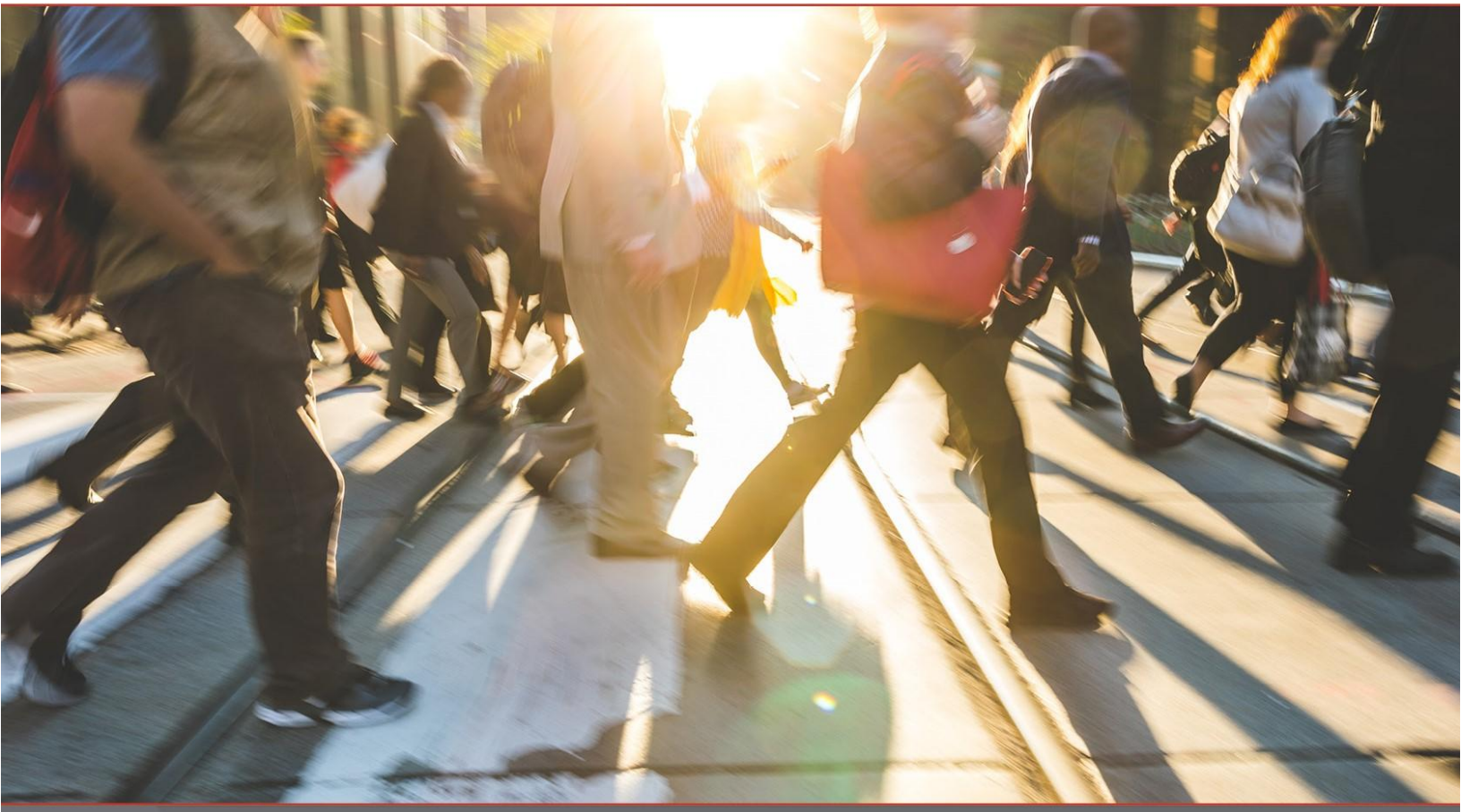
6490 FIRST LINE
TOWNSHIP OF CENTRE WELLINGTON

Proposed Residential Subdivision
Transportation Impact Study



Prepared For: The Sorbara Group

August 13, 2026

BA Group

© BA Consulting Group Ltd.
95 St. Clair Avenue West, Suite 1000
Toronto, ON M4V 1N6
www.bagroup.com

AUTHORSHIP

Date	Revision	Update
August 10, 2026	Version 1	Draft Report
August 13, 2026	Version 2	Final Report

PREPARED AND REVIEWED BY

Project Manager

Luke Richardson, P.Eng.
Associate

TABLE OF CONTENTS

1.0 INTRODUCTION 1
- 1.1 Overview 1
- 1.2 The Site 1
- 1.3 The Proposed Development 1

2.0 PLANNING POLICIES 5
- 2.1 Wellington County Road Master Action Plan 5
- 2.2 Township of Centre Wellington Transportation Master Plan 5

3.0 AREA TRANSPORTATION CONTEXT 7
- 3.1 Road Network 7
- 3.2 Transit Network 8
- 3.3 Bicycle Network 8
- 3.4 Pedestrian Network 8

4.0 TRAFFIC VOLUME PROJECTIONS 12
- 4.1 Scope 12
- 4.2 Existing Traffic Volumes 12
- 4.3 Future Background Traffic Volumes 13
- 4.4 Site Traffic Forecasts 14

5.0 OPERATION ANALYSIS 27
- 5.1 Analysis Methodology 27
- 5.2 Analysis Assumptions and Parameters 27
- 5.3 Intersection Operations Analysis 28

6.0 TRANSPORTATION DEMAND MANAGEMENT 43
- 6.1 Mobility Choice Travel Plan 43
- 6.2 Organizational Framework 43

7.0 DESIGN CONSIDERATIONS 45
- 7.1 Concept Road Plan 45
- 7.2 Left Turn Lane Warrants 45
- 7.3 Intersection Spacing 45
- 7.4 Active Transportation Connections 45
- 7.5 Traffic Calming and Potential Cut Through Traffic 46
- 7.6 Sight Distance 46

8.0 OPA COMMENT RESPONSES 48
- 8.1 Triton Engineering Memo, Dated June 11, 2026 48

9.0 SUMMARY AND CONCLUSIONS 50

LIST OF TABLES

Table 1 Existing Traffic Data Sources 13
Table 2 Area Background Development 13
Table 3 Adopted Vehicle Trip Generation Rates 14
Table 4 Site Vehicle Trip Generation 15
Table 5 Site Traffic Distribution 15
Table 6 Signalized Intersections Capacity Analysis Summary 33
Table 7 Signalized Intersections Queue Length Summary 35
Table 8 Unsignalized Intersections Capacity Analysis Summary 37
Table 9 Unsignalized Intersection Queue Length Summary 41
Table 10 Potential Mobility Choice Travel Plan Strategies 44
Table 11 Sight Distance Assessment 47

LIST OF FIGURES

Figure 1: Site Location 3
Figure 2: Concept Plan 4
Figure 3: Existing and Proposed Street Network 9
Figure 4: Township of Centre Wellington Transit Feasibility Study – Proposed Urban Transit Network 10
Figure 5: Existing and Proposed Bicycle Network 11
Figure 6: Existing Lane Configurations 16
Figure 7: Future Lane Configurations 17
Figure 8: Existing Traffic Volumes 18
Figure 9: Corridor Growth Traffic Volumes (5-Year Horizon) 19
Figure 10: Corridor Growth Traffic Volumes (10-Year Horizon) 20
Figure 11: Background Development Traffic Volumes 21
Figure 12: Future Background Traffic Volumes (5-Year Horizon) 22
Figure 13: Future Background Traffic Volumes (10-Year Horizon) 23
Figure 14: Site Traffic Volumes 24
Figure 15: Future Total Traffic Volumes (5-Year Horizon) 25
Figure 16: Future Total Traffic Volumes (10-Year Horizon) 26

TABLE OF APPENDICES

Appendix A: Concept Plan
Appendix B: Concept Road Plan
Appendix C: Vehicle Manoeuvring Diagrams
Appendix D: Turning Movement Counts

Appendix E: Synchro Outputs
Appendix F: Signal Timing Plans
Appendix G: Left Turn Lane Warrants
Appendix H: Sight Distance Assessment

1.0 INTRODUCTION

1.1 Overview

BA Group is retained by The Sorbara Group to provide transportation consulting services in relation to the proposed residential subdivision located at 6490 First Line and 8076 Wellington Road 19 in the Township of Centre Wellington (the "site"). A Draft Plan of Subdivision ("Draft Plan") application is being made to the Township for the proposed development.

An Official Plan Amendment ("OPA") application was previously made to the Township in April 2026, and was accompanied by a Transportation Impact Study ("TIS") prepared by BA Group, dated March 30, 2026 (the "March 2026 TIS"). This report provides an update to the March 2026 TIS to respond to additional information that has been developed through the Draft Plan process, such as revised stats and further detail related to the internal site layout and street network. This report has also been updated to respond to comments received from the Township and Wellington County on the proposed Terms of Reference, as well as comments received from the County in relation to the abovementioned OPA application.

1.2 The Site

The site is located on the northwest corner of the Wellington Road 19 / First Line / Anderson Street North intersection and is generally bound by Wellington Road 19 to the south, First Line to the east, rural land to the north and residential to the west. The Elora Cataract Trail bisects the northwest corner of the site into two parcels of land. The site is currently occupied by a residential dwelling at the south end of the site, with a driveway to Wellington Road 19. Surrounding land use is generally residential in nature. Maranatha Christian School, which operates classes for Kindergarten to Grade 8, is located south of the site on the opposite side of Wellington Road 19.

The site location is shown in **Figure 1**.

1.3 The Proposed Development

The proposed development contemplates the construction of a residential subdivision. For the purpose of this assessment, BA Group have been advised of the following high level stats:

- Up to 694 residential units, including:
  - 434 detached dwellings;
  - 257 townhouses

It should be noted that the above stats are high level, and remain subject to change as the planning process for this site progresses.

The dwellings will be serviced by an internal public road network, generally comprising roads with an 18 metre right of way in accordance with Section B.2 of the Centre Wellington Development Manual, dated June 2024 for a "Local Street". Two streets (Street B and Street C) are proposed as a "Minor Collector Street A" with a right of way width of 20 metres, and one street (Street C) is proposed as a "Minor Collector Street B" with a right of way width of 22 metres, in accordance with Section B.2 of the Centre Wellington Development Manual.

The dwellings will be serviced by an internal public road network, including access to the site conceptually shown at three locations as follows:

- A new unsignalized intersection at Wellington Road 19 / Street A, located approximately 380 metres west of First Line;
- A new unsignalized intersection at First Line / Street C, located approximately 180 metres north of Wellington Road 19; and
- A new unsignalized intersection at First Line / Street B, located approximately 400 metres north of Wellington Road 19.

Internal intersections across the redevelopment are expected to operate under two-way or all-way Stop control. Vehicle access to individual lots is generally proposed via the abovementioned internal public road network.

In addition to the abovementioned residential units and internal public road network, the redevelopment will include other features including a storm water management facility and a park. An access road / trail is proposed within the park block and will connect between Wellington Road 19 and the Street J cul-de-sac, with subsequent access to the Elora Cataract Trail available via Street J and Street G.

The concept plan is shown in **Figure 2** and attached in **Appendix A**. A preliminary concept road plan is attached in **Appendix B** and vehicle manoeuvring diagrams are attached in **Appendix C**.

\\bamediaaccount.file.core.windows.net\fp02data\WP\58\83\58\Graphics\Adobe\Id\5883-58 - 6490 First Line.indd

Aerial maps provided courtesy of: Esri, DigitalGlobe, GeoEye, Earthstar Geographies, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, the GIS User Community and/or Google Earth/Maps.

FIGURE 1 SITE LOCATION

\\bamediaaccount.file.core.windows.net\fp02data\WP\58\83\58\Graphics\AdobeId\5883-58 - 6490 First Line.indd

Aerial maps provided courtesy of: Esri, DigitalGlobe, GeoEye, Earthstar Geographies, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, the GIS User Community and/or Google Earth/Maps.

FIGURE 2 CONCEPT PLAN

2.0 PLANNING POLICIES

2.1 Wellington County Road Master Action Plan

The Wellington County Road Master Action Plan, dated December 2021 ("RMAP") provides long-term guidance on transportation in the County by identifying future policy direction and transportation infrastructure needs on the County transportation network to accommodate future population and employment growth into 2041.

In the vicinity of the site, the RMAP identifies Wellington Road 19 as a Wellington County road with an existing Annual Average Daily Traffic ("AADT") of 0-5,000 and an existing volume to capacity ("v/c") ratio between 0.00-0.50.

Based on the projected 2041 Wellington County population of 140,000 (increase from 96,000 in 2016) and employment of 61,000 (increase from 40,100 in 2016), future traffic forecasts were undertaken to assess short-term and long-term needs. Based on these projections, the RMAP estimates that the AADT on Wellington Road 19 adjacent the site will be in the range of 5,000-10,000, and the v/c ratio will be in the range of 0.00-0.50. No specific mitigation works were identified to be required for Wellington Road 19.

In addition to the corridor-specific review, potential bypass options were also reviewed to potentially improve capacity generally between Fergus and Elora. The RMAP recommended that a detailed Area Wide Feasibility Study be undertaken to confirm area needs.

The RMAP also reviewed a number of potential transit service models when assessing the future of transit in Wellington County. The RMAP ultimately recommended that Wellington County continue to operate the Ride Well service (discussed in **Section 3.2**) and undertake a number of additional actions such as increasing the number of vehicles, expanding service hours, reduce passenger fares, potential partnerships with Ride Well to allow other types of service, and coordination with Community Care Agencies.

2.2 Township of Centre Wellington Transportation Master Plan

The Township of Centre Wellington Transportation Master Plan, dated January 2019 ("TMP") sets a vision for a sustainable transportation future that maintains and enhances the quality of life in the Township.

In the vicinity of the site, the TMP identifies First Line as a local road with an existing v/c ratio between 0.00-0.59. The TMP also identifies Wellington Road 19 as an arterial road, but does not provide an existing v/c ratio.

The TMP estimates a future 2041 Township population of 52,310 (increase from 29,885 in 2016) and employment of 22,780 (increase from 11,970 in 2016). Accordingly the road network was analyzed through an EMME strategic travel mode and identifies a preferred 2041 road network.

The preferred 2041 road network proposes to extend the existing Wellington Road 29 north as an arterial road to Lamond Street via a new bridge across the Grand River ("the Wellington Road 29 Extension").

A new collector road is proposed which extends east from the Anderson Street South/Lamond Street/Wellington Road 29 Extension intersection, then curves north across Wellington Road 19 and loops back to connect to First Line in the vicinity of the Elora Cataract Trail (the "New NS Collector"). The Wellington Road 19/New NS Collector intersection is identified to potentially include signalization, turning lanes or roundabouts.

The existing Dickson Drive is proposed to be extended east as a collector road to First Line (the "Dickson Drive Extension").

Subsequent to the above new connections, the section of First Line between the New NS Collector and the Dickson Drive Extension is proposed to be redesignated as an arterial road.

The Dickson Drive Extension is identified as a medium-term improvement (i.e. by 2031) and the other noted improvements are identified as long-term improvements (i.e. by 2041 and beyond). It's noted that the Dickson Drive extension has now been completed.

The TMP also consolidates active transportation recommendations from the Township of Centre Wellington Trails Master Plan, dated May 2014, and the Wellington County Active Transportation Plan, dated September 2012. However, these recommendations have subsequently been superseded by the Township of Centre Wellington Active Transportation and Mobility Plan, dated July 2025 (the "ATMP"). The existing and future cycling network based on the ATMP are outlined in **Section 3.3**.

With regards to transit, the TMP recommends that a Transit Service Strategy report be prepared, discussing with existing service providers on whether or not there is an opportunity to serve Centre Wellington, and participating in any future studies regarding transit expansion or provision led by others. It's noted that the TMP is dated January 2019 and pre-dates the implementation of the Ride Well transit service that was implemented in October 2019, and the preparation of the Transit Feasibility Study in May 2025, as outlined further in **Section 3.2**.

3.0 AREA TRANSPORTATION CONTEXT

3.1 Road Network

3.1.1 Overview

The following sections provide an overview of the existing and future area road network, as shown graphically in **Figure 3**.

3.1.2 Wellington Road 19

Wellington Road 19 is an arterial road operated by Wellington County which extends generally in an east-west direction from East West Garafraxa Townline at the east boundary of Wellington County to Highway 6 in Fergus. In the vicinity of the site, Wellington Road 19 is also known as Belwood Road and Garafraxa Street East.

East of East West Garafraxa Townline, Wellington Road 19 continues as Dufferin County Road 5 and west of Highway 6, Wellington Road 19 continues as Garafraxa Street West.

Adjacent the site, Wellington Road 19 operates with a single traffic lane in each direction. East of Maranatha Christian School, Wellington Road has a posted speed limit of 70 kilometres per hour. Across the school frontage and west of the school, the posted speed limit reduces to 40 kilometres per hour. There are no sidewalks along Wellington Road 19 adjacent the site.

3.1.3 First Line

First Line extends generally in a north-south direction from Wellington Road 109 in Arthur to Wellington Road 19 in Fergus. Adjacent the site, First Line operates as a local road operated by the Township of Centre Wellington.

South of Wellington Road 19, First Line continues as Anderson Street North.

Adjacent the site, First Line operates with a single traffic lane in each direction and a posted speed limit of 60 kilometres per hour. There are no sidewalks along First Line adjacent the site.

3.1.4 Township of Centre Wellington TMP Preferred 2041 Road Network

As discussed in **Section 2.2**, the preferred 2041 road network as outlined in the TMP proposes the following in the vicinity of the site:

- The Wellington Road 29 Extension, extending the existing Wellington Road 29 north as an arterial road to Lamond Street via a new bridge across the Grand River (long-term improvement by 2041 and beyond);
- The New NS Collector, a new collector road which extends east from the Anderson Street South/Lamond Street/Wellington Road 29 Extension intersection, then curves north across Wellington Road 19 and loops back to connect to First Line in the vicinity of the Elora Cataract Trail. The Wellington Road 19/New NS Collector intersection is identified to potentially include signalization, turning lanes or roundabouts (long-term improvement by 2041 and beyond);
- The Dickson Drive Extension, extending the existing Dickson Drive as a collector road to First Line (medium-term improvement by 2031). It's noted that this extension has now been completed; and
- Redesignate the section of First Line between the New NS Collector and the Dickson Drive Extension as an arterial road (long-term improvement by 2041 and beyond).

3.2 Transit Network

On October 1, 2019, Wellington County launched a County wide, demand based, public transit service available to all residents and visitors ("Ride Well"). This service operates Monday to Friday, 6:00am-7:00pm. Bookings can be made to or from any address in Wellington County or Guelph.

This service also provides opportunities to connect to other nearby transit agencies and routes, including Guelph Transit, GO Transit, and Guelph Owen Sound Transportation (a transit service which extends from Owen Sound to Guelph with stops in Chatsworth, Williamsford, Durham, Mount Forest, Arthur, Fergus and Elora).

In addition to the above, a Transit Feasibility Study has been undertaken for the Township of Centre Wellington and was presented in a report to Council on May 25, 2026. The study recommends a hybrid transit network which combines fixed-route urban transit (gradual implementation of fixed routes serving Fergus, Elora, and Salem), on-demand service where appropriate, continued rural on-demand service, and a regional fixed-route connection to Guelph. The study proposes a total of 5 fixed-routes, with the nearest identified as Route 4 Gartshore which would operate via the Wellington Road 19 / Gartshore Street intersection approximately 500 metres west of the site, as shown in **Figure 4**. The recommended transit model was endorsed by Council on June 29, 2026, and Council directed staff to publish the Notice of Study Completion.

3.3 Bicycle Network

The ATMP and RMAP identify the following existing and future bicycle infrastructure in the vicinity of the site:

- Elora Cataract Trail along the site's north boundary.
- Existing paved shoulder on Wellington Road 19 east of First Line.
- Proposed paved shoulder on Wellington Road 19 between First Line and the west site boundary, and proposed signed route west of the site boundary.
- Proposed paved shoulder along First Line between Wellington Road 19 and Dickson Drive, and proposed bicycle lanes along Anderson Street North between Wellington Road 19 and Lamond Street.

In addition to the above, it's noted that the ATMP identifies a multi-use trail through the site, connecting from Wellington Road 19 to the Elora Cataract Trail. As part of the development, an access road / trail is proposed within the park block and will connect between Wellington Road 19 and the Street J cul-de-sac, with subsequent access to the Elora Cataract Trail available via Street J and Street G.

The above routes provide connections to the broader existing and future bicycle network through the Township of Centre Wellington and beyond.

The existing and future area bicycle network is shown in **Figure 5**, including the facilities within the site as proposed as part of this development.

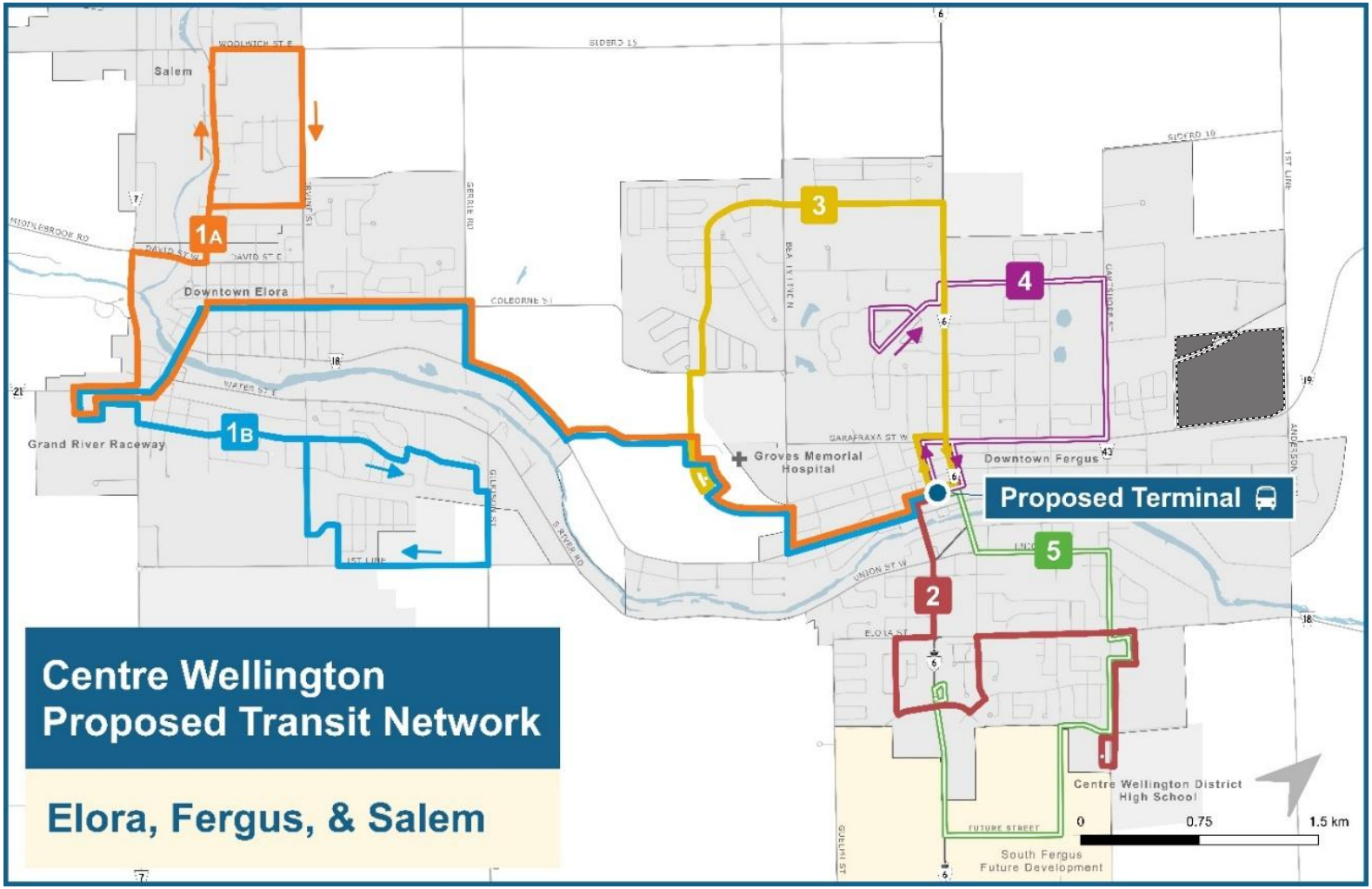
3.4 Pedestrian Network

There are currently no sidewalks adjacent the site. West of the site, there are sidewalks along one or both sides of Wellington Road 19, Gartshore Street, and a number of local streets in nearby residential subdivisions. A signalized crossing location is available at the Wellington Road 19/Gartshore Street intersection.

\\bamediaaccount.file.core.windows.net\fp02data\WP\5883\5883-58\Graphics\Adobe\Id\5883-58 - 6490 First Line.indd

Aerial maps provided courtesy of: Esri, DigitalGlobe, GeoEye, Earthstar Geographies, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, the GIS User Community and/or Google Earth/Maps.

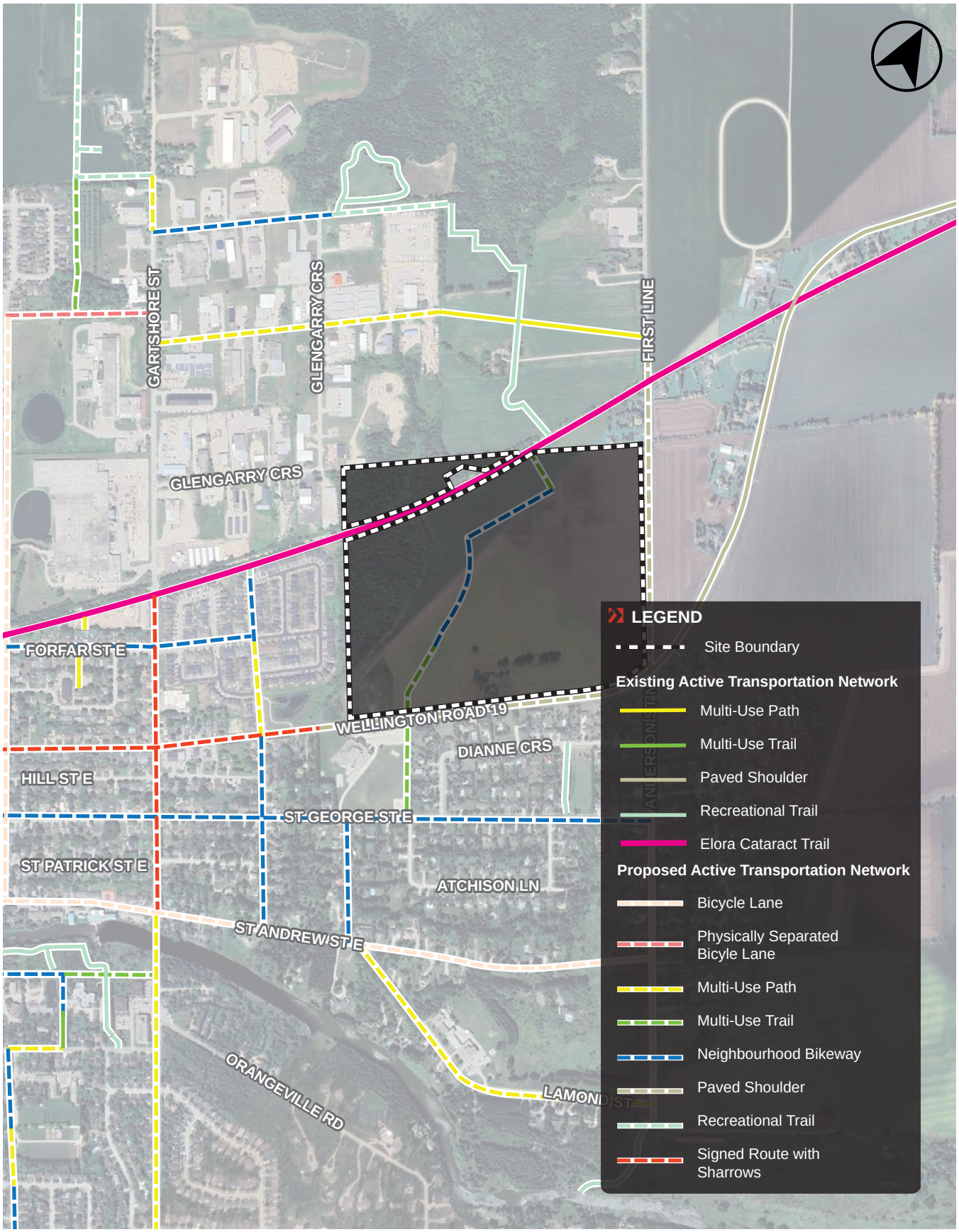
FIGURE 3 EXISTING AND PROPOSED STREET NETWORK



\\bamediaaccount.file.core.windows.net\fp02data\WP\58\83\58\Graphics\Adobe\Id\5883-58 - 6490 First Line.indd

Aerial maps provided courtesy of: Esri, DigitalGlobe, GeoEye, Earthstar Geographies, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, the GIS User Community and/or Google Earth/Maps.

FIGURE 4 TOWNSHIP OF CENTRE WELLINGTON TRANSIT FEASIBILITY STUDY – PROPOSED URBAN TRANSIT NETWORK



\\bamediaaccount.file.core.windows.net\fp02ata\WP\5818358\Graphics\AdobeId\5883-58 - 6490 First Line.indd

Aerial maps provided courtesy of: Esri, DigitalGlobe, GeoEye, Earthstar Geographies, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, the GIS User Community and/or Google Earth/Maps.

FIGURE 5 EXISTING AND PROPOSED BICYCLE NETWORK

4.0 TRAFFIC VOLUME PROJECTIONS

4.1 Scope

For the purpose of analysis, a build-out timeframe of 5-years has been assumed. In accordance with County of Wellington Traffic Impact Study Guidelines, analysis has been undertaken for opening year (i.e. 5-year horizon) and opening year plus 5 years (i.e. 10-year horizon).

