.00 | 0.95 | 0.95 |
| Ped Bike Factor | 1.00 | 0.99 | | 1.00 | 0.98 | | 0.99 | 1.00 | | 1.00 | 1.00 | |
| Frt | | 0.925 | | | 0.874 | | | 0.992 | | | 0.991 | |
| Flt Protected | 0.950 | | | 0.950 | | | 0.950 | | | 0.950 | | |
| Satd. Flow (prot) | 1755 | 1670 | 0 | 1825 | 1590 | 0 | 1659 | 3579 | 0 | 1807 | 3530 | 0 |
| Flt Permitted | 0.486 | | | 0.708 | | | 0.299 | | | 0.212 | | |
| Satd. Flow (perm) | 894 | 1670 | 0 | 1354 | 1590 | 0 | 519 | 3579 | 0 | 402 | 3530 | 0 |
| Right Turn on Red | | | Yes | | | Yes | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | 38 | | | 192 | | | 8 | | | 11 | |
| Link Speed (k/h) | | 40 | | | 48 | | | 48 | | | 50 | |
| Link Distance (m) | | 152.2 | | | 116.2 | | | 153.2 | | | 295.0 | |
| Travel Time (s) | | 13.7 | | | 8.7 | | | 11.5 | | | 21.2 | |
| Confl. Peds. (#/hr) | 6 | | 5 | 5 | | 6 | 15 | | 14 | 14 | | 15 |
| Peak Hour Factor | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Heavy Vehicles (%) | 4% | 3% | 8% | 0% | 9% | 3% | 10% | 1% | 0% | 1% | 2% | 6% |
| Adj. Flow (vph) | 132 | 38 | 38 | 132 | 36 | 192 | 20 | 942 | 55 | 126 | 902 | 55 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 132 | 76 | 0 | 132 | 228 | 0 | 20 | 997 | 0 | 126 | 957 | 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) | | 3.7 | | | 3.7 | | | 3.7 | | | 3.7 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 1.6 | | | 1.6 | | | 1.6 | | | 1.6 | |
| Two way Left Turn Lane | | | | | | | | Yes | | | Yes | |
| Headway Factor | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 |
| Turning Speed (k/h) | 24 | | 14 | 24 | | 14 | 24 | | 14 | 24 | | 14 |
| Number of Detectors | 1 | 2 | | 1 | 2 | | 1 | 2 | | 1 | 2 | |
| Detector Template | Left | Thru | | Left | Thru | | Left | Thru | | Left | Thru | |
| Leading Detector (m) | 6.1 | 30.5 | | 6.1 | 30.5 | | 6.1 | 30.5 | | 6.1 | 30.5 | |
| Trailing Detector (m) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Position(m) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Size(m) | 6.1 | 1.8 | | 6.1 | 1.8 | | 6.1 | 1.8 | | 6.1 | 1.8 | |
| Detector 1 Type | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Queue (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Delay (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 2 Position(m) | | 28.7 | | | 28.7 | | | 28.7 | | | 28.7 | |
| Detector 2 Size(m) | | 1.8 | | | 1.8 | | | 1.8 | | | 1.8 | |
| Detector 2 Type | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |

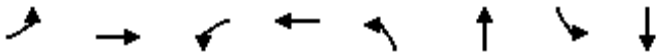
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | pm+pt | NA | |
| Protected Phases | | 4 | | | 8 | | | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Detector Phase | 4 | 4 | | 8 | 8 | | 2 | 2 | | 1 | 6 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 8.0 | 8.0 | | 8.0 | 8.0 | | 8.0 | 8.0 | | 6.0 | 8.0 | |
| Minimum Split (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | 39.8 | 39.8 | | 10.5 | 39.8 | |
| Total Split (s) | 33.0 | 33.0 | | 33.0 | 33.0 | | 45.0 | 45.0 | | 12.0 | 57.0 | |
| Total Split (%) | 36.7% | 36.7% | | 36.7% | 36.7% | | 50.0% | 50.0% | | 13.3% | 63.3% | |
| Maximum Green (s) | 27.0 | 27.0 | | 27.0 | 27.0 | | 39.2 | 39.2 | | 9.0 | 51.2 | |
| Yellow Time (s) | 3.3 | 3.3 | | 3.3 | 3.3 | | 3.3 | 3.3 | | 3.0 | 3.3 | |
| All-Red Time (s) | 2.7 | 2.7 | | 2.7 | 2.7 | | 2.5 | 2.5 | | 0.0 | 2.5 | |
| Lost Time Adjust (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Total Lost Time (s) | 6.0 | 6.0 | | 6.0 | 6.0 | | 5.8 | 5.8 | | 3.0 | 5.8 | |
| Lead/Lag | | | | | | | Lag | Lag | | Lead | | |
| Lead-Lag Optimize? | | | | | | | Yes | Yes | | Yes | | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Recall Mode | None | None | | None | None | | Max | Max | | None | Max | |
| Walk Time (s) | 11.0 | 11.0 | | 11.0 | 11.0 | | 23.0 | 23.0 | | | 23.0 | |
| Flash Dont Walk (s) | 14.0 | 14.0 | | 14.0 | 14.0 | | 11.0 | 11.0 | | | 11.0 | |
| Pedestrian Calls (#/hr) | 0 | 0 | | 0 | 0 | | 0 | 0 | | | 0 | |
| Act Effct Green (s) | 15.5 | 15.5 | | 15.5 | 15.5 | | 43.1 | 43.1 | | 54.3 | 51.5 | |
| Actuated g/C Ratio | 0.20 | 0.20 | | 0.20 | 0.20 | | 0.55 | 0.55 | | 0.69 | 0.65 | |
| v/c Ratio | 0.75 | 0.21 | | 0.50 | 0.49 | | 0.07 | 0.51 | | 0.31 | 0.41 | |
| Control Delay | 55.6 | 16.2 | | 34.3 | 10.2 | | 13.2 | 14.2 | | 7.2 | 7.9 | |
| Queue Delay | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Total Delay | 55.6 | 16.2 | | 34.3 | 10.2 | | 13.2 | 14.2 | | 7.2 | 7.9 | |
| LOS | E | B | | C | B | | B | B | | A | A | |
| Approach Delay | | 41.2 | | | 19.0 | | | 14.2 | | | 7.8 | |
| Approach LOS | | D | | | B | | | B | | | A | |

**Intersection Summary**

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 78.8
Natural Cycle: 85
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.75
Intersection Signal Delay: 14.4 Intersection LOS: B
Intersection Capacity Utilization 76.7% ICU Level of Service D
Analysis Period (min) 15

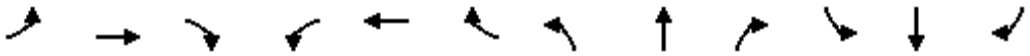
Splits and Phases: 141: Brant Street & Grahams Lane/Prospect Street





| Lane Group | EBL | EBT | WBL | WBT | NBL | NBT | SBL | SBT |
|---|---|---|---|---|---|---|---|---|
| Lane Group Flow (vph) | 132 | 76 | 132 | 228 | 20 | 997 | 126 | 957 |
| v/c Ratio | 0.75 | 0.21 | 0.50 | 0.49 | 0.07 | 0.51 | 0.31 | 0.41 |
| Control Delay | 55.6 | 16.2 | 34.3 | 10.2 | 13.2 | 14.2 | 7.2 | 7.9 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 55.6 | 16.2 | 34.3 | 10.2 | 13.2 | 14.2 | 7.2 | 7.9 |
| Queue Length 50th (m) | 18.7 | 4.7 | 17.6 | 4.4 | 1.4 | 47.8 | 5.3 | 30.5 |
| Queue Length 95th (m) | 36.9 | 14.6 | 33.0 | 20.9 | 6.1 | 83.6 | 14.6 | 57.0 |
| Internal Link Dist (m) | | 128.2 | | 92.2 | | 129.2 | | 271.0 |
| Turn Bay Length (m) | | | 15.0 | | 20.0 | | 20.0 | |
| Base Capacity (vph) | 307 | 600 | 466 | 673 | 283 | 1960 | 438 | 2309 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.43 | 0.13 | 0.28 | 0.34 | 0.07 | 0.51 | 0.29 | 0.41 |

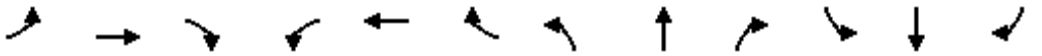
Intersection Summary



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 127 | 36 | 36 | 127 | 35 | 184 | 19 | 904 | 53 | 121 | 866 | 53 |
| Future Volume (vph) | 127 | 36 | 36 | 127 | 35 | 184 | 19 | 904 | 53 | 121 | 866 | 53 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 6.0 | 6.0 | | 6.0 | 6.0 | | 5.8 | 5.8 | | 3.0 | 5.8 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.93 | | 1.00 | 0.87 | | 1.00 | 0.99 | | 1.00 | 0.99 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1748 | 1670 | | 1817 | 1591 | | 1651 | 3579 | | 1806 | 3532 | |
| Flt Permitted | 0.49 | 1.00 | | 0.71 | 1.00 | | 0.30 | 1.00 | | 0.21 | 1.00 | |
| Satd. Flow (perm) | 895 | 1670 | | 1353 | 1591 | | 520 | 3579 | | 403 | 3532 | |
| Peak-hour factor, PHF | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Adj. Flow (vph) | 132 | 38 | 38 | 132 | 36 | 192 | 20 | 942 | 55 | 126 | 902 | 55 |
| RTOR Reduction (vph) | 0 | 31 | 0 | 0 | 155 | 0 | 0 | 4 | 0 | 0 | 4 | 0 |
| Lane Group Flow (vph) | 132 | 45 | 0 | 132 | 73 | 0 | 20 | 993 | 0 | 126 | 953 | 0 |
| Confl. Peds. (#/hr) | 6 | | 5 | 5 | | 6 | 15 | | 14 | 14 | | 15 |
| Heavy Vehicles (%) | 4% | 3% | 8% | 0% | 9% | 3% | 10% | 1% | 0% | 1% | 2% | 6% |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | pm+pt | NA | |
| Protected Phases | | 4 | | | 8 | | | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 15.5 | 15.5 | | 15.5 | 15.5 | | 43.1 | 43.1 | | 52.1 | 52.1 | |
| Effective Green, g (s) | 15.5 | 15.5 | | 15.5 | 15.5 | | 43.1 | 43.1 | | 52.1 | 52.1 | |
| Actuated g/C Ratio | 0.20 | 0.20 | | 0.20 | 0.20 | | 0.54 | 0.54 | | 0.66 | 0.66 | |
| Clearance Time (s) | 6.0 | 6.0 | | 6.0 | 6.0 | | 5.8 | 5.8 | | 3.0 | 5.8 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 174 | 326 | | 264 | 310 | | 282 | 1942 | | 370 | 2317 | |
| v/s Ratio Prot | | 0.03 | | | 0.05 | | | c0.28 | | 0.03 | c0.27 | |
| v/s Ratio Perm | c0.15 | | | 0.10 | | | 0.04 | | | 0.20 | | |
| v/c Ratio | 0.76 | 0.14 | | 0.50 | 0.24 | | 0.07 | 0.51 | | 0.34 | 0.41 | |
| Uniform Delay, d1 | 30.2 | 26.4 | | 28.5 | 27.0 | | 8.6 | 11.5 | | 6.3 | 6.4 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 17.1 | 0.2 | | 1.5 | 0.4 | | 0.5 | 1.0 | | 0.6 | 0.5 | |
| Delay (s) | 47.3 | 26.6 | | 30.0 | 27.4 | | 9.1 | 12.5 | | 6.8 | 7.0 | |
| Level of Service | D | C | | C | C | | A | B | | A | A | |
| Approach Delay (s) | | 39.8 | | | 28.3 | | | 12.4 | | | 7.0 | |
| Approach LOS | | D | | | C | | | B | | | A | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 14.5 | HCM 2000 Level of Service | B |
| HCM 2000 Volume to Capacity ratio | 0.56 | | |
| Actuated Cycle Length (s) | 79.4 | Sum of lost time (s) | 14.8 |
| Intersection Capacity Utilization | 76.7% | ICU Level of Service | D |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

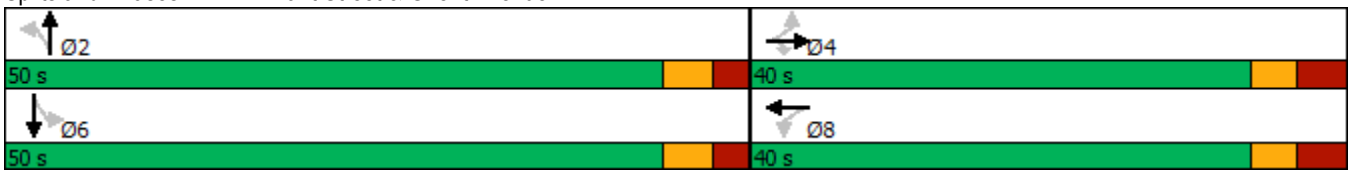


| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 135 | 17 | 29 | 38 | 61 | 91 | 32 | 795 | 36 | 118 | 725 | 250 |
| Future Volume (vph) | 135 | 17 | 29 | 38 | 61 | 91 | 32 | 795 | 36 | 118 | 725 | 250 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (m) | 0.0 | | 35.0 | 0.0 | | 0.0 | 45.0 | | 0.0 | 25.0 | | 0.0 |
| Storage Lanes | 0 | | 0 | 0 | | 0 | 1 | | 0 | 1 | | 0 |
| Taper Length (m) | 2.5 | | | 2.5 | | | 5.0 | | | 5.0 | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.95 | 0.95 | 1.00 | 0.95 | 0.95 |
| Ped Bike Factor | | 1.00 | 0.97 | | 0.99 | | 1.00 | 1.00 | | 0.99 | 0.99 | |
| Frt | | | 0.850 | | 0.935 | | | 0.994 | | | 0.962 | |
| Flt Protected | | 0.957 | | | 0.990 | | 0.950 | | | 0.950 | | |
| Satd. Flow (prot) | 0 | 1822 | 1512 | 0 | 1737 | 0 | 1825 | 3553 | 0 | 1825 | 3411 | 0 |
| Flt Permitted | | 0.588 | | | 0.894 | | 0.238 | | | 0.295 | | |
| Satd. Flow (perm) | 0 | 1114 | 1473 | 0 | 1565 | 0 | 455 | 3553 | 0 | 563 | 3411 | 0 |
| Right Turn on Red | | | Yes | | | Yes | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | | 35 | | 59 | | | 7 | | | 75 | |
| Link Speed (k/h) | | 40 | | | 40 | | | 48 | | | 50 | |
| Link Distance (m) | | 111.7 | | | 105.0 | | | 155.1 | | | 153.2 | |
| Travel Time (s) | | 10.1 | | | 9.5 | | | 11.6 | | | 11.0 | |
| Confl. Peds. (#/hr) | 9 | | 16 | 16 | | 9 | 15 | | 17 | 17 | | 15 |
| 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 |
| Heavy Vehicles (%) | 1% | 0% | 8% | 4% | 2% | 0% | 0% | 2% | 0% | 0% | 2% | 1% |
| Adj. Flow (vph) | 144 | 18 | 31 | 40 | 65 | 97 | 34 | 846 | 38 | 126 | 771 | 266 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 162 | 31 | 0 | 202 | 0 | 34 | 884 | 0 | 126 | 1037 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(m) | | 0.0 | | | 0.0 | | | 3.7 | | | 3.7 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 1.6 | | | 1.6 | | | 1.6 | | | 1.6 | |
| Two way Left Turn Lane | | | | | | | | Yes | | | Yes | |
| Headway Factor | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 |
| Turning Speed (k/h) | 24 | | 14 | 24 | | 14 | 24 | | 14 | 24 | | 14 |
| Number of Detectors | 1 | 2 | 1 | 1 | 2 | | 1 | 2 | | 1 | 2 | |
| Detector Template | Left | Thru | Right | Left | Thru | | Left | Thru | | Left | Thru | |
| Leading Detector (m) | 6.1 | 30.5 | 6.1 | 6.1 | 30.5 | | 6.1 | 30.5 | | 6.1 | 30.5 | |
| Trailing Detector (m) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Position(m) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Size(m) | 6.1 | 1.8 | 6.1 | 6.1 | 1.8 | | 6.1 | 1.8 | | 6.1 | 1.8 | |
| Detector 1 Type | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Queue (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Delay (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 2 Position(m) | | 28.7 | | | 28.7 | | | 28.7 | | | 28.7 | |
| Detector 2 Size(m) | | 1.8 | | | 1.8 | | | 1.8 | | | 1.8 | |
| Detector 2 Type | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Turn Type | Perm | NA | Perm | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | | 6 | | |
| Detector Phase | 4 | 4 | 4 | 8 | 8 | | 2 | 2 | | 6 | 6 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | | 8.0 | 8.0 | | 8.0 | 8.0 | |
| Minimum Split (s) | 37.5 | 37.5 | 37.5 | 37.5 | 37.5 | | 32.9 | 32.9 | | 32.9 | 32.9 | |
| Total Split (s) | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | | 50.0 | 50.0 | | 50.0 | 50.0 | |
| Total Split (%) | 44.4% | 44.4% | 44.4% | 44.4% | 44.4% | | 55.6% | 55.6% | | 55.6% | 55.6% | |
| Maximum Green (s) | 33.5 | 33.5 | 33.5 | 33.5 | 33.5 | | 44.1 | 44.1 | | 44.1 | 44.1 | |
| Yellow Time (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.3 | 3.3 | | 3.3 | 3.3 | |
| All-Red Time (s) | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | | 2.6 | 2.6 | | 2.6 | 2.6 | |
| Lost Time Adjust (s) | | 0.0 | 0.0 | | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Total Lost Time (s) | | 6.5 | 6.5 | | 6.5 | | 5.9 | 5.9 | | 5.9 | 5.9 | |
| Lead/Lag | | | | | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Recall Mode | None | None | None | None | None | | Max | Max | | Max | Max | |
| Walk Time (s) | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | | 16.0 | 16.0 | | 16.0 | 16.0 | |
| Flash Dont Walk (s) | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | | 10.0 | 10.0 | | 10.0 | 10.0 | |
| Pedestrian Calls (#/hr) | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Act Effct Green (s) | | 15.1 | 15.1 | | 15.1 | | 44.3 | 44.3 | | 44.3 | 44.3 | |
| Actuated g/C Ratio | | 0.21 | 0.21 | | 0.21 | | 0.62 | 0.62 | | 0.62 | 0.62 | |
| v/c Ratio | | 0.70 | 0.09 | | 0.54 | | 0.12 | 0.40 | | 0.36 | 0.49 | |
| Control Delay | | 42.0 | 7.9 | | 22.8 | | 8.7 | 8.4 | | 12.2 | 8.6 | |
| Queue Delay | | 0.0 | 0.0 | | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.1 | |
| Total Delay | | 42.0 | 7.9 | | 22.8 | | 8.7 | 8.4 | | 12.2 | 8.7 | |
| LOS | | D | A | | C | | A | A | | B | A | |
| Approach Delay | | 36.5 | | | 22.8 | | | 8.4 | | | 9.1 | |
| Approach LOS | | D | | | C | | | A | | | A | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Cycle Length: 90 | | | |
| Actuated Cycle Length: 71.8 | | | |
| Natural Cycle: 75 | | | |
| Control Type: Semi Act-Uncoord | | | |
| Maximum v/c Ratio: 0.70 | | | |
| Intersection Signal Delay: 12.1 | | Intersection LOS: B | |
| Intersection Capacity Utilization 78.8% | | ICU Level of Service D | |
| Analysis Period (min) 15 | | | |

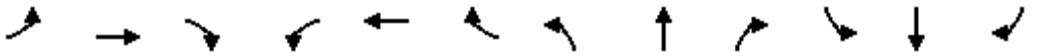
Splits and Phases: 142: Brant Street & Ghent Avenue





| Lane Group | EBT | EBR | WBT | NBL | NBT | SBL | SBT |
|---|---|---|---|---|---|---|---|
| Lane Group Flow (vph) | 162 | 31 | 202 | 34 | 884 | 126 | 1037 |
| v/c Ratio | 0.70 | 0.09 | 0.54 | 0.12 | 0.40 | 0.36 | 0.49 |
| Control Delay | 42.0 | 7.9 | 22.8 | 8.7 | 8.4 | 12.2 | 8.6 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 |
| Total Delay | 42.0 | 7.9 | 22.8 | 8.7 | 8.4 | 12.2 | 8.7 |
| Queue Length 50th (m) | 20.2 | 0.0 | 16.8 | 1.7 | 27.7 | 7.3 | 32.2 |
| Queue Length 95th (m) | 38.6 | 5.4 | 34.6 | 6.9 | 51.0 | 23.2 | 60.0 |
| Internal Link Dist (m) | 87.7 | | 81.0 | | 131.1 | | 129.2 |
| Turn Bay Length (m) | | 35.0 | | 45.0 | | 25.0 | |
| Base Capacity (vph) | 521 | 708 | 764 | 280 | 2194 | 347 | 2132 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 253 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.31 | 0.04 | 0.26 | 0.12 | 0.40 | 0.36 | 0.55 |

Intersection Summary



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 135 | 17 | 29 | 38 | 61 | 91 | 32 | 795 | 36 | 118 | 725 | 250 |
| Future Volume (vph) | 135 | 17 | 29 | 38 | 61 | 91 | 32 | 795 | 36 | 118 | 725 | 250 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | | 6.5 | 6.5 | | 6.5 | | 5.9 | 5.9 | | 5.9 | 5.9 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | 0.98 | | 0.99 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | |
| Frt | | 1.00 | 0.85 | | 0.94 | | 1.00 | 0.99 | | 1.00 | 0.96 | |
| Flt Protected | | 0.96 | 1.00 | | 0.99 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 1816 | 1477 | | 1735 | | 1817 | 3552 | | 1813 | 3414 | |
| Flt Permitted | | 0.59 | 1.00 | | 0.89 | | 0.24 | 1.00 | | 0.29 | 1.00 | |
| Satd. Flow (perm) | | 1115 | 1477 | | 1566 | | 456 | 3552 | | 563 | 3414 | |
| Peak-hour factor, PHF | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Adj. Flow (vph) | 144 | 18 | 31 | 40 | 65 | 97 | 34 | 846 | 38 | 126 | 771 | 266 |
| RTOR Reduction (vph) | 0 | 0 | 24 | 0 | 47 | 0 | 0 | 3 | 0 | 0 | 29 | 0 |
| Lane Group Flow (vph) | 0 | 162 | 7 | 0 | 155 | 0 | 34 | 881 | 0 | 126 | 1008 | 0 |
| Confl. Peds. (#/hr) | 9 | | 16 | 16 | | 9 | 15 | | 17 | 17 | | 15 |
| Heavy Vehicles (%) | 1% | 0% | 8% | 4% | 2% | 0% | 0% | 2% | 0% | 0% | 2% | 1% |
| Turn Type | Perm | NA | Perm | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 15.1 | 15.1 | | 15.1 | | 44.3 | 44.3 | | 44.3 | 44.3 | |
| Effective Green, g (s) | | 15.1 | 15.1 | | 15.1 | | 44.3 | 44.3 | | 44.3 | 44.3 | |
| Actuated g/C Ratio | | 0.21 | 0.21 | | 0.21 | | 0.62 | 0.62 | | 0.62 | 0.62 | |
| Clearance Time (s) | | 6.5 | 6.5 | | 6.5 | | 5.9 | 5.9 | | 5.9 | 5.9 | |
| Vehicle Extension (s) | | 3.0 | 3.0 | | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | | 234 | 310 | | 329 | | 281 | 2191 | | 347 | 2106 | |
| v/s Ratio Prot | | | | | | | | 0.25 | | | c0.30 | |
| v/s Ratio Perm | | c0.15 | 0.00 | | 0.10 | | 0.07 | | | 0.22 | | |
| v/c Ratio | | 0.69 | 0.02 | | 0.47 | | 0.12 | 0.40 | | 0.36 | 0.48 | |
| Uniform Delay, d1 | | 26.2 | 22.5 | | 24.9 | | 5.7 | 7.0 | | 6.8 | 7.5 | |
| Progression Factor | | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 8.5 | 0.0 | | 1.1 | | 0.9 | 0.6 | | 2.9 | 0.8 | |
| Delay (s) | | 34.7 | 22.5 | | 25.9 | | 6.6 | 7.6 | | 9.7 | 8.3 | |
| Level of Service | | C | C | | C | | A | A | | A | A | |
| Approach Delay (s) | | 32.8 | | | 25.9 | | | 7.5 | | | 8.4 | |
| Approach LOS | | C | | | C | | | A | | | A | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 11.4 | HCM 2000 Level of Service | B |
| HCM 2000 Volume to Capacity ratio | 0.53 | | |
| Actuated Cycle Length (s) | 71.8 | Sum of lost time (s) | 12.4 |
| Intersection Capacity Utilization | 78.8% | ICU Level of Service | D |
| Analysis Period (min) | 15 | | |