Accordingly, analysis has been completed for the following scenarios during the AM and PM peak hour:

- Existing Conditions;
- Future Background Conditions (5-Year Horizon);
- Future Background Conditions (10-Year Horizon);
- Future Total Conditions (5-Year Horizon); and
- Future Total Conditions (10-Year Horizon).

Intersections included within the analysis study area are listed below:

- Wellington Road 19 / Gartshore Street
- Wellington Road 19 / First Line / Anderson Street North
- Wellington Road 19 / Robinson Road / Tom Street
- Gartshore Street / Forfar Street East / Middleton Avenue
- Gartshore Street / Gordon Street
- Gartshore Street / St Andrew Street East
- Gartshore Street / Dickson Drive
- First Line / Dickson Drive
- Wellington Road 19 / Second Line
- Wellington Road 19 / Street A
- First Line / Street C
- First Line / Street B

Existing lane configurations are shown in **Figure 6** and future lane configurations are shown in **Figure 7**.

4.2 Existing Traffic Volumes

Existing peak hour traffic volumes have been established based on traffic counts undertaken by Spectrum Traffic Data on behalf of BA Group. The intersections which were counted are summarized in **Table 1**. The existing baseline area traffic volumes for the AM and PM peak hours are provided in **Figure 8**, and the raw data is attached in **Appendix D**.

Table 1 Existing Traffic Data Sources

Intersection	Count Date	Count Times	Source
Wellington Rd 19 / Gartshore St	Wednesday, June 19, 2024	7:00am-7:00pm	Spectrum Traffic Data
Wellington Rd 19 / Robinson Rd / Tom St			
Gartshore St / Forfar St E / Middleton Ave			
Wellington Rd 19 / First Line / Anderson St N		12:00am-12:00am (24 hr count)	
Gartshore St / Gordon St	Tuesday, February 11, 2025	7:00am-7:00pm	
Gartshore St / St Andrew St E			
Gartshore St / Dickson Dr	Tuesday, June 23, 2026	7:00am-9:00am 4:00pm-6:00pm	
Dickson Dr / First Line			
Wellington Rd 19 / Second Line			

4.3 Future Background Traffic Volumes

4.3.1 Corridor Growth

For the purpose of this assessment, a growth rate of 2% per annum has conservatively been adopted along Gartshore Street, Wellington Road 19 and First Line, as requested by Township of Centre Wellington staff.

Corridor growth traffic volumes for the 5-year and 10-year horizons are shown in **Figure 9** and **Figure 10** respectively.

4.3.2 Background Development Growth

Background development traffic allowances included within the analysis were based on information available within the Norfolk County pending development applications map, as summarized in **Table 2**. In the absence of an available transportation study, trip generation and distribution assumptions consistent with those adopted for the site were manually applied to the proposed redevelopment.

Background development traffic volumes are shown in **Figure 11**.

Table 2 Area Background Development

Site	Development Statistics	Study
965, 970 Gartshore St & 101 Gregson Ct, Fergus	3,560 m^2 operations centre	Report prepared by Burnside, dated May, 2023
8243, 8262 & 8282 Wellington Rd 19, Belwood (Fergus Golf Club)	118 residential units	Report prepared by BA Group, dated February, 2022
6518 First Line, Fergus (Fergus (Dickson Drive) Business Park)	33,445 m^2 business park	Report prepared by Triton Engineering, dated January, 2022

4.3.3 Future Background Traffic Volumes

The future background traffic volumes are determined by adding existing traffic volumes, background development traffic volumes and corridor growth traffic volumes.

Future background traffic volumes for the 5-year and 10-year horizons are shown in **Figure 12** and **Figure 13** respectively.

4.4 Site Traffic Forecasts

4.4.1 Vehicle Trip Generation Rates

Vehicle trip generation rates in the ITE Trip Generation Manual 12th Edition and in proxy data collected by BA Group in Fergus were reviewed, as outlined in **Table 3**. For the purpose of this assessment, trip generation has been adopted in accordance with the rates outlined in the ITE Trip Generation Manual.

Table 3 Adopted Vehicle Trip Generation Rates

Land Use	Trip Rate Source	Vehicle Trip Generation Rate (vehicle trips per unit)					
		AM Peak Hour			PM Peak Hour		
		In	Out	2-Way	In	Out	2-Way
ITE Trip Generation Manual 11th Edition							
Detached Dwelling	LUC 210 (Single-Family Detached Housing) General Urban/Suburban	0.18	0.55	0.70	0.59	0.35	0.94
Townhouse	LUC 215 (Single-Family Attached Housing) General Urban/Suburban	0.12	0.36	0.48	0.34	0.23	0.57
Proxy Data							
Mix of Detached / Townhouse	Vincent St / Steele St Neighbourhood, Fergus 201 residential units Survey undertaken Wednesday, December 13, 2023	0.22	0.49	0.71	0.53	0.32	0.85
	Robinson Rd / Middleton Ave Neighbourhood, Fergus 213 residential units Survey undertaken Wednesday, June 19, 2024	0.32	0.58	0.90	0.58	0.45	1.03
Adopted Rates							
Detached Dwelling		**0.19**	**0.51**	**0.70**	**0.58**	**0.35**	**0.93**
Townhouse		**0.12**	**0.36**	**0.48**	**0.34**	**0.23**	**0.57**

4.4.2 Site Vehicle Trip Generation

Based on the above adopted rates, the traffic volumes projected to be generated by the redevelopment are summarized in **Table 4**.

Overall, it is projected that the proposed redevelopment will generate in the order of 430 and 560 two-way vehicle trips during the AM and PM peak hours respectively.

Table 4 Site Vehicle Trip Generation

Type of Units	Number of Units	AM Peak Hour			PM Peak Hour		
		In	Out	2-Way	In	Out	2-Way
Detached Dwellings	437 units	*0.18*	*0.52*	*0.70*	*0.59*	*0.35*	*0.94*
		80-	**225**	**305**	**260**	**155**	**415**
Townhouses	257 units	*0.12*	*0.36*	*0.48*	*0.34*	*0.23*	*0.57*
		30	**95**	**125**	**85**	**60**	**145**
Total		**110**	**320**	**430**	**345**	**215**	**560**

4.4.3 Vehicle Trip Distribution

Site traffic was assigned onto the area road network based on the results of the 2022 Transportation Tomorrow Survey (TTS), prevailing traffic patterns and area turn restrictions. General direction of approach percentages for residential traffic was based on the results of the TTS and is summarized in **Table 5**.

Table 5 Site Traffic Distribution

Road	Direction	Inbound	Outbound
Wellington Rd 19	West	60%	50%
	East	10%	10%
First Line	North	0%	5%
Highway 6	North	5%	10%
Gartshore Street	South	25%	25%
Total		**100%**	**100%**

Notes:
1. Based on TTS zone 8351

4.4.4 Site Traffic Volumes

The site traffic volumes are shown in **Figure 14**.

4.4.5 Future Total Traffic Volumes

Future total traffic volumes are determined by adding the future background traffic volumes and the site traffic volumes.

The future total traffic volumes are shown in **Figure 15** and **Figure 16** for the 5-year and 10-year horizons respectively.

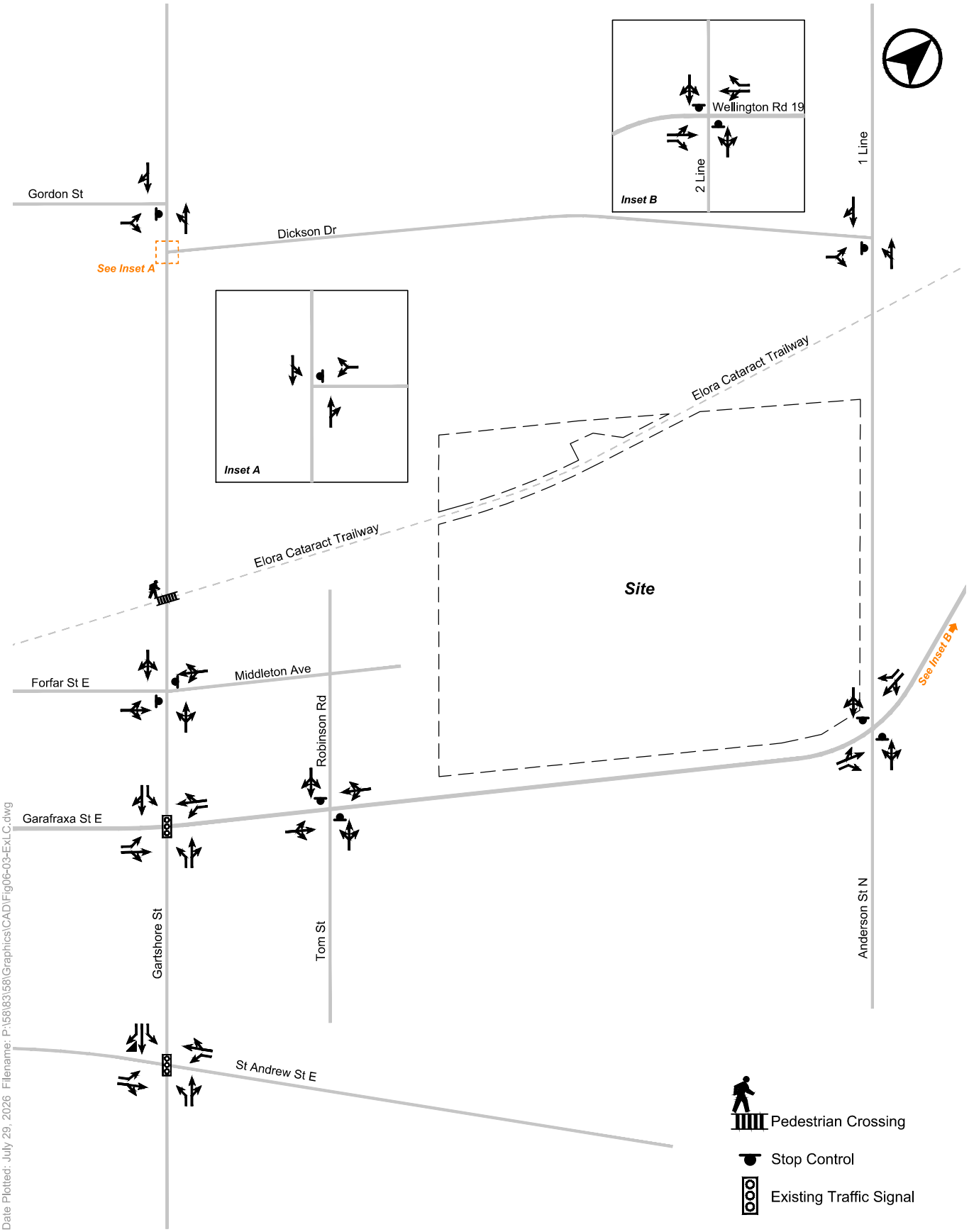


FIGURE 6 EXISTING LANE CONFIGURATION AND TRAFFIC CONTROL

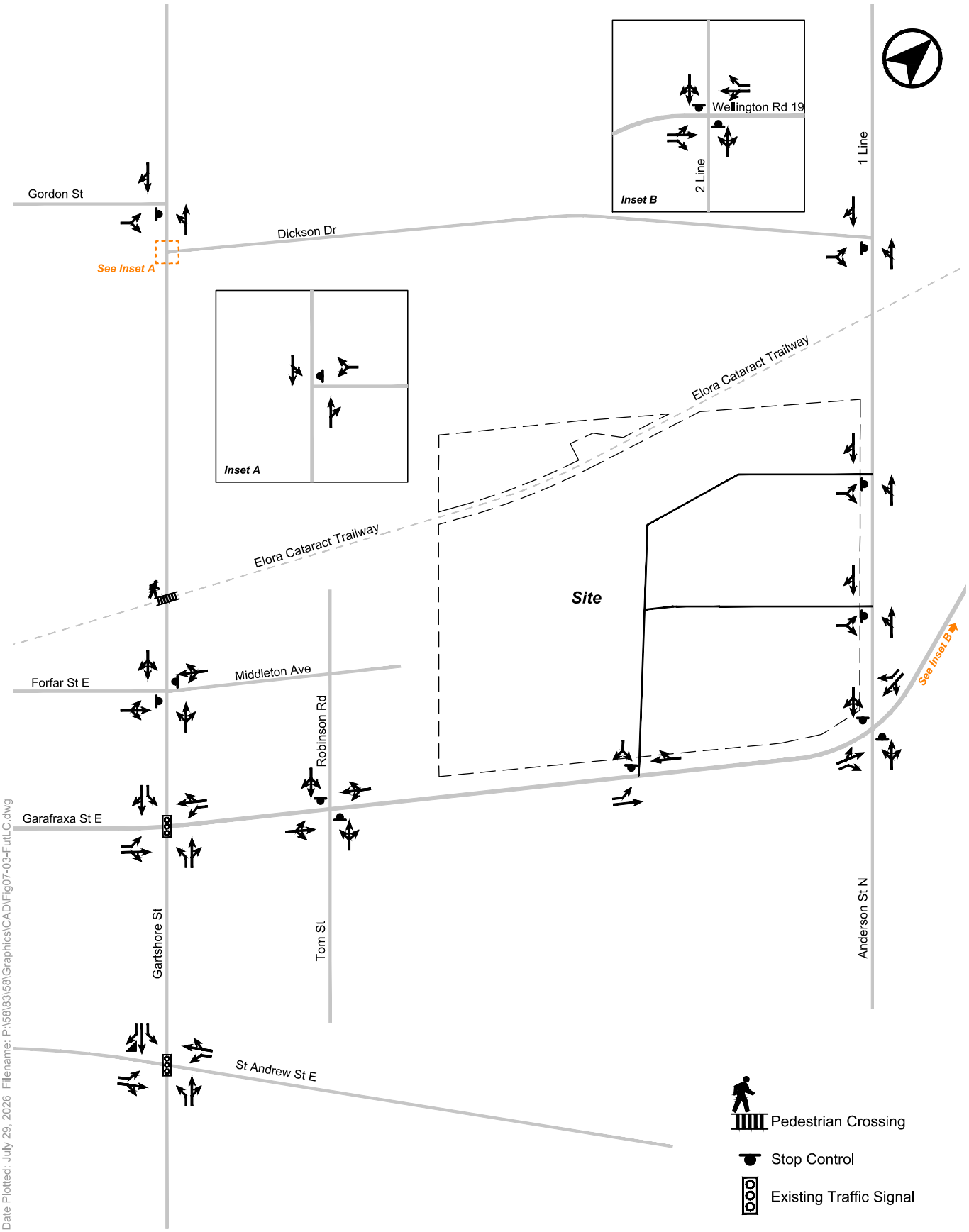


FIGURE 7 FUTURE LANE CONFIGURATION AND TRAFFIC CONTROL

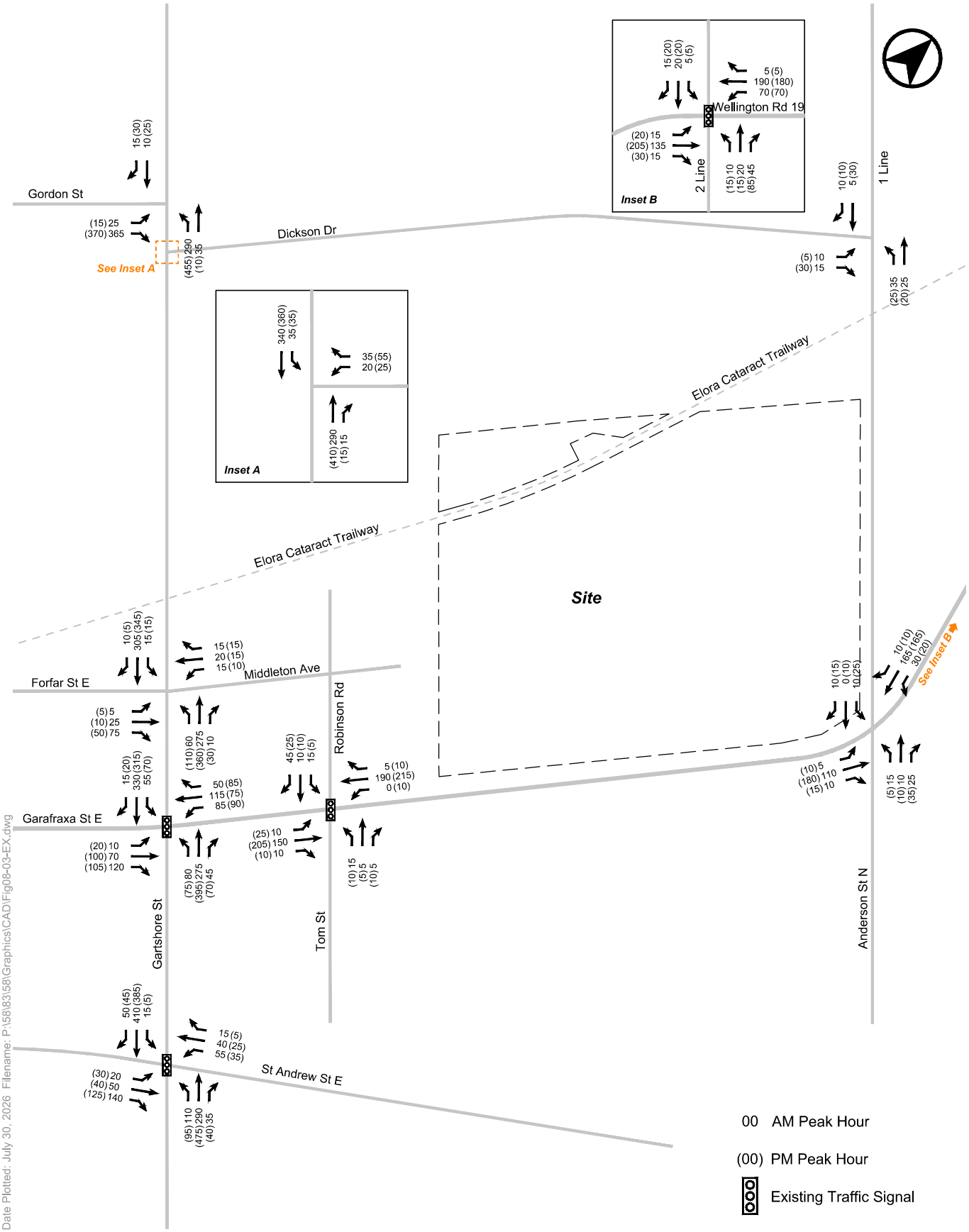


FIGURE 8 EXISTING TRAFFIC VOLUMES

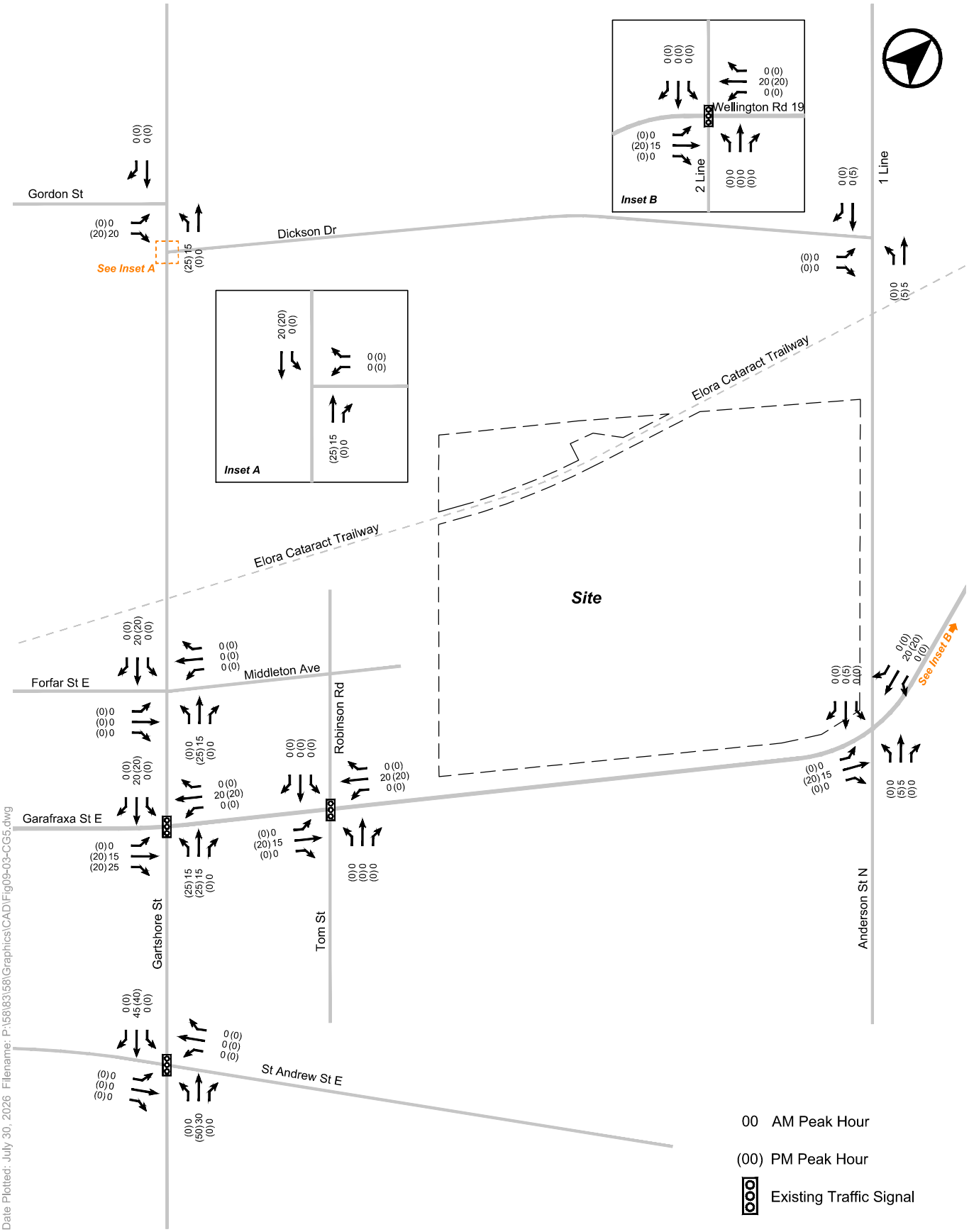


FIGURE 9 CORRIDOR GROWTH TRAFFIC VOLUMES (5-YEAR HORIZON)

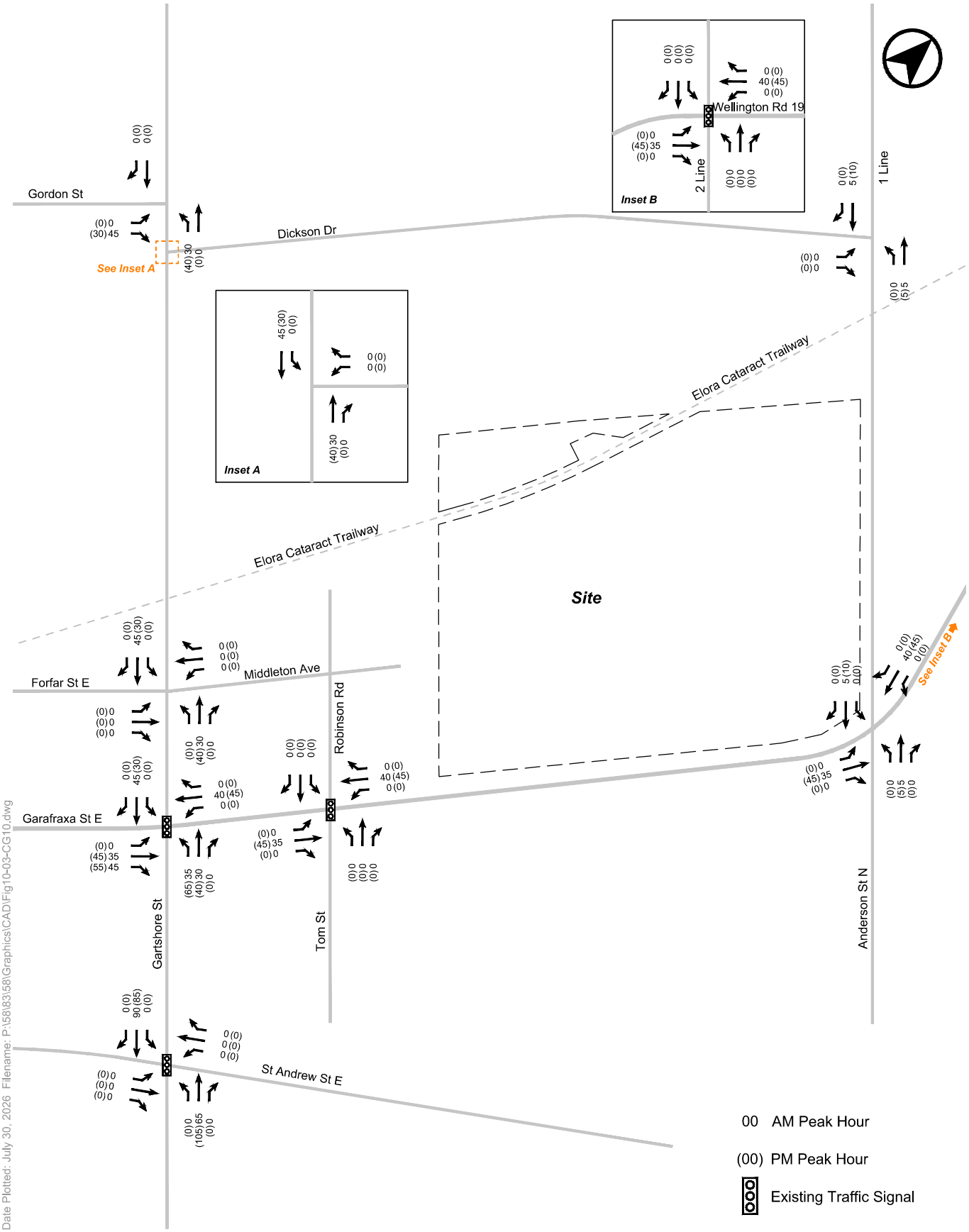


FIGURE 10 CORRIDOR GROWTH TRAFFIC VOLUMES (10-YEAR HORIZON)

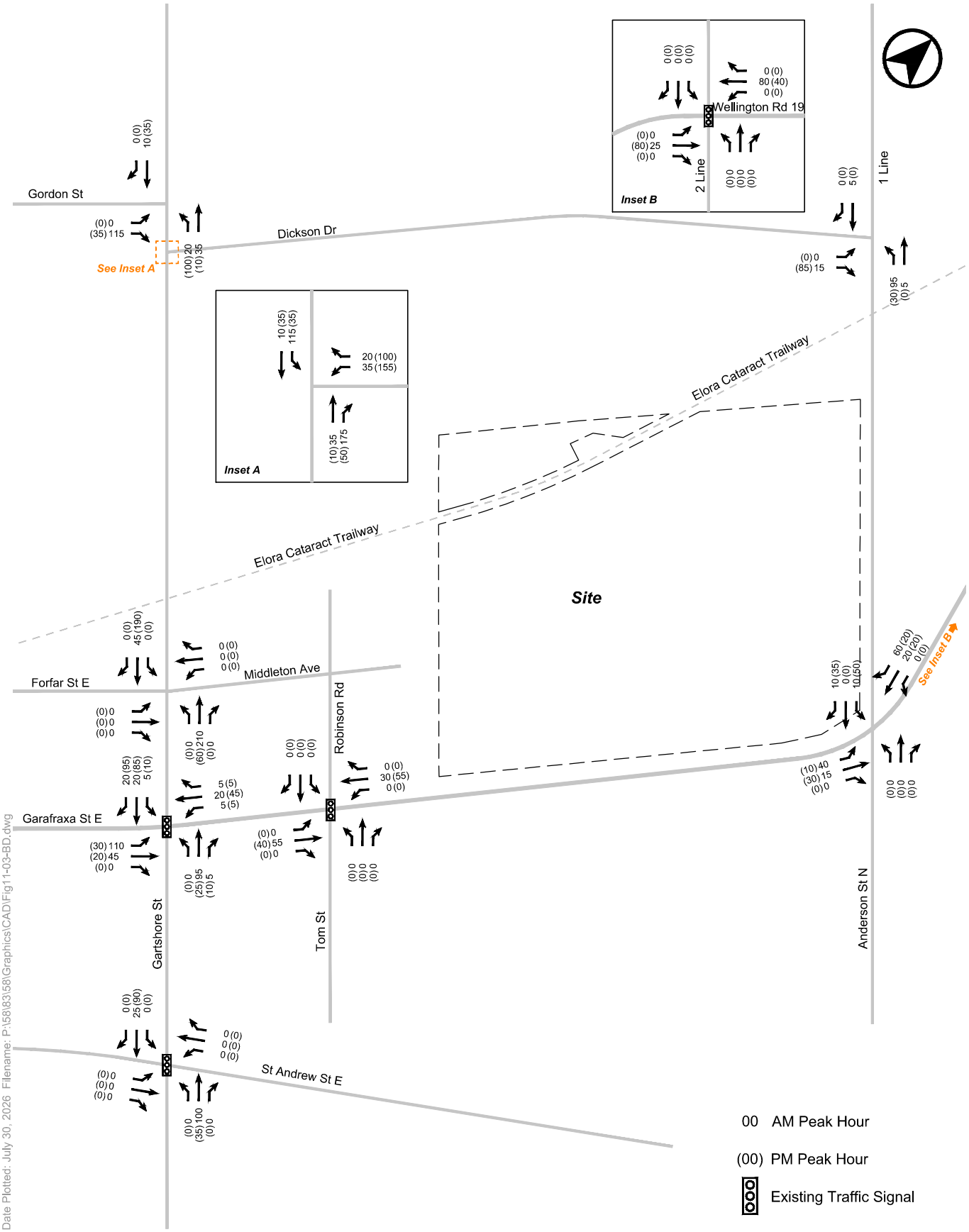


FIGURE 11 BACKGROUND DEVELOPMENT TRAFFIC VOLUMES

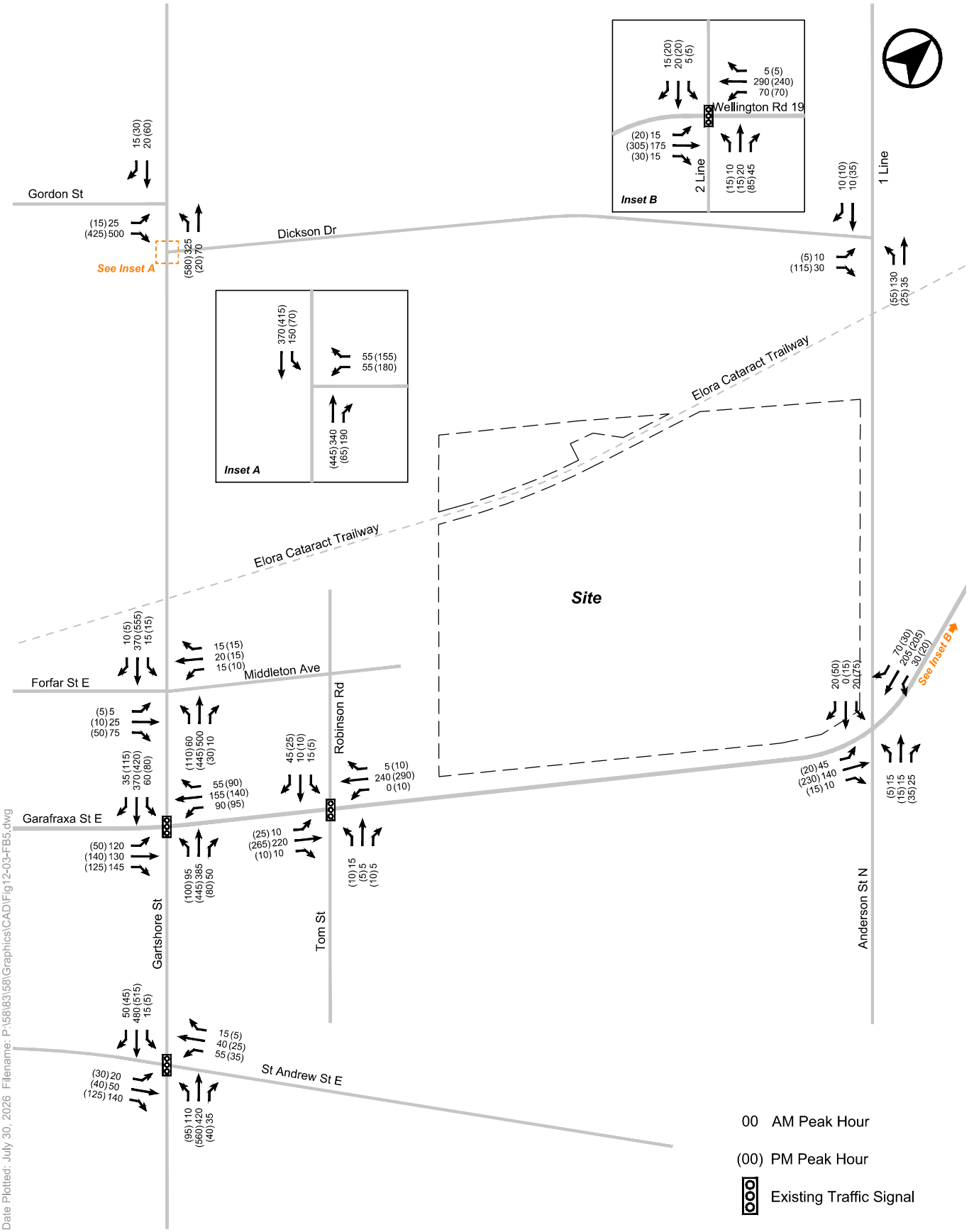


FIGURE 12 FUTURE BACKGROUND TRAFFIC VOLUMES (5-YEAR HORIZON)

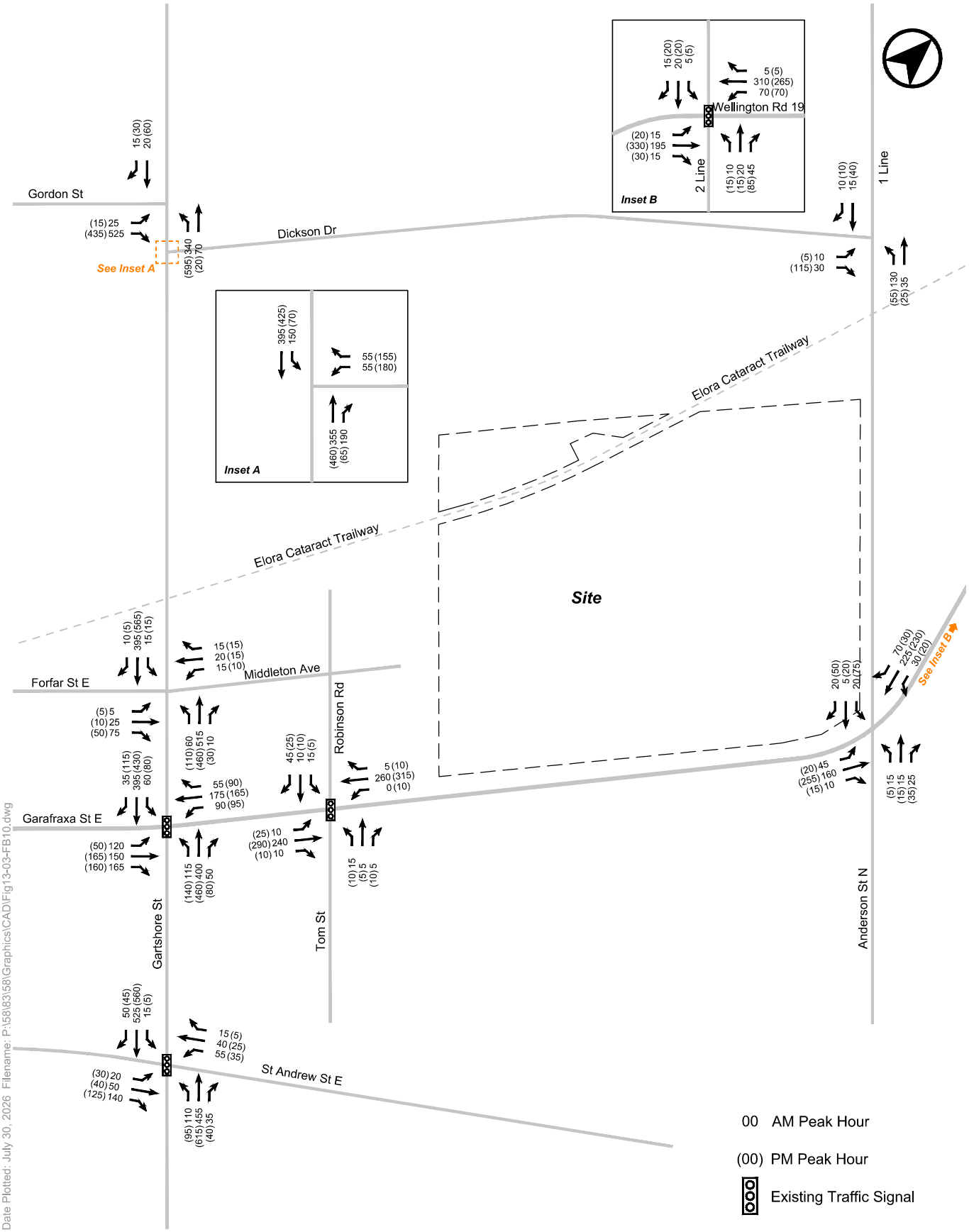


FIGURE 13 FUTURE BACKGROUND TRAFFIC VOLUMES (10-YEAR HORIZON)

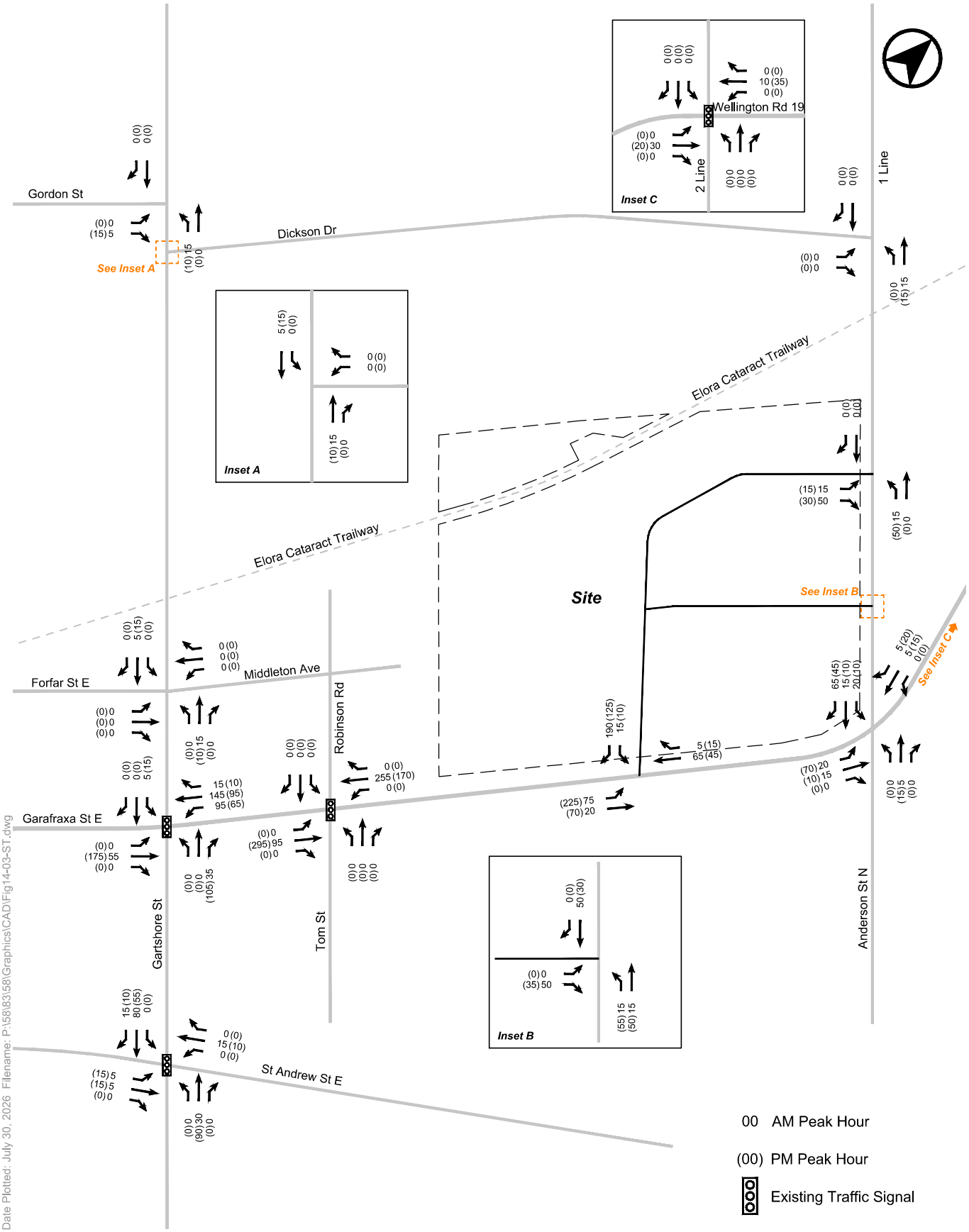


FIGURE 14 SITE TRAFFIC VOLUMES

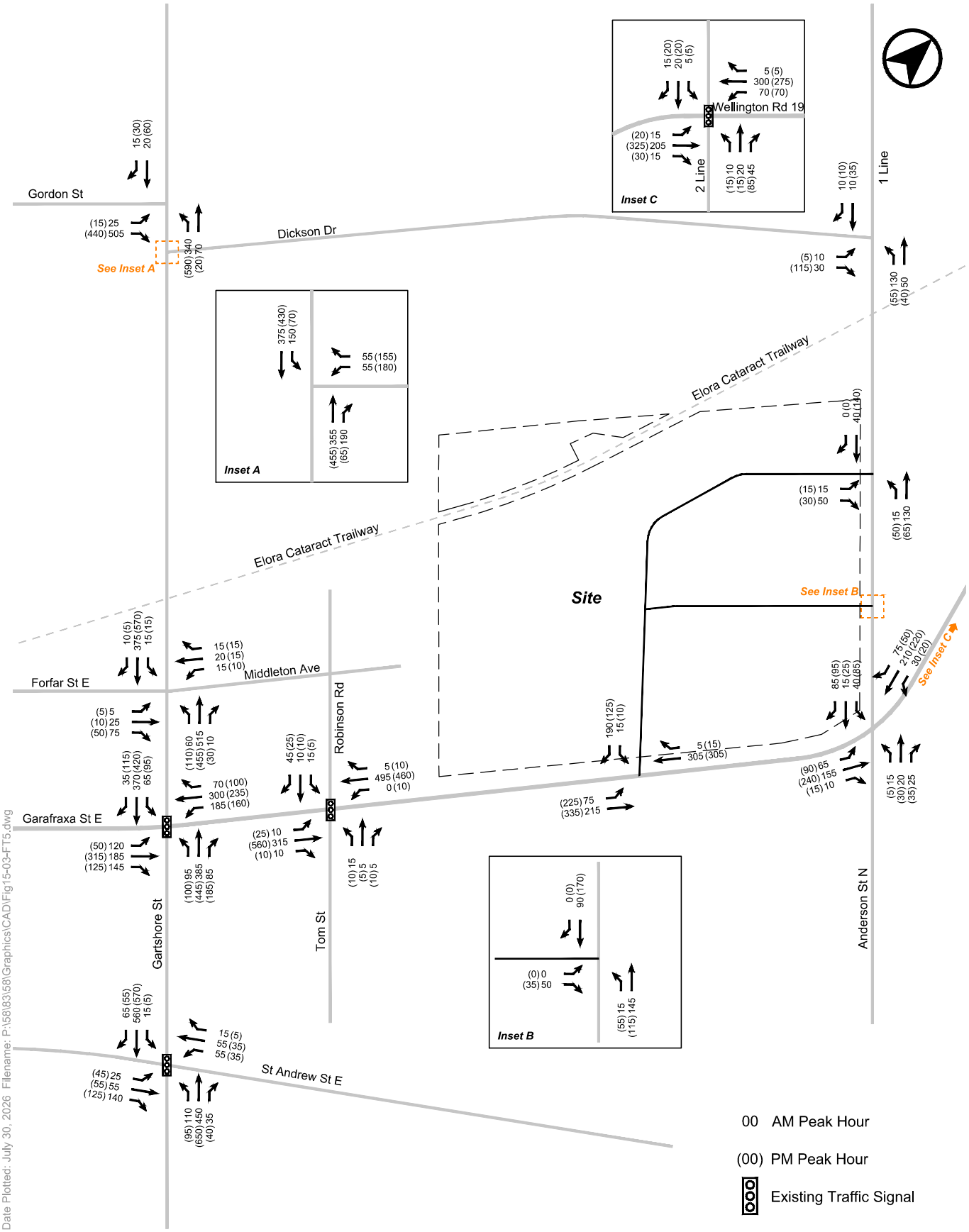


FIGURE 15 FUTURE TOTAL TRAFFIC VOLUMES (5-YEAR HORIZON)

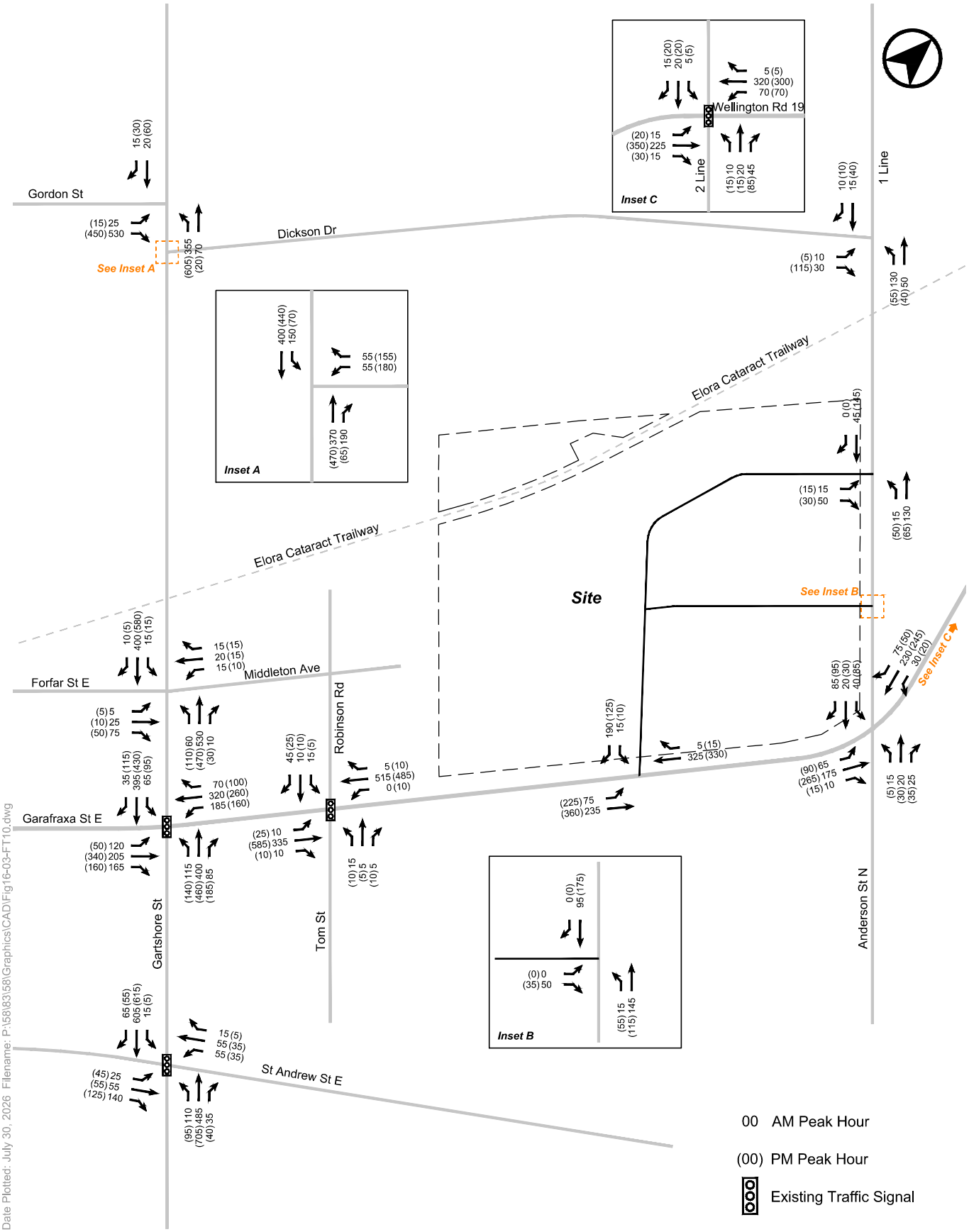


FIGURE 16 FUTURE TOTAL TRAFFIC VOLUMES (10-YEAR HORIZON)

5.0 OPERATION ANALYSIS

5.1 Analysis Methodology

Synchro Version 11 and the Highway Capacity Manual (HCM) methodology were used to analyze the study area intersections and site access points.

For signalized intersections, the volume-to-capacity ratio (v/c) is an indicator of the capacity utilization for the key movements in the intersection. A v/c of 1.00 indicates that a traffic movement through an intersection is operating at or near maximum capacity.

For unsignalized intersections, level of service (LOS) characterizes operational conditions for key movements in terms of average delay experienced by vehicles attempting to complete a manoeuvre through the intersection. LOS 'A' represents a good level of service with short delays, while LOS 'F' represents a poor level of service with extended delays.

Further to the above, it is noted that Wellington County TIS Guidelines specify that at signalized intersections, a v/c ratio of greater than 0.85 for the overall intersection and on through or shared though/turn lanes, and a v/c ratio of greater than 0.90 on dedicated turn lanes is deemed to be "critical" in terms of operations. Wellington County TIS Guidelines also note that the assessment should identify unsignalized intersections where the overall intersection LOS is 'E' or 'F'. For both signalized and unsignalized intersections, the Wellington County TIS Guidelines specify that the analysis should identify where 95th percentile queues exceed the available storage.

Capacity analysis and queue length results for the signalized intersections can be found in **Table 6** and **Table 7** respectively. Capacity analysis and queue results for the unsignalized intersections can be found in **Table 8** and **Table 9** respectively. Detailed analysis worksheets are attached in **Appendix E**.

5.2 Analysis Assumptions and Parameters

5.2.1 Existing Signal Timings

Existing signal timings were obtained and are attached in **Appendix F**. These parameters were adopted for analysis of existing and future conditions.

5.2.2 Heavy Vehicle Assumptions

Heavy and medium truck percentages incorporated into the analysis were based upon information in the traffic counts.

5.2.3 Saturation Flow Assumptions

A base saturation flow rate of 1,900 passenger cars per hour of green time per lane (pcphgpl) was adopted for signalized and unsignalized intersections.

5.2.4 Lost Time Adjustments

A base lost time adjustment factor of 0 seconds (i.e. a total lost time per phase equal to the amber plus all-red time) was adopted for signalized intersections.

5.2.5 Peak Hour Factor

Peak hour factors were calculated from information in the traffic counts.

5.3 Intersection Operations Analysis

5.3.1 Wellington Road 19 / Gartshore Street

The intersection of Wellington Road 19 / Gartshore Street is signalized.

Under existing conditions, the intersection operate at v/c ratios of 0.38 and 0.47 in the AM and PM peak hours, respectively.

Under future background conditions, the intersection is projected to operate at the following overall v/c ratios:

- **5-Year Horizon:** 0.54 and 0.56 in the AM and PM peak hours, respectively.
- **10-Year Horizon:** 0.59 and 0.68 in the AM and PM peak hours, respectively.

Under future total conditions, the intersection is projected to operate at the following overall v/c ratios:

- **5-Year Horizon:** 0.69 and 0.85 in the AM and PM peak hours, respectively.
- **10-Year Horizon:** 0.74 and 0.97 in the AM and PM peak hours, respectively.

Some movements and the overall intersection are projected to exceed the thresholds identified in the Wellington County TIS Guidelines in some scenarios as follows:

- The overall intersection is projected to operate with a v/c ratio of 0.97 during the PM peak hour in the future total 10-year horizon.
- The westbound left movement is projected to operate with a v/c ratio of 0.99 during the PM peak hour in the future total 10-year horizon.
- The shared northbound through and right movement is projected to operate with a v/c ratio of 0.86 and 0.88 during the AM and PM peak hours respectively in the future total 5-year horizon, and 0.87 and 0.91 respectively in the future total 10-year horizon.
- The southbound left movement is projected to operate with a v/c ratio of 0.95 during the PM peak hour in the future total 10-year horizon.

Some 95th percentile turn lane queue lengths are projected to exceed the available turn lane lengths as follows:

- The westbound left movement is projected to have a 95th percentile queue length which exceeds the available storage during the AM and PM peak hours in the future total 5-year and 10-year horizons. It should be noted that given this is related to the 95th percentile queue, this is expected to occur infrequently. When this occurs, westbound through vehicles will wait behind the left turn queue and will be processed once the light turns green. As noted above, the operations analysis results indicate that the queue is cleared each cycle, with a v/c value of less than 1.00.
- The northbound left movement is projected to have a 95th percentile queue length which meets or exceeds the available storage during the AM and PM peak hours under the future background 5-year horizon, and in subsequent scenarios. It should be noted that given this is related to the 95th percentile queue, this is expected to occur infrequently. When this occurs, northbound through vehicles will wait behind the left turn queue and will be processed once the light turns green. As noted above, the operations analysis results indicate that the queue is cleared each cycle, with a v/c value of less than 1.00.
- The southbound left movement is projected to have a 95th percentile queue length which exceeds the available storage during the PM peak hour in the future total 5-year and 10-year horizons. It should be noted that given this is related to the 95th percentile queue, this is expected to occur infrequently. When this occurs, southbound through vehicles will wait behind the left turn queue and will be processed once the light turns green. As noted above, the operations analysis results indicate that the queue is cleared each cycle, with a v/c value of less than 1.00.

While the above v/c ratios exceed the thresholds identified in the Wellington County TIS Guidelines, it's important to note that the intersection and all movements are projected to remain operating within capacity under all analysis scenarios. Additionally, it should be noted that queuing conditions such as the above are not uncommon in urban areas.

Furthermore, the analysis assumes a 2% growth rate that is applied across a 10-year horizon, in addition to the background and site assumptions made as part of this analysis. This is considered to be a conservative assumption that may not eventuate to the extent assumed in this analysis. Overall, it is concluded that the traffic associated with the development can be accommodated at this intersection, and it's recommended that the intersection be monitored over time.

Capacity analysis and queue results are provided in **Table 6** and **Table 7** respectively. Synchro output sheets are provided in **Appendix E**.

5.3.2 Gartshore Street / St Andrew Street East

The intersection of Gartshore Street / St Andrew Street East is signalized.

Under existing conditions, the intersection operate at v/c ratios of 0.62 and 0.45 in the AM and PM peak hours, respectively.

Under future background conditions, the intersection is projected to operate at the following overall v/c ratios:

- **5-Year Horizon:** 0.71 and 0.51 in the AM and PM peak hours, respectively.
- **10-Year Horizon:** 0.76 and 0.55 in the AM and PM peak hours, respectively.

Under future total conditions, the intersection is projected to operate at the following overall v/c ratios:

- **5-Year Horizon:** 0.80 and 0.59 in the AM and PM peak hours, respectively.
- **10-Year Horizon:** 0.85 and 0.63 in the AM and PM peak hours, respectively.

Some movements are projected to exceed the thresholds identified in the Wellington County TIS Guidelines in some scenarios as follows:

- The southbound through movement is projected to operate with a v/c ratio of 0.87 during the AM peak hour in the future total 10-year horizon.

Some 95th percentile turn lane queue lengths are projected to exceed the available turn lane lengths as follows:

- The eastbound left movement is projected to have a 95th percentile queue length which slightly exceeds the available storage during the PM peak hour in the future total 5-year and 10-year horizons. It should be noted that given this is related to the 95th percentile queue, this is expected to occur infrequently. When this occurs, eastbound through vehicles will wait behind the left turn queue and will be processed once the light turns green. As noted above, the operations analysis results indicate that the queue is cleared each cycle, with a v/c value of less than 1.00.

While the above v/c ratios exceed the thresholds identified in the Wellington County TIS Guidelines, it's important to note that the intersection and all movements are projected to remain operating within capacity under all analysis scenarios. Additionally, it should be noted that queuing conditions such as the above are not uncommon in urban areas.

Furthermore, the analysis assumes a 2% growth rate that is applied across a 10-year horizon, in addition to the background and site assumptions made as part of this analysis. This is considered to be a conservative assumption that may not eventuate to the extent assumed in this analysis. Overall, it is concluded that the traffic associated with the development can be accommodated at this intersection, and it's recommended that the intersection be monitored over time.

Capacity analysis and queue results are provided in **Table 6** and **Table 7** respectively. Synchro output sheets are provided in **Appendix E**.

5.3.3 Wellington Road 19 / First Line / Anderson Street North

The intersection of Wellington Road 19 / First Line / Anderson Street North is unsignalized and is projected to operate at LOS D or better in all analysis scenarios.

The 95th percentile turn lane queue lengths are projected to be accommodated within the available storage length under all analysis scenarios.

Overall, it is projected that site traffic can be accommodated at this intersection. Capacity analysis and queue results can be found in **Table 8** and **Table 9** respectively. Synchro output sheets are provided in **Appendix E**.

5.3.4 Wellington Road 19 / Robinson Road / Tom Street

The intersection of Wellington Road 19 / Robinson Road / Tom Street is unsignalized. All movements are projected to operate at LOS E or better in all analysis scenarios. The overall intersection is projected to operate at LOS A in all analysis scenarios.

The 95th percentile turn lane queue lengths are projected to be accommodated within the available storage length under all analysis scenarios.

Overall, it is projected that site traffic can be accommodated at this intersection. Capacity analysis and queue results can be found in **Table 8** and **Table 9** respectively. Synchro output sheets are provided in **Appendix E**.

5.3.5 Gartshore Street / Forfar Street East / Middleton Avenue

The intersection of Gartshore Street / Forfar Street East / Middleton Avenue is unsignalized. All movements are projected to operate at LOS E or better in all analysis scenarios. The overall intersection is projected to operate at LOS D or better in all analysis scenarios.

The 95th percentile turn lane queue lengths are projected to be accommodated within the available storage length under all analysis scenarios.

Overall, it is projected that site traffic can be accommodated at this intersection. Capacity analysis and queue results can be found in **Table 8** and **Table 9** respectively. Synchro output sheets are provided in **Appendix E**.

5.3.6 Gartshore Street / Gordon Street

The intersection of Gartshore Street / Gordon Street is unsignalized and is projected to operate at LOS C or better in all analysis scenarios.

The 95th percentile turn lane queue lengths are projected to be accommodated within the available storage length under all analysis scenarios.

Overall, it is projected that site traffic can be accommodated at this intersection. Capacity analysis and queue results can be found in **Table 8** and **Table 9** respectively. Synchro output sheets are provided in **Appendix E**.

5.3.7 Gartshore Street / Dickson Drive

The intersection of Gartshore Street / Dickson Drive is unsignalized and is projected to operate at LOS E or better in all analysis scenarios during the AM peak hour. The overall intersection is projected to operate at LOS D or better in all analysis scenarios during the AM peak hour.

During the PM peak hour, the shared westbound left and right lane is projected to operate at LOS F in the future background 5-year horizon, and in subsequent scenarios. This condition is primarily a result of the Dickson Drive Business Park, for which a potential yield of 33,445 square metres of business park uses was assumed in the traffic study prepared for the Dickson Drive extension. Based on that traffic study, the business park uses are estimated to generate in the order of 250 westbound vehicle trips at this intersection in the PM peak hour. The traffic study identified that a potential signalized

configuration would improve the operations of this intersection, however ultimately recommended that since the final development land use and lot fabric is not currently known and could vary, that traffic operations be monitored and assessed as part of future development applications within the industrial park to determine the need and timing for signals at this intersection. It's noted that the site specific impact on the operation of this intersection is minor.