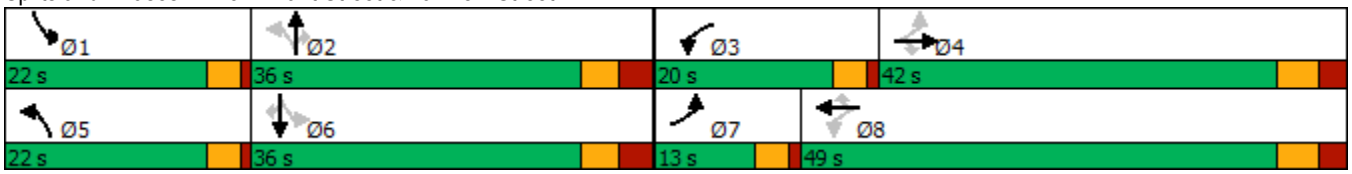
c Critical Lane Group

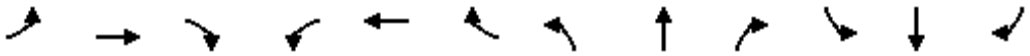
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 206 | 652 | 230 | 204 | 1230 | 336 | 253 | 820 | 190 | 158 | 648 | 185 |
| Future Volume (vph) | 206 | 652 | 230 | 204 | 1230 | 336 | 253 | 820 | 190 | 158 | 648 | 185 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (m) | 0.0 | | 150.0 | 65.0 | | 0.0 | 85.0 | | 70.0 | 50.0 | | 0.0 |
| Storage Lanes | 1 | | 1 | 1 | | 1 | 1 | | 1 | 1 | | 1 |
| Taper Length (m) | 2.5 | | | 45.0 | | | 10.0 | | | 15.0 | | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Ped Bike Factor | | | 0.97 | 1.00 | | 0.97 | 1.00 | | 0.94 | 0.99 | | 0.97 |
| Frt | | | 0.850 | | | 0.850 | | | 0.850 | | | 0.850 |
| Flt Protected | 0.950 | | | 0.950 | | | 0.950 | | | 0.950 | | |
| Satd. Flow (prot) | 1807 | 3544 | 1601 | 1772 | 3579 | 1570 | 1807 | 3614 | 1570 | 1755 | 3614 | 1570 |
| Flt Permitted | 0.102 | | | 0.232 | | | 0.170 | | | 0.136 | | |
| Satd. Flow (perm) | 194 | 3544 | 1556 | 431 | 3579 | 1519 | 322 | 3614 | 1475 | 249 | 3614 | 1524 |
| Right Turn on Red | | | Yes | | | Yes | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | | 240 | | | 266 | | | 179 | | | 193 |
| Link Speed (k/h) | | 50 | | | 50 | | | 50 | | | 50 | |
| Link Distance (m) | | 373.6 | | | 286.0 | | | 295.0 | | | 107.5 | |
| Travel Time (s) | | 26.9 | | | 20.6 | | | 21.2 | | | 7.7 | |
| Confl. Peds. (#/hr) | 14 | | 11 | 11 | | 14 | 12 | | 33 | 33 | | 12 |
| Peak Hour Factor | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Heavy Vehicles (%) | 1% | 3% | 2% | 3% | 2% | 4% | 1% | 1% | 4% | 4% | 1% | 4% |
| Adj. Flow (vph) | 215 | 679 | 240 | 213 | 1281 | 350 | 264 | 854 | 198 | 165 | 675 | 193 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 215 | 679 | 240 | 213 | 1281 | 350 | 264 | 854 | 198 | 165 | 675 | 193 |
| 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) | | 3.7 | | | 3.7 | | | 3.7 | | | 3.7 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 1.6 | | | 1.6 | | | 1.6 | | | 1.6 | |
| Two way Left Turn Lane | | | | | | | | Yes | | | | |
| Headway Factor | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 |
| Turning Speed (k/h) | 24 | | 14 | 24 | | 14 | 24 | | 14 | 24 | | 14 |
| Number of Detectors | 1 | 2 | 1 | 1 | 2 | 1 | 1 | 2 | 1 | 1 | 2 | 1 |
| Detector Template | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Leading Detector (m) | 6.1 | 30.5 | 6.1 | 6.1 | 30.5 | 6.1 | 6.1 | 30.5 | 6.1 | 6.1 | 30.5 | 6.1 |
| Trailing Detector (m) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector 1 Position(m) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector 1 Size(m) | 6.1 | 1.8 | 6.1 | 6.1 | 1.8 | 6.1 | 6.1 | 1.8 | 6.1 | 6.1 | 1.8 | 6.1 |
| Detector 1 Type | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector 1 Queue (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector 1 Delay (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector 2 Position(m) | | 28.7 | | | 28.7 | | | 28.7 | | | 28.7 | |
| Detector 2 Size(m) | | 1.8 | | | 1.8 | | | 1.8 | | | 1.8 | |
| Detector 2 Type | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Turn Type | pm+pt | NA | Perm | pm+pt | NA | Perm | pm+pt | NA | Perm | pm+pt | NA | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | 6 |
| Detector Phase | 7 | 4 | 4 | 3 | 8 | 8 | 5 | 2 | 2 | 1 | 6 | 6 |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 7.0 | 8.0 | 8.0 | 7.0 | 8.0 | 8.0 | 7.0 | 8.0 | 8.0 | 7.0 | 8.0 | 8.0 |
| Minimum Split (s) | 11.5 | 30.4 | 30.4 | 11.5 | 30.4 | 30.4 | 11.5 | 30.5 | 30.5 | 11.5 | 30.5 | 30.5 |
| Total Split (s) | 13.0 | 42.0 | 42.0 | 20.0 | 49.0 | 49.0 | 22.0 | 36.0 | 36.0 | 22.0 | 36.0 | 36.0 |
| Total Split (%) | 10.8% | 35.0% | 35.0% | 16.7% | 40.8% | 40.8% | 18.3% | 30.0% | 30.0% | 18.3% | 30.0% | 30.0% |
| Maximum Green (s) | 9.0 | 35.6 | 35.6 | 16.0 | 42.6 | 42.6 | 18.0 | 29.5 | 29.5 | 18.0 | 29.5 | 29.5 |
| Yellow Time (s) | 3.0 | 3.7 | 3.7 | 3.0 | 3.7 | 3.7 | 3.0 | 3.3 | 3.3 | 3.0 | 3.3 | 3.3 |
| All-Red Time (s) | 1.0 | 2.7 | 2.7 | 1.0 | 2.7 | 2.7 | 1.0 | 3.2 | 3.2 | 1.0 | 3.2 | 3.2 |
| Lost Time Adjust (s) | -1.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 3.0 | 6.4 | 6.4 | 4.0 | 6.4 | 6.4 | 4.0 | 6.5 | 6.5 | 4.0 | 6.5 | 6.5 |
| Lead/Lag | Lead | Lag | Lag | Lead | Lag | Lag | Lead | Lag | Lag | Lead | Lag | Lag |
| Lead-Lag Optimize? | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Recall Mode | None | None | None | None | None | None | None | Max | Max | None | Max | Max |
| Walk Time (s) | | 7.0 | 7.0 | | 7.0 | 7.0 | | 7.0 | 7.0 | | 7.0 | 7.0 |
| Flash Dont Walk (s) | | 17.0 | 17.0 | | 17.0 | 17.0 | | 17.0 | 17.0 | | 17.0 | 17.0 |
| Pedestrian Calls (#/hr) | | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 |
| Act Effct Green (s) | 51.7 | 38.3 | 38.3 | 57.0 | 42.6 | 42.6 | 51.3 | 33.0 | 33.0 | 44.7 | 29.5 | 29.5 |
| Actuated g/C Ratio | 0.44 | 0.32 | 0.32 | 0.48 | 0.36 | 0.36 | 0.43 | 0.28 | 0.28 | 0.38 | 0.25 | 0.25 |
| v/c Ratio | 0.97 | 0.59 | 0.36 | 0.59 | 0.99 | 0.49 | 0.77 | 0.85 | 0.37 | 0.65 | 0.75 | 0.37 |
| Control Delay | 84.2 | 36.8 | 5.6 | 25.2 | 61.7 | 10.0 | 39.5 | 49.8 | 8.9 | 34.6 | 47.2 | 7.2 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 84.2 | 36.8 | 5.6 | 25.2 | 61.7 | 10.0 | 39.5 | 49.8 | 8.9 | 34.6 | 47.2 | 7.2 |
| LOS | F | D | A | C | E | A | D | D | A | C | D | A |
| Approach Delay | | 39.2 | | | 47.6 | | | 41.6 | | | 37.7 | |
| Approach LOS | | D | | | D | | | D | | | D | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Cycle Length: 120 | | | |
| Actuated Cycle Length: 118.2 | | | |
| Natural Cycle: 95 | | | |
| Control Type: Semi Act-Uncoord | | | |
| Maximum v/c Ratio: 0.99 | | | |
| Intersection Signal Delay: 42.4 | | Intersection LOS: D | |
| Intersection Capacity Utilization 96.8% | | ICU Level of Service F | |
| Analysis Period (min) 15 | | | |

Splits and Phases: 151: Brant Street & Fairview Street



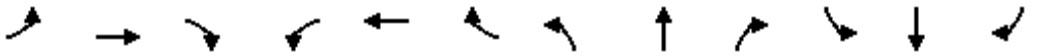


| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Group Flow (vph) | 215 | 679 | 240 | 213 | 1281 | 350 | 264 | 854 | 198 | 165 | 675 | 193 |
| v/c Ratio | 0.97 | 0.59 | 0.36 | 0.59 | 0.99 | 0.49 | 0.77 | 0.85 | 0.37 | 0.65 | 0.75 | 0.37 |
| Control Delay | 84.2 | 36.8 | 5.6 | 25.2 | 61.7 | 10.0 | 39.5 | 49.8 | 8.9 | 34.6 | 47.2 | 7.2 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 84.2 | 36.8 | 5.6 | 25.2 | 61.7 | 10.0 | 39.5 | 49.8 | 8.9 | 34.6 | 47.2 | 7.2 |
| Queue Length 50th (m) | 34.4 | 71.0 | 0.0 | 28.5 | ~159.5 | 13.4 | 39.2 | 98.0 | 3.2 | 23.1 | 77.7 | 0.0 |
| Queue Length 95th (m) | #85.4 | 93.4 | 18.1 | 44.5 | #208.3 | 38.9 | #71.6 | #144.2 | 22.5 | 40.3 | 99.3 | 17.7 |
| Internal Link Dist (m) | | 349.6 | | | 262.0 | | | 271.0 | | | 83.5 | |
| Turn Bay Length (m) | | | 150.0 | 65.0 | | | 85.0 | | 70.0 | 50.0 | | |
| Base Capacity (vph) | 221 | 1148 | 666 | 393 | 1290 | 717 | 366 | 1009 | 540 | 333 | 902 | 525 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.97 | 0.59 | 0.36 | 0.54 | 0.99 | 0.49 | 0.72 | 0.85 | 0.37 | 0.50 | 0.75 | 0.37 |

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

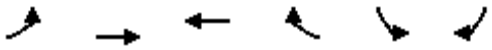
# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 206 | 652 | 230 | 204 | 1230 | 336 | 253 | 820 | 190 | 158 | 648 | 185 |
| Future Volume (vph) | 206 | 652 | 230 | 204 | 1230 | 336 | 253 | 820 | 190 | 158 | 648 | 185 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 3.0 | 6.4 | 6.4 | 4.0 | 6.4 | 6.4 | 4.0 | 6.5 | 6.5 | 4.0 | 6.5 | 6.5 |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.94 | 1.00 | 1.00 | 0.97 |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1807 | 3544 | 1556 | 1771 | 3579 | 1519 | 1806 | 3614 | 1476 | 1753 | 3614 | 1524 |
| Flt Permitted | 0.10 | 1.00 | 1.00 | 0.23 | 1.00 | 1.00 | 0.17 | 1.00 | 1.00 | 0.14 | 1.00 | 1.00 |
| Satd. Flow (perm) | 194 | 3544 | 1556 | 432 | 3579 | 1519 | 323 | 3614 | 1476 | 250 | 3614 | 1524 |
| Peak-hour factor, PHF | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Adj. Flow (vph) | 215 | 679 | 240 | 212 | 1281 | 350 | 264 | 854 | 198 | 165 | 675 | 193 |
| RTOR Reduction (vph) | 0 | 0 | 162 | 0 | 0 | 170 | 0 | 0 | 129 | 0 | 0 | 145 |
| Lane Group Flow (vph) | 215 | 679 | 78 | 213 | 1281 | 180 | 264 | 854 | 69 | 165 | 675 | 48 |
| Confl. Peds. (#/hr) | 14 | | 11 | 11 | | 14 | 12 | | 33 | 33 | | 12 |
| Heavy Vehicles (%) | 1% | 3% | 2% | 3% | 2% | 4% | 1% | 1% | 4% | 4% | 1% | 4% |
| Turn Type | pm+pt | NA | Perm | pm+pt | NA | Perm | pm+pt | NA | Perm | pm+pt | NA | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 47.3 | 38.3 | 38.3 | 55.6 | 42.6 | 42.6 | 49.2 | 33.0 | 33.0 | 42.2 | 29.5 | 29.5 |
| Effective Green, g (s) | 49.3 | 38.3 | 38.3 | 55.6 | 42.6 | 42.6 | 49.2 | 33.0 | 33.0 | 42.2 | 29.5 | 29.5 |
| Actuated g/C Ratio | 0.42 | 0.32 | 0.32 | 0.47 | 0.36 | 0.36 | 0.42 | 0.28 | 0.28 | 0.36 | 0.25 | 0.25 |
| Clearance Time (s) | 4.0 | 6.4 | 6.4 | 4.0 | 6.4 | 6.4 | 4.0 | 6.5 | 6.5 | 4.0 | 6.5 | 6.5 |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 217 | 1148 | 504 | 353 | 1289 | 547 | 337 | 1008 | 412 | 250 | 901 | 380 |
| v/s Ratio Prot | c0.08 | 0.19 | | c0.07 | c0.36 | | c0.11 | c0.24 | | 0.07 | 0.19 | |
| v/s Ratio Perm | 0.33 | | 0.05 | 0.22 | | 0.12 | 0.22 | | 0.05 | 0.16 | | 0.03 |
| v/c Ratio | 0.99 | 0.59 | 0.15 | 0.60 | 0.99 | 0.33 | 0.78 | 0.85 | 0.17 | 0.66 | 0.75 | 0.13 |
| Uniform Delay, d1 | 31.2 | 33.4 | 28.4 | 20.6 | 37.7 | 27.4 | 25.9 | 40.2 | 32.2 | 28.9 | 40.9 | 34.4 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 58.3 | 0.8 | 0.1 | 2.9 | 23.4 | 0.4 | 11.3 | 8.8 | 0.9 | 6.4 | 5.7 | 0.7 |
| Delay (s) | 89.5 | 34.2 | 28.6 | 23.5 | 61.1 | 27.8 | 37.2 | 49.0 | 33.1 | 35.3 | 46.6 | 35.1 |
| Level of Service | F | C | C | C | E | C | D | D | C | D | D | D |
| Approach Delay (s) | | 43.5 | | | 50.4 | | | 44.2 | | | 42.6 | |
| Approach LOS | | D | | | D | | | D | | | D | |

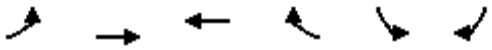
| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 45.9 | HCM 2000 Level of Service | D |
| HCM 2000 Volume to Capacity ratio | 0.95 | | |
| Actuated Cycle Length (s) | 118.2 | Sum of lost time (s) | 20.9 |
| Intersection Capacity Utilization | 96.8% | ICU Level of Service | F |
| Analysis Period (min) | 15 | | |

c Critical Lane Group



| Lane Group | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (vph) | 0 | 62 | 28 | 29 | 76 | 0 |
| Future Volume (vph) | 0 | 62 | 28 | 29 | 76 | 0 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | | | 0.931 | | | |
| Flt Protected | | | | | 0.950 | |
| Satd. Flow (prot) | 0 | 1865 | 1719 | 0 | 1755 | 0 |
| Flt Permitted | | | | | 0.950 | |
| Satd. Flow (perm) | 0 | 1865 | 1719 | 0 | 1755 | 0 |
| Link Speed (k/h) | | 40 | 40 | | 40 | |
| Link Distance (m) | | 86.9 | 152.2 | | 135.3 | |
| Travel Time (s) | | 7.8 | 13.7 | | 12.2 | |
| Peak Hour Factor | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Heavy Vehicles (%) | 21% | 3% | 0% | 8% | 4% | 0% |
| Adj. Flow (vph) | 0 | 73 | 33 | 34 | 89 | 0 |
| Shared Lane Traffic (%) | | | | | | |
| Lane Group Flow (vph) | 0 | 73 | 67 | 0 | 89 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Left | Right | Left | Right |
| Median Width(m) | | 0.0 | 0.0 | | 3.7 | |
| Link Offset(m) | | 0.0 | 0.0 | | 0.0 | |
| Crosswalk Width(m) | | 1.6 | 1.6 | | 1.6 | |
| Two way Left Turn Lane | | | | | | |
| Headway Factor | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 |
| Turning Speed (k/h) | 24 | | | 14 | 24 | 14 |
| Sign Control | | Free | Free | | Stop | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Control Type: Unsignalized | | | |
| Intersection Capacity Utilization 14.2% | | ICU Level of Service A | |
| Analysis Period (min) 15 | | | |



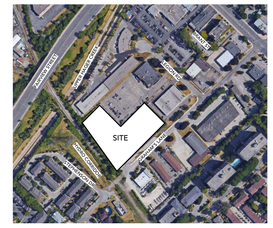
| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 0 | 62 | 28 | 29 | 76 | 0 |
| Future Volume (Veh/h) | 0 | 62 | 28 | 29 | 76 | 0 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Hourly flow rate (vph) | 0 | 73 | 33 | 34 | 89 | 0 |
| Pedestrians | | | | | | |
| Lane Width (m) | | | | | | |
| Walking Speed (m/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage veh) | | | | | | |
| Upstream signal (m) | | | 152 | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 67 | | | | 123 | 50 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 67 | | | | 123 | 50 |
| tC, single (s) | 4.3 | | | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.4 | | | | 3.5 | 3.3 |
| p0 queue free % | 100 | | | | 90 | 100 |
| cM capacity (veh/h) | 1422 | | | | 867 | 1024 |

| Direction, Lane # | EB 1 | WB 1 | SB 1 |
|---|---|---|---|
| Volume Total | 73 | 67 | 89 |
| Volume Left | 0 | 0 | 89 |
| Volume Right | 0 | 34 | 0 |
| cSH | 1422 | 1700 | 867 |
| Volume to Capacity | 0.00 | 0.04 | 0.10 |
| Queue Length 95th (m) | 0.0 | 0.0 | 2.6 |
| Control Delay (s) | 0.0 | 0.0 | 9.6 |
| Lane LOS | | | A |
| Approach Delay (s) | 0.0 | 0.0 | 9.6 |
| Approach LOS | | | A |

| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 3.7 | | |
| Intersection Capacity Utilization | 14.2% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |

# Appendix H – Proposed Development Plans and Site Statistics

**KEY MAP**




**SITE STATISTICS**

**BUILDING & SITE INFORMATION:**

| | |
|---|---|
| LOT AREA | 10,779sm (2.66 AC) |
| PROPOSED GFA | 45,821sm (493,229sf) |
| DENSITY (FSI) | 4.25 |
| COVERAGE: | |
| BUILDING COVERAGE: | XXXXXXsm (XX%) |
| PAVING (HARDSCAPING): | XXXXXXsm (XX%) |
| LANDSCAPING (SOFTSCAPING): | XXXXXXsm (XX%) |
| LOT FRONTAGE / DEPTH: | 128.77m / 118.44m |
| No. OF STOREYS / HEIGHT: | BLDG A = 16st / 49.5m<br>BLDG B = 9st / 28.5m<br>BLDG C = 20st / 61.5m |

**GCA/GFA/NSA CALCULATIONS**

| | UNITS | GCA | NSA |
|---|---|---|---|
| BUILDING A | | | |
| LEVEL 1 | 18 | 1,690sm | 863sm |
| LEVEL 2 | 19 | 1,682sm | 1,392sm |
| LEVEL 3 | 24 | 1,729sm | 1,439sm |
| LEVEL 4 | 25 | 1,853sm | 1,695sm |
| LEVEL 5 | 25 | 1,592sm | 1,442sm |
| LEVEL 6 | 25 | 1,592sm | 1,442sm |
| LEVEL 7 | 25 | 1,500sm | 1,350sm |
| LEVEL 8 | 25 | 1,500sm | 1,350sm |
| LEVEL 9 | 25 | 1,462sm | 1,312sm |
| LEVEL 10 | 15 | 985sm | 862sm |
| LEVEL 11 | 15 | 985sm | 862sm |
| LEVEL 12 | 15 | 930sm | 807sm |
| LEVEL 13 | 15 | 930sm | 807sm |
| LEVEL 14 | 15 | 930sm | 807sm |
| LEVEL 15 | 15 | 857sm | 734sm |
| LEVEL 16 | 15 | 857sm | 734sm |
| *MECH. PENTHOUSE* | - | XXX | - |
| BLDG A SUBTOTAL: | 316 | 21,079sm (226,900sf) | 17,901sm (192,691sf) |
| EFFICIENCY = | 85% | NSA/GCA (EXCL. MECH. PH) | |
| *BLDG A GFA W/ DEDUCTIONS* | | 20,025sm (215,554sf) | |
| BUILDING B | | | |
| LEVEL 1 | 7 | 807sm | 413sm |
| LEVEL 2 | 11 | 807sm | 717sm |
| LEVEL 3 | 12 | 880sm | 790sm |
| LEVEL 4 | 15 | 1,026sm | 928sm |
| LEVEL 5 | 15 | 930sm | 832sm |
| LEVEL 6 | 15 | 975sm | 877sm |
| LEVEL 7 | 15 | 975sm | 877sm |
| LEVEL 8 | 15 | 975sm | 877sm |
| LEVEL 9 | 15 | 880sm | 782sm |
| *MECH. PENTHOUSE* | - | XXX | - |
| BLDG B SUBTOTAL: | 120 | 8,255sm (88,859sf) | 7,093sm (76,351sf) |
| EFFICIENCY = | 86% | NSA/GCA (EXCL. MECH. PH) | |
| *BLDG B GFA W/ DEDUCTIONS* | | *7,842sm (84,413sf)* | |
| BUILDING C | | | |
| LEVEL 1 | 7 | 817sm | 417sm |
| LEVEL 2 | 12 | 817sm | 717sm |
| LEVEL 3 | 12 | 871sm | 717sm |
| LEVEL 4 | 15 | 1,017sm | 916sm |
| LEVEL 5 | 15 | 969sm | 871sm |
| LEVEL 6 | 15 | 1,040sm | 942sm |
| LEVEL 7 | 15 | 1,040sm | 942sm |
| LEVEL 8 | 15 | 1,040sm | 942sm |
| LEVEL 9 | 15 | 905sm | 807sm |
| LEVEL 10 | 15 | 905sm | 807sm |
| LEVEL 11 | 15 | 930sm | 832sm |
| LEVEL 12 | 15 | 930sm | 832sm |
| LEVEL 13 | 15 | 971sm | 873sm |
| LEVEL 14 | 15 | 971sm | 873sm |
| LEVEL 15 | 15 | 971sm | 873sm |
| LEVEL 16 | 15 | 971sm | 873sm |
| LEVEL 17 | 15 | 971sm | 873sm |
| LEVEL 18 | 15 | 971sm | 873sm |
| LEVEL 19 | 15 | 891sm | 793sm |
| LEVEL 20 | 15 | 891sm | 793sm |
| *MECH. PENTHOUSE* | - | XXX | - |
| BLDG C SUBTOTAL: | 286 | 18,899sm (203,434sf) | 16,566sm (178,321sf) |
| EFFICIENCY = | 88%[1] | NSA/GCA (EXCL. MECH. PH) | |
| *BLDG C GFA W/ DEDUCTIONS* | | *17,954sm (193,261sf)* | |
| **TOTAL:** | **722** | **48,233sm (519,193f)** | **41,560 (447,362sf)** |
| **EFFICIENCY =** | **86%**[2] | NSA/GCA (EXCL. MECH. PH) | |
| *TOTAL GFA W/ DEDUCTIONS* | | **45,821sm (493,229sf)** | |

| UNIT MIX / COUNT | S (300SF-400SF) | 1B | 1B+D (450SF-700SF) | 2B | 2B+D (750SF-850SF) | 3B (850SF-1150SF) |
|---|---|---|---|---|---|---|
| BUILDING A | | | | | | |
| LEVEL 1 | 2 | 10 | X | 5 | X | 1 |
| LEVEL 2 | 3 | 10 | X | 5 | X | 1 |
| LEVEL 3 | 4 | 13 | X | 6 | X | 1 |
| LEVEL 4 | 4 | 14 | X | 6 | X | 1 |
| LEVEL 5 | 4 | 14 | X | 6 | X | 1 |
| LEVEL 6 | 4 | 14 | X | 6 | X | 1 |
| LEVEL 7 | 4 | 14 | X | 6 | X | 1 |
| LEVEL 8 | 4 | 14 | X | 6 | X | 1 |
| LEVEL 9 | 4 | 14 | X | 6 | X | 1 |
| LEVEL 10 | 2 | 8 | X | 4 | X | 1 |
| LEVEL 11 | 2 | 8 | X | 4 | X | 1 |
| LEVEL 12 | 2 | 8 | X | 4 | X | 1 |
| LEVEL 13 | 2 | 8 | X | 4 | X | 1 |
| LEVEL 14 | 2 | 8 | X | 4 | X | 1 |
| LEVEL 15 | 2 | 8 | X | 4 | X | 1 |
| LEVEL 16 | 2 | 8 | X | 4 | X | 1 |
| SUBTOTAL: | 47[15%] | 173[55%] | | 80[25%] | | 16[5%] |
| BUILDING B | | | | | | |
| LEVEL 1 | 1 | 4 | X | 2 | X | X |
| LEVEL 2 | 2 | 6 | X | 3 | X | X |
| LEVEL 3 | 2 | 6 | X | 3 | X | 1 |
| LEVEL 4 | 2 | 8 | X | 4 | X | 1 |
| LEVEL 5 | 2 | 8 | X | 4 | X | 1 |
| LEVEL 6 | 2 | 8 | X | 4 | X | 1 |
| LEVEL 7 | 2 | 8 | X | 4 | X | 1 |
| LEVEL 8 | 2 | 8 | X | 4 | X | 1 |
| LEVEL 9 | 2 | 8 | X | 4 | X | 1 |
| SUBTOTAL: | 17[15%] | 64[55%] | | 32[25%] | | 3[5%] |
| BUILDING C | | | | | | |
| LEVEL 1 | 1 | 4 | X | 2 | X | X |
| LEVEL 2 | 2 | 6 | X | 3 | X | 1 |
| LEVEL 3 | 2 | 6 | X | 3 | X | 1 |
| LEVEL 4 | 2 | 8 | X | 4 | X | 1 |
| LEVEL 5 | 2 | 8 | X | 4 | X | 1 |
| LEVEL 6 | 2 | 8 | X | 4 | X | 1 |
| LEVEL 7 | 2 | 8 | X | 4 | X | 1 |
| LEVEL 8 | 2 | 8 | X | 4 | X | 1 |
| LEVEL 9 | 2 | 8 | X | 4 | X | 1 |
| LEVEL 10 | 2 | 8 | X | 4 | X | 1 |
| LEVEL 11 | 2 | 8 | X | 4 | X | 1 |
| LEVEL 12 | 2 | 8 | X | 4 | X | 1 |
| LEVEL 13 | 2 | 8 | X | 4 | X | 1 |
| LEVEL 14 | 2 | 8 | X | 4 | X | 1 |
| LEVEL 15 | 2 | 8 | X | 4 | X | 1 |
| LEVEL 16 | 2 | 8 | X | 4 | X | 1 |
| LEVEL 17 | 2 | 8 | X | 4 | X | 1 |
| LEVEL 18 | 2 | 8 | X | 4 | X | 1 |
| LEVEL 19 | 2 | 8 | X | 4 | X | 1 |
| LEVEL 20 | 2 | 8 | X | 4 | X | 1 |
| SUBTOTAL: | 39[15%] | 152[55%] | | 76[25%] | | 19[5%] |
| **TOTAL:** | **S 103[15%]** | **1B 289[55%]** | | **2B 188[25%]** | | **3B 42[5%]** |
| NOTE: 15% OF TOTAL UNIT COUNT TO BE BARRIER FREE | | | | | | |

**AMENITY SPACES (INDOOR/OUTDOOR)**

INDOOR AMENITY AREA = XXX / UNIT — OUTDOOR AMENITY AREA = XXX / UNIT

| | | | |
|---|---|---|---|
| INDOOR REQUIRED: | XXXsm | OUTDOOR REQUIRED: | XXXsm |
| INDOOR PROPOSED: | XXXsm | OUTDOOR PROPOSED: | XXXsm |

**GREEN ROOF**

| | | | |
|---|---|---|---|
| AVAILABLE ROOF AREA: | XXXsm | | |
| AREA REQ'D: | XXXsm (60%) | AREA PROPOSED: | XXXsm (60%) |

**PARKING SPACE RATES** (BASED ON BLENDED RATE OF 0.83 SPACES/UNIT):

RES. PARKING RATES
RESIDENT 0.70/UNIT
VISITOR 0.13/UNIT

| PARKING SPACES: | REQUIRED | PROPOSED |
|---|---|---|
| PERPENDICULAR STALL DIMENSION | 6.0m x 2.75m | 6.0m x 2.75m |
| PARALLEL STALL DIMENSION | 7.2m x 2.75m | 7.2m x 2.75m |
| BARRIER-FREE STALL (TYPE A) | 6.0m x 3.4m | 6.0m x 3.4m |
| BARRIER-FREE STALL (TYPE B) | 6.0m x 2.4m | 6.0m x 2.4m |
| DRIVE AISLE WIDTH | 6.0m | 6.0m |
| RESIDENTIAL: | 505 | 505 (505 U/G) |
| VISITOR: | 93 | 93 (16 A/G + 77 U/G) |
| TOTAL SPACES: (NOTE: 7 TYPE A (1 A/G and 6 B/G) and 7 TYPE B (7 A/G and 0 B/G)) | 598 SPACES | 598 SPACES (2 LEVELS) |

**BICYCLE PARKING SPACE RATES**

| SHORT TERM RES. PARKING RATES | LONG TERM RES. PARKING RATES |
|---|---|
| 0.05/ RES UNIT | 0.5/ RES UNIT |

| BICYCLE PARKING SPACES: | REQUIRED | PROPOSED |
|---|---|---|
| SHORT TERM RESIDENTIAL: | 36 | 36 |
| LONG TERM RESIDENTIAL: | 361 | 262 |
| TOTAL SPACES: | 397 | 398 |
| **STORAGE LOCKERS:** | REQUIRED | PROPOSED |
| RESIDENTIAL: | 0 | 0 |

**LOADING SPACE RATES**

RESIDENTIAL LOADING IS TYPE 'Z' AND TYPE 'F'

| LOADING SPACES: | REQUIRED | PROPOSED |
|---|---|---|
| RESIDENTIAL: | 3 | 3 |

**SURVEY INFORMATION**

BOUNDARY SURVEY OF PART OF LOT 69, BRANT'S BLOCK, REGISTERED PLAN 99 CITY OF BURLINGTON

MACKAY MACKAY & PETERS LIMITED
3380 SOUTH SERVICE ROAD, BUILINGTN, ON. L7N 3J5
T: (905) 639-1375

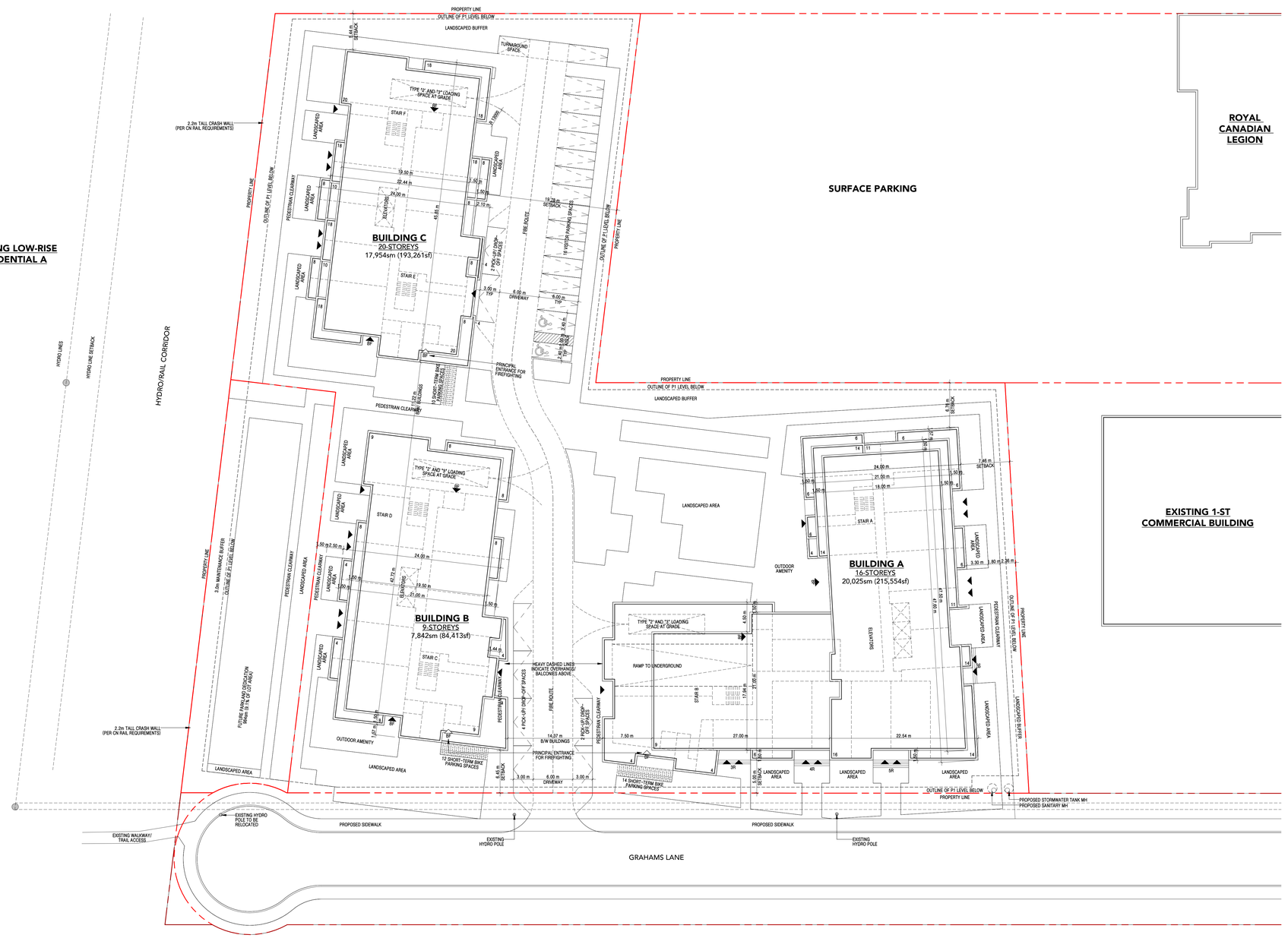
**EXISTING LOW-RISE RESIDENTIAL A**

**EXISTING 1-ST COMMERCIAL BUILDING**

**SURFACE PARKING**

**ROYAL CANADIAN LEGION**

**EXISTING 1-ST COMMERCIAL BUILDING**




SITE PLAN
SCALE: 1 : 250

1
A1 00


Kohn

Kohn Partnership Architects Inc.
116 Spadina Avenue, Suite 501, Toronto ON M5V 2K6
Tel 416.703.6700 www.kohnarchitects.com



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| No. | Date | Note |
|---|---|---|
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**SITE PLAN SYMBOL AND SIGN LEGEND:**

- PRINCIPLE ENTRANCE (FOR FIRE FIGHTING)
- ENTRANCE TO RETAIL OR GRADE REALTED RES. UNIT
- A.D. CATCH BASIN (REFER TO CIVIL DWGS.)
- AREA DRAIN (REFER TO CIVIL DWGS.)
- T.D. TRENCH DRAIN (REFER TO CIVIL DWGS.)
- MH MANHOLE (REFER TO CIVIL DWGS.)
- FH FIRE HYDRANT
- SIAMESE (STANDPIPE) CONNECTION
- HC ACCESIBLE PARKING SIGNAGE
- FIRE ROUTE SIGNAGE
- LS LIGHT STANDARD (EXTERIOR POLE FIXTURE)
- WALL MOUNTED EXTERIOR LIGHT FIXTURE
- ACCESSIBLE CURB CUT
- BARRIER FREE PARKING SPACE

PROJECT NORTH | TRUE NORTH | SEAL

Project:
1393 GRAHAMS LANE

NORTHSTONE CAPITAL PARTNERS

1393 GRAHAMS LANE

BURLINGTON ONTARIO

Drawing Title:
SITE PLAN AND STATISTICS

Project Manager Team: AN
Project No. 22-111
Date Plotted: 3/6/2024 5:57:15 PM
Scale: As indicated
Drawing No.: A1 00

FILE NAME:BIM 360://22111_1393GrahamsLane/22111_1393 Grahams Lane.rvt

A0




FLOOR PLAN - LEVEL P2

SCALE: 1 : 200

1
A2 00


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116 Spadina Avenue, Suite 501, Toronto ON M5V 2K6
Tel 416.703.6700 www.kohnarchitects.com



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|---|---|---|
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**FLOOR PLAN (ABOVE GRADE) LEGEND:**

| | |
|---|---|
| | AREA DRAIN (REFER TO MECH. DWGS.) |
| F.D. | FLOOR DRAIN (REFER TO MECH. DWGS.) |
| R.D. | ROOF DRAIN (REFER TO MECH. DWGS.) |
| T.D. | TRENCH DRAIN (REFER TO CIVIL DWGS.) |
| WS | WALL MOUNTED EXTERIOR LIGHT FIXTURE |
| | WARNING SYSTEM FOR MOTORISTS |
| AO | AUTO OPERATORS |
| E.P. | ELECTRICAL PANEL |
| | CONVEX MIRROR |
| | PAINTED YELLOW LINES (PEDESTRAIN PATHWAYS) |
| | SIAMESE (STANDPIPE) CONNECTION |
| FHC | FIRE HOSE CABINET |
| FHV | STANDPIPE HOSE VALVE CABINET |
| FE | FIRE EXTINGUISHER CABINET |
| | EXTENTS OF BUIDING ABOVE |
| | BARRIER FREE TURNING RADIUS |

**TYPICAL VEHICULAR PARKING SPACE:**

*AS PER BY-LAW XXX-XXXX*

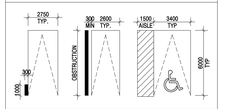
DRIVE AISLE: MIN. 6.0m

TYPICAL PARKING SPACE DIMENSIONS:

WIDTH: MIN. 2.6m LENGTH: 5.6m
VERTICAL CLEARANCE: 2.0m

TYPICAL ACCESSIBLE PARKING SPACE DIMENSIONS:

WIDTH: MIN. 3.9m LENGTH: 5.6m
VERTICAL CLEARANCE: 2.1m




**TYPICAL BICYCLE PARKING SPACE:**

WIDTH: 0.6m (MIN)
LENGTH: 1.8m
VERTICAL CLEARANCE: 1.9m




PROJECT NORTH | TRUE NORTH | SEAL

Project:
1393 GRAHAMS LANE

NORTHSTONE CAPITAL PARTNERS

1393 GRAHAMS LANE

BURLINGTON ONTARIO

Drawing Title:
LEVEL P2 FLOOR PLAN

Project Manager Team: AN
Project No. 22-111
Date Plotted: 3/6/2024 5:57:27 PM
Scale: As indicated
Drawing No.:
A2 00

FILE NAME:BIM 360://22111_1393GrahamsLane/22111_1393 Grahams Lane.rvt

A0




FLOOR PLAN - LEVEL P1
SCALE: 1 : 200

1
A2 01


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| WS | WALL MOUNTED EXTERIOR LIGHT FIXTURE |
| | WARNING SYSTEM FOR MOTORISTS |
| AO | AUTO OPERATORS |
| E.P. | ELECTRICAL PANEL |
| | CONVEX MIRROR |
| | PAINTED YELLOW LINES (PEDESTRAIN PATHWAYS) |
| | SIAMESE (STANDPIPE) CONNECTION |
| FHC | FIRE HOSE CABINET |
| FHV | STANDPIPE HOSE VALVE CABINET |
| FE | FIRE EXTINGUISHER CABINET |
| | EXTENTS OF BUIDING ABOVE |
| | BARRIER FREE TURNING RADIUS |

**TYPICAL VEHICULAR PARKING SPACE:**

*AS PER BY-LAW XXX-XXXX*

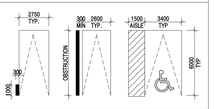
DRIVE AISLE: MIN. 6.0m

TYPICAL PARKING SPACE DIMENSIONS:

WIDTH: MIN. 2.6m LENGTH: 5.6m
VERTICAL CLEARANCE: 2.0m

TYPICAL ACCESSIBLE PARKING SPACE DIMENSIONS:

WIDTH: MIN. 3.9m LENGTH: 5.6m
VERTICAL CLEARANCE: 2.1m




**TYPICAL BICYCLE PARKING SPACE:**

WIDTH: 0.6m (MIN)
LENGTH: 1.8m
VERTICAL CLEARANCE: 1.9m




PROJECT NORTH | TRUE NORTH | SEAL

Project:
1393 GRAHAMS LANE

NORTHSTONE CAPITAL PARTNERS

1393 GRAHAMS LANE

BURLINGTON ONTARIO

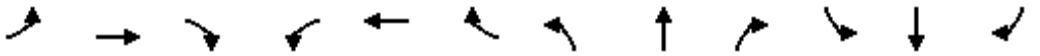
Drawing Title:
LEVEL P1 FLOOR PLAN

Project Manager Team: AN
Project No. 22-111
Date Plotted: 3/6/2024 5:57:30 PM
Scale: As indicated
Drawing No.: A2 01

FILE NAME:BIM 360://22111_1393GrahamsLane/22111_1393 Grahams Lane.rvt

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# Appendix I – Future (2029) Total Conditions Synchro Reports



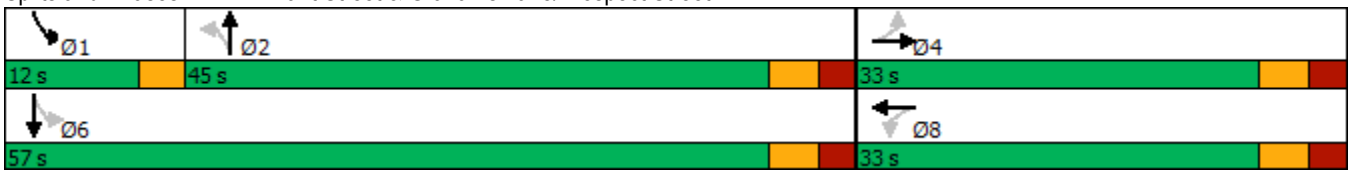
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 163 | 23 | 36 | 68 | 18 | 115 | 27 | 849 | 72 | 89 | 744 | 116 |
| Future Volume (vph) | 163 | 23 | 36 | 68 | 18 | 115 | 27 | 849 | 72 | 89 | 744 | 116 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (m) | 0.0 | | 100.0 | 15.0 | | 0.0 | 20.0 | | 0.0 | 20.0 | | 0.0 |
| Storage Lanes | 1 | | 1 | 1 | | 0 | 1 | | 0 | 1 | | 0 |
| Taper Length (m) | 2.5 | | | 20.0 | | | 5.0 | | | 5.0 | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.95 | 0.95 | 1.00 | 0.95 | 0.95 |
| Ped Bike Factor | 0.99 | 0.99 | | 1.00 | 0.98 | | 0.99 | 1.00 | | 0.99 | 0.99 | |
| Frt | | 0.908 | | | 0.871 | | | 0.988 | | | 0.980 | |
| Flt Protected | 0.950 | | | 0.950 | | | 0.950 | | | 0.950 | | |
| Satd. Flow (prot) | 1644 | 1415 | 0 | 1789 | 1599 | 0 | 1825 | 3460 | 0 | 1772 | 3416 | 0 |
| Flt Permitted | 0.668 | | | 0.717 | | | 0.318 | | | 0.222 | | |
| Satd. Flow (perm) | 1148 | 1415 | 0 | 1344 | 1599 | 0 | 605 | 3460 | 0 | 412 | 3416 | 0 |
| Right Turn on Red | | | Yes | | | Yes | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | 38 | | | 120 | | | 12 | | | 32 | |
| Link Speed (k/h) | | 40 | | | 48 | | | 48 | | | 50 | |
| Link Distance (m) | | 152.2 | | | 116.2 | | | 153.2 | | | 295.0 | |
| Travel Time (s) | | 13.7 | | | 8.7 | | | 11.5 | | | 21.2 | |
| Confl. Peds. (#/hr) | 8 | | 5 | 5 | | 8 | 24 | | 20 | 20 | | 24 |
| Peak Hour Factor | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Heavy Vehicles (%) | 11% | 14% | 27% | 2% | 14% | 1% | 0% | 4% | 2% | 3% | 4% | 4% |
| Adj. Flow (vph) | 170 | 24 | 38 | 71 | 19 | 120 | 28 | 884 | 75 | 93 | 775 | 121 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 170 | 62 | 0 | 71 | 139 | 0 | 28 | 959 | 0 | 93 | 896 | 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) | | 3.7 | | | 3.7 | | | 3.7 | | | 3.7 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 1.6 | | | 1.6 | | | 1.6 | | | 1.6 | |
| Two way Left Turn Lane | | | | | | | | Yes | | | Yes | |
| Headway Factor | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 |
| Turning Speed (k/h) | 24 | | 14 | 24 | | 14 | 24 | | 14 | 24 | | 14 |
| Number of Detectors | 1 | 2 | | 1 | 2 | | 1 | 2 | | 1 | 2 | |
| Detector Template | Left | Thru | | Left | Thru | | Left | Thru | | Left | Thru | |
| Leading Detector (m) | 6.1 | 30.5 | | 6.1 | 30.5 | | 6.1 | 30.5 | | 6.1 | 30.5 | |
| Trailing Detector (m) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Position(m) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Size(m) | 6.1 | 1.8 | | 6.1 | 1.8 | | 6.1 | 1.8 | | 6.1 | 1.8 | |
| Detector 1 Type | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Queue (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Delay (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 2 Position(m) | | 28.7 | | | 28.7 | | | 28.7 | | | 28.7 | |
| Detector 2 Size(m) | | 1.8 | | | 1.8 | | | 1.8 | | | 1.8 | |
| Detector 2 Type | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |

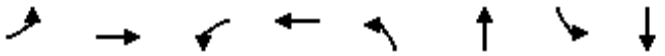
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | pm+pt | NA | |
| Protected Phases | | 4 | | | 8 | | | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Detector Phase | 4 | 4 | | 8 | 8 | | 2 | 2 | | 1 | 6 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 8.0 | 8.0 | | 8.0 | 8.0 | | 8.0 | 8.0 | | 6.0 | 8.0 | |
| Minimum Split (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | 39.8 | 39.8 | | 9.0 | 39.8 | |
| Total Split (s) | 33.0 | 33.0 | | 33.0 | 33.0 | | 45.0 | 45.0 | | 12.0 | 57.0 | |
| Total Split (%) | 36.7% | 36.7% | | 36.7% | 36.7% | | 50.0% | 50.0% | | 13.3% | 63.3% | |
| Maximum Green (s) | 27.0 | 27.0 | | 27.0 | 27.0 | | 39.2 | 39.2 | | 9.0 | 51.2 | |
| Yellow Time (s) | 3.3 | 3.3 | | 3.3 | 3.3 | | 3.3 | 3.3 | | 3.0 | 3.3 | |
| All-Red Time (s) | 2.7 | 2.7 | | 2.7 | 2.7 | | 2.5 | 2.5 | | 0.0 | 2.5 | |
| Lost Time Adjust (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Total Lost Time (s) | 6.0 | 6.0 | | 6.0 | 6.0 | | 5.8 | 5.8 | | 3.0 | 5.8 | |
| Lead/Lag | | | | | | | Lag | Lag | | Lead | | |
| Lead-Lag Optimize? | | | | | | | Yes | Yes | | Yes | | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Recall Mode | None | None | | None | None | | Max | Max | | None | Max | |
| Walk Time (s) | 11.0 | 11.0 | | 11.0 | 11.0 | | 23.0 | 23.0 | | | 23.0 | |
| Flash Dont Walk (s) | 14.0 | 14.0 | | 14.0 | 14.0 | | 11.0 | 11.0 | | | 11.0 | |
| Pedestrian Calls (#/hr) | 0 | 0 | | 0 | 0 | | 0 | 0 | | | 0 | |
| Act Effct Green (s) | 16.9 | 16.9 | | 16.9 | 16.9 | | 43.3 | 43.3 | | 54.3 | 51.5 | |
| Actuated g/C Ratio | 0.21 | 0.21 | | 0.21 | 0.21 | | 0.54 | 0.54 | | 0.68 | 0.64 | |
| v/c Ratio | 0.70 | 0.19 | | 0.25 | 0.32 | | 0.09 | 0.51 | | 0.23 | 0.41 | |
| Control Delay | 45.0 | 14.0 | | 27.7 | 8.9 | | 13.6 | 14.8 | | 7.2 | 8.2 | |
| Queue Delay | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Total Delay | 45.0 | 14.0 | | 27.7 | 8.9 | | 13.6 | 14.8 | | 7.2 | 8.2 | |
| LOS | D | B | | C | A | | B | B | | A | A | |
| Approach Delay | | 36.7 | | | 15.3 | | | 14.8 | | | 8.1 | |
| Approach LOS | | D | | | B | | | B | | | A | |

**Intersection Summary**

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 80.3
Natural Cycle: 80
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.70
Intersection Signal Delay: 14.2 Intersection LOS: B
Intersection Capacity Utilization 75.3% ICU Level of Service D
Analysis Period (min) 15

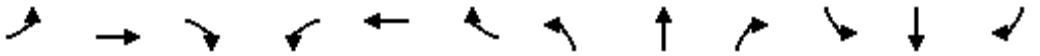
Splits and Phases: 141: Brant Street & Grahams Lane/Prospect Street





| Lane Group | EBL | EBT | WBL | WBT | NBL | NBT | SBL | SBT |
|---|---|---|---|---|---|---|---|---|
| Lane Group Flow (vph) | 170 | 62 | 71 | 139 | 28 | 959 | 93 | 896 |
| v/c Ratio | 0.70 | 0.19 | 0.25 | 0.32 | 0.09 | 0.51 | 0.23 | 0.41 |
| Control Delay | 45.0 | 14.0 | 27.7 | 8.9 | 13.6 | 14.8 | 7.2 | 8.2 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 45.0 | 14.0 | 27.7 | 8.9 | 13.6 | 14.8 | 7.2 | 8.2 |
| Queue Length 50th (m) | 24.0 | 3.0 | 9.0 | 2.3 | 2.0 | 47.1 | 4.1 | 29.2 |
| Queue Length 95th (m) | 43.5 | 11.9 | 19.3 | 15.1 | 8.0 | 83.7 | 12.0 | 54.7 |
| Internal Link Dist (m) | | 128.2 | | 92.2 | | 129.2 | | 271.0 |
| Turn Bay Length (m) | | | 15.0 | | 20.0 | | 20.0 | |
| Base Capacity (vph) | 388 | 503 | 454 | 620 | 326 | 1872 | 432 | 2201 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.44 | 0.12 | 0.16 | 0.22 | 0.09 | 0.51 | 0.22 | 0.41 |

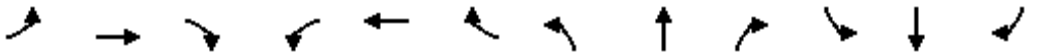
Intersection Summary



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 163 | 23 | 36 | 68 | 18 | 115 | 27 | 849 | 72 | 89 | 744 | 116 |
| Future Volume (vph) | 163 | 23 | 36 | 68 | 18 | 115 | 27 | 849 | 72 | 89 | 744 | 116 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 6.0 | 6.0 | | 6.0 | 6.0 | | 5.8 | 5.8 | | 3.0 | 5.8 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 0.98 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 0.99 | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.91 | | 1.00 | 0.87 | | 1.00 | 0.99 | | 1.00 | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1634 | 1416 | | 1781 | 1600 | | 1810 | 3462 | | 1770 | 3416 | |
| Flt Permitted | 0.67 | 1.00 | | 0.72 | 1.00 | | 0.32 | 1.00 | | 0.22 | 1.00 | |
| Satd. Flow (perm) | 1149 | 1416 | | 1344 | 1600 | | 605 | 3462 | | 414 | 3416 | |
| Peak-hour factor, PHF | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Adj. Flow (vph) | 170 | 24 | 38 | 71 | 19 | 120 | 28 | 884 | 75 | 93 | 775 | 121 |
| RTOR Reduction (vph) | 0 | 30 | 0 | 0 | 95 | 0 | 0 | 6 | 0 | 0 | 11 | 0 |
| Lane Group Flow (vph) | 170 | 32 | 0 | 71 | 44 | 0 | 28 | 953 | 0 | 93 | 885 | 0 |
| Confl. Peds. (#/hr) | 8 | | 5 | 5 | | 8 | 24 | | 20 | 20 | | 24 |
| Heavy Vehicles (%) | 11% | 14% | 27% | 2% | 14% | 1% | 0% | 4% | 2% | 3% | 4% | 4% |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | pm+pt | NA | |
| Protected Phases | | 4 | | | 8 | | | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 16.9 | 16.9 | | 16.9 | 16.9 | | 43.3 | 43.3 | | 52.1 | 52.1 | |
| Effective Green, g (s) | 16.9 | 16.9 | | 16.9 | 16.9 | | 43.3 | 43.3 | | 52.1 | 52.1 | |
| Actuated g/C Ratio | 0.21 | 0.21 | | 0.21 | 0.21 | | 0.54 | 0.54 | | 0.64 | 0.64 | |
| Clearance Time (s) | 6.0 | 6.0 | | 6.0 | 6.0 | | 5.8 | 5.8 | | 3.0 | 5.8 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 240 | 296 | | 281 | 334 | | 324 | 1855 | | 364 | 2202 | |
| v/s Ratio Prot | | 0.02 | | | 0.03 | | | c0.28 | | 0.02 | c0.26 | |
| v/s Ratio Perm | c0.15 | | | 0.05 | | | 0.05 | | | 0.15 | | |
| v/c Ratio | 0.71 | 0.11 | | 0.25 | 0.13 | | 0.09 | 0.51 | | 0.26 | 0.40 | |
| Uniform Delay, d1 | 29.7 | 25.9 | | 26.7 | 26.0 | | 9.1 | 12.0 | | 6.4 | 6.9 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 9.2 | 0.2 | | 0.5 | 0.2 | | 0.5 | 1.0 | | 0.4 | 0.5 | |
| Delay (s) | 38.9 | 26.0 | | 27.2 | 26.2 | | 9.6 | 13.0 | | 6.8 | 7.4 | |
| Level of Service | D | C | | C | C | | A | B | | A | A | |
| Approach Delay (s) | | 35.4 | | | 26.5 | | | 12.9 | | | 7.4 | |
| Approach LOS | | D | | | C | | | B | | | A | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 14.0 | HCM 2000 Level of Service | B |
| HCM 2000 Volume to Capacity ratio | 0.56 | | |
| Actuated Cycle Length (s) | 80.8 | Sum of lost time (s) | 14.8 |
| Intersection Capacity Utilization | 75.3% | ICU Level of Service | D |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

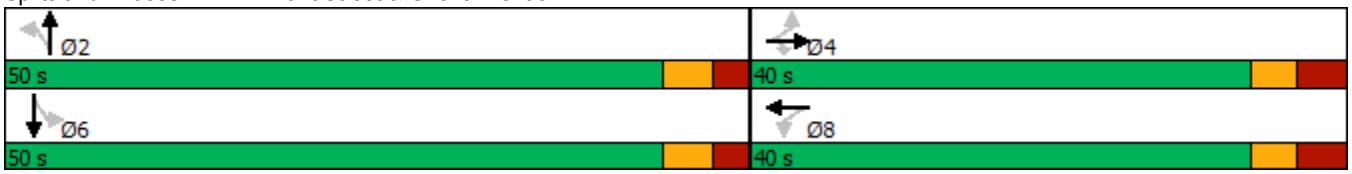


| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 179 | 28 | 28 | 33 | 14 | 111 | 16 | 713 | 22 | 51 | 774 | 86 |
| Future Volume (vph) | 179 | 28 | 28 | 33 | 14 | 111 | 16 | 713 | 22 | 51 | 774 | 86 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (m) | 0.0 | | 35.0 | 0.0 | | 0.0 | 45.0 | | 0.0 | 25.0 | | 0.0 |
| Storage Lanes | 0 | | 0 | 0 | | 0 | 1 | | 0 | 1 | | 0 |
| Taper Length (m) | 2.5 | | | 2.5 | | | 5.0 | | | 5.0 | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.95 | 0.95 | 1.00 | 0.95 | 0.95 |
| Ped Bike Factor | | 0.99 | 0.98 | | 0.98 | | 0.99 | 1.00 | | 0.98 | 1.00 | |
| Frt | | | 0.850 | | 0.905 | | | 0.996 | | | 0.987 | |
| Flt Protected | | 0.959 | | | 0.990 | | 0.950 | | | 0.950 | | |
| Satd. Flow (prot) | 0 | 1811 | 1633 | 0 | 1603 | 0 | 1825 | 3478 | 0 | 1615 | 3483 | 0 |
| Flt Permitted | | 0.639 | | | 0.882 | | 0.251 | | | 0.303 | | |
| Satd. Flow (perm) | 0 | 1201 | 1597 | 0 | 1426 | 0 | 480 | 3478 | 0 | 507 | 3483 | 0 |
| Right Turn on Red | | | Yes | | | Yes | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | | 35 | | 101 | | | 5 | | | 16 | |
| Link Speed (k/h) | | 40 | | | 40 | | | 48 | | | 50 | |
| Link Distance (m) | | 111.7 | | | 105.0 | | | 155.1 | | | 153.2 | |
| Travel Time (s) | | 10.1 | | | 9.5 | | | 11.6 | | | 11.0 | |
| Confl. Peds. (#/hr) | 9 | | 12 | 12 | | 9 | 16 | | 35 | 35 | | 16 |
| 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 | 1.00 |
| Heavy Vehicles (%) | 2% | 0% | 0% | 8% | 0% | 6% | 0% | 4% | 13% | 13% | 3% | 3% |
| Adj. Flow (vph) | 203 | 32 | 32 | 38 | 16 | 126 | 18 | 810 | 25 | 58 | 880 | 86 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 235 | 32 | 0 | 180 | 0 | 18 | 835 | 0 | 58 | 966 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(m) | | 0.0 | | | 0.0 | | | 3.7 | | | 3.7 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 1.6 | | | 1.6 | | | 1.6 | | | 1.6 | |
| Two way Left Turn Lane | | | | | | | | Yes | | | Yes | |
| Headway Factor | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 |
| Turning Speed (k/h) | 24 | | 14 | 24 | | 14 | 24 | | 14 | 24 | | 14 |
| Number of Detectors | 1 | 2 | 1 | 1 | 2 | | 1 | 2 | | 1 | 2 | |
| Detector Template | Left | Thru | Right | Left | Thru | | Left | Thru | | Left | Thru | |
| Leading Detector (m) | 6.1 | 30.5 | 6.1 | 6.1 | 30.5 | | 6.1 | 30.5 | | 6.1 | 30.5 | |
| Trailing Detector (m) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Position(m) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Size(m) | 6.1 | 1.8 | 6.1 | 6.1 | 1.8 | | 6.1 | 1.8 | | 6.1 | 1.8 | |
| Detector 1 Type | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Queue (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Delay (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 2 Position(m) | | 28.7 | | | 28.7 | | | 28.7 | | | 28.7 | |
| Detector 2 Size(m) | | 1.8 | | | 1.8 | | | 1.8 | | | 1.8 | |
| Detector 2 Type | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Turn Type | Perm | NA | Perm | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | | 6 | | |
| Detector Phase | 4 | 4 | 4 | 8 | 8 | | 2 | 2 | | 6 | 6 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | | 8.0 | 8.0 | | 8.0 | 8.0 | |
| Minimum Split (s) | 37.5 | 37.5 | 37.5 | 37.5 | 37.5 | | 32.9 | 32.9 | | 32.9 | 32.9 | |
| Total Split (s) | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | | 50.0 | 50.0 | | 50.0 | 50.0 | |
| Total Split (%) | 44.4% | 44.4% | 44.4% | 44.4% | 44.4% | | 55.6% | 55.6% | | 55.6% | 55.6% | |
| Maximum Green (s) | 33.5 | 33.5 | 33.5 | 33.5 | 33.5 | | 44.1 | 44.1 | | 44.1 | 44.1 | |
| Yellow Time (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.3 | 3.3 | | 3.3 | 3.3 | |
| All-Red Time (s) | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | | 2.6 | 2.6 | | 2.6 | 2.6 | |
| Lost Time Adjust (s) | | 0.0 | 0.0 | | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Total Lost Time (s) | | 6.5 | 6.5 | | 6.5 | | 5.9 | 5.9 | | 5.9 | 5.9 | |
| Lead/Lag | | | | | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Recall Mode | None | None | None | None | None | | Max | Max | | Max | Max | |
| Walk Time (s) | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | | 16.0 | 16.0 | | 16.0 | 16.0 | |
| Flash Dont Walk (s) | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | | 10.0 | 10.0 | | 10.0 | 10.0 | |
| Pedestrian Calls (#/hr) | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Act Effct Green (s) | | 20.0 | 20.0 | | 20.0 | | 44.4 | 44.4 | | 44.4 | 44.4 | |
| Actuated g/C Ratio | | 0.26 | 0.26 | | 0.26 | | 0.58 | 0.58 | | 0.58 | 0.58 | |
| v/c Ratio | | 0.76 | 0.07 | | 0.40 | | 0.06 | 0.42 | | 0.20 | 0.48 | |
| Control Delay | | 41.6 | 6.9 | | 13.1 | | 10.6 | 10.8 | | 12.3 | 11.4 | |
| Queue Delay | | 0.0 | 0.0 | | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Total Delay | | 41.6 | 6.9 | | 13.1 | | 10.6 | 10.8 | | 12.3 | 11.4 | |
| LOS | | D | A | | B | | B | B | | B | B | |
| Approach Delay | | 37.4 | | | 13.1 | | | 10.8 | | | 11.5 | |
| Approach LOS | | D | | | B | | | B | | | B | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Cycle Length: 90 | | | |
| Actuated Cycle Length: 76.9 | | | |
| Natural Cycle: 75 | | | |
| Control Type: Semi Act-Uncoord | | | |
| Maximum v/c Ratio: 0.76 | | | |
| Intersection Signal Delay: 14.3 | | Intersection LOS: B | |
| Intersection Capacity Utilization 81.9% | | ICU Level of Service D | |
| Analysis Period (min) 15 | | | |