The 95th percentile turn lane queue lengths are projected to be accommodated within the available storage length under all analysis scenarios.

Overall, the site traffic impact on this intersection is minor and can be accommodated. As outlined in the traffic study for the Dickson Drive extension, it's recommended that traffic operations at this intersection be monitored as development within the business park progresses.

Capacity analysis and queue results can be found in **Table 8** and **Table 9** respectively. Synchro output sheets are provided in **Appendix E**.

5.3.8 First Line / Dickson Drive

The intersection of First Line / Dickson Drive is unsignalized and is projected to operate at LOS A in all analysis scenarios.

The 95th percentile turn lane queue lengths are projected to be accommodated within the available storage length under all analysis scenarios.

Overall, it is projected that site traffic can be accommodated at this intersection. Capacity analysis and queue results can be found in **Table 8** and **Table 9** respectively. Synchro output sheets are provided in **Appendix E**.

5.3.9 Wellington Road 19 / Second Line

The intersection of Wellington Road 19 / Second Line is unsignalized and is projected to operate at LOS C or better in all analysis scenarios.

The 95th percentile turn lane queue lengths are projected to be accommodated within the available storage length under all analysis scenarios.

Overall, it is projected that site traffic can be accommodated at this intersection. Capacity analysis and queue results can be found in **Table 8** and **Table 9** respectively. Synchro output sheets are provided in **Appendix E**.

5.3.10 Wellington Road 19 / Street A

The intersection of Wellington Road 19 / Street A is a proposed new unsignalized intersection and is projected to operate at LOS A in all analysis scenarios.

The 95th percentile turn lane queue lengths are projected to be accommodated within the available storage length under all analysis scenarios.

Overall, it is projected that site traffic can be accommodated at this intersection. Capacity analysis and queue results can be found in **Table 8** and **Table 9** respectively. Synchro output sheets are provided in **Appendix E**.

5.3.11 First Line / Street C

The intersection of First Line / Street C is a proposed new unsignalized intersection and is projected to operate at LOS A in all analysis scenarios.

The 95th percentile turn lane queue lengths are projected to be accommodated within the available storage length under all analysis scenarios.

Overall, it is projected that site traffic can be accommodated at this intersection. Capacity analysis and queue results can be found in **Table 8** and **Table 9** respectively. Synchro output sheets are provided in **Appendix E**.

5.3.12 First Line / Street B

The intersection of First Line / Street B is a proposed new unsignalized intersection and is projected to operate at LOS A in all analysis scenarios.

The 95th percentile turn lane queue lengths are projected to be accommodated within the available storage length under all analysis scenarios.

Overall, it is projected that site traffic can be accommodated at this intersection. Capacity analysis and queue results can be found in **Table 8** and **Table 9** respectively. Synchro output sheets are provided in **Appendix E**.

Table 6 Signalized Intersections Capacity Analysis Summary

Movement	Existing			Future Background						Future Total					
				5-Year Horizon			10-Year Horizon			5-Year Horizon			10-Year Horizon		
	V/C	LOS	Delay (s)	V/C	LOS	Delay (s)	V/C	LOS	Delay (s)	V/C	LOS	Delay (s)	V/C	LOS	Delay (s)
Wellington Rd 19 / Gartshore St															
EBL	0.02 (0.04)	A (B)	8.2 (10.6)	0.28 (0.13)	B (B)	13.8 (13.1)	0.29 (0.15)	B (B)	14.5 (14.9)	0.40 (0.21)	B (B)	17.4 (17.7)	0.44 (0.22)	B (B)	19.1 (17.5)
EBTR	0.17 (0.22)	A (B)	9.3 (12.1)	0.33 (0.32)	B (B)	13.9 (14.8)	0.40 (0.43)	B (B)	15.2 (18.0)	0.43 (0.67)	B (C)	15.7 (24.8)	0.50 (0.75)	B (C)	17.3 (27.3)
WBL	0.16 (0.18)	A (B)	9.4 (11.9)	0.23 (0.23)	B (B)	13.3 (14.2)	0.26 (0.29)	B (B)	14.2 (17.0)	0.55 (0.81)	C (D)	20.8 (48.6)	0.63 (0.99)	C (F)	25.1 (89.6)
WBTR	0.18 (0.16)	A (B)	9.3 (11.6)	0.26 (0.29)	B (B)	13.0 (14.4)	0.30 (0.35)	B (B)	13.8 (16.7)	0.49 (0.51)	B (C)	16.4 (20.9)	0.52 (0.53)	B (C)	17.6 (21.0)
NBL	0.54 (0.31)	C (B)	21.0 (14.7)	0.53 (0.83)	D (E)	35.4 (58.2)	0.69 (0.93)	D (E)	42.3 (72.6)	0.50 (0.52)	C (C)	31.2 (21.4)	0.64 (0.80)	D (D)	35.1 (39.8)
NBTR	0.74 (0.81)	C (C)	25.3 (26.0)	0.82 (0.84)	D (D)	44.1 (36.8)	0.83 (0.79)	D (C)	43.6 (29.8)	0.86 (0.88)	D (C)	44.8 (31.8)	0.87 (0.91)	D (D)	43.3 (36.9)
SBL	0.35 (0.52)	C (C)	23.3 (23.7)	0.41 (0.63)	C (C)	20.6 (28.2)	0.41 (0.53)	C (C)	20.3 (20.2)	0.49 (0.79)	C (D)	21.7 (43.8)	0.50 (0.95)	C (F)	21.3 (88.9)
SBTR	0.76 (0.57)	C (C)	31.9 (22.1)	0.72 (0.84)	C (C)	26.0 (30.9)	0.75 (0.79)	C (C)	26.7 (25.6)	0.70 (0.72)	C (C)	24.7 (20.8)	0.73 (0.75)	C (C)	25.0 (22.3)
Overall	**0.38 (0.47)**	**C (B)**	**21.0 (19.6)**	**0.54 (0.56)**	**C (C)**	**25.9 (28.3)**	**0.59 (0.68)**	**C (C)**	**26.6 (26.7)**	**0.69 (0.85)**	**C (C)**	**25.8 (27.3)**	**0.74 (0.97)**	**C (C)**	**26.6 (34.6)**
Gartshore St / St Andrew St E															
EBL	0.15 (0.21)	C (C)	30.8 (33.2)	0.15 (0.21)	C (C)	30.8 (33.2)	0.15 (0.21)	C (C)	30.8 (33.2)	0.19 (0.30)	C (C)	31.0 (33.5)	0.19 (0.30)	C (C)	31.0 (33.5)
EBTR	0.40 (0.32)	C (C)	32.6 (33.9)	0.40 (0.32)	C (C)	32.6 (33.9)	0.40 (0.32)	C (C)	32.6 (33.9)	0.42 (0.38)	C (C)	32.7 (34.0)	0.42 (0.38)	C (C)	32.7 (34.0)
WBL	0.82 (0.35)	E (D)	75.8 (35.1)	0.82 (0.35)	E (D)	75.8 (35.1)	0.82 (0.35)	E (D)	75.8 (35.1)	0.82 (0.37)	E (D)	75.7 (35.0)	0.82 (0.37)	E (D)	75.7 (35.0)
WBTR	0.22 (0.14)	C (C)	31.2 (32.6)	0.22 (0.14)	C (C)	31.2 (32.6)	0.22 (0.14)	C (C)	31.2 (32.6)	0.30 (0.18)	C (C)	31.6 (32.4)	0.30 (0.18)	C (C)	31.6 (32.4)

Movement	Existing			Future Background						Future Total					
				5-Year Horizon			10-Year Horizon			5-Year Horizon			10-Year Horizon		
	V/C	LOS	Delay (s)	V/C	LOS	Delay (s)	V/C	LOS	Delay (s)	V/C	LOS	Delay (s)	V/C	LOS	Delay (s)
NBL	0.27 (0.15)	A (A)	6.0 (4.1)	0.31 (0.18)	A (A)	7.1 (4.8)	0.34 (0.20)	A (A)	8.1 (5.1)	0.37 (0.20)	A (A)	9.2 (5.5)	0.42 (0.22)	B (A)	11.0 (6.0)
NBT	0.37 (0.42)	A (A)	6.5 (6.0)	0.51 (0.49)	A (A)	8.1 (6.7)	0.55 (0.54)	A (A)	8.7 (7.3)	0.54 (0.57)	A (A)	8.6 (8.0)	0.59 (0.61)	A (A)	9.3 (8.7)
SBL	0.04 (0.01)	B (B)	17.6 (13.3)	0.04 (0.01)	A (A)	8.1 (7.5)	0.05 (0.01)	A (A)	8.3 (7.4)	0.05 (0.01)	A (A)	8.9 (7.8)	0.05 (0.01)	A (A)	9.3 (7.3)
SBT	0.59 (0.39)	C (B)	27.2 (18.9)	0.69 (0.52)	B (A)	14.2 (9.7)	0.76 (0.56)	B (B)	16.3 (10.6)	0.81 (0.58)	C (B)	20.2 (11.1)	0.87 (0.62)	C (B)	26.2 (11.1)
SBR	0.04 (0.03)	E (A)	72.2 (7.6)	0.04 (0.03)	B (A)	12.7 (7.6)	0.04 (0.03)	B (A)	11.7 (7.6)	0.06 (0.04)	B (A)	11.1 (9.1)	0.06 (0.04)	B (A)	13.8 (6.9)
Overall	**0.62 (0.45)**	**C (B)**	**24.8 (15.3)**	**0.71 (0.51)**	**B (B)**	**17.3 (12.3)**	**0.76 (0.55)**	**B (B)**	**17.9 (12.6)**	**0.80 (0.59)**	**B (B)**	**19.5 (13.4)**	**0.85 (0.63)**	**C (B)**	**21.9 (13.5)**

Notes:

1. xx (xx) – AM Peak (PM Peak)

Table 7 Signalized Intersections Queue Length Summary

Movement	Approx. Storage Length (m)	Existing		Future Background				Future Total			
				5-Year Horizon		10-Year Horizon		5-Year Horizon		10-Year Horizon	
		50%ile (m)	95%ile (m)	50%ile (m)	95%ile (m)	50%ile (m)	95%ile (m)	50%ile (m)	95%ile (m)	50%ile (m)	95%ile (m)
Wellington Rd 19 / Gartshore St											
EBL	**40**	0.7 (1.6)	3.5 (6.1)	11.7 (4.6)	27.9 (12.9)	12.1 (5.4)	28.3 (13.1)	13.3 (5.4)	29.1 (12.5)	14.0 (5.1)	30.8 (13.0)
EBTR	**1,000**	5.6 (12.3)	18.7 (31.0)	20.2 (21.9)	45.4 (46.7)	26.1 (34.1)	54.8 (59.8)	31.9 (60.9)	56.2 (87.9)	39.5 (68.3)	67.0 (107.6)
WBL	**40**	6.8 (8.4)	17.5 (21.0)	8.7 (9.9)	22.0 (23.8)	9.0 (11.7)	22.6 (25.0)	22.8 (25.3)	46.8 (#58.4)	24.7 (26.8)	#57.5 (#67.2)
WBTR	**> 1,000**	11.1 (7.3)	26.0 (21.8)	18.8 (19.9)	40.2 (42.2)	22.1 (27.5)	44.8 (48.3)	43.5 (41.4)	70.9 (62.1)	48.6 (43.2)	78.1 (70.2)
NBL	**25**	8.0 (6.3)	12.5 (9.9)	16.1 (14.5)	29.6 (#39.5)	20.4 (15.9)	34.9 (#56.8)	14.9 (10.9)	30.4 (m29.4)	21.1 (17.9)	m39.0 (m#53.0)
NBTR	**350**	29.3 (71.8)	33.9 (40.3)	74.9 (73.0)	94.3 (104.9)	75.7 (54.6)	97.9 (109.7)	75.3 (72.5)	#102.3 (#164.9)	84.1 (78.4)	116.9 (#167.8)
SBL	**30**	7.5 (9.6)	15.3 (21.1)	7.6 (10.9)	15.5 (#26.7)	7.5 (9.1)	15.8 (24.5)	8.2 (13.2)	20.2 (#45.3)	8.0 (15.9)	20.1 (#48.2)
SBLTR	**> 1,000**	54.1 (45.9)	70.1 (61.1)	59.0 (78.8)	72.8 (105.5)	63.0 (69.8)	79.0 (108.5)	56.2 (67.8)	80.6 (#118.5)	59.2 (75.3)	85.3 (117.2)
Gartshore St / St Andrew St E											
EBL	**15**	3.7 (4.8)	8.3 (12.2)	3.7 (4.8)	8.3 (12.2)	3.7 (4.8)	8.3 (12.2)	4.5 (7.3)	9.5 (16.1)	4.5 (7.3)	9.5 (16.1)
EBTR	**900**	9.4 (6.4)	19.5 (23.0)	9.4 (6.4)	19.5 (23.0)	9.4 (6.4)	19.5 (23.0)	10.3 (8.8)	20.5 (26.3)	10.3 (8.8)	20.5 (26.3)
WBL	**25**	10.8 (5.6)	19.3 (13.8)	10.8 (5.6)	19.3 (13.8)	10.8 (5.6)	19.3 (13.8)	10.8 (5.6)	19.3 (13.7)	10.8 (5.6)	19.3 (13.7)
WBTR	**> 1,000**	7.5 (4.0)	14.5 (11.1)	7.5 (4.0)	14.5 (11.1)	7.5 (4.0)	14.5 (11.1)	10.4 (5.4)	18.0 (13.4)	10.4 (5.4)	18.0 (13.4)
NBL	**25**	5.5 (3.1)	11.6 (8.9)	5.5 (3.1)	11.6 (8.9)	5.5 (3.1)	11.6 (8.9)	5.5 (3.2)	11.7 (9.4)	5.5 (3.2)	11.7 (9.4)

Movement	Approx. Storage Length (m)	Existing		Future Background				Future Total			
				5-Year Horizon		10-Year Horizon		5-Year Horizon		10-Year Horizon	
		50%ile (m)	95%ile (m)	50%ile (m)	95%ile (m)	50%ile (m)	95%ile (m)	50%ile (m)	95%ile (m)	50%ile (m)	95%ile (m)
NBTR	**800**	23.1 (28.9)	37.9 (59.3)	37.9 (36.3)	58.5 (74.2)	42.6 (41.6)	65.1 (85.2)	42.1 (46.6)	64.5 (97.1)	47.3 (53.2)	71.6 (111.7)
SBL	**40**	2.5 (0.5)	m6.0 (m1.7)	1.1 (0.3)	m3.0 (m0.8)	1.2 (0.3)	m3.1 (m0.9)	1.4 (0.3)	m3.1 (m0.6)	1.5 (0.2)	m2.7 (m0.5)
SBT	**360**	75.4 (56.0)	95.3 (88.0)	40.4 (32.5)	67.8 (66.1)	46.8 (43.5)	#97.3 (75.3)	63.3 (49.2)	#137.0 (86.7)	125.0 (49.5)	#161.0 (m98.6)
SBR	**60**	1.5 (0.5)	4.6 (m2.9)	0.0 (0.2)	m1.5 (m0.2)	0.0 (0.0)	m0.9 (m0.1)	0.5 (0.0)	m2.9 (m0.2)	0.5 (0.0)	m2.8 (m0.0)

Notes:

1. xx (xx) – AM Peak (PM Peak)

Table 8 Unsignalized Intersections Capacity Analysis Summary

Movement	Existing			Future Background						Future Total					
				5-Year Horizon			10-Year Horizon			5-Year Horizon			10-Year Horizon		
	V/C	LOS	Delay (s)	V/C	LOS	Delay (s)	V/C	LOS	Delay (s)	V/C	LOS	Delay (s)	V/C	LOS	Delay (s)
Wellington Rd 19 / First Line / Anderson St N															
EBLT	0.00* (0.00*)	A (A)	0.3 (0.5)	0.04 (0.02)	A (A)	2.2 (0.7)	0.04 (0.02)	A (A)	2.0 (0.7)	0.05 (0.07)	A (A)	2.7 (2.7)	0.05 (0.08)	A (A)	2.5 (2.6)
WBLT	0.02 (0.02)	A (A)	1.3 (0.9)	0.02 (0.02)	A (A)	1.2 (0.8)	0.02 (0.02)	A (A)	1.1 (0.8)	0.02 (0.02)	A (A)	1.1 (0.8)	0.02 (0.02)	A (A)	1.1 (0.7)
NBLTR	0.08 (0.08)	B (B)	10.8 (10.5)	0.11 (0.10)	B (B)	12.8 (11.8)	0.12 (0.10)	B (B)	13.4 (12.2)	0.15 (0.18)	C (C)	15.0 (15.4)	0.16 (0.19)	C (C)	15.8 (16.3)
SBLTR	0.03 (0.10)	B (B)	10.7 (12.4)	0.08 (0.32)	B (C)	12.4 (16.2)	0.10 (0.36)	B (C)	13.3 (17.8)	0.28 (0.57)	B (D)	14.4 (26.1)	0.31 (0.63)	C (D)	15.6 (31.2)
Overall		**A (A)**	**2.6 (2.8)**		**A (A)**	**3.2 (4.6)**		**A (A)**	**3.2 (4.7)**		**A (B)**	**5.1 (8.2)**		**A (B)**	**5.2 (9.1)**
Wellington Rd 19 / Robinson Rd / Tom St															
EBLTR	0.00* (0.02)	A (A)	0.5 (1.0)	0.00* (0.03)	A (A)	0.4 (0.9)	0.00* (0.03)	A (A)	0.4 (0.9)	0.01 (0.03)	A (A)	0.4 (0.8)	0.01 (0.03)	A (A)	0.4 (0.8)
WBLTR	0.00 (0.00*)	A (A)	0.0 (0.4)	0.00 (0.00*)	A (A)	0.0 (0.3)	0.00 (0.01)	A (A)	0.0 (0.3)	0.00 (0.01)	A (A)	0.0 (0.4)	0.00 (0.01)	A (A)	0.0 (0.4)
NBLTR	0.05 (0.07)	B (B)	12.3 (13.6)	0.06 (0.08)	B (C)	13.9 (16.0)	0.06 (0.09)	B (C)	14.5 (17.0)	0.11 (0.22)	C (E)	21.5 (38.2)	0.11 (0.25)	C (E)	22.9 (44.6)
SBLTR	0.11 (0.09)	B (B)	10.8 (12.1)	0.12 (0.11)	B (B)	11.6 (13.7)	0.13 (0.11)	B (B)	12.0 (14.4)	0.20 (0.22)	C (D)	16.5 (25.7)	0.20 (0.25)	C (D)	17.2 (28.9)
Overall		**A (A)**	**2.5 (2.1)**		**A (A)**	**2.1 (2.0)**		**A (A)**	**2.1 (1.9)**		**A (A)**	**1.9 (2.3)**		**A (A)**	**1.9 (2.5)**
Gartshore St / Forfar St E / Middleton Ave															
EBLTR	0.24 (0.15)	B (B)	14.7 (14.7)	0.35 (0.25)	C (C)	21.4 (22.5)	0.38 (0.25)	C (C)	23.4 (23.3)	0.36 (0.26)	C (C)	22.3 (23.4)	0.39 (0.27)	C (C)	24.4 (24.8)
WBLTR	0.19 (0.16)	C (C)	19.9 (21.5)	0.35 (0.28)	E (E)	39.4 (39.9)	0.39 (0.30)	E (E)	45.1 (42.4)	0.37 (0.30)	E (E)	42.2 (42.4)	0.41 (0.32)	E (E)	48.7 (46.8)

Movement	Existing			Future Background						Future Total					
				5-Year Horizon			10-Year Horizon			5-Year Horizon			10-Year Horizon		
	V/C	LOS	Delay (s)	V/C	LOS	Delay (s)	V/C	LOS	Delay (s)	V/C	LOS	Delay (s)	V/C	LOS	Delay (s)
NBLTR	0.06 (0.09)	A (A)	1.9 (2.6)	0.06 (0.11)	A (A)	1.6 (2.8)	0.06 (0.11)	A (A)	1.6 (2.9)	0.06 (0.11)	A (A)	1.6 (2.9)	0.06 (0.11)	A (A)	1.6 (2.9)
SBLTR	0.01 (0.01)	A (A)	0.5 (0.4)	0.02 (0.01)	A (A)	0.5 (0.4)	0.02 (0.01)	A (A)	0.5 (0.4)	0.02 (0.01)	A (A)	0.5 (0.4)	0.02 (0.01)	A (A)	0.5 (0.4)
Overall		**A (B)**	**4.1 (3.4)**		**C (D)**	**4.8 (3.9)**		**C (D)**	**5.1 (4.0)**		**C (D)**	**4.9 (4.0)**		**C (D)**	**5.3 (4.1)**
Gartshore St / Gordon St															
EBLR	0.47 (0.45)	B (B)	12.4 (12.4)	0.64 (0.59)	C (C)	15.7 (16.2)	0.67 (0.61)	C (C)	16.7 (16.8)	0.65 (0.61)	C (C)	16.1 (16.8)	0.68 (0.63)	C (C)	17.2 (17.5)
NBLT	0.21 (0.32)	A (A)	7.3 (8.5)	0.24 (0.43)	A (A)	7.0 (9.3)	0.25 (0.44)	A (A)	7.1 (9.3)	0.25 (0.43)	A (A)	7.1 (9.3)	0.26 (0.44)	A (A)	7.2 (9.4)
Overall		**B (B)**	**9.7 (9.7)**		**C (D)**	**11.5 (11.2)**		**C (D)**	**12.2 (11.5)**		**C (D)**	**11.8 (11.5)**		**C (D)**	**12.4 (11.9)**
Gartshore St / Dickson Dr															
WBLR	0.11 (0.21)	B (C)	13.0 (15.6)	0.47 (1.37)	D (F)	31.0 (224.3)	0.49 (1.42)	D (F)	33.6 (247.2)	0.48 (1.42)	D (F)	32.4 (245.1)	0.51 (1.47)	E (F)	35.3 (268.4)
SBLT	0.03 (0.04)	A (A)	1.1 (1.1)	0.17 (0.08)	A (A)	4.3 (2.2)	0.17 (0.08)	A (A)	4.3 (2.2)	0.17 (0.08)	A (A)	4.4 (2.2)	0.18 (0.08)	A (A)	4.4 (2.2)
Overall		**A (B)**	**1.5 (1.9)**		**D (E)**	**4.9 (57.3)**		**D (E)**	**5.1 (61.8)**		**D (E)**	**5.0 (61.4)**		**D (E)**	**5.2 (65.9)**
First Line / Dickson Dr															
EBLR	0.03 (0.04)	A (A)	8.9 (8.7)	0.06 (0.14)	A (A)	9.5 (9.1)	0.06 (0.14)	A (A)	9.5 (9.2)	0.06 (0.14)	A (A)	9.6 (9.1)	0.06 (0.14)	A (A)	9.6 (9.2)
NBLT	0.03 (0.02)	A (A)	4.3 (4.2)	0.10 (0.05)	A (A)	6.1 (5.4)	0.10 (0.05)	A (A)	6.1 (5.4)	0.10 (0.05)	A (A)	5.7 (4.6)	0.10 (0.05)	A (A)	5.7 (4.6)
Overall		**A (A)**	**4.8 (4.1)**		**A (A)**	**6.1 (6.2)**		**A (A)**	**6.0 (6.1)**		**A (A)**	**5.8 (5.9)**		**A (A)**	**5.7 (5.8)**
Wellington Rd 19 / Second Line															

Movement	Existing			Future Background						Future Total					
				5-Year Horizon			10-Year Horizon			5-Year Horizon			10-Year Horizon		
	V/C	LOS	Delay (s)	V/C	LOS	Delay (s)	V/C	LOS	Delay (s)	V/C	LOS	Delay (s)	V/C	LOS	Delay (s)
EBLT	0.01 (0.02)	A (A)	0.8 (0.8)	0.01 (0.02)	A (A)	0.7 (0.6)	0.01 (0.02)	A (A)	0.7 (0.6)	0.01 (0.02)	A (A)	0.6 (0.6)	0.01 (0.02)	A (A)	0.6 (0.6)
WBLT	0.05 (0.06)	A (A)	2.4 (2.7)	0.06 (0.07)	A (A)	2.0 (2.4)	0.06 (0.07)	A (A)	1.9 (2.3)	0.06 (0.07)	A (A)	2.0 (2.3)	0.06 (0.07)	A (A)	1.9 (2.2)
NBLTR	0.14 (0.22)	B (B)	12.1 (12.8)	0.16 (0.27)	B (C)	13.5 (15.3)	0.17 (0.29)	B (C)	14.1 (16.3)	0.17 (0.29)	B (C)	14.1 (16.3)	0.18 (0.31)	B (C)	14.7 (17.3)
SBLTR	0.09 (0.11)	B (B)	13.1 (14.3)	0.11 (0.14)	C (C)	15.1 (17.1)	0.11 (0.16)	C (C)	15.8 (18.2)	0.11 (0.16)	C (C)	15.7 (18.4)	0.12 (0.17)	C (C)	16.5 (19.6)
Overall		**A (A)**	**4.0 (4.4)**		**A (A)**	**3.6 (4.2)**		**A (B)**	**3.5 (4.2)**		**A (B)**	**3.5 (4.2)**		**A (B)**	**3.5 (4.2)**
Wellington Rd 19 / Street A															
EBL	-[2]			-[2]			-[2]			0.06 (0.18)	A (A)	8.0 (8.5)	0.06 (0.18)	A (A)	8.1 (8.6)
SBLR										0.30 (0.22)	B (B)	12.3 (12.6)	0.30 (0.23)	B (B)	12.7 (13.0)
Overall											**A (A)**	**3.9 (3.6)**		**A (A)**	**3.8 (3.5)**
First Line / Street C															
EBLR	-[2]			-[2]			-[2]			0.05 (0.04)	A (A)	8.9 (9.3)	0.05 (0.04)	A (A)	8.9 (9.3)
NBLT										0.00* (0.04)	A (A)	0.8 (2.7)	0.00* (0.04)	A (A)	0.8 (2.7)
Overall											**A (A)**	**1.9 (2.1)**		**A (A)**	**1.9 (2.1)**
First Line / Street B															
EBLR	-[2]			-[2]			-[2]			0.07 (0.06)	A (A)	9.0 (9.7)	0.07 (0.06)	A (A)	9.0 (9.7)
NBLT										0.00* (0.03)	A (A)	0.8 (3.4)	0.00* (0.03)	A (A)	0.8 (3.4)

Movement	Existing			Future Background						Future Total					
				5-Year Horizon			10-Year Horizon			5-Year Horizon			10-Year Horizon		
	V/C	LOS	Delay (s)	V/C	LOS	Delay (s)	V/C	LOS	Delay (s)	V/C	LOS	Delay (s)	V/C	LOS	Delay (s)
Overall											A (A)	2.8 (2.8)		A (A)	2.8 (2.7)

Notes:

1. xx (xx) – AM Peak (PM Peak)
2. Intersection does not exist under existing or future background conditions

Table 9 Unsignalized Intersection Queue Length Summary

Movement	Approx Storage Length (m)	Existing	Future Background		Future Total	
			5-Year Horizon	10-Year Horizon	5-Year Horizon	10-Year Horizon
		95%ile (m)	95%ile (m)	95%ile (m)	95%ile (m)	95%ile (m)
Wellington Rd 19 / First Line / Anderson St N						
EBLT	**> 1,000**	0.1 (0.2)	0.9 (0.4)	0.9 (0.4)	1.3 (1.9)	1.4 (2.0)
WBLT	**> 1,000**	0.5 (0.4)	0.6 (0.4)	0.6 (0.4)	0.6 (0.4)	0.6 (0.4)
NBLTR	**1,000**	2.0 (1.9)	3.0 (2.6)	3.2 (2.8)	4.2 (5.1)	4.5 (5.5)
SBLTR	**> 1,000**	0.8 (2.7)	2.1 (10.8)	2.6 (12.7)	9.1 (27.2)	10.4 (32.9)
Wellington Rd 19 / Robinson Rd / Tom St						
EBLTR	**220**	0.2 (0.6)	0.2 (0.6)	0.2 (0.7)	0.3 (0.8)	0.3 (0.8)
WBLTR	**> 1,000**	0.0 (0.2)	0.0 (0.2)	0.0 (0.2)	0.0 (0.3)	0.0 (0.3)
NBLTR	**180**	1.3 (1.7)	1.5 (2.2)	1.6 (2.4)	2.8 (6.3)	3.1 (7.4)
SBLTR	**340**	2.9 (2.3)	3.3 (2.8)	3.5 (3.1)	5.7 (6.5)	6.1 (7.5)
Gartshore St / Forfar St E / Middleton Ave						
EBLTR	**1,000**	7.5 (4.3)	12.2 (7.5)	13.5 (7.9)	12.8 (7.9)	14.2 (8.5)
WBLTR	**370**	5.5 (4.3)	11.7 (8.7)	13.3 (9.2)	12.5 (9.2)	14.2 (10.1)
NBLTR	**200**	1.4 (2.5)	1.5 (3.0)	1.6 (3.1)	1.5 (3.1)	1.6 (3.1)
SBLTR	**> 1,000**	0.3 (0.3)	0.4 (0.3)	0.4 (0.3)	0.4 (0.3)	0.4 (0.3)
Gartshore St / Gordon St						
EBLR	**320**	20.3 (18.9)	37.8 (31.4)	42.7 (33.6)	39.5 (33.9)	44.6 (36.4)
NBLT	**1,000**	6.3 (11.3)	7.4 (17.4)	7.8 (18.1)	7.8 (17.9)	8.3 (18.7)
Gartshore St / Dickson Dr						
WBLR	**> 1,000**	3.1 (6.2)	18.4 (158.6)	19.9 (166.1)	19.2 (165.5)	20.9 (172.7)
SBLT	**> 1,000**	0.8 (0.9)	4.9 (2.2)	5.0 (2.2)	5.0 (2.2)	5.1 (2.2)
First Line / Dickson Dr						

EBLR	**> 1,000**	0.8 (1.0)	1.5 (3.9)	1.5 (3.9)	1.5 (3.9)	1.6 (3.9)
NBLT	**780**	0.7 (0.5)	2.8 (1.1)	2.8 (1.1)	2.8 (1.1)	2.8 (1.1)
Second Line / Wellington Rd 19						
EBLT	**> 1,000**	0.3 (0.4)	0.3 (0.4)	0.3 (0.4)	0.3 (0.4)	0.3 (0.4)
WBLT	**> 1,000**	1.4 (1.6)	1.4 (1.8)	1.5 (1.8)	1.5 (1.8)	1.5 (1.8)
NBLTR	**> 1,000**	3.9 (6.7)	4.6 (8.8)	4.9 (9.5)	4.9 (9.5)	5.2 (10.3)
SBLTR	**> 1,000**	2.3 (3.1)	2.9 (4.0)	3.1 (4.3)	3.1 (4.4)	3.3 (4.8)
Wellington Rd 19 / Street A						
EBL	**25**	-[2]	-[2]	-[2]	1.5 (5.2)	1.5 (5.4)
SBLR	**400**				9.9 (6.7)	10.3 (7.1)
First Line / Street C						
EBLR	**450**	-[2]	-[2]	-[2]	1.3 (1.0)	1.3 (1.0)
NBLT	**150**				0.2 (1.0)	0.2 (1.0)
First Line / Street B						
EBLR	**300**	-[2]	-[2]	-[2]	1.7 (1.4)	1.7 (1.4)
NBLT	**400**				0.2 (0.9)	0.2 (0.9)

Notes:

1. xx (xx) – AM Peak (PM Peak)
2. Intersection does not exist under existing or future background condition

6.0 TRANSPORTATION DEMAND MANAGEMENT

6.1 Mobility Choice Travel Plan

The location of the site and its surrounding uses greatly influence the success of a Mobility Choice Travel Plan. The purpose of the Mobility Choice Travel Plan is to guide the provision of viable alternative personal transportation options beyond the single-occupant, private automobile. This plan intends to support the proposed redevelopment by outlining Transportation Demand Management (TDM) measures and the suite of strategies under consideration to promote the use of more active and sustainable transportation modes; respond to the mobility needs of residents and visitors of the site; and to reduce the overall dependence on the private automobile.

Four specific objectives define the policy framework for the Mobility Choice Travel Plan:

- Encourage the use of alternate travel modes (transit, cycling, walking);
- Increase vehicle occupancy;
- Shift travel to off-peak periods; and
- Reduce vehicle kilometres travelled.

6.2 Organizational Framework

The four broader objectives can be organized within the following categories:

- Encourage Transit Use;
- Encourage and Facilitate Bicycle Use;
- Enhance Pedestrian Access and Walkability;
- Facilitation of Reduced Car Ownership and Usage;
- Vehicular Parking Supply and Management;
- Land Use and Building Infrastructure; and
- Coordination, Communication, and Promotion.

Potential Mobility Choice Travel Plan Strategies for the proposed redevelopment are summarized in **Table 10**.

Table 10 Potential Mobility Choice Travel Plan Strategies

TRANSIT USE		**Intent:** **Encourage Transit Use** Support for and the promotion of the use of area transit services for both short and long-distance travel by residents and visitors will reduce the overall use of a vehicle and the need to own one.	**Existing and Future Context:** • Wellington County operates a demand based, public transit service available to all residents and visitors. Bookings can be made to or from any address in Wellington County or Guelph. **Mobility Strategies:** • At first occupancy, provide new residents with a transit information package detailing available transit services in the area
BICYCLE FACILITIES		**Intent:** **Encourage Bicycle Use** Provide cycling infrastructure that supports and promotes cycling as a convenient and viable travel alternative to the personal automobile.	**Existing and Future Context:** • Bicycle infrastructure in the area includes an existing on-road route on Wellington Road 19 east of First Line, and proposed on-road routes on Wellington Road 19 between First Line and James Street, and on Anderson Street North. **Mobility Strategies:** • At first occupancy, provide new residents with a cycling information package detailing available routes in the area
PEDESTRIAN CONNECTIVITY		**Intent:** **Encourage Pedestrian Use** A high-quality, safe, connection between the site and transit stations / stops, cycling network, and public street system encourages residents, employees, and visitors to travel around the site area without a vehicle.	**Existing and Future Context:** • There are currently no sidewalks adjacent the site. West of the site, there are sidewalks along one or both sides of Wellington Road 19, Gartshore Street, and a number of local streets in nearby residential subdivisions. A signalized crossing location is available at the Wellington Road 19/Gartshore Street intersection. **Mobility Strategies:** • Provision of sidewalks within the site.

7.0 DESIGN CONSIDERATIONS

7.1 Concept Road Plan

A concept road plan has been prepared in accordance with the Centre Wellington Development Manual, and is attached in **Appendix B**.

7.2 Left Turn Lane Warrants

To assess whether any left turn lanes are warranted at the proposed site accesses, reference has been made to Section 9.17.2.1 of the MTO Design Supplement for TAC Geometric Design Guide for Canadian Roads ("MTO TAC Supplement").

The warrant analyses are attached in **Appendix G** and assume a design speed of 80 kilometres per hour on Wellington Road 19, and a design speed of 70 kilometres per hour on First Line. Overall, the projected volumes warrant the provision of an eastbound left turn lane at Wellington Road 19 / Street A, and this was assumed within the operations analysis outlined in **Section 5.0**. The left turn lane was designed in accordance with the TAC Geometric Design Guide for Canadian Roads ("TAC"), and is shown on the concept road plan attached in **Appendix B**.

7.3 Intersection Spacing

The proposed Street A is located approximately 500 metres east of the existing Wellington Road 19 / Robinson Road / Tom Street intersection, and approximately 400 metres west of the existing Wellington Road 19 / First Line intersection. This intersection spacing satisfies the recommended minimum intersection spacing identified in TAC section 9.4.2.1 for arterial roads of 200 metres.

The proposed Street C is located approximately 170 metres north of the existing Wellington Road 19 / First Line intersection and approximately 220 metres south of the proposed First Line / Street B intersection. This intersection spacing satisfies the recommended minimum intersection spacing identified in TAC section 9.4.2.3 for local roads of 60 metres between four-legged intersections and 40 metres between three-legged intersections.

The proposed Street B is located approximately 220 metres north of the proposed First Line / Street C intersection and approximately 400 metres south of the existing First Line / Dickson Drive intersection. This intersection spacing satisfies the recommended minimum intersection spacing identified in TAC section 9.4.2.3 for local roads of 60 metres between four-legged intersections and 40 metres between three-legged intersections.

7.4 Active Transportation Connections

Sidewalks are proposed on one side of all roads within the site. In addition, urbanization along all, or a portion of the site's Wellington Road 19 frontage could be considered. There is an existing sidewalk on the north side of Wellington Road 19 west of the site. It's noted that there are no existing sidewalks on First Line.

A trail is also provided to the Elora Cataract Trail which will provide connections further east, west, and towards Dickson Drive to the north. An access road / trail is also proposed within the park block and will connect between Wellington Road 19 and the Street J cul-de-sac.

The concept road plan attached in **Appendix B** contemplates potential all-way stop control intersections at the Street A / Street C, Street C / Street D, Street B / Street D, and Street D / Street G intersections, which will provide controlled crossing locations and support north-south and east-west pedestrian connections through the site.

With respect to cycling, the abovementioned access road / trail will connect between Wellington Road 19 and the Street J cul-de-sac, with subsequent access to the Elora Cataract Trail available via Street J and Street G as neighbourhood bikeways. This access road / trail will also provide a connection to the planned future cycling facilities on Wellington Road 19 and a planned multi-use trail south of Wellington Road 19. This connection is generally consistent with the ATMP.

7.5 Traffic Calming and Potential Cut Through Traffic

It's noted that travelling through the site between Wellington Road 19 and First Line would require additional turns and stops than staying on Wellington Road 19 and First Line which would reduce the attractiveness of using the site as a cut through route. In the eastbound to northbound direction, based on the traffic analysis outlined in **Section 5.0**, delays at the Wellington Road 19 / First Line / Anderson Street North intersection are minor (less than 3 seconds) and not expected to encourage cut through traffic. In the southbound to westbound direction, based on the traffic analysis outlined in **Section 5.0**, delays at the Wellington Road 19 / First Line / Anderson Street North intersection are slightly elevated in the PM peak hour (approximately 30 seconds) which may result in some vehicles choosing to cut through the site. Based on the projected southbound right volumes at this intersection in the PM peak hour (95 vehicles) and assuming approximately 5% may cut through the site equates to an estimated 5 cut through vehicles during the PM peak hour. Significant cut through traffic is not projected in the AM peak hour based on the estimated delays (approximately 10 seconds).

The concept road plan attached in **Appendix B** contemplates potential all-way stop control intersections at the Street A / Street C, Street C / Street D, Street B / Street D, and Street D / Street G intersections which will provide traffic calming, particularly along potential cut through routes and will reduce the attractiveness of using the site as a cut through route.

7.6 Sight Distance

A desktop sight distance assessment was undertaken for the proposed intersections to Wellington Road 19 and First Line. An assessment was also undertaken for the internal Street B / Street D intersection, given the horizontal curve to the east of the intersection. The assessment is attached in **Appendix H**. The assessments were undertaken in accordance with the Wellington County Entrance Permit Policy (for intersection sight distance ("ISD") at the Wellington Road 19 / Street A intersection) and TAC.

The relevant sight distances for consideration in this case are stopping sight distance ("SSD") and ISD case B1 (stop control on the minor road, left turn from the minor road), case B2 (stop control on the minor road, right turn from the minor road), case B3 (stop control on the minor road, crossing manoeuvre from the minor road), and case F (left turns from the major road), as defined in TAC. It's noted that of the relevant ISD cases, case B1 (stop control on the minor road, left turn from the minor road) has the highest sight distance requirement. The ISD assessment has therefore been undertaken against case B1 where applicable.

The following sight distance properties were considered:

- Wellington Road 19 posted speed: 70 km/h
- Wellington Road 19 design speed: 80 km/h
- First Line design speed: 70 km/h
- Street A design speed: 60 km/h
- Street B design speed: 60 km/h
- Street B design speed: 60 km/h
- Street D design speed: 60 km/h
- Design vehicle: Passenger car
- Driver's eye height: 1.05 metres for Wellington Road 19 / Street A (Wellington County Entrance Permit Policy)
  1.08 metres for other intersections (TAC Section 9.11)
- Object height: 1.3 metres (TAC Section 9.11 and Wellington County Entrance Permit Policy)

- Setback distance of driver's eye: 3 metres for Wellington Road 19 / Street A (Wellington County Entrance Permit Policy)
  4.4 metres for other intersections (TAC Section 9.9.2.3)

A summary of the sight distance assessment is provided in **Table 11**.

The sight distance at the Wellington Road 19 / Street A, First Line / Street C, and First Line / Street B intersections satisfies both SSD and ISD requirements.

The sight distance at the Street B / Street D intersection does not satisfy ISD requirements. It's noted that the assessment conservatively assumes the drivers eye is 4.4 metres back from the curb line. Practically, drivers will be able to edge closer to the curbline if required. Furthermore, it's noted that SSD is satisfied, which will enable vehicles on Street B to stop in time should a potential conflict occur. Notwithstanding, the concept road plan attached in **Appendix B** contemplates a potential all-way stop control intersection at this location which would address these constraints, noting that vehicles will be able to see stopped vehicles on all other approaches.

Table 11 Sight Distance Assessment

Intersection	Requirement	Desktop Assessment
Wellington Rd 19 / Street A	**SSD (TAC)[1]:** 130 m **ISD (Wellington County)[2]:** 200 m	Sight distance was reviewed in both directions and satisfies both SSD and ISD requirements.
First Line / Street C	**SSD (TAC)[1]:** 105 m **ISD (TAC)[2]:** 150 m	Sight distance was reviewed in both directions and satisfies both SSD and ISD requirements.
First Line / Street B	**SSD (TAC)[1]:** 105 m **ISD (TAC)[2]:** 150 m	Sight distance was reviewed in both directions and satisfies both SSD and ISD requirements.
Street B / Street D	**SSD (TAC)[1]:** 85 m **ISD (TAC)[2]:** 130 m	Sight distance was reviewed to the east, given the horizontal curve to the east of the intersection, and satisfies SSD. Sight distance does not satisfy ISD. An all-way stop control intersection is contemplated at this location which would address these constraints.

Notes:
1. TAC Section 9.9, Case B1
2. Wellington County Entrance Permit Policy

8.0 OPA COMMENT RESPONSES

8.1 Triton Engineering Memo, Dated June 11, 2026

1. It should be noted that the Township has completed construction of the Dickson Drive connection to First Line. The lots are currently undeveloped, but the road has been constructed.

Response: Noted. References to Dickson Drive have been updated to reflect that it is now constructed.

2. It is understood that the number of units has been assumed at a high level at this stage. If the number of units changes from this assumption, an addendum or revised TIS may be required at the discretion of the County.

Response: Noted. This TIS includes the latest high level stats. As outlined in **Section 1.3**, these remain subject to change as the planning process for this site progresses.

3. The study analyzes a 5-year horizon (assumed to be full build out) and 10-year horizon. This approach is acceptable.

Response: Noted.

4. A growth rate of 2% was applied to establish background traffic volumes. This rate is acceptable.

Response: Noted.

5. The trip distribution percentages/direction assumptions are reasonable, but some of the west direction traffic on Wellington Road 19 should be applied to travel via Gartshore Street and St. Andrew Street as it provides an alternative route to access downtown Fergus and Highway 6. Figure 13 and the analysis should be revised accordingly.

Response: Noted. Some traffic previously assigned to/from the west on Wellington Road 19 has been reassigned to utilize St. Andrew Street to/from the west. It's noted that Wellington Road 19 is a more direct route to Highway 6 and Downtown Fergus with less turns required. Therefore utilization of St. Andrew Street is not expected to be significantly high and is assumed to primarily be associated with vehicles accessing commercial uses within Downtown Fergus on the east side of Highway 6.

6. The analysis results in LOS F for the southbound left movement and LOS E for the westbound left and northbound left movements at the Wellington Road 19 and Gartshore signalized intersection in the 10-year horizon period. All these movements have queues longer than available storage and v/c ratios approaching 1.0. The study should provide recommendations for improvements to the intersection.

Response: Based on our review, there are no signal timing optimizations that resolve these conditions. The intersection currently operates with a single north-south phase and a single east-west phase, with all left turn movements operating under permissive phasing. The northbound left and southbound left movements are therefore competing with the westbound left turn for green time and reallocating green time to one of these phases results in increased delays and queues on the opposing movement(s). Similarly, implementation of protected left turn phases takes time away from the through movements and results in over capacity conditions on other movements.

Opportunities for physical mitigation measures are also limited, with existing housing and commercial uses in close proximity to the existing road pavement, and minimal additional boulevard width available for additional lanes at the intersection or extension of the left turn lane storages. However, the existing road pavement on the westbound approach (approximately 11.5 metres) may be sufficient in width to accommodate an extension of the westbound left turn lane length.

The Level of Service is driven by the average delay, which at signalized intersections is a function of the cycle length. This is particularly true for left turns which are not provided with significant green time, or operate under permissive phasing during which they are required to give way to opposing vehicles, and may need to wait a full cycle before they are able to

clear the intersection. In this context, the projected delays for these movements are reasonable, particularly noting that all movements are projected to operate within capacity and queues would generally clear each cycle.

With respect to queuing, as noted in **Section 5.3.1**, it's noted that all 50th percentile queues are projected to be accommodated within the available storage, while the 95th percentile queues are projected to slightly exceed the available storage in some instances. Given this condition is associated with the 95th percentile, this is expected to occur infrequently. On average, the queues are projected to be accommodated within the available storage as identified by the 50th percentile queues. When queue lengths do exceed the available storage, through vehicles will be able to wait behind the left turn queue and will be processed once the light turns green. As noted above, all movements are projected to operate within capacity and therefore it's expected the queues would generally clear each cycle.

In addition, the Dickson Drive Business Park adds in the order of 250 vehicle trips through this intersection, for which a potential yield of 33,445 square metres of business park uses was assumed in the traffic study prepared for the Dickson Drive extension. However as outlined in **Section 5.3.7**, that traffic study noted that the final development land use and lot fabric is not currently known and could vary and with respect to the Gartshore Street / Dickson Drive intersection, recommended that traffic operations be monitored and assessed as part of future development applications within the industrial park. The analysis also assumes a 2% growth rate that is applied across a 10-year horizon, in addition to the background and site assumptions made as part of this analysis. This is considered to be a conservative assumption that may not eventuate to the extent assumed in this analysis.

On the basis of the above, it's recommended that operations at this intersection be monitored moving forward.

7. The TIS recommends that sidewalks be provided on internal streets but it should comment on how these sidewalks will connect to existing sidewalks and provide any recommendations along existing roadways to accommodate the connectivity.

Response: A summary of the proposed active transportation connections and the connections to the broader active transportation network is provided in **Section 7.4**.

8. The TIS should analyze each proposed access including sight distance and clearance distances from existing intersections.

Response: Please see sight distance assessment in **Section 7.6**.

9.0 SUMMARY AND CONCLUSIONS

Proposal Overview

1. The proposal is for a residential subdivision.
2. For the purpose of this assessment, BA Group have been advised of high level stats comprising up to 694 residential units. It should be noted that these stats are high level, and remain subject to change as the planning process for this site progresses.
3. An internal public road network is proposed to service the subdivision, with proposed roads in accordance with the Centre Wellington Development Manual.
4. The dwellings will be serviced by an internal public road network, including access to the site conceptually shown at three locations as follows:
    - A new unsignalized intersection at Wellington Road 19 / Street A, located approximately 380 metres west of First Line;
    - A new unsignalized intersection at First Line / Street C, located approximately 180 metres north of Wellington Road 19; and
    - A new unsignalized intersection at First Line / Street B, located approximately 400 metres north of Wellington Road 19.

Traffic Analysis

5. Analysis has been completed for the following scenarios during the AM and PM peak hour:
    - Existing Conditions;
    - Future Background Conditions (5-Year Horizon);
    - Future Background Conditions (10-Year Horizon);
    - Future Total Conditions (5-Year Horizon); and
    - Future Total Conditions (10-Year Horizon).
6. Capacity analysis was undertaken to determine the site vehicular traffic impact within the analysis study area listed below:
    - Wellington Road 19 / Gartshore Street
    - Wellington Road 19 / First Line / Anderson Street North
    - Wellington Road 19 / Robinson Road / Tom Street
    - Gartshore Street / Forfar Street East / Middleton Avenue
    - Gartshore Street / Gordon Street
    - Gartshore Street / St Andrew Street East
    - Gartshore Street / Dickson Drive
    - First Line / Dickson Drive
    - Wellington Road 19 / Second Line
    - Wellington Road 19 / Street A
    - First Line / Street C
    - First Line / Street B

7. The proposed redevelopment is expected to generate in the order of 430 and 560 two-way vehicle trips during the AM and PM peak hours respectively.

8. During the PM peak hour, the shared westbound left and right lane at the Gartshore Street / Dickson Drive intersection is projected to operate at LOS F in the future background 5-year horizon, and in subsequent scenarios. This condition is primarily a result of the Dickson Drive Business Park, for which a potential yield of 33,445 square metres of business park uses was assumed in the traffic study prepared for the Dickson Drive extension. Based on that traffic study, the business park uses are estimated to generate in the order of 250 westbound vehicle trips at this intersection in the PM peak hour. The traffic study identified that a potential signalized configuration would improve the operations of this intersection, however ultimately recommended that since the final development land use and lot fabric is not currently known and could vary, that traffic operations be monitored and assessed as part of future development applications within the industrial park to determine the need and timing for signals at this intersection. It's noted that the site specific impact on the operation of this intersection is minor. Overall, the site traffic impact on this intersection is minor and can be accommodated. As outlined in the traffic study for the Dickson Drive extension, it's recommended that traffic operations at this intersection be monitored as development within the business park progresses.

9. It is projected that traffic associated with the proposed development can be suitably accommodated at all other intersections within the study area.

Transportation Demand Management

10. Proposed Transportation Demand Management measures include:

    - Provision of transit information package
    - Provision of cycling information package
    - Provision of sidewalks within the site

Design Considerations

11. The concept road plan has been prepared in accordance with the Centre Wellington Development Manual

12. The projected volumes warrant the provision of an eastbound left turn lane at Wellington Road 19 / Street A. The left turn lane was designed in accordance with TAC, and is shown on the concept road plan

13. The proposed intersection locations satisfy the recommended intersection spacings identified in TAC.

14. Sidewalks are proposed on one side of all roads within the site. In addition, urbanization along all, or a portion of the site's Wellington Road 19 frontage could be considered. There is an existing sidewalk on the north side of Wellington Road 19 west of the site. It's noted that there are no existing sidewalks on First Line.

15. A trail is provided to the Elora Cataract Trail which will provide connections further east, west, and towards Dickson Drive to the north. An access road / trail is also proposed within the park block and will connect between Wellington Road 19 and the Street J cul-de-sac. The concept road plan contemplates potential all-way stop control intersections at a number of locations to provide controlled crossing locations and support north-south and east-west pedestrian connections through the site.

16. With respect to cycling, the abovementioned access road / trail will connect between Wellington Road 19 and the Street J cul-de-sac, with subsequent access to the Elora Cataract Trail available via Street J and Street G as neighbourhood bikeways.

17. The concept road plan contemplates potential all-way stop control intersections at a number of locations which will provide traffic calming, particularly along potential cut through routes.

18. A desktop sight distance assessment was undertaken for the proposed intersections to Wellington Road 19 and First Line. An assessment was also undertaken for the internal Street B / Street D intersection, given the horizontal curve to the east of the intersection.

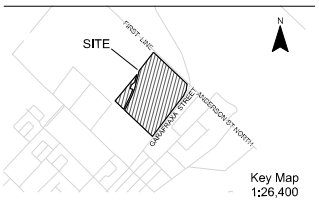
19. The sight distance at the Wellington Road 19 / Street A, First Line / Street C, and First Line / Street B intersections satisfies both SSD and ISD requirements.

20. The sight distance at the Street B / Street D intersection does not satisfy ISD. It's noted that the assessment conservatively assumes the drivers eye is 4.4 metres back from the curb line. Practically, drivers will be able to edge closer to the curbline if required. Furthermore, it's noted that SSD is satisfied, which will enable vehicles on Street B to stop in time should a potential conflict occur. Notwithstanding, the concept road plan contemplates a potential all-way stop control intersection at this location which would address these constraints, noting that vehicles will be able to see stopped vehicles on all other approaches.

Appendix A:
Concept Plan

DRAFT PLAN OF SUBDIVISION

PT LT 8 CON 1 WEST GARAFRAXA
PT 1, 61R11802 TOWNSHIP OF
CENTRE WELLINGTON
WELLINGTON COUNTY



Key Map
1:26,400

OWNER'S CERTIFICATE:

I authorize Weston Consulting Group Inc. to prepare and submit this plan for draft approval.

Date: June 23, 2026

RBS & EJS FERGUS (GP) INC.
3700 STEELES AVENUE WEST, SUITE 600
WOODBRIDGE, ON L4L 8M9
905.850.6154

SURVEYOR'S CERTIFICATE:

I hereby certify that the boundaries of the lands being subdivided and their correct relationship to the adjacent lands are accurately and correctly shown on this plan.

Date: June 23, 2026

GRANT J. STROUL O.L.S.
J.D. BARNES LTD.
401 WHEELABRATOR WAY, SUITE A
MILTON, ON L9T 3C7
PHONE (905) 875-4610
www.jdbarnes.com

ADDITIONAL INFORMATION:

[Section 51(17) of the Planning Act, R.S.O. 1990, c. P.13], as amended to June 16, 2026.
a), b), e), f), g), j) & l) - on plan.
c) - on key plan
d) - see statistics
h) - piped water to be installed by developer
l) - sandy silt till, silt & sandy silt
k) - all services to be made available by developer

DEVELOPMENT STATISTICS:

BLOCKS	UNITS	AREA(HA)
Residential Blocks [Blks. 1-45]:	674-694	18.874 ha
Heritage House [Blk. 46]:	1	0.143 ha
Park [Blk. 47]:		1.504 ha
Environmental Protection Area [Blks. 48,49]:		8.798 ha
SWMP [Blk. 50]:		1.560 ha
Walkway and Servicing [Blk. 51]:		0.018 ha
Sight Triangle [Blk. 52]:		0.010 ha
Roads:		8.152 ha
Total:	675-695	39.059 ha

WESTON CONSULTING
1-800.363.3558 westonconsulting.com
Vaughan: 201 Millway Ave, Suite 19 Vaughan, Ontario, L4K 5K8 T: 905.738.8080 F: 905.738.6637
Toronto: 225 Berkeley St, Toronto, Ontario, M5A 2X1 T: 416.640.9917 F: 905.738.6637

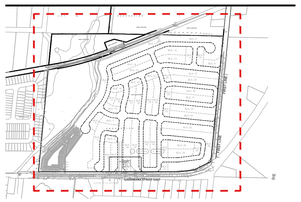
DRAWN / REVISED

23 JUN 2026	1st Draft

File Number: 11630
Date: 2026-06-22
Drawn By: SM
Planner: RG
CAD: 2026-06-23_Wellington_Draft Plan D1_11630.dwg

Drawing
D1

Appendix B:
Concept Road Plan



GENERAL NOTES

1. CONCEPT PLAN DATED JUNE 23, 2026, PREPARED BY WESTON CONSULTING.
2. SURVEY PLAN DATED NOVEMBER 11, 2011, PREPARED BY J.D. BARNES LIMITED.
3. THIS PLAN IS ILLUSTRATIVE FOR THE PURPOSE OF SHOWING FUNCTIONAL PLAN AND SHALL NOT BE RELIED UPON FOR DETAILED DESIGN OR CONSTRUCTION.

L O T 9

C O N C E S S I O N 1

C O N C E S S I O N 2

PART 2, 60R-1618

PART 3, 60R-1274

PART 2, 61R-11802

PART 4, 60R-3217

FORMERLY CANADIAN PACIFIC RAILWAY

PART 1, 61R-11802

RP-01A

RP-01B

BLK. 8

BLK. 51

BLK. 12

BLK. 11

BLK. 10

BLK. 13

BLK. 9

BLK. 14

BLK. 15

BLK. 27

BLK. 23

BLK. 26

BLK. 7

BLK. 20

BLK. 28

BLK. 16

BLK. 30

BLK. 29

BLK. 31

BLK. 17

BLK. 18

BLK. 21

BLK. 22

BLK. 24

BLK. 25

BLK. 19

BLK. 32

BLK. 33

BLK. 34

BLK. 6

BLK. 5

BLK. 35

VMD-01 TO 04

BLK. 4

BLK. 3

BLK. 43

BLK. 42

BLK. 45

BLK. 44

BLK. 38

BLK. 36

BLK. 37

BLK. 40

BLK. 39

BLK. 2

BLK. 1

BLK. 46

BLK. 41

BLK. 52

DAYLIGHT TRIANGLE

APPROX. R.O.W. LIMITS

FIRST LINE

WELLINGTON COUNTY ROAD NO. 19 - GARAFRAXA STREET

GARAFRAXA STREET EAST

CENTRELINE PER TOPO SURVEY

FD-01

APPROX. R.O.W. LIMITS

00	07-06-26	TC	ISSUED FOR DRAFT PLAN OF SUBDIVISION
00	MM-DD-YR	INT	REVISION NOTE

BA Group

BA Consulting Group Ltd.
1000 – 95 St. Clair Ave. W.
Toronto ON M4V 1N6
ph. 416 961 7110
www. bagroup@bagroup.com

MOVEMENT IN URBAN ENVIRONMENTS
BAGROUP.COM

6490 FIRST LINE
FERGUS

ROAD PLAN

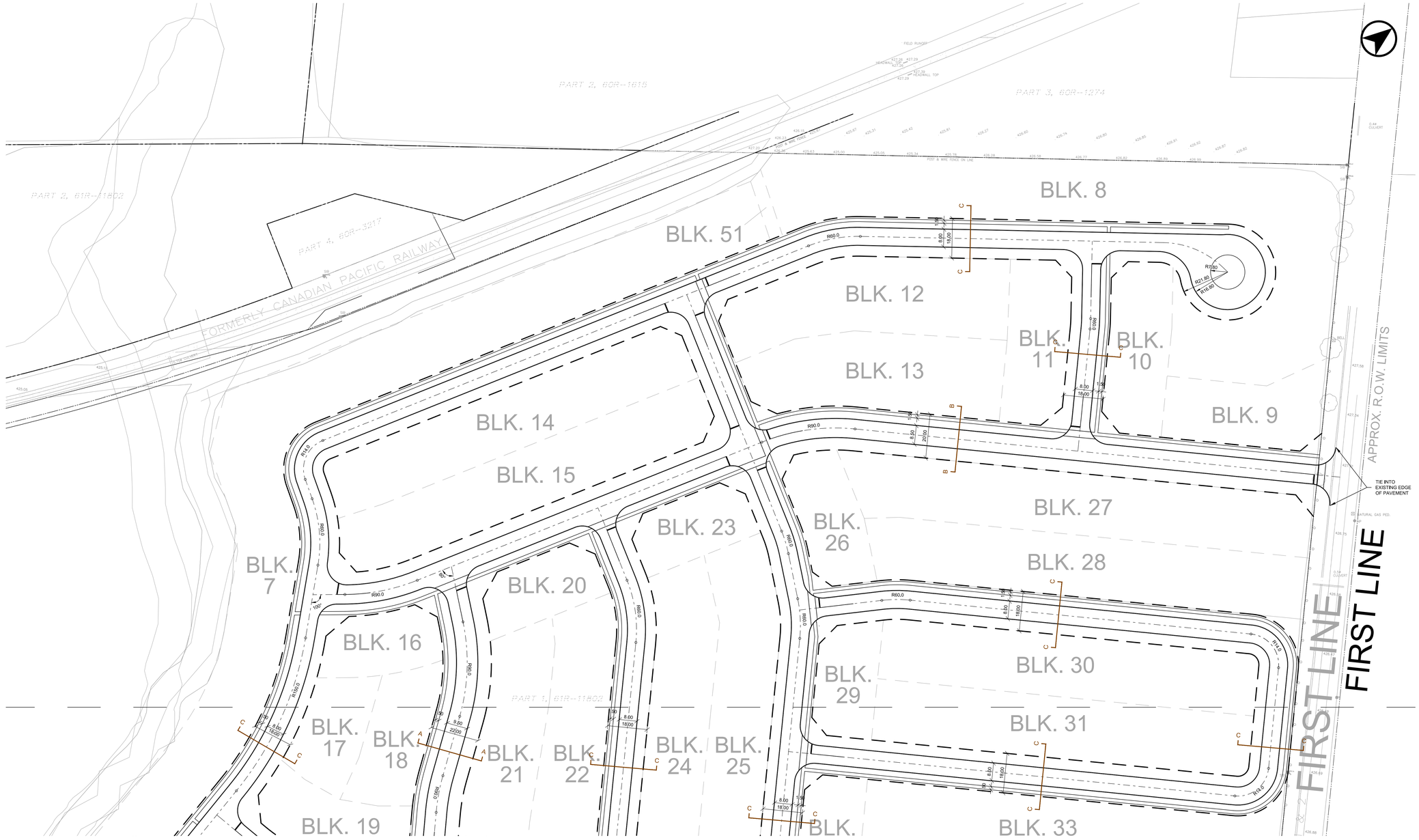
Date: July 6, 2026

Project No.: 5883-58

Scale: 1:1,000 (0 10 20 30 40 50m)

RP-01

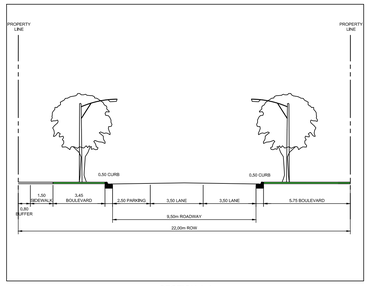
Date Plotted: July 6, 2026 Filename: J:\5883-58\BA\Road Plan\2. 2026-06-23\ba-6490 First Line-RP-R02-588358.dwg



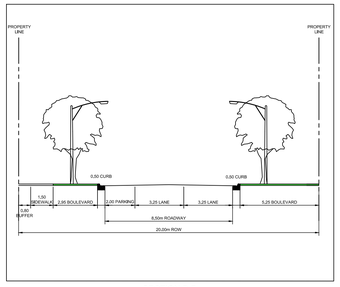
GENERAL NOTES

1. CONCEPT PLAN DATED JUNE 23, 2026, PREPARED BY WESTON CONSULTING.
2. SURVEY PLAN DATED NOVEMBER 11, 2011, PREPARED BY J.D. BARNES LIMITED.
3. THIS PLAN IS ILLUSTRATIVE FOR THE PURPOSE OF SHOWING FUNCTIONAL PLAN AND SHALL NOT BE RELIED UPON FOR DETAILED DESIGN OR CONSTRUCTION.