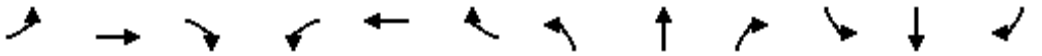
Splits and Phases: 142: Brant Street & Ghent Avenue





| Lane Group | EBT | EBR | WBT | NBL | NBT | SBL | SBT |
|---|---|---|---|---|---|---|---|
| Lane Group Flow (vph) | 235 | 32 | 180 | 18 | 835 | 58 | 966 |
| v/c Ratio | 0.76 | 0.07 | 0.40 | 0.06 | 0.42 | 0.20 | 0.48 |
| Control Delay | 41.6 | 6.9 | 13.1 | 10.6 | 10.8 | 12.3 | 11.4 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 41.6 | 6.9 | 13.1 | 10.6 | 10.8 | 12.3 | 11.4 |
| Queue Length 50th (m) | 31.1 | 0.0 | 8.9 | 1.0 | 31.5 | 3.6 | 37.7 |
| Queue Length 95th (m) | 52.3 | 5.1 | 22.5 | 4.9 | 58.5 | 12.7 | 69.7 |
| Internal Link Dist (m) | 87.7 | | 81.0 | | 131.1 | | 129.2 |
| Turn Bay Length (m) | | 35.0 | | 45.0 | | 25.0 | |
| Base Capacity (vph) | 527 | 720 | 682 | 277 | 2011 | 292 | 2019 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.45 | 0.04 | 0.26 | 0.06 | 0.42 | 0.20 | 0.48 |

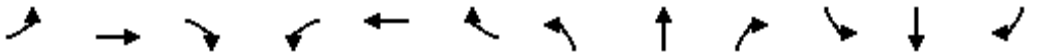
Intersection Summary



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 179 | 28 | 28 | 33 | 14 | 111 | 16 | 713 | 22 | 51 | 774 | 86 |
| Future Volume (vph) | 179 | 28 | 28 | 33 | 14 | 111 | 16 | 713 | 22 | 51 | 774 | 86 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | | 6.5 | 6.5 | | 6.5 | | 5.9 | 5.9 | | 5.9 | 5.9 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | 0.98 | | 0.99 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | | 0.99 | 1.00 | | 0.99 | 1.00 | |
| Frt | | 1.00 | 0.85 | | 0.91 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flt Protected | | 0.96 | 1.00 | | 0.99 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 1803 | 1599 | | 1602 | | 1815 | 3478 | | 1591 | 3483 | |
| Flt Permitted | | 0.64 | 1.00 | | 0.88 | | 0.25 | 1.00 | | 0.30 | 1.00 | |
| Satd. Flow (perm) | | 1202 | 1599 | | 1428 | | 479 | 3478 | | 507 | 3483 | |
| Peak-hour factor, PHF | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 0.88 | 1.00 |
| Adj. Flow (vph) | 203 | 32 | 32 | 38 | 16 | 126 | 18 | 810 | 25 | 58 | 880 | 86 |
| RTOR Reduction (vph) | 0 | 0 | 24 | 0 | 75 | 0 | 0 | 2 | 0 | 0 | 7 | 0 |
| Lane Group Flow (vph) | 0 | 235 | 8 | 0 | 105 | 0 | 18 | 833 | 0 | 58 | 959 | 0 |
| Confl. Peds. (#/hr) | 9 | | 12 | 12 | | 9 | 16 | | 35 | 35 | | 16 |
| Heavy Vehicles (%) | 2% | 0% | 0% | 8% | 0% | 6% | 0% | 4% | 13% | 13% | 3% | 3% |
| Turn Type | Perm | NA | Perm | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 20.0 | 20.0 | | 20.0 | | 44.4 | 44.4 | | 44.4 | 44.4 | |
| Effective Green, g (s) | | 20.0 | 20.0 | | 20.0 | | 44.4 | 44.4 | | 44.4 | 44.4 | |
| Actuated g/C Ratio | | 0.26 | 0.26 | | 0.26 | | 0.58 | 0.58 | | 0.58 | 0.58 | |
| Clearance Time (s) | | 6.5 | 6.5 | | 6.5 | | 5.9 | 5.9 | | 5.9 | 5.9 | |
| Vehicle Extension (s) | | 3.0 | 3.0 | | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | | 313 | 416 | | 371 | | 276 | 2010 | | 293 | 2013 | |
| v/s Ratio Prot | | | | | | | | 0.24 | | | c0.28 | |
| v/s Ratio Perm | | c0.20 | 0.01 | | 0.07 | | 0.04 | | | 0.11 | | |
| v/c Ratio | | 0.75 | 0.02 | | 0.28 | | 0.07 | 0.41 | | 0.20 | 0.48 | |
| Uniform Delay, d1 | | 26.1 | 21.1 | | 22.7 | | 7.1 | 9.0 | | 7.7 | 9.4 | |
| Progression Factor | | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 9.7 | 0.0 | | 0.4 | | 0.5 | 0.6 | | 1.5 | 0.8 | |
| Delay (s) | | 35.8 | 21.1 | | 23.1 | | 7.6 | 9.6 | | 9.2 | 10.2 | |
| Level of Service | | D | C | | C | | A | A | | A | B | |
| Approach Delay (s) | | 34.1 | | | 23.1 | | | 9.6 | | | 10.2 | |
| Approach LOS | | C | | | C | | | A | | | B | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 13.7 | HCM 2000 Level of Service | B |
| HCM 2000 Volume to Capacity ratio | 0.56 | | |
| Actuated Cycle Length (s) | 76.8 | Sum of lost time (s) | 12.4 |
| Intersection Capacity Utilization | 81.9% | ICU Level of Service | D |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

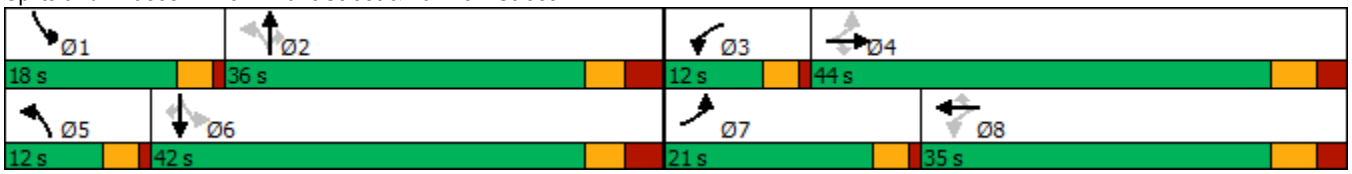


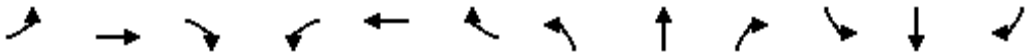
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 217 | 785 | 196 | 167 | 357 | 153 | 206 | 696 | 265 | 151 | 593 | 49 |
| Future Volume (vph) | 217 | 785 | 196 | 167 | 357 | 153 | 206 | 696 | 265 | 151 | 593 | 49 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (m) | 0.0 | | 150.0 | 65.0 | | 0.0 | 85.0 | | 70.0 | 50.0 | | 0.0 |
| Storage Lanes | 1 | | 1 | 1 | | 1 | 1 | | 1 | 1 | | 1 |
| Taper Length (m) | 2.5 | | | 45.0 | | | 10.0 | | | 15.0 | | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Ped Bike Factor | 1.00 | | 0.97 | 1.00 | | 0.98 | 0.99 | | 0.94 | 0.99 | | 0.97 |
| Frt | | | 0.850 | | | 0.850 | | | 0.850 | | | 0.850 |
| Flt Protected | 0.950 | | | 0.950 | | | 0.950 | | | 0.950 | | |
| Satd. Flow (prot) | 1755 | 3544 | 1585 | 1630 | 3411 | 1420 | 1755 | 3510 | 1512 | 1674 | 3579 | 1484 |
| Flt Permitted | 0.395 | | | 0.190 | | | 0.330 | | | 0.193 | | |
| Satd. Flow (perm) | 728 | 3544 | 1541 | 325 | 3411 | 1397 | 606 | 3510 | 1429 | 337 | 3579 | 1445 |
| Right Turn on Red | | | Yes | | | Yes | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | | 211 | | | 193 | | | 264 | | | 153 |
| Link Speed (k/h) | | 50 | | | 50 | | | 50 | | | 50 | |
| Link Distance (m) | | 373.6 | | | 286.0 | | | 295.0 | | | 107.5 | |
| Travel Time (s) | | 26.9 | | | 20.6 | | | 21.2 | | | 7.7 | |
| Confl. Peds. (#/hr) | 3 | | 12 | 12 | | 3 | 11 | | 32 | 32 | | 11 |
| Peak Hour Factor | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Heavy Vehicles (%) | 4% | 3% | 3% | 12% | 7% | 15% | 4% | 4% | 8% | 9% | 2% | 10% |
| Adj. Flow (vph) | 233 | 844 | 211 | 180 | 384 | 165 | 222 | 748 | 285 | 162 | 638 | 53 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 233 | 844 | 211 | 180 | 384 | 165 | 222 | 748 | 285 | 162 | 638 | 53 |
| 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) | | 3.7 | | | 3.7 | | | 3.7 | | | 3.7 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 1.6 | | | 1.6 | | | 1.6 | | | 1.6 | |
| Two way Left Turn Lane | | | | | | | | Yes | | | | |
| Headway Factor | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 |
| Turning Speed (k/h) | 24 | | 14 | 24 | | 14 | 24 | | 14 | 24 | | 14 |
| Number of Detectors | 1 | 2 | 1 | 1 | 2 | 1 | 1 | 2 | 1 | 1 | 2 | 1 |
| Detector Template | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Leading Detector (m) | 6.1 | 30.5 | 6.1 | 6.1 | 30.5 | 6.1 | 6.1 | 30.5 | 6.1 | 6.1 | 30.5 | 6.1 |
| Trailing Detector (m) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector 1 Position(m) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector 1 Size(m) | 6.1 | 1.8 | 6.1 | 6.1 | 1.8 | 6.1 | 6.1 | 1.8 | 6.1 | 6.1 | 1.8 | 6.1 |
| Detector 1 Type | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector 1 Queue (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector 1 Delay (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector 2 Position(m) | | 28.7 | | | 28.7 | | | 28.7 | | | 28.7 | |
| Detector 2 Size(m) | | 1.8 | | | 1.8 | | | 1.8 | | | 1.8 | |
| Detector 2 Type | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Turn Type | pm+pt | NA | Perm | pm+pt | NA | Perm | pm+pt | NA | Perm | pm+pt | NA | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | 6 |
| Detector Phase | 7 | 4 | 4 | 3 | 8 | 8 | 5 | 2 | 2 | 1 | 6 | 6 |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 7.0 | 8.0 | 8.0 | 7.0 | 8.0 | 8.0 | 7.0 | 8.0 | 8.0 | 7.0 | 8.0 | 8.0 |
| Minimum Split (s) | 11.0 | 30.4 | 30.4 | 11.0 | 30.4 | 30.4 | 11.0 | 30.5 | 30.5 | 11.0 | 30.5 | 30.5 |
| Total Split (s) | 21.0 | 44.0 | 44.0 | 12.0 | 35.0 | 35.0 | 12.0 | 36.0 | 36.0 | 18.0 | 42.0 | 42.0 |
| Total Split (%) | 19.1% | 40.0% | 40.0% | 10.9% | 31.8% | 31.8% | 10.9% | 32.7% | 32.7% | 16.4% | 38.2% | 38.2% |
| Maximum Green (s) | 17.0 | 37.6 | 37.6 | 8.0 | 28.6 | 28.6 | 8.0 | 29.5 | 29.5 | 14.0 | 35.5 | 35.5 |
| Yellow Time (s) | 3.0 | 3.7 | 3.7 | 3.0 | 3.7 | 3.7 | 3.0 | 3.3 | 3.3 | 3.0 | 3.3 | 3.3 |
| All-Red Time (s) | 1.0 | 2.7 | 2.7 | 1.0 | 2.7 | 2.7 | 1.0 | 3.2 | 3.2 | 1.0 | 3.2 | 3.2 |
| Lost Time Adjust (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 4.0 | 6.4 | 6.4 | 4.0 | 6.4 | 6.4 | 4.0 | 6.5 | 6.5 | 4.0 | 6.5 | 6.5 |
| Lead/Lag | Lead | Lag | Lag | Lead | Lag | Lag | Lead | Lag | Lag | Lead | Lag | Lag |
| Lead-Lag Optimize? | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Recall Mode | None | None | None | None | None | None | None | Max | Max | None | Max | Max |
| Walk Time (s) | | 7.0 | 7.0 | | 7.0 | 7.0 | | 7.0 | 7.0 | | 7.0 | 7.0 |
| Flash Dont Walk (s) | | 17.0 | 17.0 | | 17.0 | 17.0 | | 17.0 | 17.0 | | 17.0 | 17.0 |
| Pedestrian Calls (#/hr) | | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 |
| Act Effct Green (s) | 46.3 | 32.3 | 32.3 | 36.9 | 26.5 | 26.5 | 43.0 | 32.5 | 32.5 | 48.5 | 35.6 | 35.6 |
| Actuated g/C Ratio | 0.44 | 0.31 | 0.31 | 0.35 | 0.25 | 0.25 | 0.41 | 0.31 | 0.31 | 0.46 | 0.34 | 0.34 |
| v/c Ratio | 0.51 | 0.77 | 0.34 | 0.84 | 0.45 | 0.33 | 0.66 | 0.69 | 0.46 | 0.55 | 0.53 | 0.09 |
| Control Delay | 22.6 | 38.2 | 5.2 | 54.7 | 35.1 | 4.8 | 31.3 | 37.2 | 7.8 | 24.2 | 30.5 | 0.3 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 22.6 | 38.2 | 5.2 | 54.7 | 35.1 | 4.8 | 31.3 | 37.2 | 7.8 | 24.2 | 30.5 | 0.3 |
| LOS | C | D | A | D | D | A | C | D | A | C | C | A |
| Approach Delay | | 30.0 | | | 33.1 | | | 29.5 | | | 27.5 | |
| Approach LOS | | C | | | C | | | C | | | C | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Cycle Length: 110 | | | |
| Actuated Cycle Length: 104.9 | | | |
| Natural Cycle: 85 | | | |
| Control Type: Semi Act-Uncoord | | | |
| Maximum v/c Ratio: 0.84 | | | |
| Intersection Signal Delay: 29.8 | | Intersection LOS: C | |
| Intersection Capacity Utilization 79.8% | | ICU Level of Service D | |
| Analysis Period (min) 15 | | | |

Splits and Phases: 151: Brant Street & Fairview Street

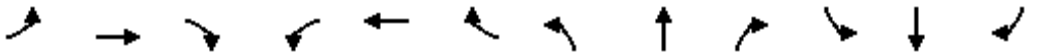




| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Group Flow (vph) | 233 | 844 | 211 | 180 | 384 | 165 | 222 | 748 | 285 | 162 | 638 | 53 |
| v/c Ratio | 0.51 | 0.77 | 0.34 | 0.84 | 0.45 | 0.33 | 0.66 | 0.69 | 0.46 | 0.55 | 0.53 | 0.09 |
| Control Delay | 22.6 | 38.2 | 5.2 | 54.7 | 35.1 | 4.8 | 31.3 | 37.2 | 7.8 | 24.2 | 30.5 | 0.3 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 22.6 | 38.2 | 5.2 | 54.7 | 35.1 | 4.8 | 31.3 | 37.2 | 7.8 | 24.2 | 30.5 | 0.3 |
| Queue Length 50th (m) | 29.5 | 81.7 | 0.0 | 22.3 | 34.9 | 0.0 | 27.0 | 72.2 | 3.1 | 19.1 | 55.8 | 0.0 |
| Queue Length 95th (m) | 46.1 | 103.5 | 15.3 | #54.2 | 50.3 | 10.7 | #51.3 | 101.0 | 25.1 | 34.1 | 76.9 | 0.0 |
| Internal Link Dist (m) | | 349.6 | | | 262.0 | | | 271.0 | | | 83.5 | |
| Turn Bay Length (m) | | | 150.0 | 65.0 | | | 85.0 | | 70.0 | 50.0 | | |
| Base Capacity (vph) | 491 | 1273 | 688 | 214 | 935 | 523 | 336 | 1087 | 624 | 340 | 1214 | 591 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.47 | 0.66 | 0.31 | 0.84 | 0.41 | 0.32 | 0.66 | 0.69 | 0.46 | 0.48 | 0.53 | 0.09 |

Intersection Summary

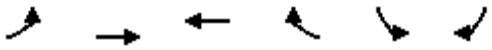
# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 217 | 785 | 196 | 167 | 357 | 153 | 206 | 696 | 265 | 151 | 593 | 49 |
| Future Volume (vph) | 217 | 785 | 196 | 167 | 357 | 153 | 206 | 696 | 265 | 151 | 593 | 49 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.0 | 6.4 | 6.4 | 4.0 | 6.4 | 6.4 | 4.0 | 6.5 | 6.5 | 4.0 | 6.5 | 6.5 |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.98 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.97 |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1754 | 3544 | 1542 | 1629 | 3411 | 1397 | 1752 | 3510 | 1432 | 1672 | 3579 | 1446 |
| Flt Permitted | 0.40 | 1.00 | 1.00 | 0.19 | 1.00 | 1.00 | 0.33 | 1.00 | 1.00 | 0.19 | 1.00 | 1.00 |
| Satd. Flow (perm) | 730 | 3544 | 1542 | 326 | 3411 | 1397 | 609 | 3510 | 1432 | 341 | 3579 | 1446 |
| Peak-hour factor, PHF | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 | 0.93 |
| Adj. Flow (vph) | 233 | 844 | 211 | 180 | 384 | 165 | 222 | 748 | 285 | 162 | 638 | 53 |
| RTOR Reduction (vph) | 0 | 0 | 146 | 0 | 0 | 123 | 0 | 0 | 182 | 0 | 0 | 35 |
| Lane Group Flow (vph) | 233 | 844 | 65 | 180 | 384 | 42 | 222 | 748 | 103 | 162 | 638 | 18 |
| Confl. Peds. (#/hr) | 3 | | 12 | 12 | | 3 | 11 | | 32 | 32 | | 11 |
| Heavy Vehicles (%) | 4% | 3% | 3% | 12% | 7% | 15% | 4% | 4% | 8% | 9% | 2% | 10% |
| Turn Type | pm+pt | NA | Perm | pm+pt | NA | Perm | pm+pt | NA | Perm | pm+pt | NA | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 44.4 | 32.4 | 32.4 | 34.5 | 26.5 | 26.5 | 40.5 | 32.5 | 32.5 | 46.7 | 35.6 | 35.6 |
| Effective Green, g (s) | 44.4 | 32.4 | 32.4 | 34.5 | 26.5 | 26.5 | 40.5 | 32.5 | 32.5 | 46.7 | 35.6 | 35.6 |
| Actuated g/C Ratio | 0.42 | 0.31 | 0.31 | 0.33 | 0.25 | 0.25 | 0.39 | 0.31 | 0.31 | 0.45 | 0.34 | 0.34 |
| Clearance Time (s) | 4.0 | 6.4 | 6.4 | 4.0 | 6.4 | 6.4 | 4.0 | 6.5 | 6.5 | 4.0 | 6.5 | 6.5 |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 444 | 1094 | 476 | 206 | 861 | 352 | 322 | 1087 | 443 | 292 | 1214 | 490 |
| v/s Ratio Prot | c0.07 | 0.24 | | c0.07 | 0.11 | | c0.05 | 0.21 | | c0.06 | 0.18 | |
| v/s Ratio Perm | 0.15 | | 0.04 | c0.22 | | 0.03 | c0.21 | | 0.07 | 0.19 | | 0.01 |
| v/c Ratio | 0.52 | 0.77 | 0.14 | 0.87 | 0.45 | 0.12 | 0.69 | 0.69 | 0.23 | 0.55 | 0.53 | 0.04 |
| Uniform Delay, d1 | 20.5 | 32.9 | 26.2 | 28.5 | 33.0 | 30.2 | 23.8 | 31.8 | 26.9 | 19.7 | 27.9 | 23.2 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 1.1 | 3.4 | 0.1 | 31.0 | 0.4 | 0.2 | 6.0 | 3.6 | 1.2 | 2.3 | 1.6 | 0.1 |
| Delay (s) | 21.6 | 36.3 | 26.3 | 59.5 | 33.4 | 30.4 | 29.8 | 35.3 | 28.1 | 22.0 | 29.5 | 23.3 |
| Level of Service | C | D | C | E | C | C | C | D | C | C | C | C |
| Approach Delay (s) | | 32.0 | | | 39.1 | | | 32.7 | | | 27.7 | |
| Approach LOS | | C | | | D | | | C | | | C | |

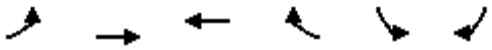
| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 32.6 | HCM 2000 Level of Service | C |
| HCM 2000 Volume to Capacity ratio | 0.73 | | |
| Actuated Cycle Length (s) | 104.9 | Sum of lost time (s) | 20.9 |
| Intersection Capacity Utilization | 79.8% | ICU Level of Service | D |
| Analysis Period (min) | 15 | | |

c Critical Lane Group



| Lane Group | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (vph) | 4 | 175 | 87 | 57 | 38 | 3 |
| Future Volume (vph) | 4 | 175 | 87 | 57 | 38 | 3 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | | | | | | |
| Frt | | | 0.946 | | 0.989 | |
| Flt Protected | | 0.999 | | | 0.956 | |
| Satd. Flow (prot) | 0 | 1531 | 1734 | 0 | 1584 | 0 |
| Flt Permitted | | 0.999 | | | 0.956 | |
| Satd. Flow (perm) | 0 | 1531 | 1734 | 0 | 1584 | 0 |
| Link Speed (k/h) | | 40 | 40 | | 40 | |
| Link Distance (m) | | 86.9 | 152.2 | | 135.3 | |
| Travel Time (s) | | 7.8 | 13.7 | | 12.2 | |
| Confl. Peds. (#/hr) | 16 | | | 16 | | |
| Peak Hour Factor | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Heavy Vehicles (%) | 0% | 26% | 6% | 3% | 16% | 0% |
| Adj. Flow (vph) | 5 | 206 | 102 | 67 | 45 | 4 |
| Shared Lane Traffic (%) | | | | | | |
| Lane Group Flow (vph) | 0 | 211 | 169 | 0 | 49 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Left | Right | Left | Right |
| Median Width(m) | | 0.0 | 0.0 | | 3.7 | |
| Link Offset(m) | | 0.0 | 0.0 | | 0.0 | |
| Crosswalk Width(m) | | 1.6 | 1.6 | | 1.6 | |
| Two way Left Turn Lane | | | | | | |
| Headway Factor | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 |
| Turning Speed (k/h) | 24 | | | 14 | 24 | 14 |
| Sign Control | | Free | Free | | Stop | |

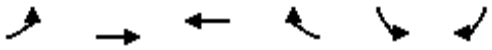
| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Control Type: Unsignalized | | | |
| Intersection Capacity Utilization 22.4% | | ICU Level of Service A | |
| Analysis Period (min) 15 | | | |



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 4 | 175 | 87 | 57 | 38 | 3 |
| Future Volume (Veh/h) | 4 | 175 | 87 | 57 | 38 | 3 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Hourly flow rate (vph) | 5 | 206 | 102 | 67 | 45 | 4 |
| Pedestrians | | | | | 16 | |
| Lane Width (m) | | | | | 3.7 | |
| Walking Speed (m/s) | | | | | 1.1 | |
| Percent Blockage | | | | | 2 | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage veh) | | | | | | |
| Upstream signal (m) | | | 152 | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 185 | | | | 368 | 152 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 185 | | | | 368 | 152 |
| tC, single (s) | 4.1 | | | | 6.6 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.2 | | | | 3.6 | 3.3 |
| p0 queue free % | 100 | | | | 92 | 100 |
| cM capacity (veh/h) | 1380 | | | | 594 | 886 |

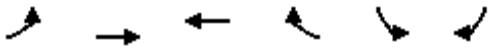
| Direction, Lane # | EB 1 | WB 1 | SB 1 |
|---|---|---|---|
| Volume Total | 211 | 169 | 49 |
| Volume Left | 5 | 0 | 45 |
| Volume Right | 0 | 67 | 4 |
| cSH | 1380 | 1700 | 610 |
| Volume to Capacity | 0.00 | 0.10 | 0.08 |
| Queue Length 95th (m) | 0.1 | 0.0 | 2.0 |
| Control Delay (s) | 0.2 | 0.0 | 11.4 |
| Lane LOS | A | | B |
| Approach Delay (s) | 0.2 | 0.0 | 11.4 |
| Approach LOS | | | B |

| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 1.4 | | |
| Intersection Capacity Utilization | 22.4% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |



| Lane Group | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (vph) | 0 | 5 | 10 | 53 | 148 | 0 |
| Future Volume (vph) | 0 | 5 | 10 | 53 | 148 | 0 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | | | 0.887 | | | |
| Flt Protected | | | | | 0.950 | |
| Satd. Flow (prot) | 0 | 1883 | 1671 | 0 | 1789 | 0 |
| Flt Permitted | | | | | 0.950 | |
| Satd. Flow (perm) | 0 | 1883 | 1671 | 0 | 1789 | 0 |
| Link Speed (k/h) | | 40 | 48 | | 48 | |
| Link Distance (m) | | 48.6 | 63.1 | | 121.6 | |
| Travel Time (s) | | 4.4 | 4.7 | | 9.1 | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 0 | 5 | 11 | 58 | 161 | 0 |
| Shared Lane Traffic (%) | | | | | | |
| Lane Group Flow (vph) | 0 | 5 | 69 | 0 | 161 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Left | Right | Left | Right |
| Median Width(m) | | 0.0 | 0.0 | | 3.7 | |
| Link Offset(m) | | 0.0 | 0.0 | | 0.0 | |
| Crosswalk Width(m) | | 1.6 | 1.6 | | 1.6 | |
| Two way Left Turn Lane | | | | | | |
| Headway Factor | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 |
| Turning Speed (k/h) | 24 | | | 14 | 24 | 14 |
| Sign Control | | Free | Free | | Stop | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Control Type: Unsignalized | | | |
| Intersection Capacity Utilization 18.7% | | ICU Level of Service A | |
| Analysis Period (min) 15 | | | |



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 0 | 5 | 10 | 53 | 148 | 0 |
| Future Volume (Veh/h) | 0 | 5 | 10 | 53 | 148 | 0 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 0 | 5 | 11 | 58 | 161 | 0 |
| Pedestrians | | | | | | |
| Lane Width (m) | | | | | | |
| Walking Speed (m/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage veh) | | | | | | |
| Upstream signal (m) | | | 302 | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 69 | | | | 45 | 40 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 69 | | | | 45 | 40 |
| tC, single (s) | 4.1 | | | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.2 | | | | 3.5 | 3.3 |
| p0 queue free % | 100 | | | | 83 | 100 |
| cM capacity (veh/h) | 1532 | | | | 965 | 1031 |

| Direction, Lane # | EB 1 | WB 1 | SB 1 |
|---|---|---|---|
| Volume Total | 5 | 69 | 161 |
| Volume Left | 0 | 0 | 161 |
| Volume Right | 0 | 58 | 0 |
| cSH | 1532 | 1700 | 965 |
| Volume to Capacity | 0.00 | 0.04 | 0.17 |
| Queue Length 95th (m) | 0.0 | 0.0 | 4.5 |
| Control Delay (s) | 0.0 | 0.0 | 9.5 |
| Lane LOS | | | A |
| Approach Delay (s) | 0.0 | 0.0 | 9.5 |
| Approach LOS | | | A |

| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 6.5 | | |
| Intersection Capacity Utilization | 18.7% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |

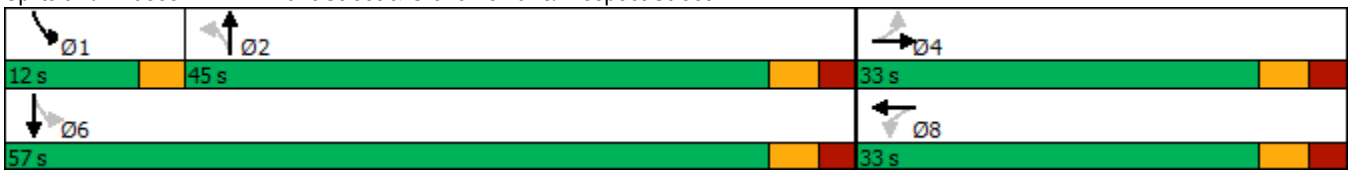
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 192 | 45 | 50 | 127 | 50 | 184 | 62 | 904 | 53 | 121 | 866 | 146 |
| Future Volume (vph) | 192 | 45 | 50 | 127 | 50 | 184 | 62 | 904 | 53 | 121 | 866 | 146 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (m) | 0.0 | | 100.0 | 15.0 | | 0.0 | 20.0 | | 0.0 | 20.0 | | 0.0 |
| Storage Lanes | 1 | | 1 | 1 | | 0 | 1 | | 0 | 1 | | 0 |
| Taper Length (m) | 2.5 | | | 20.0 | | | 5.0 | | | 5.0 | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.95 | 0.95 | 1.00 | 0.95 | 0.95 |
| Ped Bike Factor | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Frt | | 0.921 | | | 0.882 | | | 0.992 | | | 0.978 | |
| Flt Protected | 0.950 | | | 0.950 | | | 0.950 | | | 0.950 | | |
| Satd. Flow (prot) | 1755 | 1660 | 0 | 1825 | 1601 | 0 | 1659 | 3579 | 0 | 1807 | 3460 | 0 |
| Flt Permitted | 0.494 | | | 0.693 | | | 0.272 | | | 0.195 | | |
| Satd. Flow (perm) | 909 | 1660 | 0 | 1325 | 1601 | 0 | 473 | 3579 | 0 | 370 | 3460 | 0 |
| Right Turn on Red | | | Yes | | | Yes | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | 52 | | | 192 | | | 8 | | | 35 | |
| Link Speed (k/h) | | 40 | | | 48 | | | 48 | | | 50 | |
| Link Distance (m) | | 152.2 | | | 116.2 | | | 153.2 | | | 295.0 | |
| Travel Time (s) | | 13.7 | | | 8.7 | | | 11.5 | | | 21.2 | |
| Confl. Peds. (#/hr) | 6 | | 5 | 5 | | 6 | 15 | | 14 | 14 | | 15 |
| Peak Hour Factor | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Heavy Vehicles (%) | 4% | 3% | 8% | 0% | 9% | 3% | 10% | 1% | 0% | 1% | 2% | 6% |
| Adj. Flow (vph) | 200 | 47 | 52 | 132 | 52 | 192 | 65 | 942 | 55 | 126 | 902 | 152 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 200 | 99 | 0 | 132 | 244 | 0 | 65 | 997 | 0 | 126 | 1054 | 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) | | 3.7 | | | 3.7 | | | 3.7 | | | 3.7 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 1.6 | | | 1.6 | | | 1.6 | | | 1.6 | |
| Two way Left Turn Lane | | | | | | | | Yes | | | Yes | |
| Headway Factor | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 |
| Turning Speed (k/h) | 24 | | 14 | 24 | | 14 | 24 | | 14 | 24 | | 14 |
| Number of Detectors | 1 | 2 | | 1 | 2 | | 1 | 2 | | 1 | 2 | |
| Detector Template | Left | Thru | | Left | Thru | | Left | Thru | | Left | Thru | |
| Leading Detector (m) | 6.1 | 30.5 | | 6.1 | 30.5 | | 6.1 | 30.5 | | 6.1 | 30.5 | |
| Trailing Detector (m) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Position(m) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Size(m) | 6.1 | 1.8 | | 6.1 | 1.8 | | 6.1 | 1.8 | | 6.1 | 1.8 | |
| Detector 1 Type | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Queue (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Delay (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 2 Position(m) | | 28.7 | | | 28.7 | | | 28.7 | | | 28.7 | |
| Detector 2 Size(m) | | 1.8 | | | 1.8 | | | 1.8 | | | 1.8 | |
| Detector 2 Type | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |

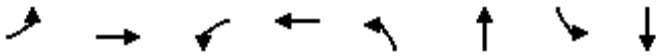
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | pm+pt | NA | |
| Protected Phases | | 4 | | | 8 | | | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Detector Phase | 4 | 4 | | 8 | 8 | | 2 | 2 | | 1 | 6 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 8.0 | 8.0 | | 8.0 | 8.0 | | 8.0 | 8.0 | | 6.0 | 8.0 | |
| Minimum Split (s) | 31.0 | 31.0 | | 31.0 | 31.0 | | 39.8 | 39.8 | | 10.5 | 39.8 | |
| Total Split (s) | 33.0 | 33.0 | | 33.0 | 33.0 | | 45.0 | 45.0 | | 12.0 | 57.0 | |
| Total Split (%) | 36.7% | 36.7% | | 36.7% | 36.7% | | 50.0% | 50.0% | | 13.3% | 63.3% | |
| Maximum Green (s) | 27.0 | 27.0 | | 27.0 | 27.0 | | 39.2 | 39.2 | | 9.0 | 51.2 | |
| Yellow Time (s) | 3.3 | 3.3 | | 3.3 | 3.3 | | 3.3 | 3.3 | | 3.0 | 3.3 | |
| All-Red Time (s) | 2.7 | 2.7 | | 2.7 | 2.7 | | 2.5 | 2.5 | | 0.0 | 2.5 | |
| Lost Time Adjust (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Total Lost Time (s) | 6.0 | 6.0 | | 6.0 | 6.0 | | 5.8 | 5.8 | | 3.0 | 5.8 | |
| Lead/Lag | | | | | | | Lag | Lag | | Lead | | |
| Lead-Lag Optimize? | | | | | | | Yes | Yes | | Yes | | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Recall Mode | None | None | | None | None | | Max | Max | | None | Max | |
| Walk Time (s) | 11.0 | 11.0 | | 11.0 | 11.0 | | 23.0 | 23.0 | | | 23.0 | |
| Flash Dont Walk (s) | 14.0 | 14.0 | | 14.0 | 14.0 | | 11.0 | 11.0 | | | 11.0 | |
| Pedestrian Calls (#/hr) | 0 | 0 | | 0 | 0 | | 0 | 0 | | | 0 | |
| Act Effct Green (s) | 21.5 | 21.5 | | 21.5 | 21.5 | | 42.7 | 42.7 | | 54.3 | 51.4 | |
| Actuated g/C Ratio | 0.25 | 0.25 | | 0.25 | 0.25 | | 0.50 | 0.50 | | 0.64 | 0.61 | |
| v/c Ratio | 0.87 | 0.22 | | 0.39 | 0.44 | | 0.27 | 0.55 | | 0.34 | 0.50 | |
| Control Delay | 64.7 | 14.1 | | 29.4 | 9.4 | | 19.9 | 17.8 | | 9.7 | 10.8 | |
| Queue Delay | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Total Delay | 64.7 | 14.1 | | 29.4 | 9.4 | | 19.9 | 17.8 | | 9.7 | 10.8 | |
| LOS | E | B | | C | A | | B | B | | A | B | |
| Approach Delay | | 47.9 | | | 16.4 | | | 17.9 | | | 10.7 | |
| Approach LOS | | D | | | B | | | B | | | B | |

**Intersection Summary**

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 84.8
Natural Cycle: 85
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.87
Intersection Signal Delay: 17.9 Intersection LOS: B
Intersection Capacity Utilization 81.4% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 141: Brant Street & Grahams Lane/Prospect Street

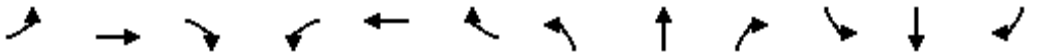




| Lane Group | EBL | EBT | WBL | WBT | NBL | NBT | SBL | SBT |
|---|---|---|---|---|---|---|---|---|
| Lane Group Flow (vph) | 200 | 99 | 132 | 244 | 65 | 997 | 126 | 1054 |
| v/c Ratio | 0.87 | 0.22 | 0.39 | 0.44 | 0.27 | 0.55 | 0.34 | 0.50 |
| Control Delay | 64.7 | 14.1 | 29.4 | 9.4 | 19.9 | 17.8 | 9.7 | 10.8 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 64.7 | 14.1 | 29.4 | 9.4 | 19.9 | 17.8 | 9.7 | 10.8 |
| Queue Length 50th (m) | 30.8 | 5.8 | 17.6 | 6.5 | 6.4 | 61.3 | 7.6 | 47.5 |
| Queue Length 95th (m) | #63.8 | 17.1 | 33.0 | 24.0 | 17.7 | 88.4 | 15.8 | 69.3 |
| Internal Link Dist (m) | | 128.2 | | 92.2 | | 129.2 | | 271.0 |
| Turn Bay Length (m) | | | 15.0 | | 20.0 | | 20.0 | |
| Base Capacity (vph) | 290 | 566 | 423 | 642 | 238 | 1807 | 389 | 2112 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.69 | 0.17 | 0.31 | 0.38 | 0.27 | 0.55 | 0.32 | 0.50 |

Intersection Summary

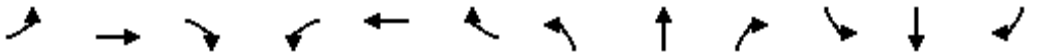
# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 192 | 45 | 50 | 127 | 50 | 184 | 62 | 904 | 53 | 121 | 866 | 146 |
| Future Volume (vph) | 192 | 45 | 50 | 127 | 50 | 184 | 62 | 904 | 53 | 121 | 866 | 146 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 6.0 | 6.0 | | 6.0 | 6.0 | | 5.8 | 5.8 | | 3.0 | 5.8 | |
| Lane Util. Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | 1.00 | 0.99 | | 1.00 | 0.99 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Frt | 1.00 | 0.92 | | 1.00 | 0.88 | | 1.00 | 0.99 | | 1.00 | 0.98 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | 1748 | 1661 | | 1817 | 1602 | | 1652 | 3579 | | 1806 | 3462 | |
| Flt Permitted | 0.49 | 1.00 | | 0.69 | 1.00 | | 0.27 | 1.00 | | 0.19 | 1.00 | |
| Satd. Flow (perm) | 908 | 1661 | | 1325 | 1602 | | 472 | 3579 | | 370 | 3462 | |
| Peak-hour factor, PHF | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Adj. Flow (vph) | 200 | 47 | 52 | 132 | 52 | 192 | 65 | 942 | 55 | 126 | 902 | 152 |
| RTOR Reduction (vph) | 0 | 39 | 0 | 0 | 144 | 0 | 0 | 4 | 0 | 0 | 14 | 0 |
| Lane Group Flow (vph) | 200 | 60 | 0 | 132 | 100 | 0 | 65 | 993 | 0 | 126 | 1040 | 0 |
| Confl. Peds. (#/hr) | 6 | | 5 | 5 | | 6 | 15 | | 14 | 14 | | 15 |
| Heavy Vehicles (%) | 4% | 3% | 8% | 0% | 9% | 3% | 10% | 1% | 0% | 1% | 2% | 6% |
| Turn Type | Perm | NA | | Perm | NA | | Perm | NA | | pm+pt | NA | |
| Protected Phases | | 4 | | | 8 | | | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | 21.5 | 21.5 | | 21.5 | 21.5 | | 42.7 | 42.7 | | 52.1 | 52.1 | |
| Effective Green, g (s) | 21.5 | 21.5 | | 21.5 | 21.5 | | 42.7 | 42.7 | | 52.1 | 52.1 | |
| Actuated g/C Ratio | 0.25 | 0.25 | | 0.25 | 0.25 | | 0.50 | 0.50 | | 0.61 | 0.61 | |
| Clearance Time (s) | 6.0 | 6.0 | | 6.0 | 6.0 | | 5.8 | 5.8 | | 3.0 | 5.8 | |
| Vehicle Extension (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | 228 | 418 | | 333 | 403 | | 236 | 1789 | | 333 | 2112 | |
| v/s Ratio Prot | | 0.04 | | | 0.06 | | | c0.28 | | 0.03 | c0.30 | |
| v/s Ratio Perm | c0.22 | | | 0.10 | | | 0.14 | | | 0.20 | | |
| v/c Ratio | 0.88 | 0.14 | | 0.40 | 0.25 | | 0.28 | 0.56 | | 0.38 | 0.49 | |
| Uniform Delay, d1 | 30.7 | 24.8 | | 26.6 | 25.5 | | 12.4 | 14.8 | | 8.6 | 9.3 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | 29.2 | 0.2 | | 0.8 | 0.3 | | 2.9 | 1.2 | | 0.7 | 0.8 | |
| Delay (s) | 59.9 | 25.0 | | 27.3 | 25.8 | | 15.3 | 16.0 | | 9.4 | 10.1 | |
| Level of Service | E | C | | C | C | | B | B | | A | B | |
| Approach Delay (s) | | 48.3 | | | 26.4 | | | 16.0 | | | 10.0 | |
| Approach LOS | | D | | | C | | | B | | | B | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 18.2 | HCM 2000 Level of Service | B |
| HCM 2000 Volume to Capacity ratio | 0.65 | | |
| Actuated Cycle Length (s) | 85.4 | Sum of lost time (s) | 14.8 |
| Intersection Capacity Utilization | 81.4% | ICU Level of Service | D |
| Analysis Period (min) | 15 | | |

c Critical Lane Group



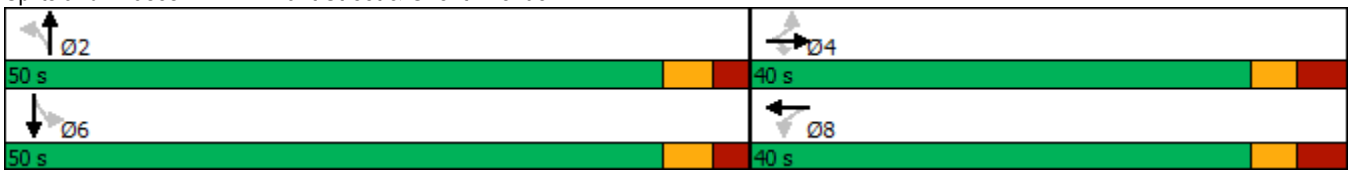
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 135 | 17 | 29 | 38 | 61 | 91 | 32 | 838 | 36 | 118 | 739 | 250 |
| Future Volume (vph) | 135 | 17 | 29 | 38 | 61 | 91 | 32 | 838 | 36 | 118 | 739 | 250 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (m) | 0.0 | | 35.0 | 0.0 | | 0.0 | 45.0 | | 0.0 | 25.0 | | 0.0 |
| Storage Lanes | 0 | | 0 | 0 | | 0 | 1 | | 0 | 1 | | 0 |
| Taper Length (m) | 2.5 | | | 2.5 | | | 5.0 | | | 5.0 | | |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.95 | 0.95 | 1.00 | 0.95 | 0.95 |
| Ped Bike Factor | | 1.00 | 0.97 | | 0.99 | | 1.00 | 1.00 | | 0.99 | 0.99 | |
| Frt | | | 0.850 | | 0.935 | | | 0.994 | | | 0.962 | |
| Flt Protected | | 0.957 | | | 0.990 | | 0.950 | | | 0.950 | | |
| Satd. Flow (prot) | 0 | 1822 | 1512 | 0 | 1737 | 0 | 1825 | 3553 | 0 | 1825 | 3411 | 0 |
| Flt Permitted | | 0.588 | | | 0.894 | | 0.233 | | | 0.277 | | |
| Satd. Flow (perm) | 0 | 1114 | 1473 | 0 | 1565 | 0 | 446 | 3553 | 0 | 529 | 3411 | 0 |
| Right Turn on Red | | | Yes | | | Yes | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | | 35 | | 59 | | | 7 | | | 72 | |
| Link Speed (k/h) | | 40 | | | 40 | | | 48 | | | 50 | |
| Link Distance (m) | | 111.7 | | | 105.0 | | | 155.1 | | | 153.2 | |
| Travel Time (s) | | 10.1 | | | 9.5 | | | 11.6 | | | 11.0 | |
| Confl. Peds. (#/hr) | 9 | | 16 | 16 | | 9 | 15 | | 17 | 17 | | 15 |
| 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 |
| Heavy Vehicles (%) | 1% | 0% | 8% | 4% | 2% | 0% | 0% | 2% | 0% | 0% | 2% | 1% |
| Adj. Flow (vph) | 144 | 18 | 31 | 40 | 65 | 97 | 34 | 891 | 38 | 126 | 786 | 266 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 162 | 31 | 0 | 202 | 0 | 34 | 929 | 0 | 126 | 1052 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(m) | | 0.0 | | | 0.0 | | | 3.7 | | | 3.7 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 1.6 | | | 1.6 | | | 1.6 | | | 1.6 | |
| Two way Left Turn Lane | | | | | | | | Yes | | | Yes | |
| Headway Factor | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 |
| Turning Speed (k/h) | 24 | | 14 | 24 | | 14 | 24 | | 14 | 24 | | 14 |
| Number of Detectors | 1 | 2 | 1 | 1 | 2 | | 1 | 2 | | 1 | 2 | |
| Detector Template | Left | Thru | Right | Left | Thru | | Left | Thru | | Left | Thru | |
| Leading Detector (m) | 6.1 | 30.5 | 6.1 | 6.1 | 30.5 | | 6.1 | 30.5 | | 6.1 | 30.5 | |
| Trailing Detector (m) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Position(m) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Size(m) | 6.1 | 1.8 | 6.1 | 6.1 | 1.8 | | 6.1 | 1.8 | | 6.1 | 1.8 | |
| Detector 1 Type | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Queue (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 1 Delay (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Detector 2 Position(m) | | 28.7 | | | 28.7 | | | 28.7 | | | 28.7 | |
| Detector 2 Size(m) | | 1.8 | | | 1.8 | | | 1.8 | | | 1.8 | |
| Detector 2 Type | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Turn Type | Perm | NA | Perm | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | | 6 | | |
| Detector Phase | 4 | 4 | 4 | 8 | 8 | | 2 | 2 | | 6 | 6 | |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | | 8.0 | 8.0 | | 8.0 | 8.0 | |
| Minimum Split (s) | 37.5 | 37.5 | 37.5 | 37.5 | 37.5 | | 32.9 | 32.9 | | 32.9 | 32.9 | |
| Total Split (s) | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | | 50.0 | 50.0 | | 50.0 | 50.0 | |
| Total Split (%) | 44.4% | 44.4% | 44.4% | 44.4% | 44.4% | | 55.6% | 55.6% | | 55.6% | 55.6% | |
| Maximum Green (s) | 33.5 | 33.5 | 33.5 | 33.5 | 33.5 | | 44.1 | 44.1 | | 44.1 | 44.1 | |
| Yellow Time (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.3 | 3.3 | | 3.3 | 3.3 | |
| All-Red Time (s) | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | | 2.6 | 2.6 | | 2.6 | 2.6 | |
| Lost Time Adjust (s) | | 0.0 | 0.0 | | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | |
| Total Lost Time (s) | | 6.5 | 6.5 | | 6.5 | | 5.9 | 5.9 | | 5.9 | 5.9 | |
| Lead/Lag | | | | | | | | | | | | |
| Lead-Lag Optimize? | | | | | | | | | | | | |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Recall Mode | None | None | None | None | None | | Max | Max | | Max | Max | |
| Walk Time (s) | 15.0 | 15.0 | 15.0 | 15.0 | 15.0 | | 16.0 | 16.0 | | 16.0 | 16.0 | |
| Flash Dont Walk (s) | 16.0 | 16.0 | 16.0 | 16.0 | 16.0 | | 10.0 | 10.0 | | 10.0 | 10.0 | |
| Pedestrian Calls (#/hr) | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| Act Effct Green (s) | | 15.1 | 15.1 | | 15.1 | | 44.3 | 44.3 | | 44.3 | 44.3 | |
| Actuated g/C Ratio | | 0.21 | 0.21 | | 0.21 | | 0.62 | 0.62 | | 0.62 | 0.62 | |
| v/c Ratio | | 0.70 | 0.09 | | 0.54 | | 0.12 | 0.42 | | 0.39 | 0.49 | |
| Control Delay | | 42.0 | 7.9 | | 22.8 | | 8.7 | 8.6 | | 13.0 | 8.7 | |
| Queue Delay | | 0.0 | 0.0 | | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.1 | |
| Total Delay | | 42.0 | 7.9 | | 22.8 | | 8.7 | 8.6 | | 13.0 | 8.8 | |
| LOS | | D | A | | C | | A | A | | B | A | |
| Approach Delay | | 36.5 | | | 22.8 | | | 8.6 | | | 9.3 | |
| Approach LOS | | D | | | C | | | A | | | A | |

**Intersection Summary**

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 71.8
Natural Cycle: 75
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.70
Intersection Signal Delay: 12.1 Intersection LOS: B
Intersection Capacity Utilization 79.2% ICU Level of Service D
Analysis Period (min) 15

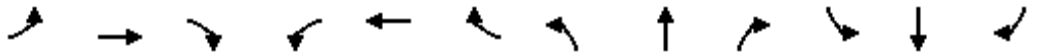
Splits and Phases: 142: Brant Street & Ghent Avenue





| Lane Group | EBT | EBR | WBT | NBL | NBT | SBL | SBT |
|---|---|---|---|---|---|---|---|
| Lane Group Flow (vph) | 162 | 31 | 202 | 34 | 929 | 126 | 1052 |
| v/c Ratio | 0.70 | 0.09 | 0.54 | 0.12 | 0.42 | 0.39 | 0.49 |
| Control Delay | 42.0 | 7.9 | 22.8 | 8.7 | 8.6 | 13.0 | 8.7 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 |
| Total Delay | 42.0 | 7.9 | 22.8 | 8.7 | 8.6 | 13.0 | 8.8 |
| Queue Length 50th (m) | 20.2 | 0.0 | 16.8 | 1.7 | 29.6 | 7.5 | 33.0 |
| Queue Length 95th (m) | 38.6 | 5.4 | 34.6 | 6.9 | 54.2 | 24.3 | 61.4 |
| Internal Link Dist (m) | 87.7 | | 81.0 | | 131.1 | | 129.2 |
| Turn Bay Length (m) | | 35.0 | | 45.0 | | 25.0 | |
| Base Capacity (vph) | 521 | 708 | 764 | 275 | 2194 | 326 | 2131 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 251 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.31 | 0.04 | 0.26 | 0.12 | 0.42 | 0.39 | 0.56 |

Intersection Summary



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 135 | 17 | 29 | 38 | 61 | 91 | 32 | 838 | 36 | 118 | 739 | 250 |
| Future Volume (vph) | 135 | 17 | 29 | 38 | 61 | 91 | 32 | 838 | 36 | 118 | 739 | 250 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | | 6.5 | 6.5 | | 6.5 | | 5.9 | 5.9 | | 5.9 | 5.9 | |
| Lane Util. Factor | | 1.00 | 1.00 | | 1.00 | | 1.00 | 0.95 | | 1.00 | 0.95 | |
| Frpb, ped/bikes | | 1.00 | 0.98 | | 0.99 | | 1.00 | 1.00 | | 1.00 | 0.99 | |
| Flpb, ped/bikes | | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | | 0.99 | 1.00 | |
| Frt | | 1.00 | 0.85 | | 0.94 | | 1.00 | 0.99 | | 1.00 | 0.96 | |
| Flt Protected | | 0.96 | 1.00 | | 0.99 | | 0.95 | 1.00 | | 0.95 | 1.00 | |
| Satd. Flow (prot) | | 1816 | 1477 | | 1735 | | 1817 | 3553 | | 1814 | 3416 | |
| Flt Permitted | | 0.59 | 1.00 | | 0.89 | | 0.23 | 1.00 | | 0.28 | 1.00 | |
| Satd. Flow (perm) | | 1115 | 1477 | | 1566 | | 446 | 3553 | | 530 | 3416 | |
| Peak-hour factor, PHF | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Adj. Flow (vph) | 144 | 18 | 31 | 40 | 65 | 97 | 34 | 891 | 38 | 126 | 786 | 266 |
| RTOR Reduction (vph) | 0 | 0 | 24 | 0 | 47 | 0 | 0 | 3 | 0 | 0 | 28 | 0 |
| Lane Group Flow (vph) | 0 | 162 | 7 | 0 | 155 | 0 | 34 | 926 | 0 | 126 | 1024 | 0 |
| Confl. Peds. (#/hr) | 9 | | 16 | 16 | | 9 | 15 | | 17 | 17 | | 15 |
| Heavy Vehicles (%) | 1% | 0% | 8% | 4% | 2% | 0% | 0% | 2% | 0% | 0% | 2% | 1% |
| Turn Type | Perm | NA | Perm | Perm | NA | | Perm | NA | | Perm | NA | |
| Protected Phases | | 4 | | | 8 | | | 2 | | | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | | 2 | | | 6 | | |
| Actuated Green, G (s) | | 15.1 | 15.1 | | 15.1 | | 44.3 | 44.3 | | 44.3 | 44.3 | |
| Effective Green, g (s) | | 15.1 | 15.1 | | 15.1 | | 44.3 | 44.3 | | 44.3 | 44.3 | |
| Actuated g/C Ratio | | 0.21 | 0.21 | | 0.21 | | 0.62 | 0.62 | | 0.62 | 0.62 | |
| Clearance Time (s) | | 6.5 | 6.5 | | 6.5 | | 5.9 | 5.9 | | 5.9 | 5.9 | |
| Vehicle Extension (s) | | 3.0 | 3.0 | | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | |
| Lane Grp Cap (vph) | | 234 | 310 | | 329 | | 275 | 2192 | | 327 | 2107 | |
| v/s Ratio Prot | | | | | | | | 0.26 | | | c0.30 | |
| v/s Ratio Perm | | c0.15 | 0.00 | | 0.10 | | 0.08 | | | 0.24 | | |
| v/c Ratio | | 0.69 | 0.02 | | 0.47 | | 0.12 | 0.42 | | 0.39 | 0.49 | |
| Uniform Delay, d1 | | 26.2 | 22.5 | | 24.9 | | 5.7 | 7.1 | | 6.9 | 7.5 | |
| Progression Factor | | 1.00 | 1.00 | | 1.00 | | 1.00 | 1.00 | | 1.00 | 1.00 | |
| Incremental Delay, d2 | | 8.5 | 0.0 | | 1.1 | | 0.9 | 0.6 | | 3.4 | 0.8 | |
| Delay (s) | | 34.7 | 22.5 | | 25.9 | | 6.6 | 7.7 | | 10.3 | 8.3 | |
| Level of Service | | C | C | | C | | A | A | | B | A | |
| Approach Delay (s) | | 32.8 | | | 25.9 | | | 7.7 | | | 8.5 | |
| Approach LOS | | C | | | C | | | A | | | A | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 11.4 | HCM 2000 Level of Service | B |
| HCM 2000 Volume to Capacity ratio | 0.54 | | |
| Actuated Cycle Length (s) | 71.8 | Sum of lost time (s) | 12.4 |
| Intersection Capacity Utilization | 79.2% | ICU Level of Service | D |
| Analysis Period (min) | 15 | | |