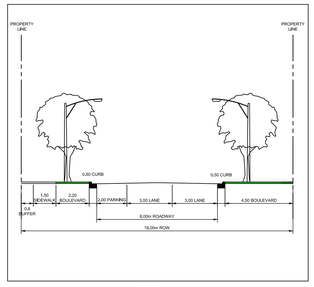
CROSS-SECTIONS



SECTION A-A
22.0m MINOR COLLECTOR
N.T.S.



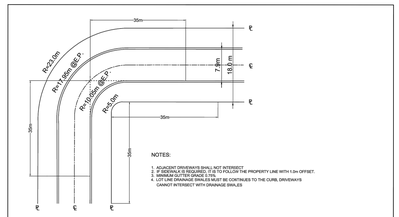
SECTION B-B
20.0m MINOR COLLECTOR
N.T.S.



SECTION C-C
18.0m LOCAL
N.T.S.

NOTES

ELBOW BEND ROADS DESIGNED BASED ON CALEDON DESIGN STANDARD NO. 214 FOR LOCAL RESIDENTIAL ROAD ELBOWS



TOWN OF CALEDON	NO.	REVISION	APRD	DATE			
LOCAL RESIDENTIAL ROAD ELBOW DESIGN	4				APRD	C.C.	DATE 13/02/01
	3	TEXT AND DIMENSION REVISION		APR.'19			
	2	STANDARD No. 253 NOW 214		JUNE.'08	DRAWN	BJM	SCALE N.T.S.
	1	STANDARD NAME AND NUMBER CHANGE, CURB RADII AND ROADWAY DIMENSION ADDED TO 6m		MARCH.'08	STANDARD No. 214		

TOWNSHIP OF CENTRE WELLINGTON STANDARDS

CURB RADII AT INTERSECTIONS :

LOCAL TO LOCAL = 9.0m
LOCAL TO MINOR COLLECTOR = 9.0m
MINOR COLLECTOR TO MINOR COLLECTOR = 9.0m

SIGHT TRIANGLES AT INTERSECTIONS:

LOCAL ROAD INTERSECTIONS = 7.5m x 7.5m
COLLECTOR ROAD INTERSECTIONS = 9.0m x 9.0m

CUL-DE-SAC (B.15):

ROAD ALLOWANCE = 20.0m RADIUS
PAVEMENT = 16.8m RADIUS

MINIMUM CENTRELINE RADII:

LOCAL ROAD = 60m
MINOR COLLECTOR = 90m

Date Plotted: July 6, 2026 Filename: J:\5883-58\BA\Road Plan\2. 2025-06-23\ba-6490 First Line-RP-R02-586358.dwg

00	07-06-26	TC	ISSUED FOR DRAFT PLAN OF SUBDIVISION
00	MM-DD-YR	INT	REVISION NOTE

BA Group

BA Consulting Group Ltd.
1000 – 45 St. Clair Ave. W.
Toronto ON M4V 1N6
TEL 416 961 7110
EMAIL bagroup@bagroup.com

MOVEMENT IN URBAN ENVIRONMENTS
BAGROUP.COM

6490 FIRST LINE
FERGUS

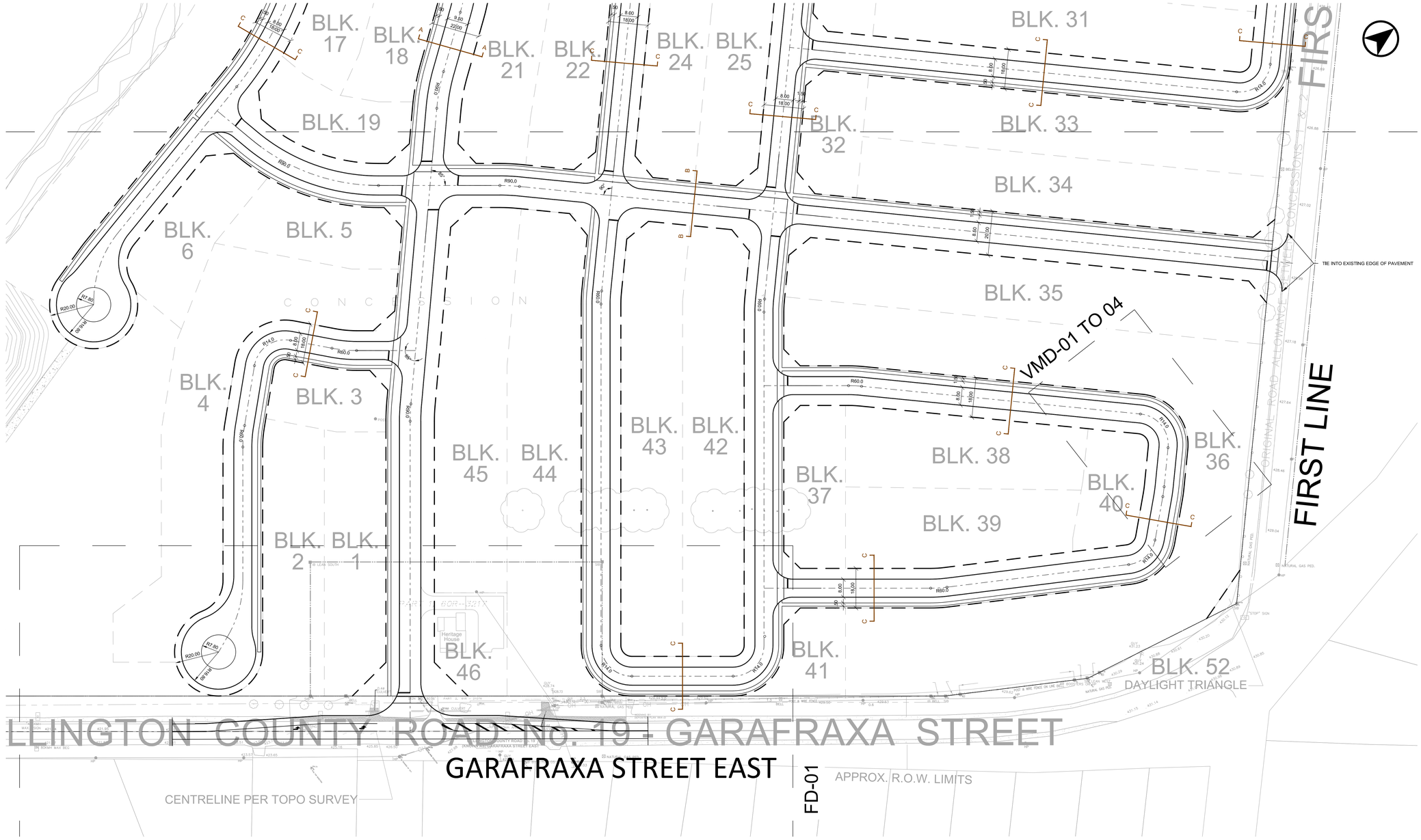
ROAD PLAN

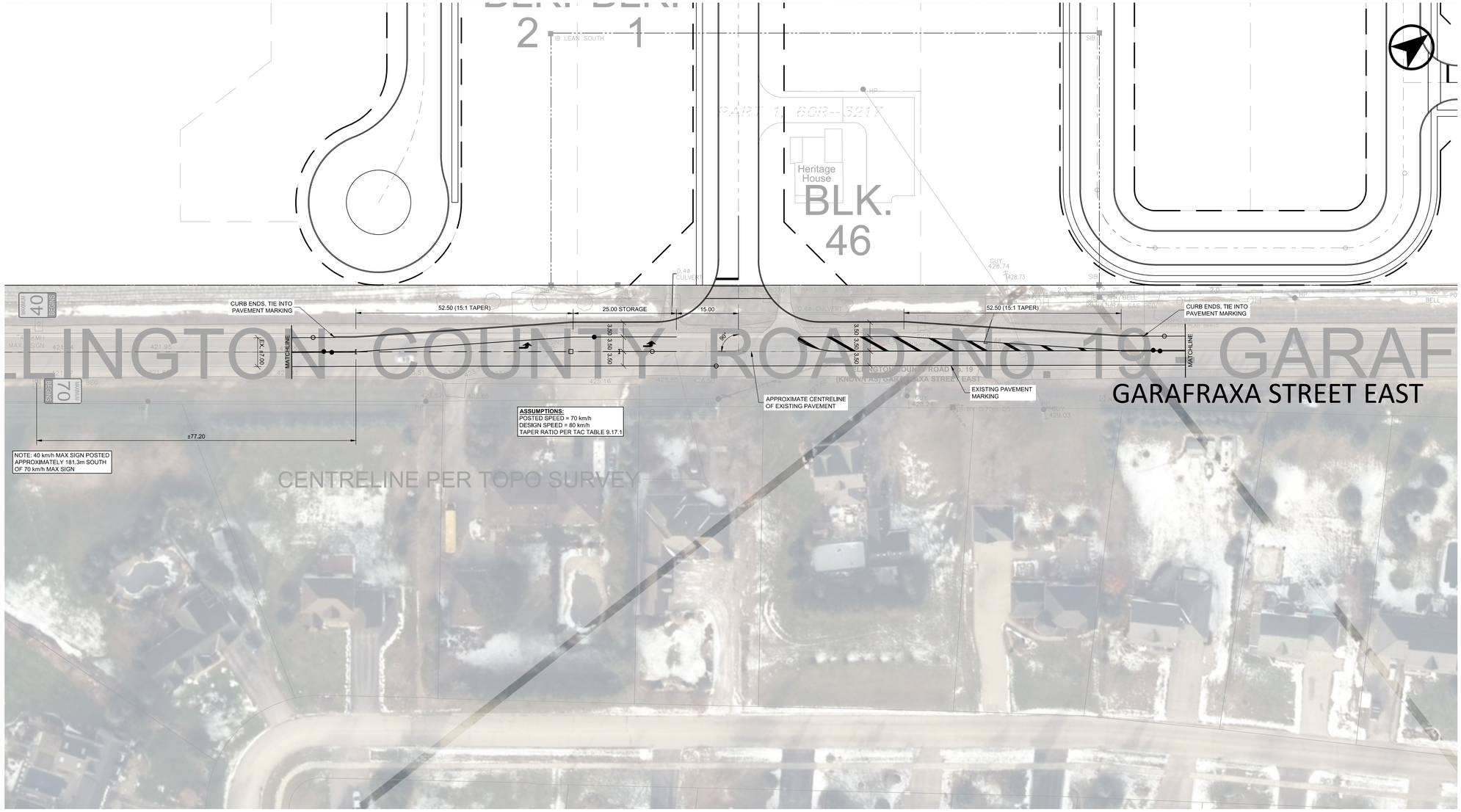
Date: July 6, 2026

Project No.: 5883-58

Scale: 1:750 (0, 15, 30m)

RP-01A

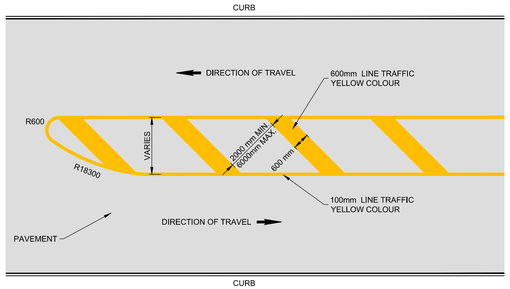

BLK. 17
BLK. 18
BLK. 21
BLK. 22
BLK. 24
BLK. 25
BLK. 31
BLK. 19
BLK. 32
BLK. 33
BLK. 34
BLK. 6
BLK. 5
BLK. 35
TIE INTO EXISTING EDGE OF PAVEMENT
CONCESSION
VMD-01 TO 04
BLK. 4
BLK. 3
BLK. 43
BLK. 42
BLK. 45
BLK. 44
BLK. 38
BLK. 36
BLK. 37
BLK. 40
BLK. 39
FIRST LINE
ORIGINAL ROAD ALLOWANCE BTWN CONCESSIONS
BLK. 2
BLK. 1
Heritage House
BLK. 46
BLK. 41
BLK. 52
DAYLIGHT TRIANGLE
R90.0
R60.0
R14.0
R20.00
R7.60
98.96 M
8.00
18.00
9.50
22.00
8.50
20.00
1.50
10.00
"STOP" SIGN
NATURAL GAS PED.
HYDRO PED.
BELL PED.
HP
MAX +5.00%
MAX -5.00%
ROAD MAX SEG.
PART 1, 61R-21374
PART 2, 61R-21374
PART 3, 61R-21374
PART 4, 61R-21374
PART 5, 61R-21374
PART 6, 61R-21374
PART 7, 61R-21374
PART 8, 61R-21374
PART 9, 61R-21374
PART 10, 61R-21374
PART 11, 61R-21374
PART 12, 61R-21374
PART 13, 61R-21374
PART



PAVEMENT MARKING LEGEND:

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

- 10cm (4 in.) WHITE SOLID
- 10cm (4 in.) YELLOW SOLID
- 10cm (4 in.) WHITE (3m (10 ft.) LINE, 3m (10 ft.) GAP)
- DENOTES LIMIT OF SYMBOLS
- LEFT TURN ARROW (3m (10 ft.))
- ALL STOP BARS TO BE 60cm (2 ft.) WHITE SOLID



PAINTED MEDIAN DETAIL
NTS

EXISTING SIGN LEGEND:

Ex. Rb-2 (600 x 900)mm

Ex. Rb-2 (600 x 900)mm

GENERAL NOTES

1. CONCEPT PLAN DATED MAY 1, 2026, PREPARED BY WESTON CONSULTING.
2. SURVEY PLAN DATED NOVEMBER 11, 2011, PREPARED BY J.D. BARNES LIMITED.
3. AERIAL DATED 2018.
4. THIS PLAN IS ILLUSTRATIVE FOR THE PURPOSE OF SHOWING FUNCTIONAL PLAN AND SHALL NOT BE RELIED UPON FOR DETAILED DESIGN OR CONSTRUCTION.

00	07-06-26	TC	ISSUED FOR DRAFT PLAN OF SUBDIVISION
00	MM-DD-YR	INT	REVISION NOTE

BA Group
BA Consulting Group Ltd.
1000 - 95 St. Clair Ave, W,
Toronto ON M4V 1N6
TEL 416 961 7110
EMAIL bagroup@bagroup.com
MOVEMENT IN URBAN ENVIRONMENTS
BAGROUP.COM

6490 FIRST LINE
FERGUS

FUNCTIONAL ROAD PLAN

LEFT TURN ON GARAFRAXA STREET EAST

Date: July 6, 2026

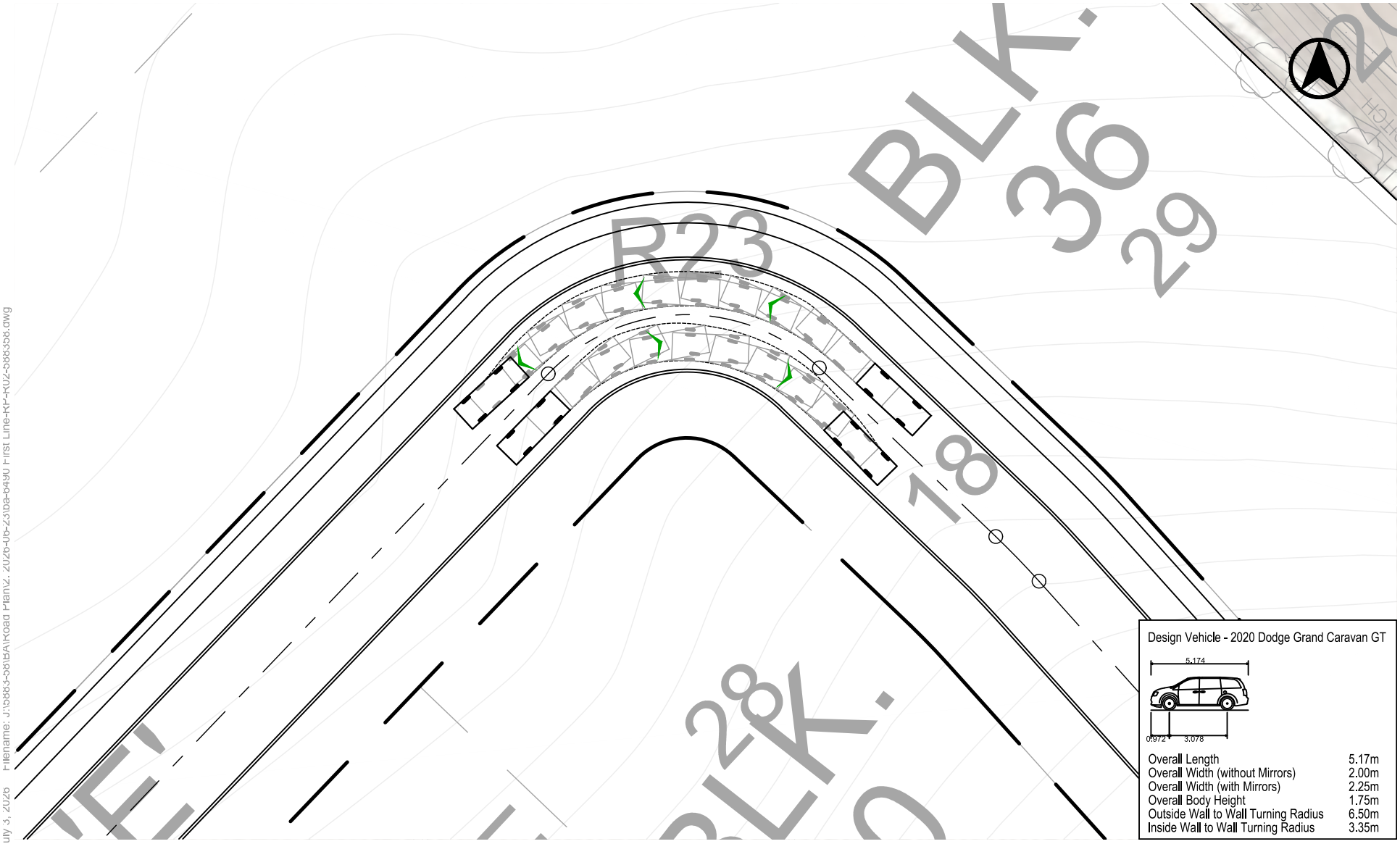
Project No.: 5883-58

Scale: 1:500 (0 5 10 15 20m)

FD-01

Date Plotted: July 6, 2026 Filename: J:\5883-58\BA\Road Plan\2, 2026-06-27\ba-6490 First Line-RP-R02-588358.dwg

Appendix C:
Vehicle Manoeuvring Diagrams



Design Vehicle - 2020 Dodge Grand Caravan GT

Overall Length	5.17m
Overall Width (without Mirrors)	2.00m
Overall Width (with Mirrors)	2.25m
Overall Body Height	1.75m
Outside Wall to Wall Turning Radius	6.50m
Inside Wall to Wall Turning Radius	3.35m

1:400

0 2 4 6 8 10 20m

Scale

Date Plotted: July 3, 2026 Filename: J:\5883-58\BA\Road Plan\2. 2026-06-23\Da-6490 First Line-KH-KUZ-588358.dwg

BA Group

6490 FIRST LINE

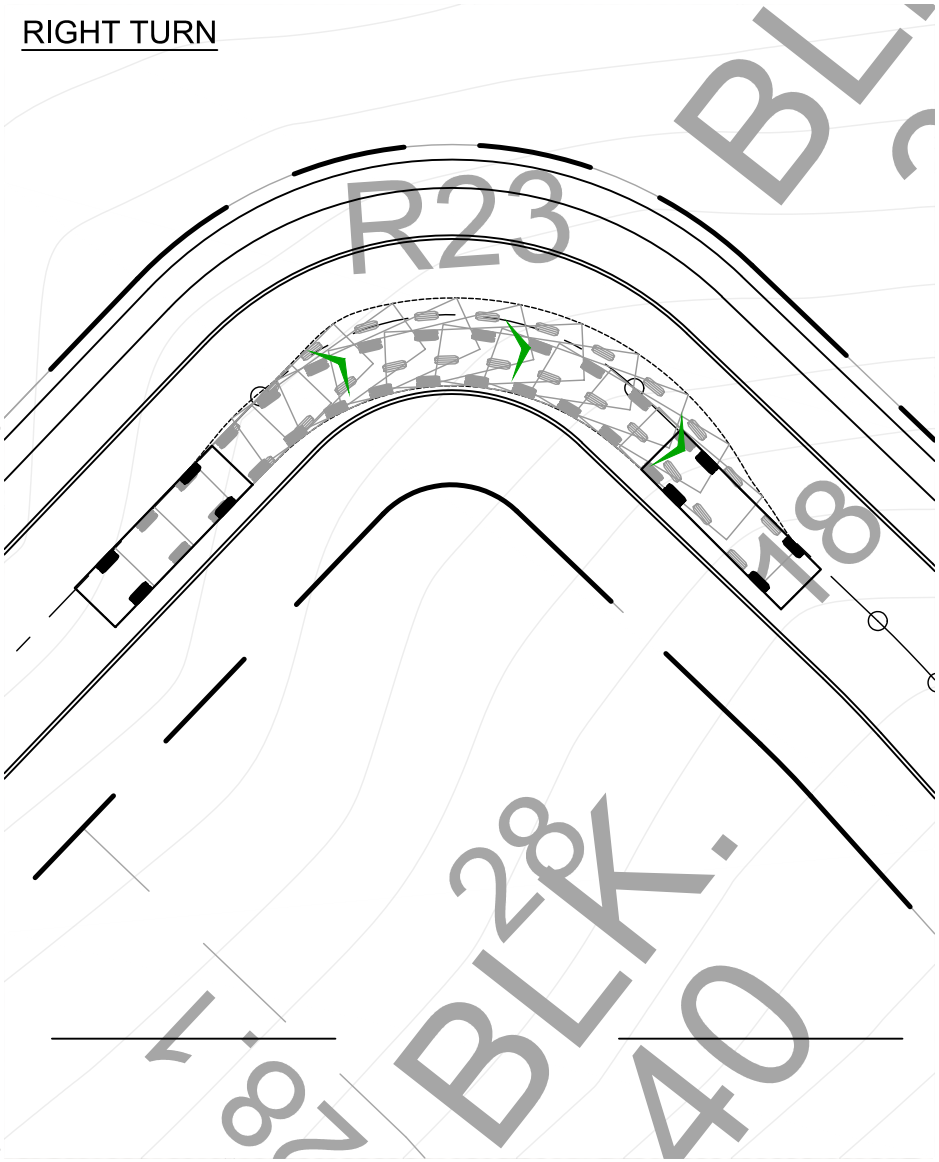
VEHICLE MANOEUVRING DIAGRAM

ELBOW BEND ROAD

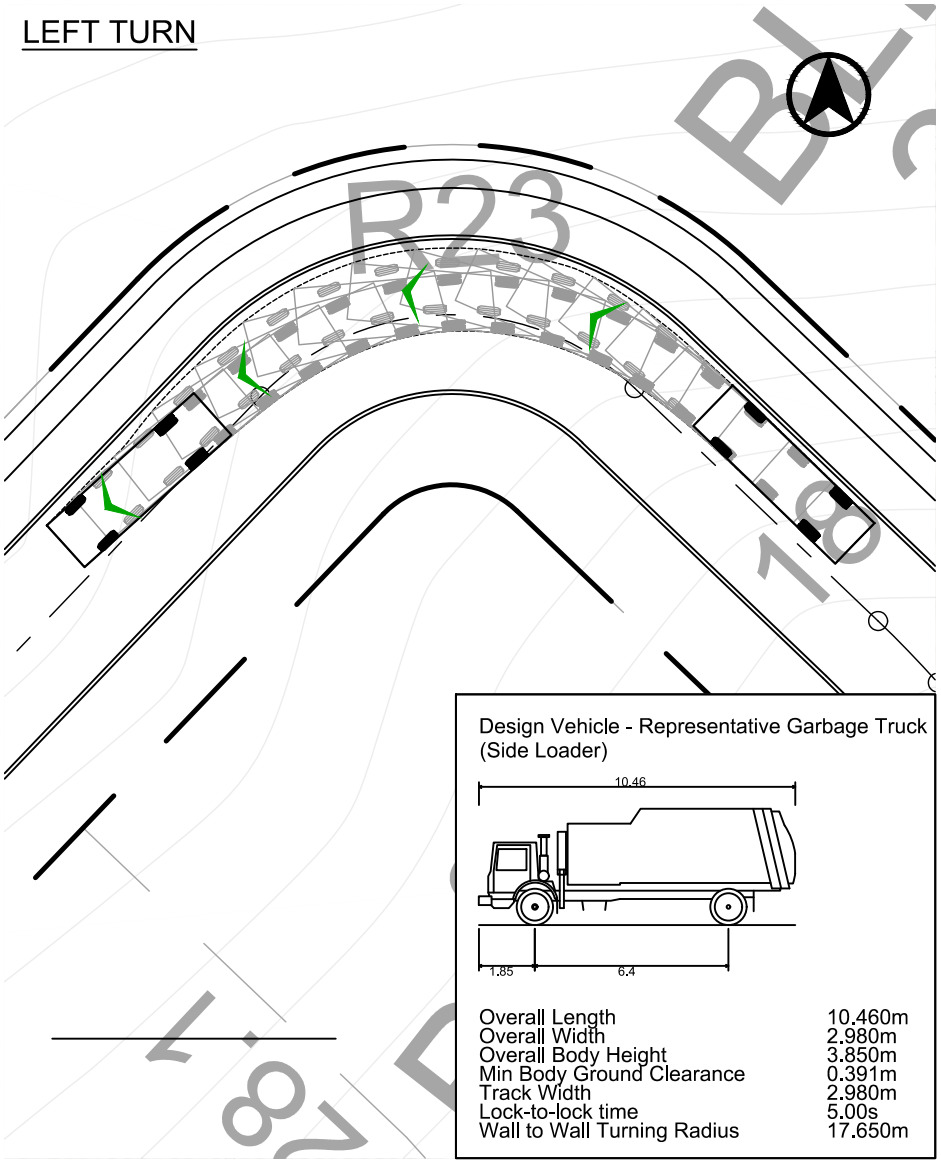
DODGE GRAND CARAVAN (TWO-WAY)

Project:	6490 FIRST LINE
Project No.	5883-58
Date:	July 3, 2026
Revised:	--
Drawing No.	VMD-01

RIGHT TURN



LEFT TURN



Design Vehicle - Representative Garbage Truck (Side Loader)

Overall Length	10.460m
Overall Width	2.980m
Overall Body Height	3.850m
Min Body Ground Clearance	0.391m
Track Width	2.980m
Lock-to-lock time	5.00s
Wall to Wall Turning Radius	17.650m

1:400

Date Plotted: July 3, 2026 Filename: J:\5883-58\BA\Road Plan\2_2026-06-23\DA-6490 First Line-KH-KUZ-588358.dwg