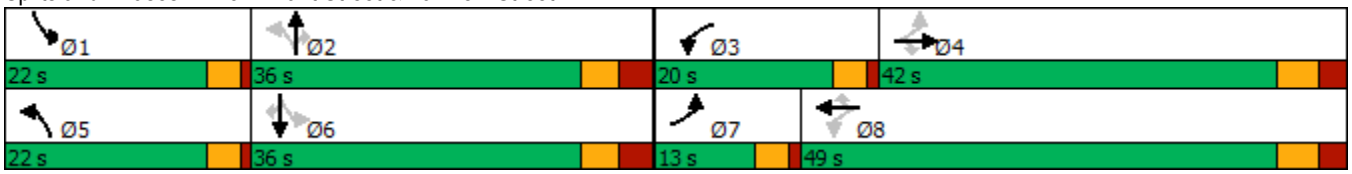
c Critical Lane Group

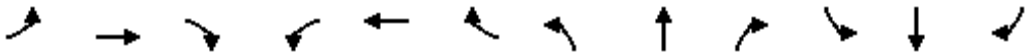
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 206 | 652 | 246 | 235 | 1230 | 336 | 262 | 859 | 207 | 158 | 694 | 185 |
| Future Volume (vph) | 206 | 652 | 246 | 235 | 1230 | 336 | 262 | 859 | 207 | 158 | 694 | 185 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (m) | 0.0 | | 150.0 | 65.0 | | 0.0 | 85.0 | | 70.0 | 50.0 | | 0.0 |
| Storage Lanes | 1 | | 1 | 1 | | 1 | 1 | | 1 | 1 | | 1 |
| Taper Length (m) | 2.5 | | | 45.0 | | | 10.0 | | | 15.0 | | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Ped Bike Factor | | | 0.97 | 1.00 | | 0.97 | 1.00 | | 0.94 | | | 0.97 |
| Frt | | | 0.850 | | | 0.850 | | | 0.850 | | | 0.850 |
| Flt Protected | 0.950 | | | 0.950 | | | 0.950 | | | 0.950 | | |
| Satd. Flow (prot) | 1807 | 3544 | 1601 | 1772 | 3579 | 1570 | 1807 | 3614 | 1570 | 1755 | 3614 | 1570 |
| Flt Permitted | 0.104 | | | 0.226 | | | 0.137 | | | 0.135 | | |
| Satd. Flow (perm) | 198 | 3544 | 1556 | 420 | 3579 | 1519 | 260 | 3614 | 1475 | 249 | 3614 | 1524 |
| Right Turn on Red | | | Yes | | | Yes | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | | 256 | | | 266 | | | 186 | | | 193 |
| Link Speed (k/h) | | 50 | | | 50 | | | 50 | | | 50 | |
| Link Distance (m) | | 373.6 | | | 286.0 | | | 295.0 | | | 107.5 | |
| Travel Time (s) | | 26.9 | | | 20.6 | | | 21.2 | | | 7.7 | |
| Confl. Peds. (#/hr) | 14 | | 11 | 11 | | 14 | 12 | | 33 | 33 | | 12 |
| Peak Hour Factor | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Heavy Vehicles (%) | 1% | 3% | 2% | 3% | 2% | 4% | 1% | 1% | 4% | 4% | 1% | 4% |
| Adj. Flow (vph) | 215 | 679 | 256 | 245 | 1281 | 350 | 273 | 895 | 216 | 165 | 723 | 193 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 215 | 679 | 256 | 245 | 1281 | 350 | 273 | 895 | 216 | 165 | 723 | 193 |
| 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) | | 3.7 | | | 3.7 | | | 3.7 | | | 3.7 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 1.6 | | | 1.6 | | | 1.6 | | | 1.6 | |
| Two way Left Turn Lane | | | | | | | | Yes | | | | |
| Headway Factor | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 |
| Turning Speed (k/h) | 24 | | 14 | 24 | | 14 | 24 | | 14 | 24 | | 14 |
| Number of Detectors | 1 | 2 | 1 | 1 | 2 | 1 | 1 | 2 | 1 | 1 | 2 | 1 |
| Detector Template | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Leading Detector (m) | 6.1 | 30.5 | 6.1 | 6.1 | 30.5 | 6.1 | 6.1 | 30.5 | 6.1 | 6.1 | 30.5 | 6.1 |
| Trailing Detector (m) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector 1 Position(m) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector 1 Size(m) | 6.1 | 1.8 | 6.1 | 6.1 | 1.8 | 6.1 | 6.1 | 1.8 | 6.1 | 6.1 | 1.8 | 6.1 |
| Detector 1 Type | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector 1 Queue (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector 1 Delay (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector 2 Position(m) | | 28.7 | | | 28.7 | | | 28.7 | | | 28.7 | |
| Detector 2 Size(m) | | 1.8 | | | 1.8 | | | 1.8 | | | 1.8 | |
| Detector 2 Type | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Turn Type | pm+pt | NA | Perm | pm+pt | NA | Perm | pm+pt | NA | Perm | pm+pt | NA | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | 6 |
| Detector Phase | 7 | 4 | 4 | 3 | 8 | 8 | 5 | 2 | 2 | 1 | 6 | 6 |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 7.0 | 8.0 | 8.0 | 7.0 | 8.0 | 8.0 | 7.0 | 8.0 | 8.0 | 7.0 | 8.0 | 8.0 |
| Minimum Split (s) | 11.5 | 30.4 | 30.4 | 11.5 | 30.4 | 30.4 | 11.5 | 30.5 | 30.5 | 11.5 | 30.5 | 30.5 |
| Total Split (s) | 13.0 | 42.0 | 42.0 | 20.0 | 49.0 | 49.0 | 22.0 | 36.0 | 36.0 | 22.0 | 36.0 | 36.0 |
| Total Split (%) | 10.8% | 35.0% | 35.0% | 16.7% | 40.8% | 40.8% | 18.3% | 30.0% | 30.0% | 18.3% | 30.0% | 30.0% |
| Maximum Green (s) | 9.0 | 35.6 | 35.6 | 16.0 | 42.6 | 42.6 | 18.0 | 29.5 | 29.5 | 18.0 | 29.5 | 29.5 |
| Yellow Time (s) | 3.0 | 3.7 | 3.7 | 3.0 | 3.7 | 3.7 | 3.0 | 3.3 | 3.3 | 3.0 | 3.3 | 3.3 |
| All-Red Time (s) | 1.0 | 2.7 | 2.7 | 1.0 | 2.7 | 2.7 | 1.0 | 3.2 | 3.2 | 1.0 | 3.2 | 3.2 |
| Lost Time Adjust (s) | -1.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 3.0 | 6.4 | 6.4 | 4.0 | 6.4 | 6.4 | 4.0 | 6.5 | 6.5 | 4.0 | 6.5 | 6.5 |
| Lead/Lag | Lead | Lag | Lag | Lead | Lag | Lag | Lead | Lag | Lag | Lead | Lag | Lag |
| Lead-Lag Optimize? | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Recall Mode | None | None | None | None | None | None | None | Max | Max | None | Max | Max |
| Walk Time (s) | | 7.0 | 7.0 | | 7.0 | 7.0 | | 7.0 | 7.0 | | 7.0 | 7.0 |
| Flash Dont Walk (s) | | 17.0 | 17.0 | | 17.0 | 17.0 | | 17.0 | 17.0 | | 17.0 | 17.0 |
| Pedestrian Calls (#/hr) | | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 |
| Act Effct Green (s) | 50.9 | 37.5 | 37.5 | 57.4 | 42.6 | 42.6 | 51.8 | 33.5 | 33.5 | 44.7 | 29.5 | 29.5 |
| Actuated g/C Ratio | 0.43 | 0.32 | 0.32 | 0.48 | 0.36 | 0.36 | 0.44 | 0.28 | 0.28 | 0.38 | 0.25 | 0.25 |
| v/c Ratio | 0.98 | 0.61 | 0.38 | 0.67 | 1.00 | 0.49 | 0.83 | 0.88 | 0.39 | 0.65 | 0.81 | 0.37 |
| Control Delay | 85.5 | 37.8 | 5.6 | 28.2 | 62.9 | 10.0 | 47.8 | 52.2 | 9.9 | 34.7 | 50.1 | 7.2 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 85.5 | 37.8 | 5.6 | 28.2 | 62.9 | 10.0 | 47.8 | 52.2 | 9.9 | 34.7 | 50.1 | 7.2 |
| LOS | F | D | A | C | E | B | D | D | A | C | D | A |
| Approach Delay | | 39.5 | | | 48.5 | | | 44.7 | | | 40.1 | |
| Approach LOS | | D | | | D | | | D | | | D | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Cycle Length: 120 | | | |
| Actuated Cycle Length: 118.7 | | | |
| Natural Cycle: 95 | | | |
| Control Type: Semi Act-Uncoord | | | |
| Maximum v/c Ratio: 1.00 | | | |
| Intersection Signal Delay: 44.0 | | Intersection LOS: D | |
| Intersection Capacity Utilization 97.3% | | ICU Level of Service F | |
| Analysis Period (min) 15 | | | |

Splits and Phases: 151: Brant Street & Fairview Street





| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Group Flow (vph) | 215 | 679 | 256 | 245 | 1281 | 350 | 273 | 895 | 216 | 165 | 723 | 193 |
| v/c Ratio | 0.98 | 0.61 | 0.38 | 0.67 | 1.00 | 0.49 | 0.83 | 0.88 | 0.39 | 0.65 | 0.81 | 0.37 |
| Control Delay | 85.5 | 37.8 | 5.6 | 28.2 | 62.9 | 10.0 | 47.8 | 52.2 | 9.9 | 34.7 | 50.1 | 7.2 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 85.5 | 37.8 | 5.6 | 28.2 | 62.9 | 10.0 | 47.8 | 52.2 | 9.9 | 34.7 | 50.1 | 7.2 |
| Queue Length 50th (m) | 34.8 | 72.6 | 0.0 | 33.6 | ~160.3 | 13.4 | 42.0 | 104.1 | 5.1 | 23.1 | 84.8 | 0.0 |
| Queue Length 95th (m) | #84.7 | 93.4 | 18.5 | 51.0 | #208.3 | 38.9 | #85.5 | #155.5 | 25.7 | 40.3 | 107.4 | 17.7 |
| Internal Link Dist (m) | | 349.6 | | | 262.0 | | | 271.0 | | | 83.5 | |
| Turn Bay Length (m) | | | 150.0 | 65.0 | | | 85.0 | | 70.0 | 50.0 | | |
| Base Capacity (vph) | 220 | 1121 | 667 | 387 | 1285 | 715 | 348 | 1019 | 549 | 332 | 898 | 524 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.98 | 0.61 | 0.38 | 0.63 | 1.00 | 0.49 | 0.78 | 0.88 | 0.39 | 0.50 | 0.81 | 0.37 |

Intersection Summary

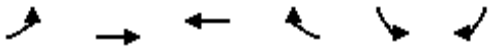
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 206 | 652 | 246 | 235 | 1230 | 336 | 262 | 859 | 207 | 158 | 694 | 185 |
| Future Volume (vph) | 206 | 652 | 246 | 235 | 1230 | 336 | 262 | 859 | 207 | 158 | 694 | 185 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 3.0 | 6.4 | 6.4 | 4.0 | 6.4 | 6.4 | 4.0 | 6.5 | 6.5 | 4.0 | 6.5 | 6.5 |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.94 | 1.00 | 1.00 | 0.97 |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1807 | 3544 | 1556 | 1771 | 3579 | 1519 | 1806 | 3614 | 1476 | 1754 | 3614 | 1524 |
| Flt Permitted | 0.10 | 1.00 | 1.00 | 0.23 | 1.00 | 1.00 | 0.14 | 1.00 | 1.00 | 0.14 | 1.00 | 1.00 |
| Satd. Flow (perm) | 198 | 3544 | 1556 | 420 | 3579 | 1519 | 261 | 3614 | 1476 | 249 | 3614 | 1524 |
| Peak-hour factor, PHF | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Adj. Flow (vph) | 215 | 679 | 256 | 245 | 1281 | 350 | 273 | 895 | 216 | 165 | 723 | 193 |
| RTOR Reduction (vph) | 0 | 0 | 175 | 0 | 0 | 171 | 0 | 0 | 134 | 0 | 0 | 145 |
| Lane Group Flow (vph) | 215 | 679 | 81 | 245 | 1281 | 179 | 273 | 895 | 82 | 165 | 723 | 48 |
| Confl. Peds. (#/hr) | 14 | | 11 | 11 | | 14 | 12 | | 33 | 33 | | 12 |
| Heavy Vehicles (%) | 1% | 3% | 2% | 3% | 2% | 4% | 1% | 1% | 4% | 4% | 1% | 4% |
| Turn Type | pm+pt | NA | Perm | pm+pt | NA | Perm | pm+pt | NA | Perm | pm+pt | NA | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 46.5 | 37.5 | 37.5 | 55.6 | 42.6 | 42.6 | 50.1 | 33.5 | 33.5 | 42.3 | 29.6 | 29.6 |
| Effective Green, g (s) | 48.5 | 37.5 | 37.5 | 55.6 | 42.6 | 42.6 | 50.1 | 33.5 | 33.5 | 42.3 | 29.6 | 29.6 |
| Actuated g/C Ratio | 0.41 | 0.32 | 0.32 | 0.47 | 0.36 | 0.36 | 0.42 | 0.28 | 0.28 | 0.36 | 0.25 | 0.25 |
| Clearance Time (s) | 4.0 | 6.4 | 6.4 | 4.0 | 6.4 | 6.4 | 4.0 | 6.5 | 6.5 | 4.0 | 6.5 | 6.5 |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 216 | 1119 | 491 | 357 | 1284 | 545 | 326 | 1019 | 416 | 249 | 901 | 380 |
| v/s Ratio Prot | c0.08 | 0.19 | | c0.08 | c0.36 | | c0.12 | c0.25 | | 0.07 | 0.20 | |
| v/s Ratio Perm | 0.32 | | 0.05 | 0.24 | | 0.12 | 0.24 | | 0.06 | 0.16 | | 0.03 |
| v/c Ratio | 1.00 | 0.61 | 0.16 | 0.69 | 1.00 | 0.33 | 0.84 | 0.88 | 0.20 | 0.66 | 0.80 | 0.13 |
| Uniform Delay, d1 | 31.2 | 34.4 | 29.3 | 21.5 | 38.0 | 27.7 | 27.4 | 40.7 | 32.4 | 29.3 | 41.8 | 34.5 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 59.6 | 0.9 | 0.2 | 5.4 | 24.4 | 0.4 | 16.8 | 10.7 | 1.1 | 6.5 | 7.5 | 0.7 |
| Delay (s) | 90.8 | 35.3 | 29.5 | 26.8 | 62.4 | 28.0 | 44.2 | 51.3 | 33.5 | 35.7 | 49.3 | 35.2 |
| Level of Service | F | D | C | C | E | C | D | D | C | D | D | D |
| Approach Delay (s) | | 44.4 | | | 51.3 | | | 47.1 | | | 44.7 | |
| Approach LOS | | D | | | D | | | D | | | D | |

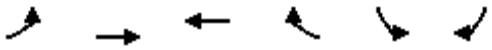
| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 47.5 | HCM 2000 Level of Service | D |
| HCM 2000 Volume to Capacity ratio | 0.97 | | |
| Actuated Cycle Length (s) | 118.7 | Sum of lost time (s) | 20.9 |
| Intersection Capacity Utilization | 97.3% | ICU Level of Service | F |
| Analysis Period (min) | 15 | | |

c Critical Lane Group



| Lane Group | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (vph) | 0 | 150 | 179 | 29 | 76 | 0 |
| Future Volume (vph) | 0 | 150 | 179 | 29 | 76 | 0 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | | | 0.981 | | | |
| Flt Protected | | | | | 0.950 | |
| Satd. Flow (prot) | 0 | 1865 | 1864 | 0 | 1755 | 0 |
| Flt Permitted | | | | | 0.950 | |
| Satd. Flow (perm) | 0 | 1865 | 1864 | 0 | 1755 | 0 |
| Link Speed (k/h) | | 40 | 40 | | 40 | |
| Link Distance (m) | | 86.9 | 152.2 | | 135.3 | |
| Travel Time (s) | | 7.8 | 13.7 | | 12.2 | |
| Peak Hour Factor | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Heavy Vehicles (%) | 21% | 3% | 0% | 8% | 4% | 0% |
| Adj. Flow (vph) | 0 | 176 | 211 | 34 | 89 | 0 |
| Shared Lane Traffic (%) | | | | | | |
| Lane Group Flow (vph) | 0 | 176 | 245 | 0 | 89 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Left | Right | Left | Right |
| Median Width(m) | | 0.0 | 0.0 | | 3.7 | |
| Link Offset(m) | | 0.0 | 0.0 | | 0.0 | |
| Crosswalk Width(m) | | 1.6 | 1.6 | | 1.6 | |
| Two way Left Turn Lane | | | | | | |
| Headway Factor | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 |
| Turning Speed (k/h) | 24 | | | 14 | 24 | 14 |
| Sign Control | | Free | Free | | Stop | |

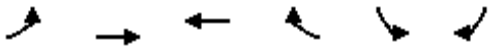
| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Control Type: Unsignalized | | | |
| Intersection Capacity Utilization 22.1% | | ICU Level of Service A | |
| Analysis Period (min) 15 | | | |



| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 0 | 150 | 179 | 29 | 76 | 0 |
| Future Volume (Veh/h) | 0 | 150 | 179 | 29 | 76 | 0 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| Hourly flow rate (vph) | 0 | 176 | 211 | 34 | 89 | 0 |
| Pedestrians | | | | | | |
| Lane Width (m) | | | | | | |
| Walking Speed (m/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage veh) | | | | | | |
| Upstream signal (m) | | | 152 | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 245 | | | | 404 | 228 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 245 | | | | 404 | 228 |
| tC, single (s) | 4.3 | | | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.4 | | | | 3.5 | 3.3 |
| p0 queue free % | 100 | | | | 85 | 100 |
| cM capacity (veh/h) | 1218 | | | | 599 | 816 |

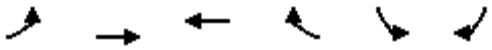
| Direction, Lane # | EB 1 | WB 1 | SB 1 |
|---|---|---|---|
| Volume Total | 176 | 245 | 89 |
| Volume Left | 0 | 0 | 89 |
| Volume Right | 0 | 34 | 0 |
| cSH | 1218 | 1700 | 599 |
| Volume to Capacity | 0.00 | 0.14 | 0.15 |
| Queue Length 95th (m) | 0.0 | 0.0 | 3.9 |
| Control Delay (s) | 0.0 | 0.0 | 12.1 |
| Lane LOS | | | B |
| Approach Delay (s) | 0.0 | 0.0 | 12.1 |
| Approach LOS | | | B |

| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 2.1 | | |
| Intersection Capacity Utilization | 22.1% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |



| Lane Group | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (vph) | 0 | 10 | 5 | 151 | 88 | 0 |
| Future Volume (vph) | 0 | 10 | 5 | 151 | 88 | 0 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | | | 0.869 | | | |
| Flt Protected | | | | | 0.950 | |
| Satd. Flow (prot) | 0 | 1883 | 1637 | 0 | 1789 | 0 |
| Flt Permitted | | | | | 0.950 | |
| Satd. Flow (perm) | 0 | 1883 | 1637 | 0 | 1789 | 0 |
| Link Speed (k/h) | | 40 | 48 | | 48 | |
| Link Distance (m) | | 48.6 | 63.1 | | 121.6 | |
| Travel Time (s) | | 4.4 | 4.7 | | 9.1 | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Adj. Flow (vph) | 0 | 11 | 5 | 164 | 96 | 0 |
| Shared Lane Traffic (%) | | | | | | |
| Lane Group Flow (vph) | 0 | 11 | 169 | 0 | 96 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Left | Right | Left | Right |
| Median Width(m) | | 0.0 | 0.0 | | 3.7 | |
| Link Offset(m) | | 0.0 | 0.0 | | 0.0 | |
| Crosswalk Width(m) | | 1.6 | 1.6 | | 1.6 | |
| Two way Left Turn Lane | | | | | | |
| Headway Factor | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 |
| Turning Speed (k/h) | 24 | | | 14 | 24 | 14 |
| Sign Control | | Free | Free | | Stop | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Control Type: Unsignalized | | | |
| Intersection Capacity Utilization 21.1% | | ICU Level of Service A | |
| Analysis Period (min) 15 | | | |

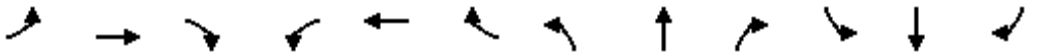


| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (veh/h) | 0 | 10 | 5 | 151 | 88 | 0 |
| Future Volume (Veh/h) | 0 | 10 | 5 | 151 | 88 | 0 |
| Sign Control | | Free | Free | | Stop | |
| Grade | | 0% | 0% | | 0% | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Hourly flow rate (vph) | 0 | 11 | 5 | 164 | 96 | 0 |
| Pedestrians | | | | | | |
| Lane Width (m) | | | | | | |
| Walking Speed (m/s) | | | | | | |
| Percent Blockage | | | | | | |
| Right turn flare (veh) | | | | | | |
| Median type | | None | None | | | |
| Median storage veh) | | | | | | |
| Upstream signal (m) | | | 302 | | | |
| pX, platoon unblocked | | | | | | |
| vC, conflicting volume | 169 | | | | 98 | 87 |
| vC1, stage 1 conf vol | | | | | | |
| vC2, stage 2 conf vol | | | | | | |
| vCu, unblocked vol | 169 | | | | 98 | 87 |
| tC, single (s) | 4.1 | | | | 6.4 | 6.2 |
| tC, 2 stage (s) | | | | | | |
| tF (s) | 2.2 | | | | 3.5 | 3.3 |
| p0 queue free % | 100 | | | | 89 | 100 |
| cM capacity (veh/h) | 1409 | | | | 901 | 971 |

| Direction, Lane # | EB 1 | WB 1 | SB 1 |
|---|---|---|---|
| Volume Total | 11 | 169 | 96 |
| Volume Left | 0 | 0 | 96 |
| Volume Right | 0 | 164 | 0 |
| cSH | 1409 | 1700 | 901 |
| Volume to Capacity | 0.00 | 0.10 | 0.11 |
| Queue Length 95th (m) | 0.0 | 0.0 | 2.7 |
| Control Delay (s) | 0.0 | 0.0 | 9.5 |
| Lane LOS | | | A |
| Approach Delay (s) | 0.0 | 0.0 | 9.5 |
| Approach LOS | | | A |

| Intersection Summary | | | |
|---|---|---|---|
| Average Delay | 3.3 | | |
| Intersection Capacity Utilization | 21.1% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |

# Appendix J – Future (2029) Background Conditions Synchro Reports after Potential Traffic Mitigation Measures

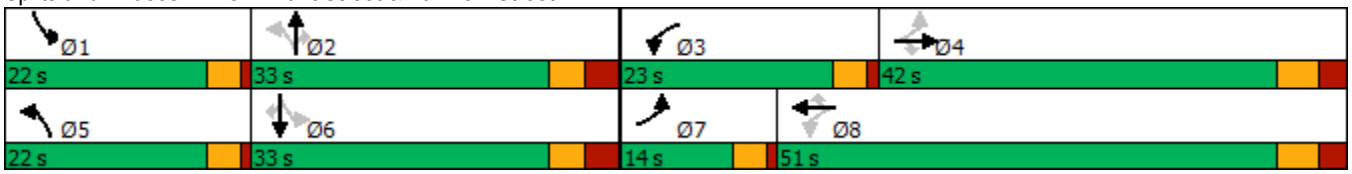


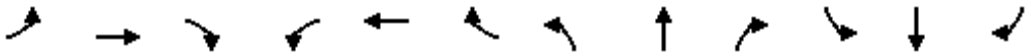
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 206 | 652 | 230 | 204 | 1230 | 336 | 253 | 820 | 190 | 158 | 648 | 185 |
| Future Volume (vph) | 206 | 652 | 230 | 204 | 1230 | 336 | 253 | 820 | 190 | 158 | 648 | 185 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (m) | 0.0 | | 150.0 | 65.0 | | 0.0 | 85.0 | | 70.0 | 50.0 | | 0.0 |
| Storage Lanes | 1 | | 1 | 1 | | 1 | 1 | | 1 | 1 | | 1 |
| Taper Length (m) | 2.5 | | | 45.0 | | | 10.0 | | | 15.0 | | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Ped Bike Factor | | | 0.97 | 1.00 | | 0.97 | 1.00 | | 0.94 | | | 0.97 |
| Frt | | | 0.850 | | | 0.850 | | | 0.850 | | | 0.850 |
| Flt Protected | 0.950 | | | 0.950 | | | 0.950 | | | 0.950 | | |
| Satd. Flow (prot) | 1807 | 3544 | 1601 | 1772 | 3579 | 1570 | 1807 | 3614 | 1570 | 1755 | 3614 | 1570 |
| Flt Permitted | 0.095 | | | 0.250 | | | 0.136 | | | 0.151 | | |
| Satd. Flow (perm) | 181 | 3544 | 1556 | 464 | 3579 | 1519 | 257 | 3614 | 1475 | 279 | 3614 | 1524 |
| Right Turn on Red | | | Yes | | | Yes | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | | 240 | | | 273 | | | 173 | | | 193 |
| Link Speed (k/h) | | 50 | | | 50 | | | 50 | | | 50 | |
| Link Distance (m) | | 373.6 | | | 286.0 | | | 295.0 | | | 107.5 | |
| Travel Time (s) | | 26.9 | | | 20.6 | | | 21.2 | | | 7.7 | |
| Confl. Peds. (#/hr) | 14 | | 11 | 11 | | 14 | 12 | | 33 | 33 | | 12 |
| Peak Hour Factor | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Heavy Vehicles (%) | 1% | 3% | 2% | 3% | 2% | 4% | 1% | 1% | 4% | 4% | 1% | 4% |
| Adj. Flow (vph) | 215 | 679 | 240 | 213 | 1281 | 350 | 264 | 854 | 198 | 165 | 675 | 193 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 215 | 679 | 240 | 213 | 1281 | 350 | 264 | 854 | 198 | 165 | 675 | 193 |
| 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) | | 3.7 | | | 3.7 | | | 3.7 | | | 3.7 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 1.6 | | | 1.6 | | | 1.6 | | | 1.6 | |
| Two way Left Turn Lane | | | | | | | | Yes | | | | |
| Headway Factor | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 |
| Turning Speed (k/h) | 24 | | 14 | 24 | | 14 | 24 | | 14 | 24 | | 14 |
| Number of Detectors | 1 | 2 | 1 | 1 | 2 | 1 | 1 | 2 | 1 | 1 | 2 | 1 |
| Detector Template | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Leading Detector (m) | 6.1 | 30.5 | 6.1 | 6.1 | 30.5 | 6.1 | 6.1 | 30.5 | 6.1 | 6.1 | 30.5 | 6.1 |
| Trailing Detector (m) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector 1 Position(m) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector 1 Size(m) | 6.1 | 1.8 | 6.1 | 6.1 | 1.8 | 6.1 | 6.1 | 1.8 | 6.1 | 6.1 | 1.8 | 6.1 |
| Detector 1 Type | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector 1 Queue (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector 1 Delay (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector 2 Position(m) | | 28.7 | | | 28.7 | | | 28.7 | | | 28.7 | |
| Detector 2 Size(m) | | 1.8 | | | 1.8 | | | 1.8 | | | 1.8 | |
| Detector 2 Type | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Turn Type | pm+pt | NA | Perm | pm+pt | NA | Perm | pm+pt | NA | Perm | pm+pt | NA | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | 6 |
| Detector Phase | 7 | 4 | 4 | 3 | 8 | 8 | 5 | 2 | 2 | 1 | 6 | 6 |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 7.0 | 8.0 | 8.0 | 7.0 | 8.0 | 8.0 | 7.0 | 8.0 | 8.0 | 7.0 | 8.0 | 8.0 |
| Minimum Split (s) | 11.5 | 30.4 | 30.4 | 11.5 | 30.4 | 30.4 | 11.5 | 30.5 | 30.5 | 11.5 | 30.5 | 30.5 |
| Total Split (s) | 14.0 | 42.0 | 42.0 | 23.0 | 51.0 | 51.0 | 22.0 | 33.0 | 33.0 | 22.0 | 33.0 | 33.0 |
| Total Split (%) | 11.7% | 35.0% | 35.0% | 19.2% | 42.5% | 42.5% | 18.3% | 27.5% | 27.5% | 18.3% | 27.5% | 27.5% |
| Maximum Green (s) | 10.0 | 35.6 | 35.6 | 19.0 | 44.6 | 44.6 | 18.0 | 26.5 | 26.5 | 18.0 | 26.5 | 26.5 |
| Yellow Time (s) | 3.0 | 3.7 | 3.7 | 3.0 | 3.7 | 3.7 | 3.0 | 3.3 | 3.3 | 3.0 | 3.3 | 3.3 |
| All-Red Time (s) | 1.0 | 2.7 | 2.7 | 1.0 | 2.7 | 2.7 | 1.0 | 3.2 | 3.2 | 1.0 | 3.2 | 3.2 |
| Lost Time Adjust (s) | -1.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 3.0 | 6.4 | 6.4 | 4.0 | 6.4 | 6.4 | 4.0 | 6.5 | 6.5 | 4.0 | 6.5 | 6.5 |
| Lead/Lag | Lead | Lag | Lag | Lead | Lag | Lag | Lead | Lag | Lag | Lead | Lag | Lag |
| Lead-Lag Optimize? | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Recall Mode | None | None | None | None | None | None | None | Max | Max | None | Max | Max |
| Walk Time (s) | | 7.0 | 7.0 | | 7.0 | 7.0 | | 7.0 | 7.0 | | 7.0 | 7.0 |
| Flash Dont Walk (s) | | 17.0 | 17.0 | | 17.0 | 17.0 | | 17.0 | 17.0 | | 17.0 | 17.0 |
| Pedestrian Calls (#/hr) | | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 |
| Act Effct Green (s) | 55.5 | 41.1 | 41.1 | 59.4 | 44.6 | 44.6 | 48.7 | 30.2 | 30.2 | 41.8 | 26.5 | 26.5 |
| Actuated g/C Ratio | 0.47 | 0.35 | 0.35 | 0.50 | 0.38 | 0.38 | 0.41 | 0.25 | 0.25 | 0.35 | 0.22 | 0.22 |
| v/c Ratio | 0.91 | 0.55 | 0.34 | 0.56 | 0.95 | 0.47 | 0.82 | 0.93 | 0.39 | 0.64 | 0.84 | 0.39 |
| Control Delay | 69.9 | 34.3 | 5.3 | 22.3 | 51.9 | 8.9 | 49.0 | 60.3 | 10.5 | 35.0 | 54.6 | 7.9 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 69.9 | 34.3 | 5.3 | 22.3 | 51.9 | 8.9 | 49.0 | 60.3 | 10.5 | 35.0 | 54.6 | 7.9 |
| LOS | E | C | A | C | D | A | D | E | B | D | D | A |
| Approach Delay | | 34.9 | | | 40.3 | | | 50.5 | | | 42.7 | |
| Approach LOS | | C | | | D | | | D | | | D | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Cycle Length: 120 | | | |
| Actuated Cycle Length: 118.6 | | | |
| Natural Cycle: 95 | | | |
| Control Type: Semi Act-Uncoord | | | |
| Maximum v/c Ratio: 0.95 | | | |
| Intersection Signal Delay: 42.2 | | Intersection LOS: D | |
| Intersection Capacity Utilization 96.8% | | ICU Level of Service F | |
| Analysis Period (min) 15 | | | |

Splits and Phases: 151: Brant Street & Fairview Street

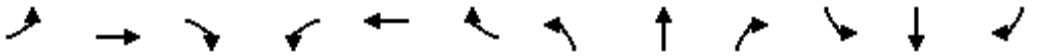




| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Group Flow (vph) | 215 | 679 | 240 | 213 | 1281 | 350 | 264 | 854 | 198 | 165 | 675 | 193 |
| v/c Ratio | 0.91 | 0.55 | 0.34 | 0.56 | 0.95 | 0.47 | 0.82 | 0.93 | 0.39 | 0.64 | 0.84 | 0.39 |
| Control Delay | 69.9 | 34.3 | 5.3 | 22.3 | 51.9 | 8.9 | 49.0 | 60.3 | 10.5 | 35.0 | 54.6 | 7.9 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 69.9 | 34.3 | 5.3 | 22.3 | 51.9 | 8.9 | 49.0 | 60.3 | 10.5 | 35.0 | 54.6 | 7.9 |
| Queue Length 50th (m) | 33.8 | 68.0 | 0.0 | 27.1 | 153.9 | 11.9 | 41.7 | 102.0 | 4.4 | 24.2 | 80.6 | 0.0 |
| Queue Length 95th (m) | #83.1 | 92.4 | 17.9 | 42.1 | #200.6 | 36.2 | #83.7 | #155.8 | 24.9 | 40.0 | #108.0 | 18.3 |
| Internal Link Dist (m) | | 349.6 | | | 262.0 | | | 271.0 | | | 83.5 | |
| Turn Bay Length (m) | | | 150.0 | 65.0 | | | 85.0 | | 70.0 | 50.0 | | |
| Base Capacity (vph) | 235 | 1228 | 696 | 448 | 1346 | 742 | 340 | 921 | 505 | 333 | 808 | 490 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.91 | 0.55 | 0.34 | 0.48 | 0.95 | 0.47 | 0.78 | 0.93 | 0.39 | 0.50 | 0.84 | 0.39 |

Intersection Summary

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



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 206 | 652 | 230 | 204 | 1230 | 336 | 253 | 820 | 190 | 158 | 648 | 185 |
| Future Volume (vph) | 206 | 652 | 230 | 204 | 1230 | 336 | 253 | 820 | 190 | 158 | 648 | 185 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 3.0 | 6.4 | 6.4 | 4.0 | 6.4 | 6.4 | 4.0 | 6.5 | 6.5 | 4.0 | 6.5 | 6.5 |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.94 | 1.00 | 1.00 | 0.97 |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1807 | 3544 | 1556 | 1770 | 3579 | 1519 | 1806 | 3614 | 1476 | 1753 | 3614 | 1524 |
| Flt Permitted | 0.10 | 1.00 | 1.00 | 0.25 | 1.00 | 1.00 | 0.14 | 1.00 | 1.00 | 0.15 | 1.00 | 1.00 |
| Satd. Flow (perm) | 181 | 3544 | 1556 | 466 | 3579 | 1519 | 258 | 3614 | 1476 | 279 | 3614 | 1524 |
| Peak-hour factor, PHF | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Adj. Flow (vph) | 215 | 679 | 240 | 212 | 1281 | 350 | 264 | 854 | 198 | 165 | 675 | 193 |
| RTOR Reduction (vph) | 0 | 0 | 157 | 0 | 0 | 170 | 0 | 0 | 129 | 0 | 0 | 150 |
| Lane Group Flow (vph) | 215 | 679 | 83 | 213 | 1281 | 180 | 264 | 854 | 69 | 165 | 675 | 43 |
| Confl. Peds. (#/hr) | 14 | | 11 | 11 | | 14 | 12 | | 33 | 33 | | 12 |
| Heavy Vehicles (%) | 1% | 3% | 2% | 3% | 2% | 4% | 1% | 1% | 4% | 4% | 1% | 4% |
| Turn Type | pm+pt | NA | Perm | pm+pt | NA | Perm | pm+pt | NA | Perm | pm+pt | NA | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 51.1 | 41.1 | 41.1 | 58.1 | 44.6 | 44.6 | 46.7 | 30.2 | 30.2 | 39.3 | 26.5 | 26.5 |
| Effective Green, g (s) | 53.1 | 41.1 | 41.1 | 58.1 | 44.6 | 44.6 | 46.7 | 30.2 | 30.2 | 39.3 | 26.5 | 26.5 |
| Actuated g/C Ratio | 0.45 | 0.35 | 0.35 | 0.49 | 0.38 | 0.38 | 0.39 | 0.25 | 0.25 | 0.33 | 0.22 | 0.22 |
| Clearance Time (s) | 4.0 | 6.4 | 6.4 | 4.0 | 6.4 | 6.4 | 4.0 | 6.5 | 6.5 | 4.0 | 6.5 | 6.5 |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 232 | 1229 | 539 | 377 | 1347 | 571 | 317 | 921 | 376 | 251 | 808 | 340 |
| v/s Ratio Prot | c0.09 | 0.19 | | c0.06 | c0.36 | | c0.12 | c0.24 | | 0.07 | 0.19 | |
| v/s Ratio Perm | 0.33 | | 0.05 | 0.21 | | 0.12 | 0.21 | | 0.05 | 0.15 | | 0.03 |
| v/c Ratio | 0.93 | 0.55 | 0.15 | 0.56 | 0.95 | 0.31 | 0.83 | 0.93 | 0.18 | 0.66 | 0.84 | 0.13 |
| Uniform Delay, d1 | 31.0 | 31.3 | 26.7 | 19.1 | 35.9 | 26.1 | 28.5 | 43.1 | 34.5 | 31.1 | 43.9 | 36.8 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 39.1 | 0.5 | 0.1 | 1.9 | 14.4 | 0.3 | 16.8 | 16.5 | 1.1 | 6.1 | 10.0 | 0.8 |
| Delay (s) | 70.2 | 31.8 | 26.8 | 21.0 | 50.3 | 26.5 | 45.3 | 59.6 | 35.6 | 37.2 | 53.9 | 37.5 |
| Level of Service | E | C | C | C | D | C | D | E | D | D | D | D |
| Approach Delay (s) | | 38.0 | | | 42.4 | | | 53.1 | | | 48.2 | |
| Approach LOS | | D | | | D | | | D | | | D | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 2000 Control Delay | 45.2 | HCM 2000 Level of Service | D |
| HCM 2000 Volume to Capacity ratio | 0.96 | | |
| Actuated Cycle Length (s) | 118.5 | Sum of lost time (s) | 20.9 |
| Intersection Capacity Utilization | 96.8% | ICU Level of Service | F |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

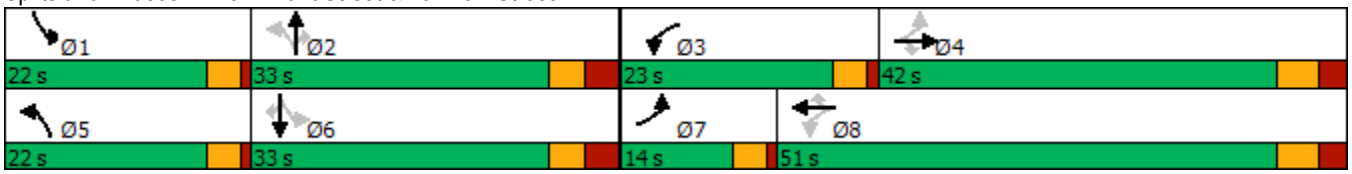
# Appendix K – Future (2029) Total Conditions Synchro Reports after Potential Traffic Mitigation Measures

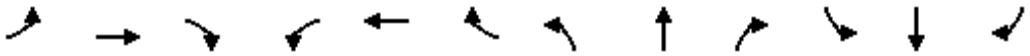
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 206 | 652 | 246 | 235 | 1230 | 336 | 262 | 859 | 207 | 158 | 694 | 185 |
| Future Volume (vph) | 206 | 652 | 246 | 235 | 1230 | 336 | 262 | 859 | 207 | 158 | 694 | 185 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (m) | 0.0 | | 150.0 | 65.0 | | 0.0 | 85.0 | | 70.0 | 50.0 | | 0.0 |
| Storage Lanes | 1 | | 1 | 1 | | 1 | 1 | | 1 | 1 | | 1 |
| Taper Length (m) | 2.5 | | | 45.0 | | | 10.0 | | | 15.0 | | |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Ped Bike Factor | | | 0.97 | 1.00 | | 0.97 | 1.00 | | 0.94 | | | 0.97 |
| Frt | | | 0.850 | | | 0.850 | | | 0.850 | | | 0.850 |
| Flt Protected | 0.950 | | | 0.950 | | | 0.950 | | | 0.950 | | |
| Satd. Flow (prot) | 1807 | 3544 | 1601 | 1772 | 3579 | 1570 | 1807 | 3614 | 1570 | 1755 | 3614 | 1570 |
| Flt Permitted | 0.098 | | | 0.240 | | | 0.131 | | | 0.151 | | |
| Satd. Flow (perm) | 186 | 3544 | 1556 | 446 | 3579 | 1519 | 248 | 3614 | 1475 | 279 | 3614 | 1524 |
| Right Turn on Red | | | Yes | | | Yes | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | | 256 | | | 273 | | | 180 | | | 193 |
| Link Speed (k/h) | | 50 | | | 50 | | | 50 | | | 50 | |
| Link Distance (m) | | 373.6 | | | 286.0 | | | 295.0 | | | 107.5 | |
| Travel Time (s) | | 26.9 | | | 20.6 | | | 21.2 | | | 7.7 | |
| Confl. Peds. (#/hr) | 14 | | 11 | 11 | | 14 | 12 | | 33 | 33 | | 12 |
| Peak Hour Factor | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Heavy Vehicles (%) | 1% | 3% | 2% | 3% | 2% | 4% | 1% | 1% | 4% | 4% | 1% | 4% |
| Adj. Flow (vph) | 215 | 679 | 256 | 245 | 1281 | 350 | 273 | 895 | 216 | 165 | 723 | 193 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 215 | 679 | 256 | 245 | 1281 | 350 | 273 | 895 | 216 | 165 | 723 | 193 |
| 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) | | 3.7 | | | 3.7 | | | 3.7 | | | 3.7 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 1.6 | | | 1.6 | | | 1.6 | | | 1.6 | |
| Two way Left Turn Lane | | | | | | | | Yes | | | | |
| Headway Factor | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 |
| Turning Speed (k/h) | 24 | | 14 | 24 | | 14 | 24 | | 14 | 24 | | 14 |
| Number of Detectors | 1 | 2 | 1 | 1 | 2 | 1 | 1 | 2 | 1 | 1 | 2 | 1 |
| Detector Template | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right | Left | Thru | Right |
| Leading Detector (m) | 6.1 | 30.5 | 6.1 | 6.1 | 30.5 | 6.1 | 6.1 | 30.5 | 6.1 | 6.1 | 30.5 | 6.1 |
| Trailing Detector (m) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector 1 Position(m) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector 1 Size(m) | 6.1 | 1.8 | 6.1 | 6.1 | 1.8 | 6.1 | 6.1 | 1.8 | 6.1 | 6.1 | 1.8 | 6.1 |
| Detector 1 Type | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex | Cl+Ex |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector 1 Queue (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector 1 Delay (s) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Detector 2 Position(m) | | 28.7 | | | 28.7 | | | 28.7 | | | 28.7 | |
| Detector 2 Size(m) | | 1.8 | | | 1.8 | | | 1.8 | | | 1.8 | |
| Detector 2 Type | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Turn Type | pm+pt | NA | Perm | pm+pt | NA | Perm | pm+pt | NA | Perm | pm+pt | NA | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | 6 |
| Detector Phase | 7 | 4 | 4 | 3 | 8 | 8 | 5 | 2 | 2 | 1 | 6 | 6 |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 7.0 | 8.0 | 8.0 | 7.0 | 8.0 | 8.0 | 7.0 | 8.0 | 8.0 | 7.0 | 8.0 | 8.0 |
| Minimum Split (s) | 11.5 | 30.4 | 30.4 | 11.5 | 30.4 | 30.4 | 11.5 | 30.5 | 30.5 | 11.5 | 30.5 | 30.5 |
| Total Split (s) | 14.0 | 42.0 | 42.0 | 23.0 | 51.0 | 51.0 | 22.0 | 33.0 | 33.0 | 22.0 | 33.0 | 33.0 |
| Total Split (%) | 11.7% | 35.0% | 35.0% | 19.2% | 42.5% | 42.5% | 18.3% | 27.5% | 27.5% | 18.3% | 27.5% | 27.5% |
| Maximum Green (s) | 10.0 | 35.6 | 35.6 | 19.0 | 44.6 | 44.6 | 18.0 | 26.5 | 26.5 | 18.0 | 26.5 | 26.5 |
| Yellow Time (s) | 3.0 | 3.7 | 3.7 | 3.0 | 3.7 | 3.7 | 3.0 | 3.3 | 3.3 | 3.0 | 3.3 | 3.3 |
| All-Red Time (s) | 1.0 | 2.7 | 2.7 | 1.0 | 2.7 | 2.7 | 1.0 | 3.2 | 3.2 | 1.0 | 3.2 | 3.2 |
| Lost Time Adjust (s) | -1.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 3.0 | 6.4 | 6.4 | 4.0 | 6.4 | 6.4 | 4.0 | 6.5 | 6.5 | 4.0 | 6.5 | 6.5 |
| Lead/Lag | Lead | Lag | Lag | Lead | Lag | Lag | Lead | Lag | Lag | Lead | Lag | Lag |
| Lead-Lag Optimize? | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Recall Mode | None | None | None | None | None | None | None | Max | Max | None | Max | Max |
| Walk Time (s) | | 7.0 | 7.0 | | 7.0 | 7.0 | | 7.0 | 7.0 | | 7.0 | 7.0 |
| Flash Dont Walk (s) | | 17.0 | 17.0 | | 17.0 | 17.0 | | 17.0 | 17.0 | | 17.0 | 17.0 |
| Pedestrian Calls (#/hr) | | 0 | 0 | | 0 | 0 | | 0 | 0 | | 0 | 0 |
| Act Effct Green (s) | 54.3 | 39.9 | 39.9 | 59.9 | 44.6 | 44.6 | 49.0 | 30.5 | 30.5 | 41.8 | 26.5 | 26.5 |
| Actuated g/C Ratio | 0.46 | 0.34 | 0.34 | 0.50 | 0.38 | 0.38 | 0.41 | 0.26 | 0.26 | 0.35 | 0.22 | 0.22 |
| v/c Ratio | 0.91 | 0.57 | 0.37 | 0.63 | 0.95 | 0.47 | 0.85 | 0.97 | 0.42 | 0.64 | 0.90 | 0.39 |
| Control Delay | 70.5 | 35.6 | 5.4 | 24.4 | 52.4 | 9.0 | 52.7 | 66.5 | 11.5 | 35.1 | 60.2 | 7.9 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 70.5 | 35.6 | 5.4 | 24.4 | 52.4 | 9.0 | 52.7 | 66.5 | 11.5 | 35.1 | 60.2 | 7.9 |
| LOS | E | D | A | C | D | A | D | E | B | D | E | A |
| Approach Delay | | 35.4 | | | 40.6 | | | 55.2 | | | 47.0 | |
| Approach LOS | | D | | | D | | | E | | | D | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Cycle Length: 120 | | | |
| Actuated Cycle Length: 118.8 | | | |
| Natural Cycle: 95 | | | |
| Control Type: Semi Act-Uncoord | | | |
| Maximum v/c Ratio: 0.97 | | | |
| Intersection Signal Delay: 44.5 | | Intersection LOS: D | |
| Intersection Capacity Utilization 97.3% | | ICU Level of Service F | |
| Analysis Period (min) 15 | | | |

Splits and Phases: 151: Brant Street & Fairview Street

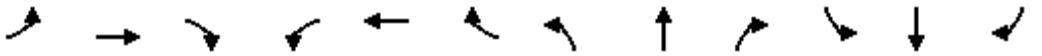




| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Group Flow (vph) | 215 | 679 | 256 | 245 | 1281 | 350 | 273 | 895 | 216 | 165 | 723 | 193 |
| v/c Ratio | 0.91 | 0.57 | 0.37 | 0.63 | 0.95 | 0.47 | 0.85 | 0.97 | 0.42 | 0.64 | 0.90 | 0.39 |
| Control Delay | 70.5 | 35.6 | 5.4 | 24.4 | 52.4 | 9.0 | 52.7 | 66.5 | 11.5 | 35.1 | 60.2 | 7.9 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 70.5 | 35.6 | 5.4 | 24.4 | 52.4 | 9.0 | 52.7 | 66.5 | 11.5 | 35.1 | 60.2 | 7.9 |
| Queue Length 50th (m) | 33.8 | 69.3 | 0.0 | 31.8 | 153.9 | 11.9 | 44.8 | 108.5 | 6.4 | 24.2 | 87.8 | 0.0 |
| Queue Length 95th (m) | #82.9 | 93.4 | 18.5 | 48.3 | #200.6 | 36.2 | #90.2 | #167.2 | 28.2 | 40.0 | #121.2 | 18.3 |
| Internal Link Dist (m) | | 349.6 | | | 262.0 | | | 271.0 | | | 83.5 | |
| Turn Bay Length (m) | | | 150.0 | 65.0 | | | 85.0 | | 70.0 | 50.0 | | |
| Base Capacity (vph) | 235 | 1190 | 692 | 440 | 1343 | 740 | 338 | 927 | 512 | 333 | 806 | 489 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.91 | 0.57 | 0.37 | 0.56 | 0.95 | 0.47 | 0.81 | 0.97 | 0.42 | 0.50 | 0.90 | 0.39 |

Intersection Summary

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

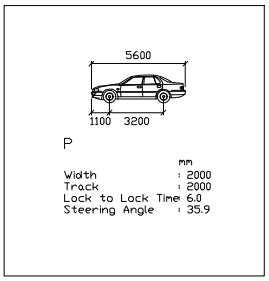


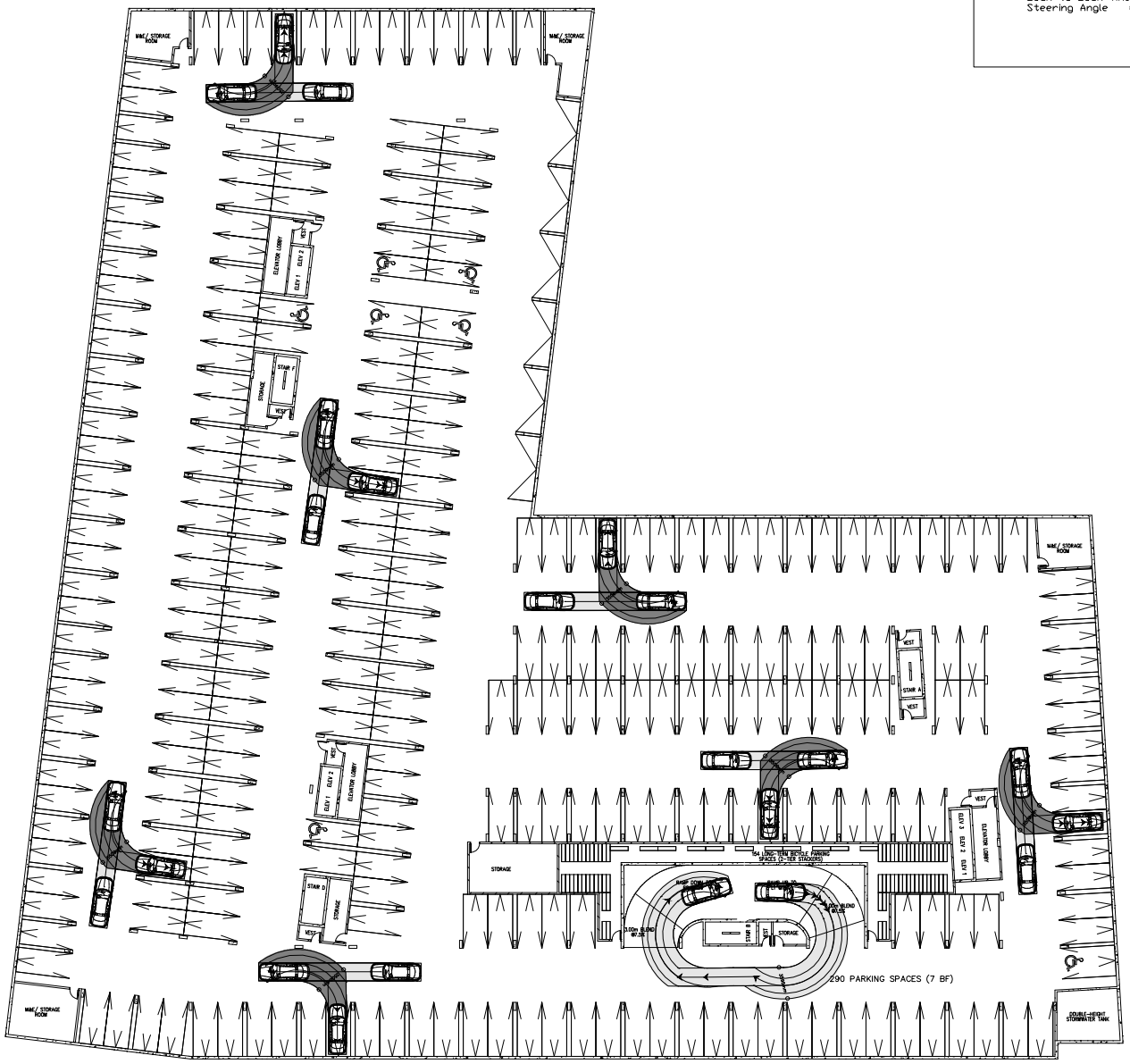
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 206 | 652 | 246 | 235 | 1230 | 336 | 262 | 859 | 207 | 158 | 694 | 185 |
| Future Volume (vph) | 206 | 652 | 246 | 235 | 1230 | 336 | 262 | 859 | 207 | 158 | 694 | 185 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 3.0 | 6.4 | 6.4 | 4.0 | 6.4 | 6.4 | 4.0 | 6.5 | 6.5 | 4.0 | 6.5 | 6.5 |
| Lane Util. Factor | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 |
| Frpb, ped/bikes | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.97 | 1.00 | 1.00 | 0.94 | 1.00 | 1.00 | 0.97 |
| Flpb, ped/bikes | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Frt | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 | 1.00 | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1807 | 3544 | 1556 | 1770 | 3579 | 1519 | 1806 | 3614 | 1476 | 1753 | 3614 | 1524 |
| Flt Permitted | 0.10 | 1.00 | 1.00 | 0.24 | 1.00 | 1.00 | 0.13 | 1.00 | 1.00 | 0.15 | 1.00 | 1.00 |
| Satd. Flow (perm) | 186 | 3544 | 1556 | 447 | 3579 | 1519 | 249 | 3614 | 1476 | 279 | 3614 | 1524 |
| Peak-hour factor, PHF | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 | 0.96 |
| Adj. Flow (vph) | 215 | 679 | 256 | 245 | 1281 | 350 | 273 | 895 | 216 | 165 | 723 | 193 |
| RTOR Reduction (vph) | 0 | 0 | 170 | 0 | 0 | 171 | 0 | 0 | 134 | 0 | 0 | 150 |
| Lane Group Flow (vph) | 215 | 679 | 86 | 245 | 1281 | 179 | 273 | 895 | 82 | 165 | 723 | 43 |
| Confl. Peds. (#/hr) | 14 | | 11 | 11 | | 14 | 12 | | 33 | 33 | | 12 |
| Heavy Vehicles (%) | 1% | 3% | 2% | 3% | 2% | 4% | 1% | 1% | 4% | 4% | 1% | 4% |
| Turn Type | pm+pt | NA | Perm | pm+pt | NA | Perm | pm+pt | NA | Perm | pm+pt | NA | Perm |
| Protected Phases | 7 | 4 | | 3 | 8 | | 5 | 2 | | 1 | 6 | |
| Permitted Phases | 4 | | 4 | 8 | | 8 | 2 | | 2 | 6 | | 6 |
| Actuated Green, G (s) | 49.9 | 39.9 | 39.9 | 58.6 | 44.6 | 44.6 | 47.3 | 30.5 | 30.5 | 39.3 | 26.5 | 26.5 |
| Effective Green, g (s) | 51.9 | 39.9 | 39.9 | 58.6 | 44.6 | 44.6 | 47.3 | 30.5 | 30.5 | 39.3 | 26.5 | 26.5 |
| Actuated g/C Ratio | 0.44 | 0.34 | 0.34 | 0.49 | 0.38 | 0.38 | 0.40 | 0.26 | 0.26 | 0.33 | 0.22 | 0.22 |
| Clearance Time (s) | 4.0 | 6.4 | 6.4 | 4.0 | 6.4 | 6.4 | 4.0 | 6.5 | 6.5 | 4.0 | 6.5 | 6.5 |
| Vehicle Extension (s) | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| Lane Grp Cap (vph) | 231 | 1190 | 522 | 384 | 1343 | 570 | 319 | 927 | 378 | 251 | 806 | 339 |
| v/s Ratio Prot | c0.09 | 0.19 | | c0.08 | c0.36 | | c0.12 | c0.25 | | 0.07 | 0.20 | |
| v/s Ratio Perm | 0.32 | | 0.06 | 0.24 | | 0.12 | 0.22 | | 0.06 | 0.15 | | 0.03 |
| v/c Ratio | 0.93 | 0.57 | 0.16 | 0.64 | 0.95 | 0.31 | 0.86 | 0.97 | 0.22 | 0.66 | 0.90 | 0.13 |
| Uniform Delay, d1 | 30.8 | 32.4 | 27.7 | 19.6 | 36.1 | 26.3 | 30.2 | 43.6 | 34.8 | 31.5 | 44.8 | 36.9 |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Incremental Delay, d2 | 40.5 | 0.7 | 0.1 | 3.5 | 14.9 | 0.3 | 19.6 | 22.3 | 1.3 | 6.1 | 14.8 | 0.8 |
| Delay (s) | 71.3 | 33.1 | 27.9 | 23.0 | 51.0 | 26.6 | 49.7 | 65.9 | 36.1 | 37.5 | 59.6 | 37.7 |
| Level of Service | E | C | C | C | D | C | D | E | D | D | E | D |
| Approach Delay (s) | | 39.1 | | | 42.8 | | | 58.1 | | | 52.3 | |
| Approach LOS | | D | | | D | | | E | | | D | |

| Intersection Summary | | | | | |
|---|---|---|---|---|---|
| HCM 2000 Control Delay | 47.7 | HCM 2000 Level of Service | D | | |
| HCM 2000 Volume to Capacity ratio | 0.97 | | | | |
| Actuated Cycle Length (s) | 118.8 | Sum of lost time (s) | 20.9 | | |
| Intersection Capacity Utilization | 97.3% | ICU Level of Service | F | | |
| Analysis Period (min) | 15 | | | | |

c Critical Lane Group

# Appendix L – Design Vehicle Maneuvering Diagrams




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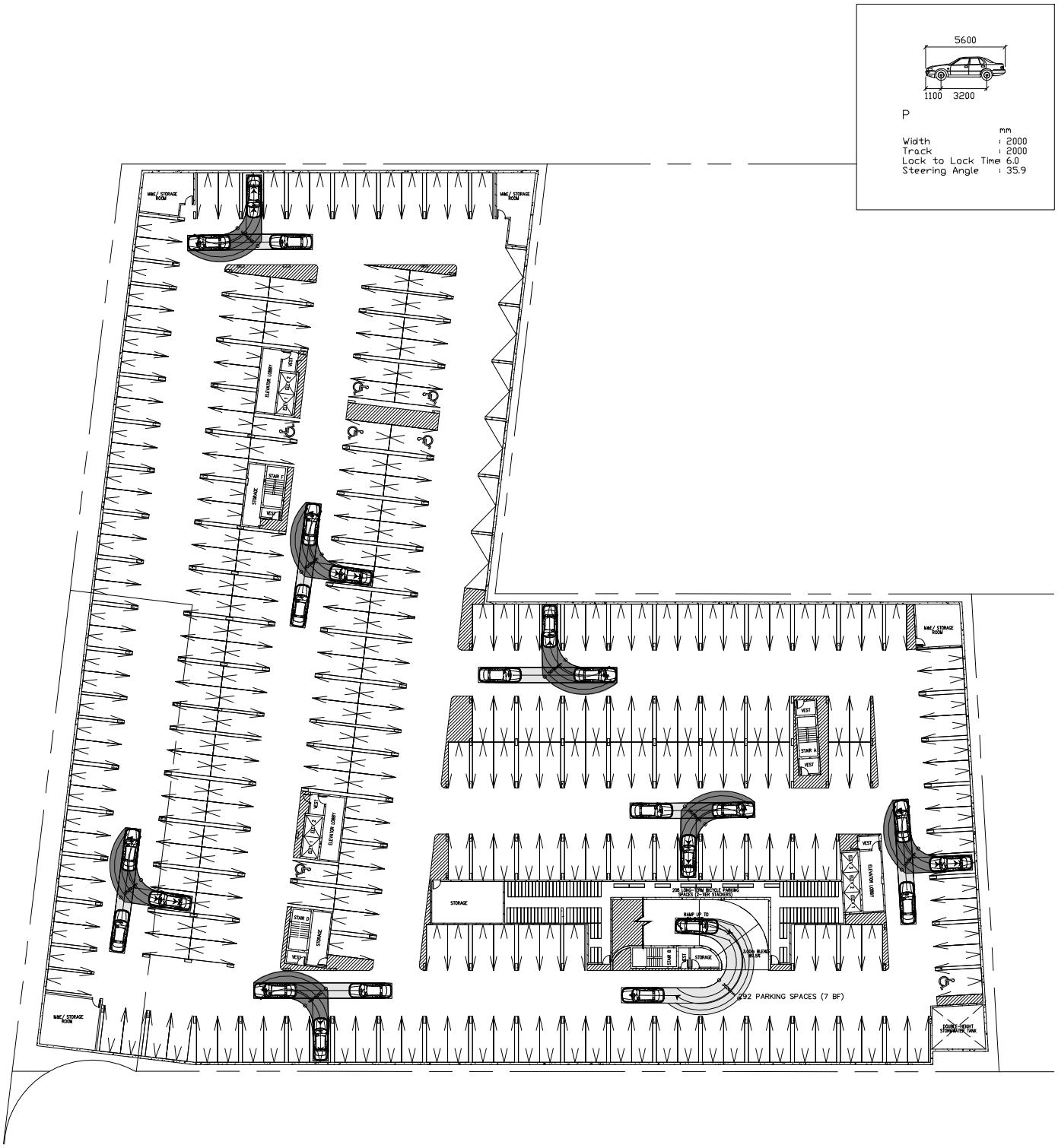
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FIGURE NAME
DESIGN VEHICLE MANEUVERING - TAC PASSENGER VEHICLE (P1 LEVEL)