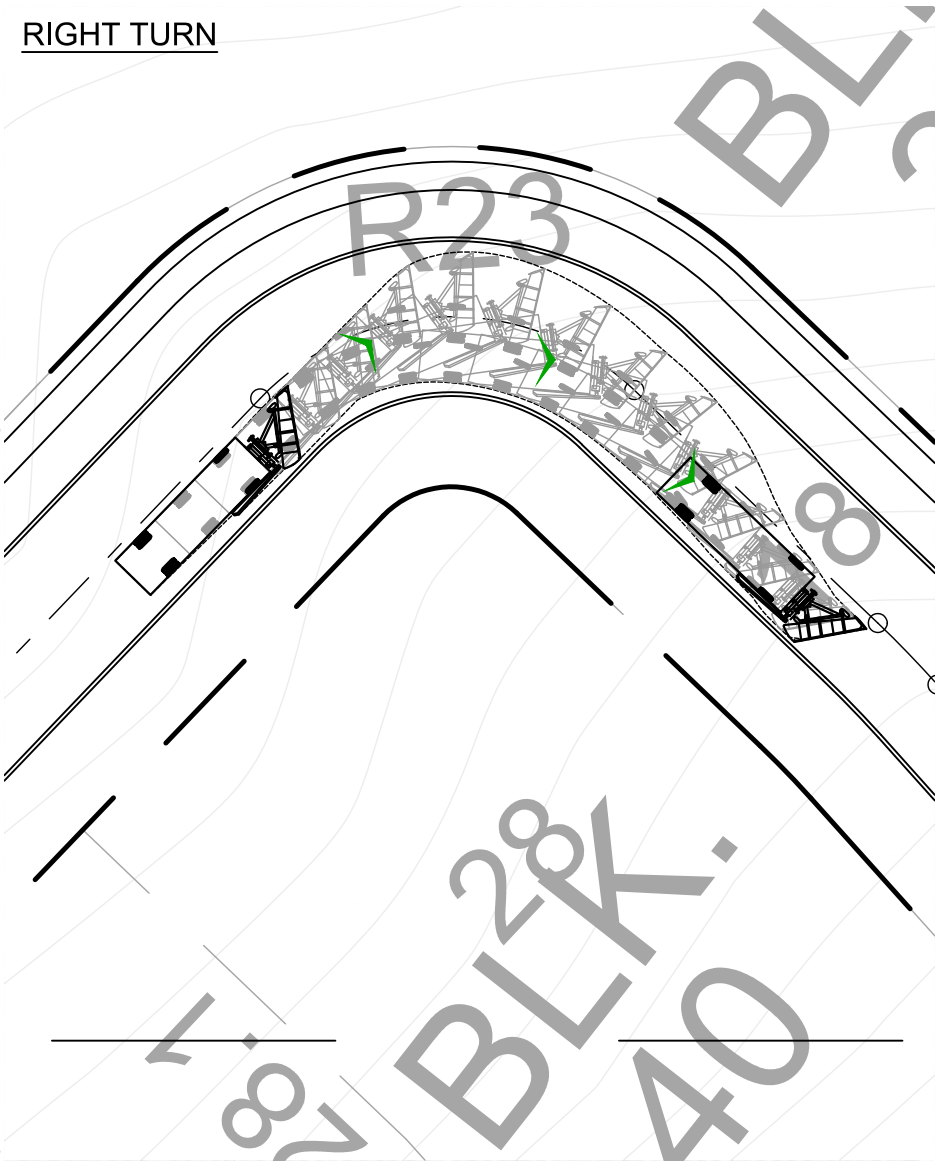
BA Group

6490 FIRST LINE

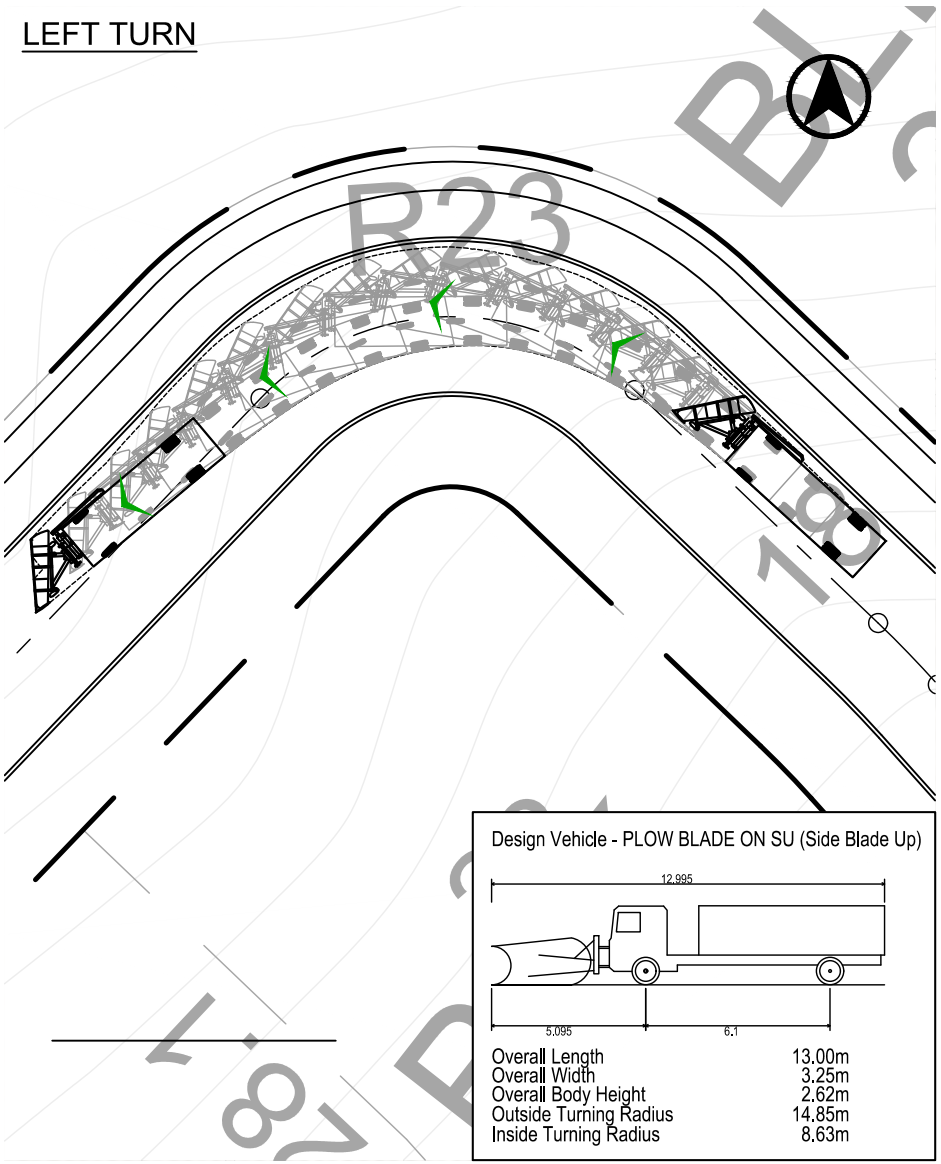
VEHICLE MANOEUVRING DIAGRAM
ELBOW BEND ROAD
REPRESENTATIVE GARBAGE TRUCK

Project:	6490 FIRST LINE
Project No.	5883-58
Date:	July 3, 2026
Revised:	--
Drawing No.	VMD-02

RIGHT TURN



LEFT TURN



Design Vehicle - PLOW BLADE ON SU (Side Blade Up)

Overall Length	13.00m
Overall Width	3.25m
Overall Body Height	2.62m
Outside Turning Radius	14.85m
Inside Turning Radius	8.63m

1:400

0 2 4 6 8 10 20m

Scale

Date Plotted: July 3, 2026 Filename: J:\5883-58\BA\Road Plan\z_2026-06-29\Ba-6490 First Line-KH-KUZ-588358.dwg

BA Group

6490 FIRST LINE

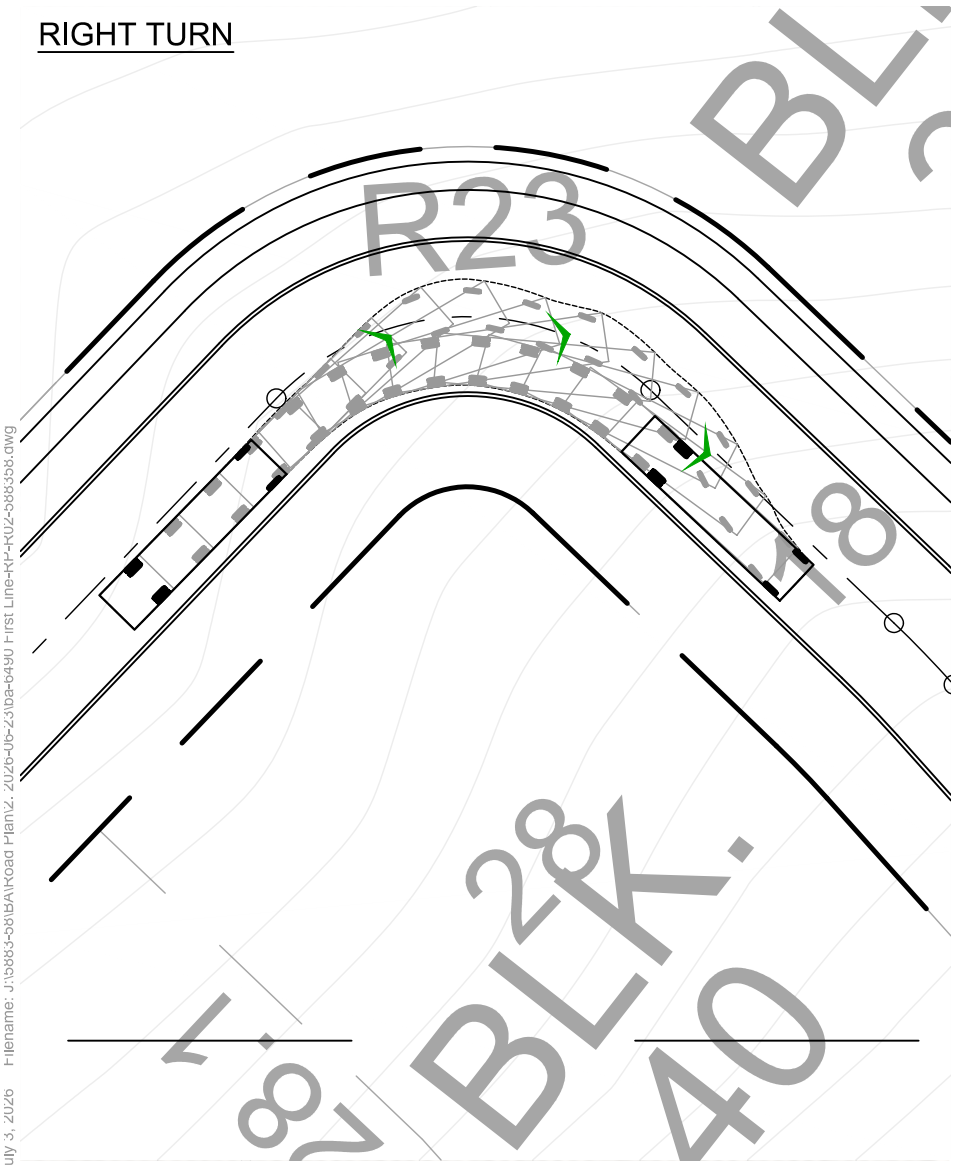
VEHICLE MANOEUVRING DIAGRAM

ELBOW BEND ROAD

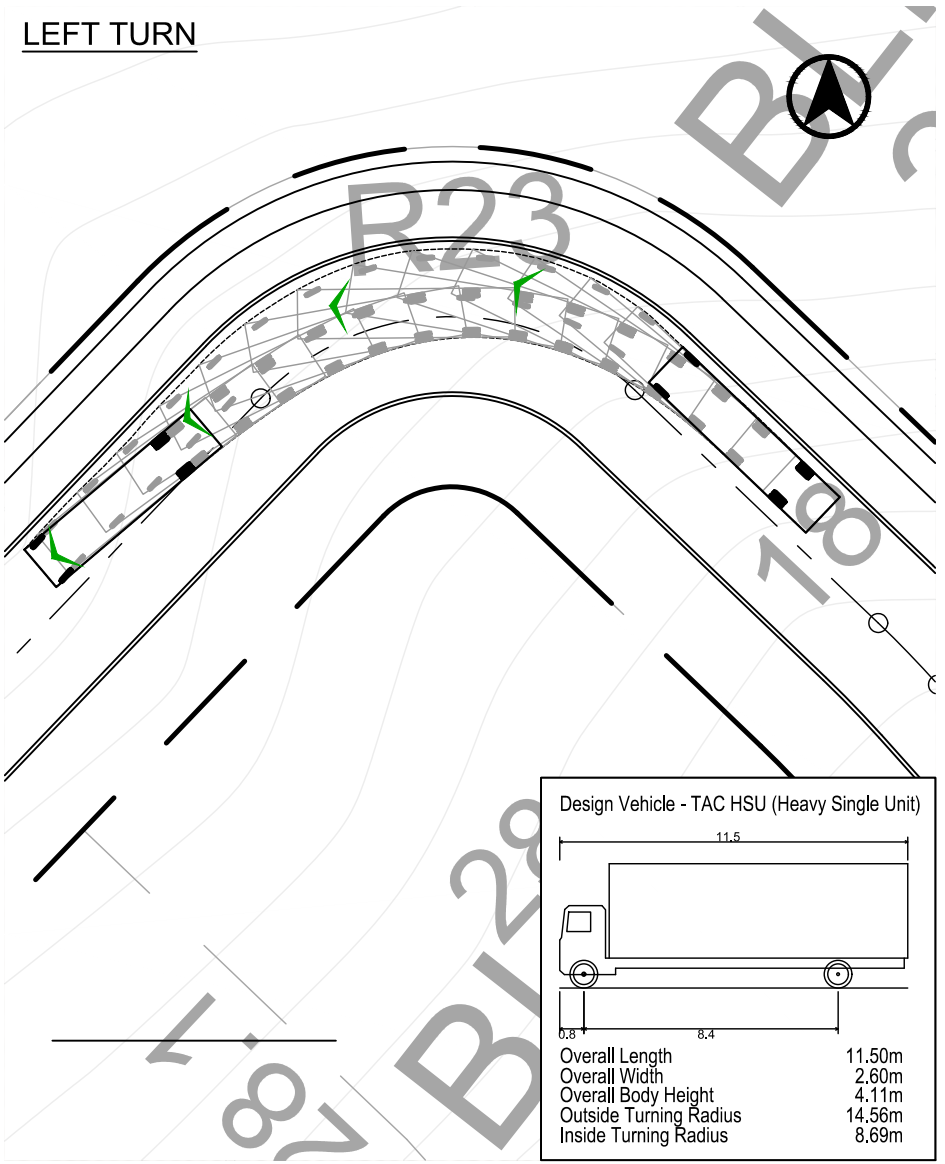
REPRESENTATIVE SNOW PLOW

Project:	6490 FIRST LINE
Project No.	5883-58
Date:	July 3, 2026
Revised:	--
Drawing No.	VMD-03

RIGHT TURN



LEFT TURN



Design Vehicle - TAC HSU (Heavy Single Unit)

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

1:400

0 2 4 6 8 10 20m

Scale

Date Plotted: July 3, 2026 Filename: J:\5883-58\BA\Road Plan\2. 2026-06-26-Elba-6490 First Line-KH-KU\5883S8.dwg

BA Group

6490 FIRST LINE

VEHICLE MANOEUVRING DIAGRAM
ELBOW BEND ROAD
HEAVY SINGLE UNIT TRUCK (HSU)

Project:	6490 FIRST LINE
Project No.	5883-58
Date:	July 3, 2026
Revised:	–
Drawing No.	VMD-04

Appendix D:
Turning Movement Counts

Spectrum

Turning Movement Count
Location Name: GARTSHORE ST & GATAFRAXA ST E
Date: Wed, Jun 19, 2024 Deployment Lead: David Chu

BA Group
1000 95 ST. CLAIR AVE W
TORONTO ONTARIO, M4V 1N6
CANADA

Turning Movement Count (2 . GARTSHORE ST & GATAFRAXA ST E)

Start Time	N Approach GARTSHORE ST						E Approach GATAFRAXA ST E						S Approach GARTSHORE ST						W Approach GATAFRAXA ST E						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total		
07:00:00	0	53	5	0	0	58	9	6	15	0	2	30	10	38	6	0	0	54	24	4	3	0	0	31	173	
07:15:00	3	47	10	0	0	60	11	12	14	0	0	37	4	69	6	0	0	79	20	11	3	0	1	34	210	
07:30:00	3	88	6	0	0	97	19	24	19	0	1	62	11	65	8	0	1	84	26	12	5	0	0	43	286	
07:45:00	5	63	10	0	0	78	18	13	18	0	0	49	15	88	12	0	0	115	22	13	2	0	0	37	279	948
08:00:00	1	87	13	0	0	101	21	24	16	0	0	61	15	63	8	0	3	86	19	11	5	0	2	35	283	1058
08:15:00	1	70	19	0	1	90	10	30	23	0	0	63	17	52	12	0	1	81	22	16	2	0	0	40	274	1122
08:30:00	4	106	12	0	0	122	14	43	25	0	1	82	10	73	21	0	1	104	31	13	2	0	1	46	354	1190
08:45:00	3	72	10	0	1	85	16	19	23	0	0	58	8	86	23	0	2	117	44	20	3	0	2	67	327	1238
09:00:00	6	82	16	0	0	104	11	19	16	0	0	46	12	62	23	0	0	97	22	21	1	0	0	44	291	1246
09:15:00	2	45	8	0	0	55	13	14	22	0	0	49	5	55	11	0	1	71	23	12	4	0	1	39	214	1186
09:30:00	1	59	7	0	1	67	12	15	18	0	0	45	10	51	9	0	0	70	10	18	7	0	1	35	217	1049
09:45:00	1	47	13	0	0	61	8	16	29	0	0	53	4	66	8	0	1	78	11	10	2	0	0	23	215	937
10:00:00	3	44	8	0	0	55	14	15	23	0	0	52	4	59	19	0	1	82	13	9	1	0	0	23	212	858
10:15:00	0	45	13	0	0	58	15	15	15	0	0	45	14	52	13	0	1	79	10	10	1	0	1	21	203	847
10:30:00	3	40	9	0	0	52	9	25	13	0	1	47	10	64	9	0	0	83	16	11	2	0	1	29	211	841
10:45:00	3	65	11	0	0	79	10	27	20	0	0	57	17	54	12	0	0	83	18	15	1	0	0	34	253	879
11:00:00	1	48	10	0	0	59	12	9	18	0	0	39	7	55	15	0	0	77	13	19	2	0	0	34	209	876
11:15:00	2	55	18	0	0	75	15	20	18	0	0	53	11	67	13	0	0	91	20	15	3	0	0	38	257	930
11:30:00	5	48	14	0	0	67	8	20	16	0	0	44	6	56	16	0	0	78	13	18	4	0	0	35	224	943
11:45:00	3	71	13	0	0	87	14	26	16	0	0	56	7	75	12	0	0	94	21	24	5	0	0	50	287	977
12:00:00	6	71	17	0	0	94	11	15	20	0	0	46	16	64	7	0	0	87	20	20	5	0	0	45	272	1040
12:15:00	1	59	19	0	0	79	12	21	17	0	0	50	12	74	11	0	0	97	23	13	8	0	0	44	270	1053
12:30:00	8	63	13	0	0	84	10	18	11	0	0	39	5	81	16	0	0	102	9	24	6	0	0	39	264	1093
12:45:00	3	64	13	0	0	80	8	14	11	0	0	33	8	69	6	0	0	83	20	21	3	0	0	44	240	1046
13:00:00	3	60	14	0	0	77	15	17	9	0	0	41	17	60	9	0	0	86	18	21	1	0	0	40	244	1018
13:15:00	2	52	7	0	0	61	14	14	11	0	0	39	13	58	17	0	0	88	25	18	4	0	0	47	235	983
13:30:00	2	62	10	0	0	74	12	22	17	0	0	51	9	57	16	0	0	82	18	15	3	0	0	36	243	962
13:45:00	4	53	9	0	0	66	8	20	9	0	0	37	8	63	19	0	0	90	16	15	7	0	1	38	231	953
14:00:00	7	64	12	0	0	83	13	18	15	0	0	46	14	66	12	0	0	92	24	13	2	0	0	39	260	969
14:15:00	2	63	11	0	0	76	10	18	21	0	0	49	10	71	14	0	0	95	24	12	6	0	0	42	262	996
14:30:00	12	59	12	0	0	83	14	20	10	0	0	44	10	71	15	0	1	96	20	15	0	0	1	35	258	1011
14:45:00	4	65	13	0	0	82	10	24	15	0	0	49	14	76	33	0	0	123	24	17	6	0	0	47	301	1081
15:00:00	9	102	19	0	0	130	12	19	31	0	0	62	15	81	23	0	0	119	29	30	7	0	1	66	377	1198
15:15:00	2	63	15	0	1	80	21	20	23	0	0	64	16	101	29	0	2	146	33	31	2	0	4	66	356	1292
15:30:00	4	74	19	0	0	97	17	17	23	0	0	57	19	94	25	0	2	138	26	14	3	0	2	43	335	1369
15:45:00	1	64	16	0	0	81	16	17	18	0	0	51	14	98	14	0	1	126	37	32	8	0	0	77	335	1403
16:00:00	11	94	19	0	0	124	16	15	25	0	0	56	16	89	14	0	0	119	23	22	8	0	0	53	352	1378
16:15:00	4	70	21	0	0	95	12	16	13	0	0	41	23	105	26	0	0	154	23	22	2	0	0	47	337	1359
16:30:00	6	85	16	0	0	107	40	26	32	0	0	98	18	102	19	0	0	139	24	22	2	0	0	48	392	1416
16:45:00	3	69	12	0	0	84	15	20	16	0	0	51	17	99	23	0	0	139	25	26	0	0	0	51	325	1406
17:00:00	5	102	15	0	1	122	17	9	14	0	0	40	10	107	27	0	0	144	20	17	2	0	0	39	345	1399
17:15:00	1	84	18	0	0	103	14	15	22	0	0	51	6	102	22	0	0	130	26	14	2	0	1	42	326	1388
17:30:00	4	72	8	0	0	84	11	15	14	0	0	40	20	83	31	0	0	134	22	13	1	0	0	36	294	1290
17:45:00	3	41	9	0	0	53	12	10	22	0	0	44	20	67	14	0	0	101	24	10	4	0	0	38	236	1201
18:00:00	0	44	9	0	0	53	11	8	11	0	0	30	16	75	16	0	0	107	11	12	2	0	0	25	215	1071

18:15:00	3	36	4	0	0	43	3	8	14	0	0	25	10	65	13	0	0	88	24	8	0	0	0	32	188	933
18:30:00	3	40	6	0	0	49	11	11	10	0	0	32	11	55	19	0	0	85	22	13	0	0	0	35	201	840
18:45:00	1	51	7	0	0	59	4	16	11	0	0	31	9	81	14	0	0	104	22	11	2	0	0	35	229	833
Grand Total	164	3061	588	0	5	3813	628	855	842	0	5	2325	573	3464	760	0	18	4797	1030	783	154	0	20	1967	**12902**	-
Approach%	4.3%	80.3%	15.4%	0%		-	27%	36.8%	36.2%	0%		-	11.9%	72.2%	15.8%	0%		-	52.4%	39.8%	7.8%	0%		-	**-**	-
Totals %	1.3%	23.7%	4.6%	0%		29.6%	4.9%	6.6%	6.5%	0%		18%	4.4%	26.8%	5.9%	0%		37.2%	8%	6.1%	1.2%	0%		15.2%	**-**	-
Heavy	11	224	28	0		-	32	20	25	0		-	26	207	23	0		-	28	26	9	0		-	**-**	-
Heavy %	6.7%	7.3%	4.8%	0%		-	5.1%	2.3%	3%	0%		-	4.5%	6%	3%	0%		-	2.7%	3.3%	5.8%	0%		-	**-**	-
Bicycles	0	4	0	0		-	1	5	2	0		-	0	2	0	0		-	3	5	2	0		-	**-**	-
Bicycle %	0%	0.1%	0%	0%		-	0.2%	0.6%	0.2%	0%		-	0%	0.1%	0%	0%		-	0.3%	0.6%	1.3%	0%		-	**-**	-

Peak Hour: 03:45 PM - 04:45 PM Weather: Overcast Clouds (21.85 °C)

Start Time	N Approach GARTSHORE ST						E Approach GATAFRAXA ST E						S Approach GARTSHORE ST						W Approach GATAFRAXA ST E						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
15:45:00	1	64	16	0	0	81	16	17	18	0	0	51	14	98	14	0	1	126	37	32	8	0	0	77	335
16:00:00	11	94	19	0	0	124	16	15	25	0	0	56	16	89	14	0	0	119	23	22	8	0	0	53	352
16:15:00	4	70	21	0	0	95	12	16	13	0	0	41	23	105	26	0	0	154	23	22	2	0	0	47	337
16:30:00	6	85	16	0	0	107	40	26	32	0	0	98	18	102	19	0	0	139	24	22	2	0	0	48	392
Grand Total	22	313	72	0	0	407	84	74	88	0	0	246	71	394	73	0	1	538	107	98	20	0	0	225	**1416**
Approach%	5.4%	76.9%	17.7%	0%		-	34.1%	30.1%	35.8%	0%		-	13.2%	73.2%	13.6%	0%		-	47.6%	43.6%	8.9%	0%		-	**-**
Totals %	1.6%	22.1%	5.1%	0%		28.7%	5.9%	5.2%	6.2%	0%		17.4%	5%	27.8%	5.2%	0%		38%	7.6%	6.9%	1.4%	0%		15.9%	**-**
PHF	0.5	0.83	0.86	0		0.82	0.53	0.71	0.69	0		0.63	0.77	0.94	0.7	0		0.87	0.72	0.77	0.63	0		0.73	**-**
Heavy	0	10	1	0		11	6	0	3	0		9	6	17	0	0		23	4	1	4	0		9	**-**
Heavy %	0%	3.2%	1.4%	0%		2.7%	7.1%	0%	3.4%	0%		3.7%	8.5%	4.3%	0%	0%		4.3%	3.7%	1%	20%	0%		4%	**-**
Lights	22	303	71	0		396	78	74	85	0		237	65	377	73	0		515	103	97	16	0		216	**-**
Lights %	100%	96.8%	98.6%	0%		97.3%	92.9%	100%	96.6%	0%		96.3%	91.5%	95.7%	100%	0%		95.7%	96.3%	99%	80%	0%		96%	**-**
Single-Unit Trucks	0	2	0	0		2	1	0	3	0		4	0	1	0	0		1	3	1	0	0		4	**-**
Single-Unit Trucks %	0%	0.6%	0%	0%		0.5%	1.2%	0%	3.4%	0%		1.6%	0%	0.3%	0%	0%		0.2%	2.8%	1%	0%	0%		1.8%	**-**
Buses	0	4	0	0		4	5	0	0	0		5	6	10	0	0		16	0	0	4	0		4	**-**
Buses %	0%	1.3%	0%	0%		1%	6%	0%	0%	0%		2%	8.5%	2.5%	0%	0%		3%	0%	0%	20%	0%		1.8%	**-**
Articulated Trucks	0	4	1	0		5	0	0	0	0		0	0	6	0	0		6	1	0	0	0		1	**-**
Articulated Trucks %	0%	1.3%	1.4%	0%		1.2%	0%	0%	0%	0%		0%	0%	1.5%	0%	0%		1.1%	0.9%	0%	0%	0%		0.4%	**-**
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**
Bicycles on Road	0	2	0	0	0	-	1	4	2	0	0	-	0	0	0	0	0	-	0	1	0	0	0	-	**-**
Bicycles on Road%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	**-**
Bicycles on Crosswalk%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	100%		-	-	-	-	0%		**-**

Spectrum

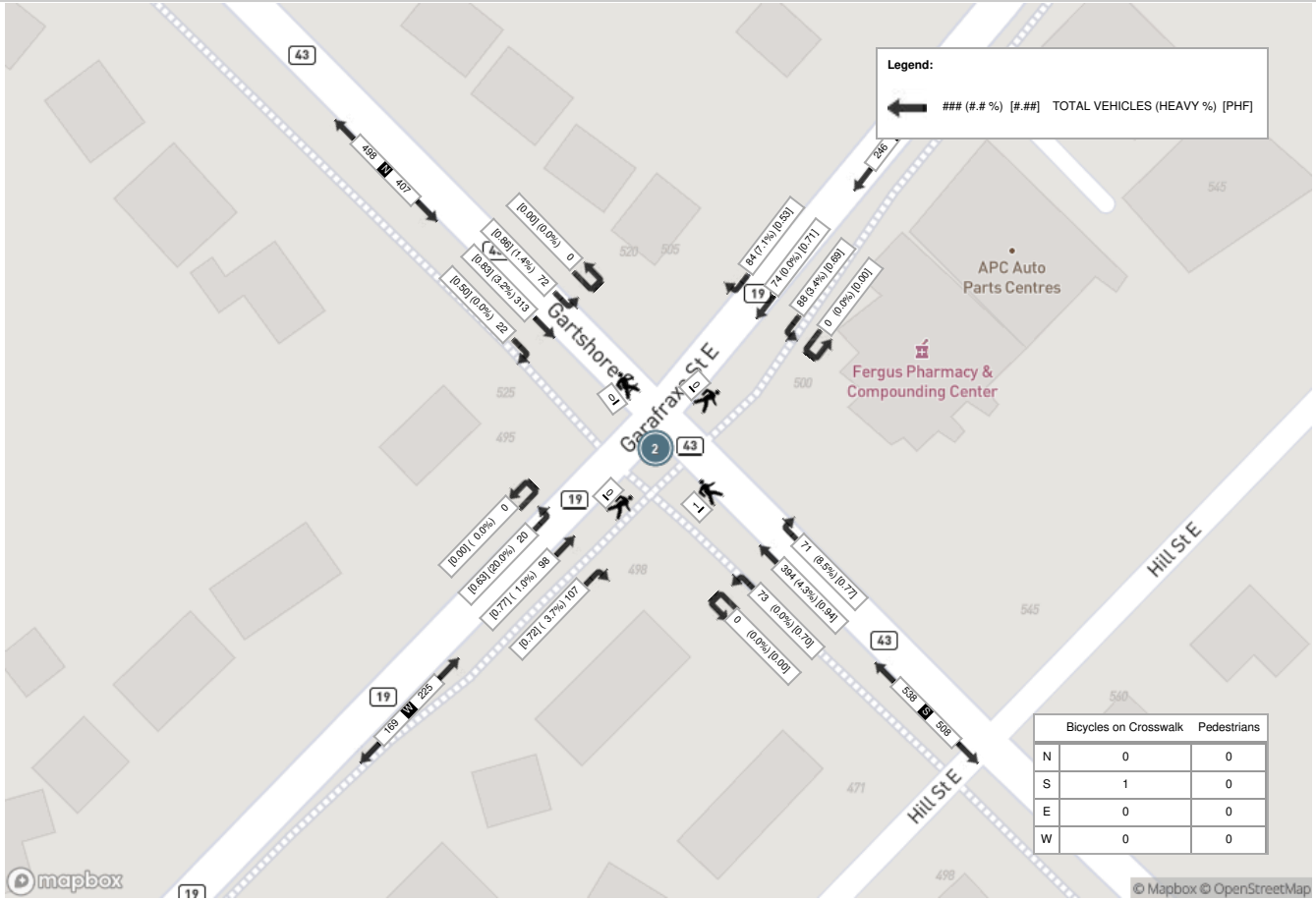
Turning Movement Count
Location Name: GARTSHORE ST & GATAFRAXA ST E
Date: Wed, Jun 19, 2024 Deployment Lead: David Chu