| FIGURE NO. | REVISION |
|---|---|
| AT-9 | 1.1 |

SCALE CHECK
1 in
10mm

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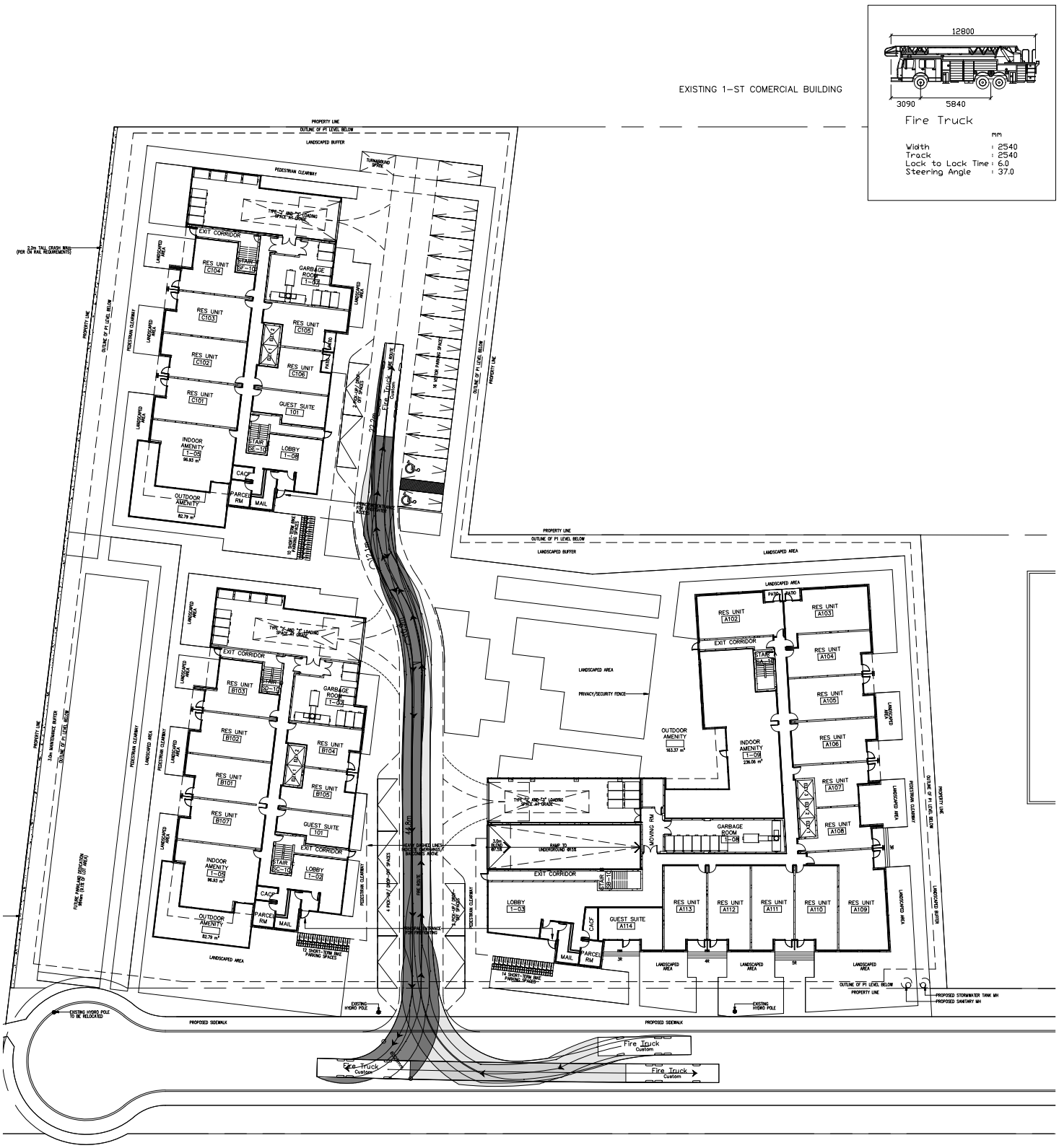
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| DL | DL |
| CHECKED BY: | APPROVED BY: |
| AG | AG |
| PROJECT NO: | |
| 144439 | |

FIGURE NAME
DESIGN VEHICLE MANEUVERING - TAC PASSENGER VEHICLE (P2 LEVEL)

| FIGURE NO. | REVISION |
|---|---|
| AT-10 | 1.1 |

SCALE CHECK
1 in 10mm

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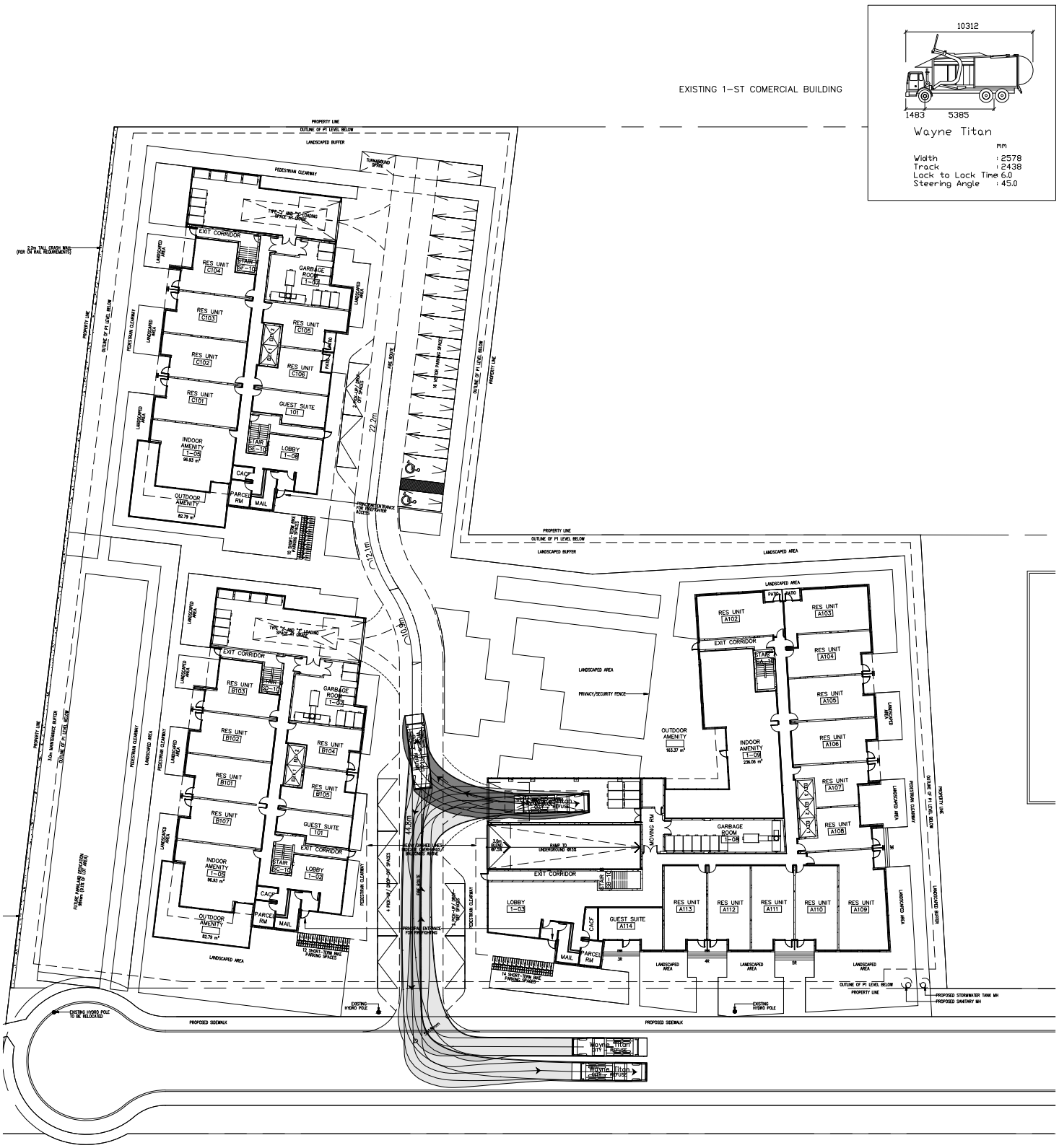
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| PROJECT NO: | |
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FIGURE NAME
DESIGN VEHICLE MANEUVERING - AERIAL FIRE TRUCK

| FIGURE NO. | REVISION |
|---|---|
| AT-1 | 1.1 |

SCALE CHECK
1 in
10mm

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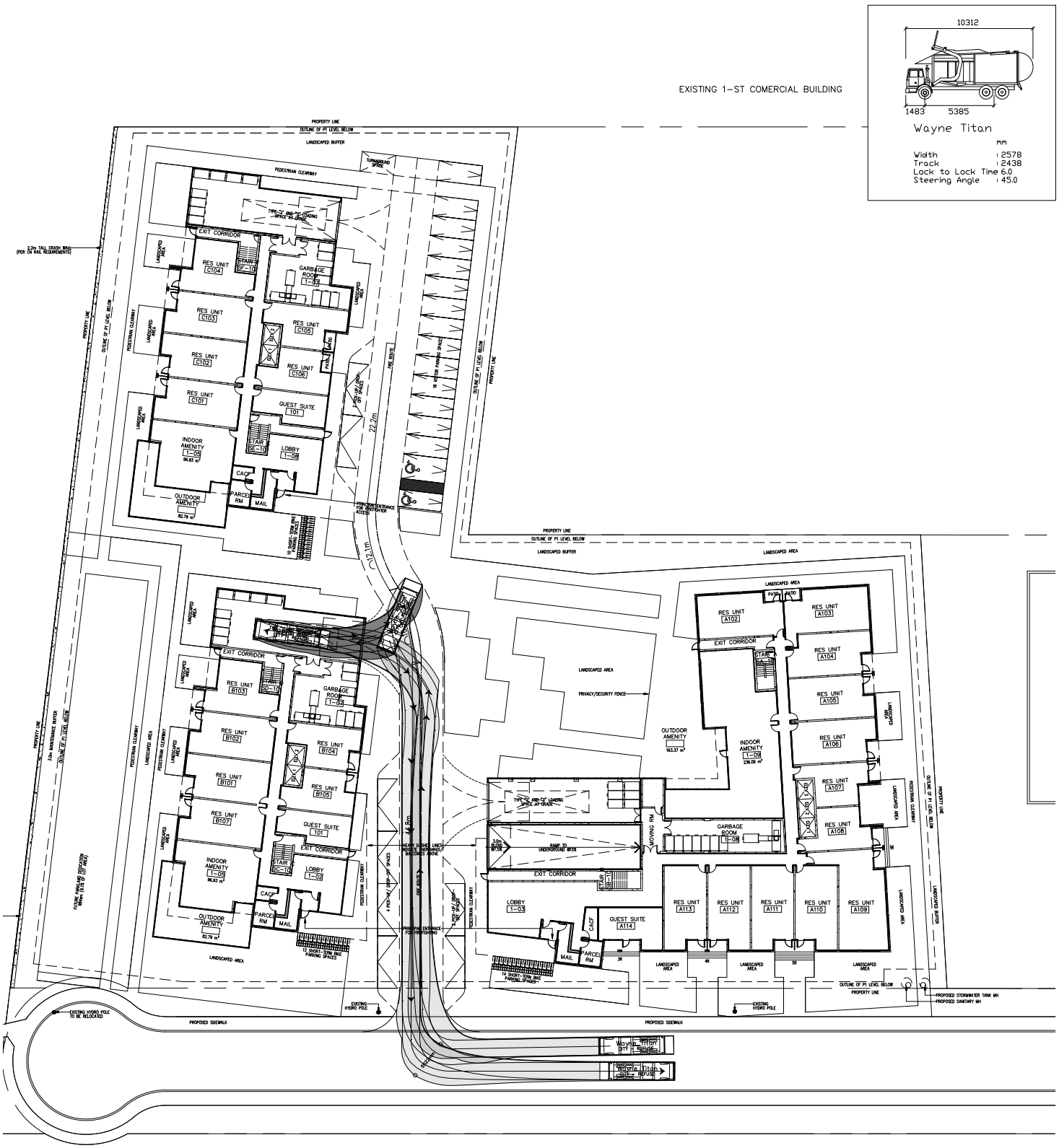
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| PROJECT NO: | |
| 144439 | |

FIGURE NAME
DESIGN VEHICLE MANEUVERING - REFUSE COLLECTION (BUILDING A)

| FIGURE NO. | REVISION |
|---|---|
| AT-2 | 1.1 |

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1 in
10mm

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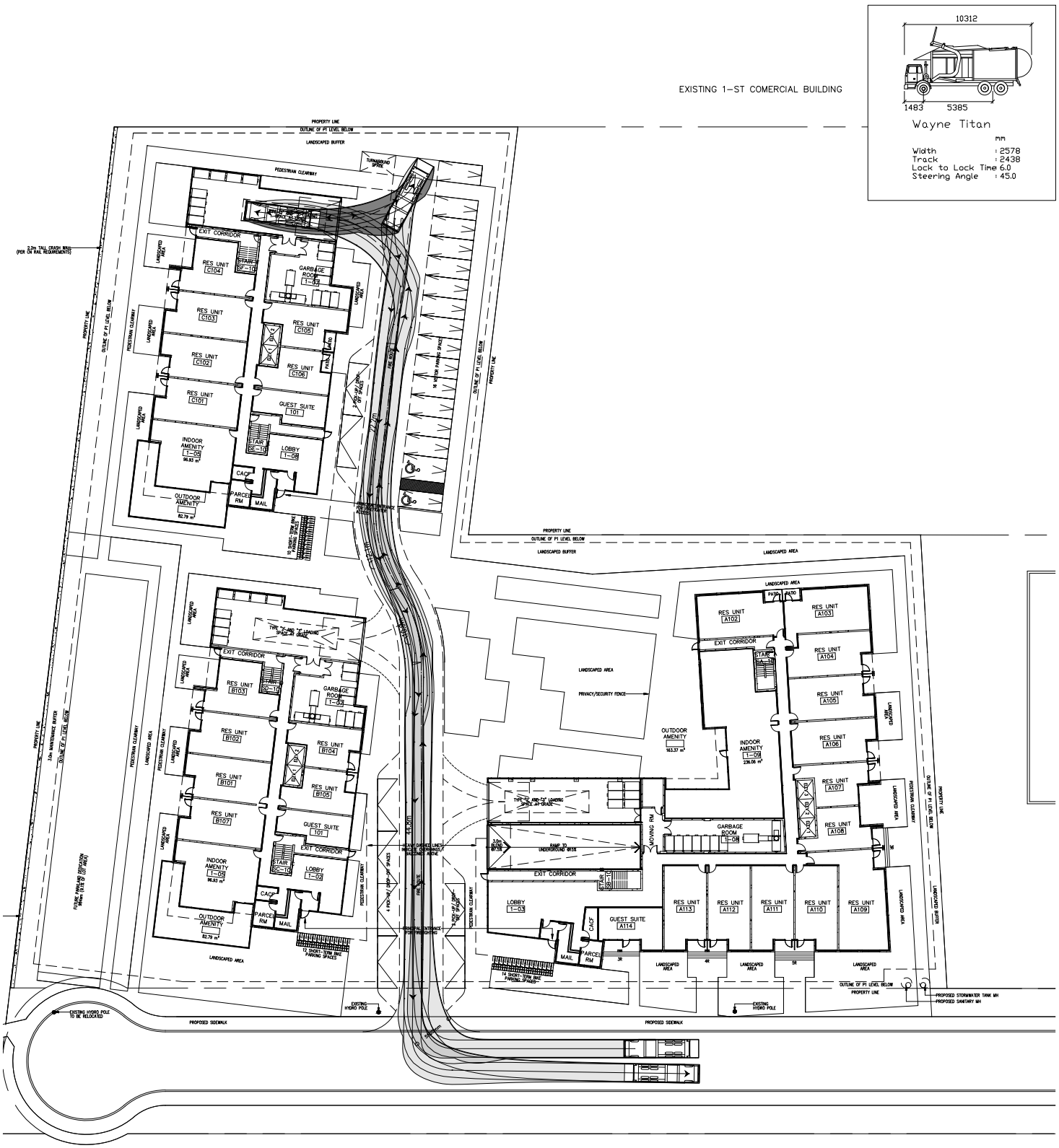

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FIGURE NAME
DESIGN VEHICLE MANEUVERING - REFUSE COLLECTION (BUILDING B)

| FIGURE NO. | REVISION |
|---|---|
| AT-3 | 1.1 |

SCALE CHECK
1 in
10mm


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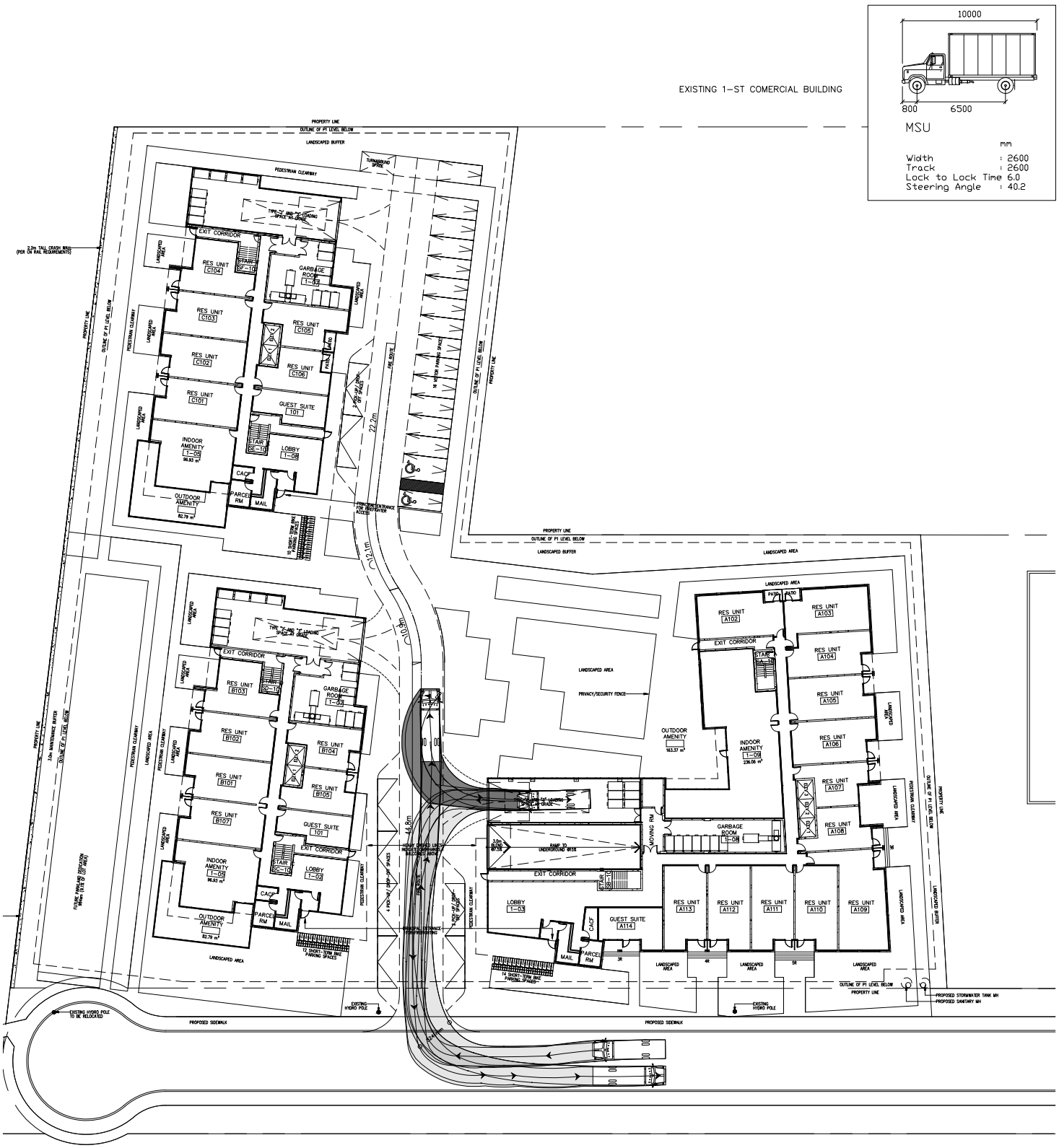
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FIGURE NAME
DESIGN VEHICLE MANEUVERING - REFUSE COLLECTION (BUILDING C)

| FIGURE NO. | REVISION |
|---|---|
| AT-4 | 1.1 |

SCALE CHECK
1 in
10mm

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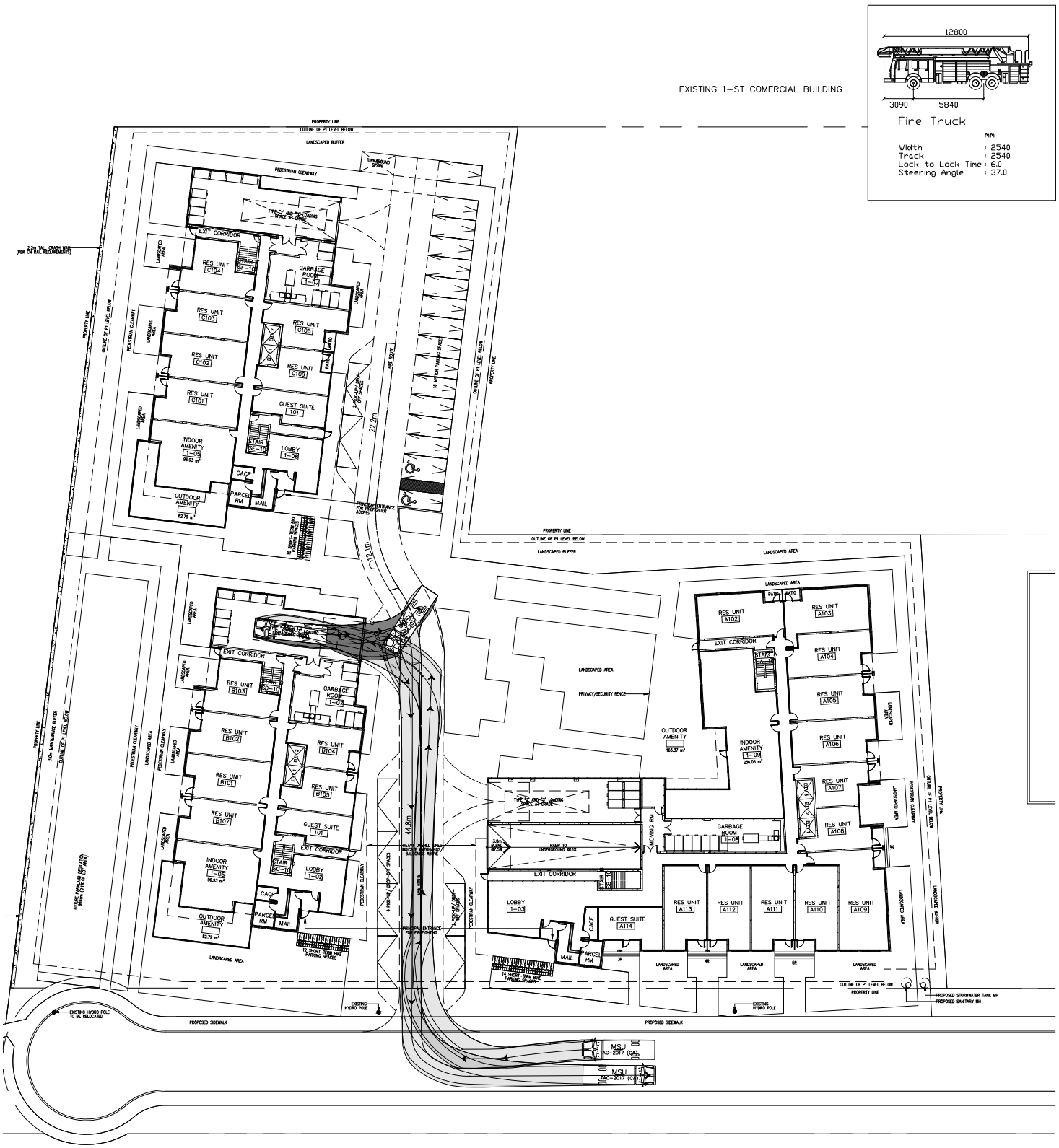
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FIGURE NAME
DESIGN VEHICLE MANEUVERING - MSU (BUILDING A)

| FIGURE NO. | REVISION |
|---|---|
| AT-5 | 1.1 |

SCALE CHECK
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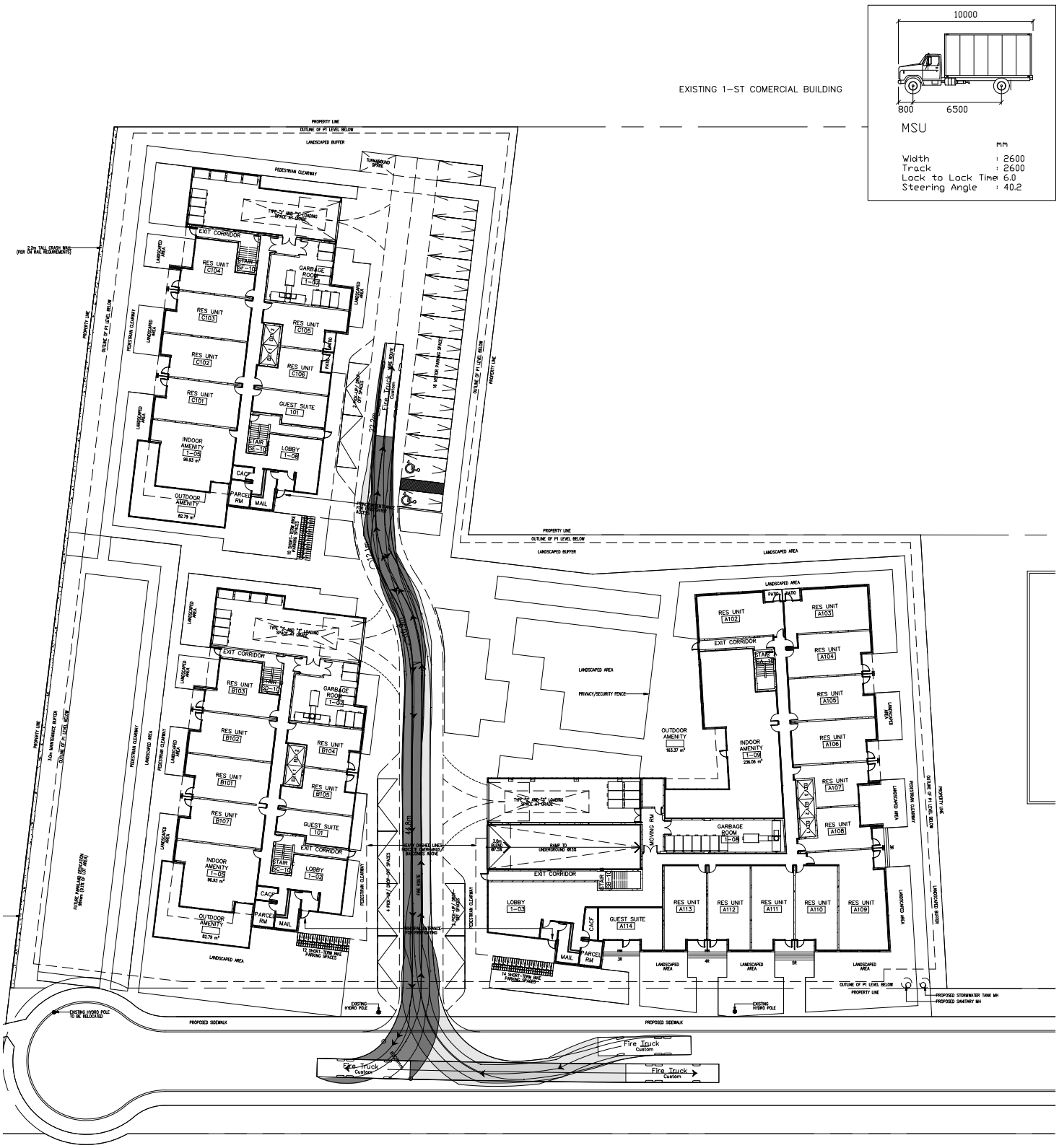
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FIGURE NAME
DESIGN VEHICLE MANEUVERING - MSU (BUILDING B)

| FIGURE NO. | REVISION |
|---|---|
| AT-6 | 1.1 |

SCALE CHECK
1 in
10mm

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FIGURE NAME
DESIGN VEHICLE MANEUVERING - MSU (BUILDING C)

FIGURE NO. AT-7

REVISION 1.1

SCALE CHECK
1 in
10mm

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FIGURE NAME
DESIGN VEHICLE MANEUVERING - PASSENGER VEHICLE (TAC)

| FIGURE NO. | REVISION |
|---|---|
| AT-8 | 1.1 |

SCALE CHECK
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