BA Group
1000 95 ST. CLAIR AVE W
TORONTO ONTARIO, M4V 1N6
CANADA

Selected Hour: 08:15 AM - 09:15 AM **Weather:**

Start Time	N Approach GARTSHORE ST						E Approach GATAFRAXA ST E						S Approach GARTSHORE ST						W Approach GATAFRAXA ST E						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
08:15:00	1	70	19	0	1	90	10	30	23	0	0	63	17	52	12	0	1	81	22	16	2	0	0	40	274
08:30:00	4	106	12	0	0	122	14	43	25	0	1	82	10	73	21	0	1	104	31	13	2	0	1	46	354
08:45:00	3	72	10	0	1	85	16	19	23	0	0	58	8	86	23	0	2	117	44	20	3	0	2	67	327
09:00:00	6	82	16	0	0	104	11	19	16	0	0	46	12	62	23	0	0	97	22	21	1	0	0	44	291
Grand Total	14	330	57	0	2	401	51	111	87	0	1	249	47	273	79	0	4	399	119	70	8	0	3	197	**1246**
Approach%	3.5%	82.3%	14.2%	0%		-	20.5%	44.6%	34.9%	0%		-	11.8%	68.4%	19.8%	0%		-	60.4%	35.5%	4.1%	0%		-	**-**
Totals %	1.1%	26.5%	4.6%	0%		32.2%	4.1%	8.9%	7%	0%		20%	3.8%	21.9%	6.3%	0%		32%	9.6%	5.6%	0.6%	0%		15.8%	**-**
PHF	0.58	0.78	0.75	0		0.82	0.8	0.65	0.87	0		0.76	0.69	0.79	0.86	0		0.85	0.68	0.83	0.67	0		0.74	**-**
Heavy	2	26	6	0		34	3	2	9	0		14	7	37	3	0		47	5	4	1	0		10	**-**
Heavy %	14.3%	7.9%	10.5%	0%		8.5%	5.9%	1.8%	10.3%	0%		5.6%	14.9%	13.6%	3.8%	0%		11.8%	4.2%	5.7%	12.5%	0%		5.1%	**-**
Lights	12	304	51	0		367	48	109	78	0		235	40	236	76	0		352	114	66	7	0		187	**-**
Lights %	85.7%	92.1%	89.5%	0%		91.5%	94.1%	98.2%	89.7%	0%		94.4%	85.1%	86.4%	96.2%	0%		88.2%	95.8%	94.3%	87.5%	0%		94.9%	**-**
Single-Unit Trucks	1	7	1	0		9	1	0	0	0		1	4	11	1	0		16	4	1	0	0		5	**-**
Single-Unit Trucks %	7.1%	2.1%	1.8%	0%		2.2%	2%	0%	0%	0%		0.4%	8.5%	4%	1.3%	0%		4%	3.4%	1.4%	0%	0%		2.5%	**-**
Buses	1	10	4	0		15	2	2	9	0		13	3	18	1	0		22	1	3	1	0		5	**-**
Buses %	7.1%	3%	7%	0%		3.7%	3.9%	1.8%	10.3%	0%		5.2%	6.4%	6.6%	1.3%	0%		5.5%	0.8%	4.3%	12.5%	0%		2.5%	**-**
Articulated Trucks	0	9	1	0		10	0	0	0	0		0	0	8	1	0		9	0	0	0	0		0	**-**
Articulated Trucks %	0%	2.7%	1.8%	0%		2.5%	0%	0%	0%	0%		0%	0%	2.9%	1.3%	0%		2.3%	0%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	4	-	-	-	-	-	2	-	**-**
Pedestrians%	-	-	-	-	10%		-	-	-	-	10%		-	-	-	-	40%		-	-	-	-	20%		**-**
Bicycles on Road	0	1	0	0	0	-	0	1	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	**-**
Bicycles on Road%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	**-**
Bicycles on Crosswalk%	-	-	-	-	10%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	10%		**-**

Peak Hour: 03:45 PM - 04:45 PM **Weather: Overcast Clouds (21.85 °C)**



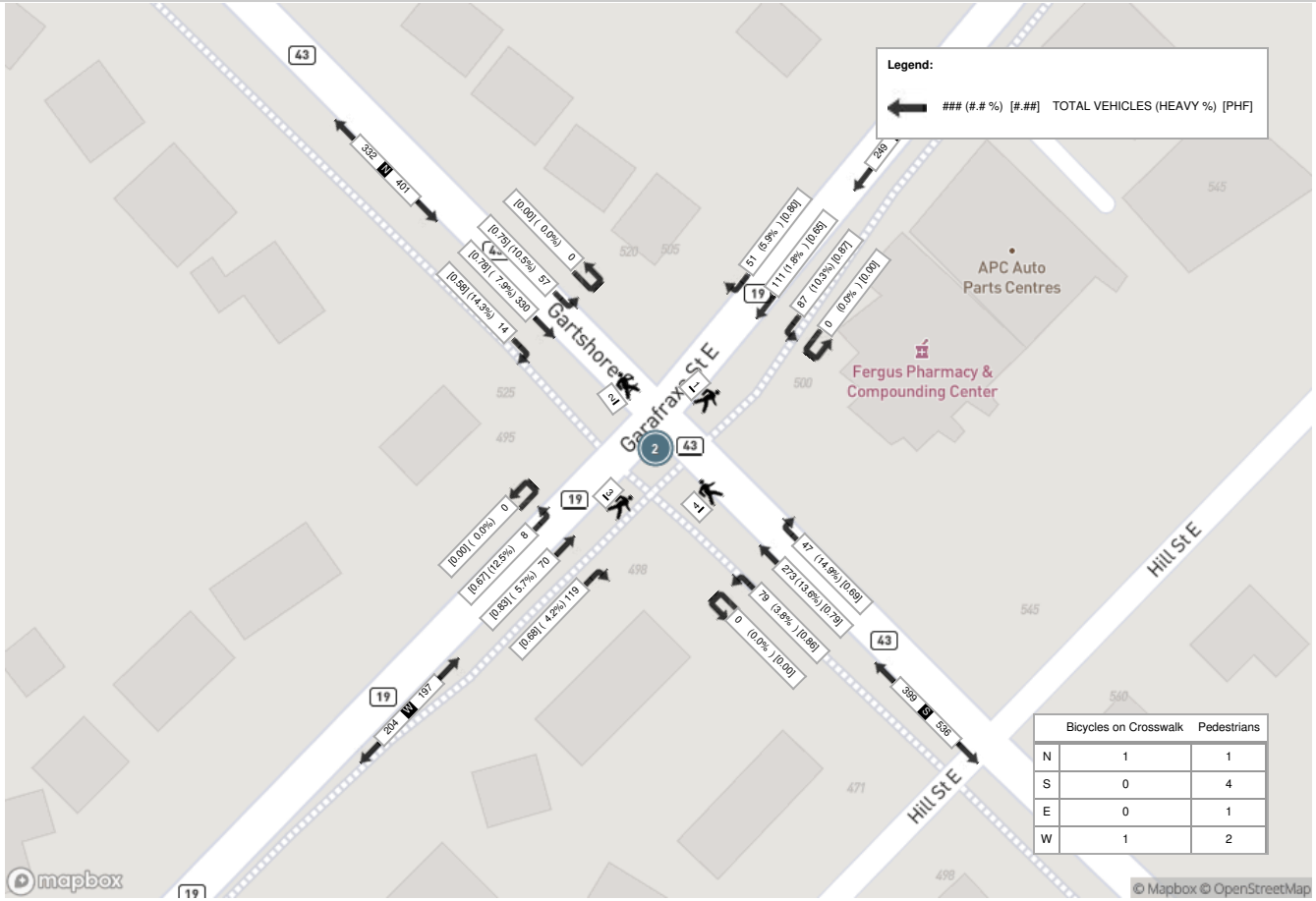
	Bicycles on Crosswalk	Pedestrians
N	0	0
S	1	0
E	0	0
W	0	0

Spectrum

Turning Movement Count
Location Name: GARTSHORE ST & GATAFRAXA ST E
Date: Wed, Jun 19, 2024 Deployment Lead: David Chu

BA Group
1000 95 ST. CLAIR AVE W
TORONTO ONTARIO, M4V 1N6
CANADA

Selected Hour: 08:15 AM - 09:15 AM **Weather:**



	Bicycles on Crosswalk	Pedestrians
N	1	1
S	0	4
E	0	1
W	1	2

Spectrum

Turning Movement Count
Location Name: GATAFRAXA ST E & FIRST LIN
Date: Wed, Jun 19, 2024 Deployment Lead: David Chu

BA Group
1000 95 ST. CLAIR AVE W
TORONTO ONTARIO, M4V 1N6
CANADA

Turning Movement Count (6 . GATAFRAXA ST E & FIRST LIN)

Start Time	N Approach FIRST LIN						E Approach GATAFRAXA ST E						S Approach FIRST LIN						W Approach GATAFRAXA ST E						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total		
00:00:00	0	0	0	0	0	0	1	1	0	0	0	2	0	0	0	0	0	0	0	6	0	0	0	6	8	
00:15:00	0	1	0	0	0	1	0	1	0	0	0	1	0	0	1	0	0	1	0	1	0	0	0	1	4	
00:30:00	0	0	0	0	0	0	0	3	0	0	0	3	1	0	0	0	0	1	0	1	0	0	0	1	5	
00:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17
01:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	10
01:15:00	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	1	0	3	0	0	0	3	5	11
01:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
01:45:00	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	7
02:00:00	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	7
02:15:00	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	1	2	4
02:30:00	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	5
02:45:00	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	2	0	0	0	2	3	7
03:00:00	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	2	0	0	0	2	3	9
03:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
03:30:00	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	1	7
03:45:00	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	5
04:00:00	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	0	0	1	0	0	0	1	3	5
04:15:00	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	1	0	1	0	0	2	3	8
04:30:00	0	0	0	0	0	0	1	2	0	0	0	3	0	0	0	0	0	0	0	2	0	0	0	2	5	12
04:45:00	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	3	14
05:00:00	0	0	0	0	0	0	0	6	0	0	0	6	0	0	1	0	0	1	0	5	0	0	0	5	12	23
05:15:00	0	0	0	0	0	0	0	7	0	0	0	7	1	0	0	0	0	1	0	5	0	0	0	5	13	33
05:30:00	0	0	0	0	0	0	0	17	0	0	0	17	1	0	0	0	0	1	0	6	0	0	0	6	24	52
05:45:00	0	0	0	0	0	0	0	10	0	0	0	10	0	0	1	0	0	1	0	7	1	0	0	8	19	68
06:00:00	0	0	1	0	0	1	1	4	0	0	0	5	0	0	1	0	0	1	0	10	0	0	0	10	17	73
06:15:00	0	0	0	0	0	0	1	15	2	0	0	18	1	1	0	0	0	2	0	18	0	0	0	18	38	98
06:30:00	0	0	1	0	0	1	0	14	1	0	0	15	3	0	1	0	0	4	0	10	0	0	0	10	30	104
06:45:00	2	0	2	0	0	4	4	22	1	0	0	27	4	1	2	0	0	7	0	17	0	0	1	17	55	140
07:00:00	0	0	3	0	0	3	1	23	0	0	1	24	2	0	0	0	0	2	2	14	0	0	0	16	45	168
07:15:00	1	0	3	0	0	4	4	24	2	0	0	30	4	0	1	0	0	5	0	19	0	0	1	19	58	188
07:30:00	2	0	1	0	0	3	3	40	2	0	0	45	2	1	2	0	0	5	0	27	3	0	0	30	83	241
07:45:00	0	1	2	0	0	3	4	33	3	0	1	40	9	3	1	0	1	13	1	20	8	0	0	29	85	271
08:00:00	3	1	2	0	0	6	2	48	1	0	0	51	5	5	4	0	0	14	0	30	2	0	0	32	103	329
08:15:00	5	1	2	0	1	8	1	38	4	0	0	43	5	3	4	0	0	12	1	28	2	0	1	31	94	365
08:30:00	2	0	3	0	0	5	4	45	11	1	0	61	4	3	3	0	1	10	4	18	2	0	0	24	100	382
08:45:00	2	0	2	0	0	4	4	31	14	0	0	49	9	0	2	0	0	11	7	25	1	0	1	33	97	394
09:00:00	2	0	2	0	0	4	0	36	5	0	0	41	2	2	3	0	0	7	2	36	0	0	0	38	90	381
09:15:00	2	0	2	0	0	4	3	36	1	0	0	40	8	0	1	0	0	9	0	22	2	0	0	24	77	364
09:30:00	2	1	2	0	1	5	1	31	3	0	1	35	3	0	0	0	0	3	1	33	0	0	1	34	77	341
09:45:00	2	1	1	0	0	4	2	45	1	0	0	48	4	1	2	0	0	7	0	24	0	0	0	24	83	327
10:00:00	3	2	1	0	0	6	1	41	3	0	0	45	6	1	1	0	0	8	2	17	0	0	0	19	78	315
10:15:00	3	0	2	0	0	5	1	39	3	0	1	43	5	2	0	0	0	7	3	32	1	0	0	36	91	329
10:30:00	1	1	0	0	0	2	0	47	2	0	0	49	6	1	2	0	0	9	1	22	1	0	0	24	84	336
10:45:00	2	2	2	0	0	6	1	45	5	0	0	51	5	0	3	0	0	8	1	37	4	0	0	42	107	360
11:00:00	0	2	1	0	0	3	2	29	5	0	0	36	12	1	1	0	0	14	2	40	1	0	0	43	96	378

11:15:00	2	3	1	0	0	6	1	44	10	0	0	55	5	1	3	0	0	9	3	30	0	0	0	33	103	390
11:30:00	0	0	0	0	0	0	1	33	6	0	0	40	7	0	1	0	0	8	1	34	1	0	0	36	84	390
11:45:00	1	1	2	0	0	4	1	41	6	0	0	48	4	2	4	0	0	10	1	30	2	0	0	33	95	378
12:00:00	2	1	2	0	0	5	2	32	3	0	0	37	4	1	1	0	0	6	1	44	3	0	0	48	96	378
12:15:00	0	2	2	0	0	4	2	45	11	0	0	58	8	3	1	0	0	12	3	35	0	0	0	38	112	387
12:30:00	0	0	0	0	0	0	0	36	4	0	0	40	3	1	1	0	0	5	3	32	3	0	0	38	83	386
12:45:00	2	1	3	0	0	6	0	28	6	0	0	34	4	1	2	0	0	7	2	39	0	0	0	41	88	379
13:00:00	3	1	1	0	0	5	0	26	2	0	0	28	6	0	2	0	0	8	1	32	1	0	0	34	75	358
13:15:00	0	2	1	0	0	3	1	32	3	0	0	36	7	1	2	0	0	10	1	33	0	0	0	34	83	329
13:30:00	0	1	4	0	0	5	2	44	4	0	0	50	6	1	0	0	0	7	5	21	0	0	0	26	88	334
13:45:00	0	2	4	0	0	6	1	28	3	0	0	32	6	0	2	0	0	8	0	28	3	0	0	31	77	323
14:00:00	0	0	3	0	0	3	1	37	2	0	0	40	12	2	3	0	0	17	1	30	0	0	0	31	91	339
14:15:00	1	0	3	0	0	4	1	33	2	0	0	36	6	1	2	0	0	9	1	22	3	0	0	26	75	331
14:30:00	1	1	1	0	0	3	2	34	6	0	1	42	8	1	2	0	0	11	3	23	1	0	0	27	83	326
14:45:00	2	3	1	0	0	6	1	35	6	0	0	42	8	0	3	0	0	11	1	22	3	0	0	26	85	334
15:00:00	5	3	1	0	0	9	4	32	6	0	0	42	3	0	1	0	0	4	3	46	1	0	0	50	105	348
15:15:00	0	2	3	0	0	5	4	44	3	0	0	51	11	3	4	0	0	18	5	39	2	0	0	46	120	393
15:30:00	1	0	5	0	0	6	1	36	2	0	0	39	15	2	1	0	0	18	2	42	0	0	0	44	107	417
15:45:00	2	0	4	0	0	6	3	40	3	0	0	46	10	2	0	0	0	12	3	42	1	0	0	46	110	442
16:00:00	5	3	10	0	0	18	5	45	4	0	0	54	9	1	1	0	0	11	3	42	0	0	0	45	128	465
16:15:00	3	3	7	0	0	13	1	42	6	0	0	49	15	1	0	0	0	16	3	34	1	0	0	38	116	461
16:30:00	1	0	3	0	0	4	2	41	7	0	0	50	2	2	2	0	0	6	4	52	5	0	0	61	121	475
16:45:00	4	2	4	0	0	10	3	36	5	0	0	44	7	6	1	0	0	14	7	41	2	0	0	50	118	483
17:00:00	0	0	2	0	0	2	1	27	3	0	0	31	10	0	2	0	0	12	1	39	0	0	0	40	85	440
17:15:00	1	1	4	0	0	6	4	32	3	0	0	39	5	1	0	0	0	6	0	29	0	0	0	29	80	404
17:30:00	2	0	4	0	0	6	1	32	4	0	0	37	5	0	3	0	0	8	2	28	1	0	0	31	82	365
17:45:00	2	2	3	0	0	7	0	29	4	0	0	33	10	1	3	0	0	14	2	25	0	0	0	27	81	328
18:00:00	0	2	1	0	0	3	0	23	4	0	0	27	10	1	2	0	0	13	4	25	4	0	0	33	76	319
18:15:00	2	0	3	0	0	5	2	19	2	0	0	23	3	3	0	0	0	6	0	19	0	0	0	19	53	292
18:30:00	3	1	1	0	0	5	0	23	0	0	0	23	2	0	2	0	0	4	2	22	2	0	0	26	58	268
18:45:00	6	0	1	0	0	7	1	22	1	0	0	24	3	1	0	0	0	4	1	17	0	0	0	18	53	240
19:00:00	0	1	3	0	0	4	0	27	0	0	0	27	3	0	3	0	0	6	3	12	0	0	0	15	52	216
19:15:00	1	1	1	0	0	3	0	24	1	0	0	25	4	1	0	0	0	5	1	12	0	0	0	13	46	209
19:30:00	1	3	2	0	0	6	2	14	1	0	0	17	2	2	1	0	0	5	0	18	0	0	0	18	46	197
19:45:00	1	1	0	0	0	2	1	10	2	0	0	13	1	2	1	0	0	4	1	19	0	0	0	20	39	183
20:00:00	0	0	0	0	0	0	0	14	0	0	0	14	6	0	0	0	0	6	0	12	0	0	0	12	32	163
20:15:00	2	0	1	0	0	3	1	15	0	0	0	16	3	1	1	0	0	5	1	18	3	0	0	22	46	163
20:30:00	1	0	0	0	0	1	0	6	2	0	0	8	0	1	1	0	0	2	0	7	1	0	0	8	19	136
20:45:00	0	0	0	0	0	0	0	3	0	0	0	3	2	0	3	0	0	5	2	7	0	0	0	9	17	114
21:00:00	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	0	3	9	0	0	0	12	14	96
21:15:00	0	0	0	0	0	0	0	4	1	0	0	5	3	1	1	0	0	5	0	10	0	0	0	10	20	70
21:30:00	0	0	0	0	0	0	0	8	0	0	0	8	3	0	1	0	0	4	0	5	2	0	0	7	19	70
21:45:00	0	0	2	0	0	2	0	14	2	0	0	16	2	0	1	0	0	3	3	2	1	0	0	6	27	80
22:00:00	0	0	1	0	0	1	1	8	1	0	0	10	2	0	0	0	0	2	2	6	0	0	0	8	21	87
22:15:00	0	0	0	0	0	0	1	2	2	0	0	5	0	0	0	0	0	0	2	13	0	0	0	15	20	87
22:30:00	0	0	0	0	0	0	1	3	0	0	0	4	3	0	0	0	0	3	0	7	0	0	0	7	14	82
22:45:00	0	1	1	0	0	2	0	4	1	0	0	5	0	0	1	0	0	1	1	2	0	0	0	3	11	66
23:00:00	0	1	0	0	0	1	0	1	0	0	0	1	0	0	0	0	0	0	0	3	0	0	0	3	5	50

23:15:00	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	0	0	4	0	0	0	4	6	36
23:30:00	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	1	2	24
23:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	2	0	0	0	2	3	16
Grand Total	92	58	130	0	2	280	97	1955	214	1	5	2267	353	72	103	0	2	528	117	1709	75	0	5	1901	**4976**	-
Approach%	32.9%	20.7%	46.4%	0%		-	4.3%	86.2%	9.4%	0%		-	66.9%	13.6%	19.5%	0%		-	6.2%	89.9%	3.9%	0%		-	**-**	-
Totals %	1.8%	1.2%	2.6%	0%		5.6%	1.9%	39.3%	4.3%	0%		45.6%	7.1%	1.4%	2.1%	0%		10.6%	2.4%	34.3%	1.5%	0%		38.2%	**-**	-
Heavy	2	3	19	0		-	11	58	8	0		-	10	5	5	0		-	14	58	1	0		-	**-**	-
Heavy %	2.2%	5.2%	14.6%	0%		-	11.3%	3%	3.7%	0%		-	2.8%	6.9%	4.9%	0%		-	12%	3.4%	1.3%	0%		-	**-**	-
Bicycles	2	3	0	0		-	0	1	0	0		-	2	4	1	0		-	0	1	1	0		-	**-**	-
Bicycle %	2.2%	5.2%	0%	0%		-	0%	0.1%	0%	0%		-	0.6%	5.6%	1%	0%		-	0%	0.1%	1.3%	0%		-	**-**	-

Peak Hour: 04:00 PM - 05:00 PM **Weather:**

Start Time	N Approach FIRST LIN						E Approach GATAFRAXA ST E						S Approach FIRST LIN						W Approach GATAFRAXA ST E						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
16:00:00	5	3	10	0	0	18	5	45	4	0	0	54	9	1	1	0	0	11	3	42	0	0	0	45	128
16:15:00	3	3	7	0	0	13	1	42	6	0	0	49	15	1	0	0	0	16	3	34	1	0	0	38	116
16:30:00	1	0	3	0	0	4	2	41	7	0	0	50	2	2	2	0	0	6	4	52	5	0	0	61	121
16:45:00	4	2	4	0	0	10	3	36	5	0	0	44	7	6	1	0	0	14	7	41	2	0	0	50	118
Grand Total	13	8	24	0	0	45	11	164	22	0	0	197	33	10	4	0	0	47	17	169	8	0	0	194	**483**
Approach%	28.9%	17.8%	53.3%	0%		-	5.6%	83.2%	11.2%	0%		-	70.2%	21.3%	8.5%	0%		-	8.8%	87.1%	4.1%	0%		-	**-**
Totals %	2.7%	1.7%	5%	0%		9.3%	2.3%	34%	4.6%	0%		40.8%	6.8%	2.1%	0.8%	0%		9.7%	3.5%	35%	1.7%	0%		40.2%	**-**
PHF	0.65	0.67	0.6	0		0.63	0.55	0.91	0.79	0		0.91	0.55	0.42	0.5	0		0.73	0.61	0.81	0.4	0		0.8	**-**
Heavy	0	0	2	0		2	2	2	1	0		5	0	0	0	0		0	1	3	0	0		4	**-**
Heavy %	0%	0%	8.3%	0%		4.4%	18.2%	1.2%	4.5%	0%		2.5%	0%	0%	0%	0%		0%	5.9%	1.8%	0%	0%		2.1%	**-**
Lights	13	8	22	0		43	9	162	21	0		192	33	10	4	0		47	16	166	8	0		190	**-**
Lights %	100%	100%	91.7%	0%		95.6%	81.8%	98.8%	95.5%	0%		97.5%	100%	100%	100%	0%		100%	94.1%	98.2%	100%	0%		97.9%	**-**
Single-Unit Trucks	0	0	1	0		1	0	1	1	0		2	0	0	0	0		0	1	0	0	0		1	**-**
Single-Unit Trucks %	0%	0%	4.2%	0%		2.2%	0%	0.6%	4.5%	0%		1%	0%	0%	0%	0%		0%	5.9%	0%	0%	0%		0.5%	**-**
Buses	0	0	1	0		1	2	1	0	0		3	0	0	0	0		0	0	2	0	0		2	**-**
Buses %	0%	0%	4.2%	0%		2.2%	18.2%	0.6%	0%	0%		1.5%	0%	0%	0%	0%		0%	0%	1.2%	0%	0%		1%	**-**
Articulated Trucks	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	1	0	0		1	**-**
Articulated Trucks %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0.6%	0%	0%		0.5%	**-**
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**
Bicycles on Road	1	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	**-**
Bicycles on Road%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**

Spectrum

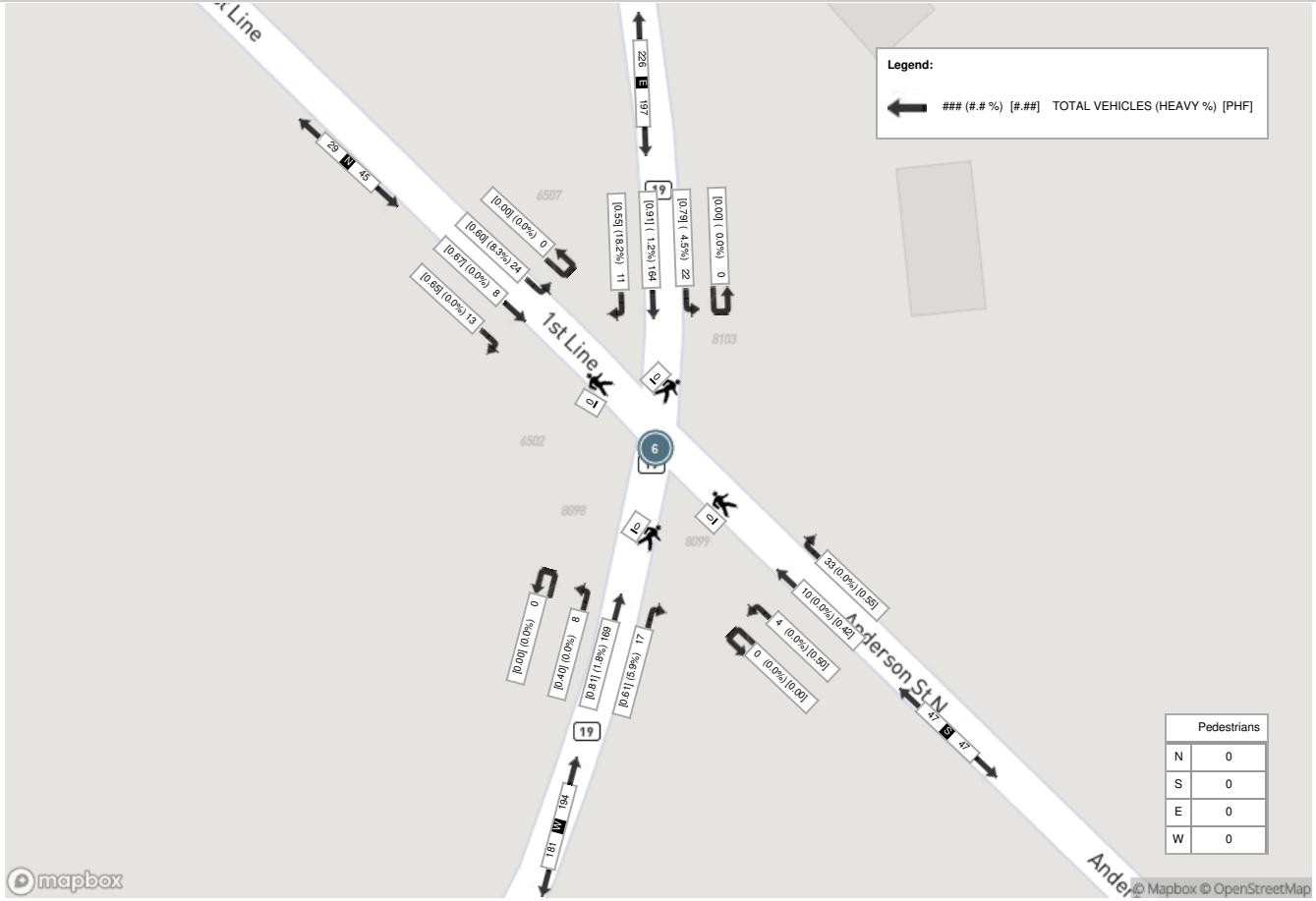
Turning Movement Count
Location Name: GATAFRAXA ST E & FIRST LIN
Date: Wed, Jun 19, 2024 Deployment Lead: David Chu

BA Group
1000 95 ST. CLAIR AVE W
TORONTO ONTARIO, M4V 1N6
CANADA

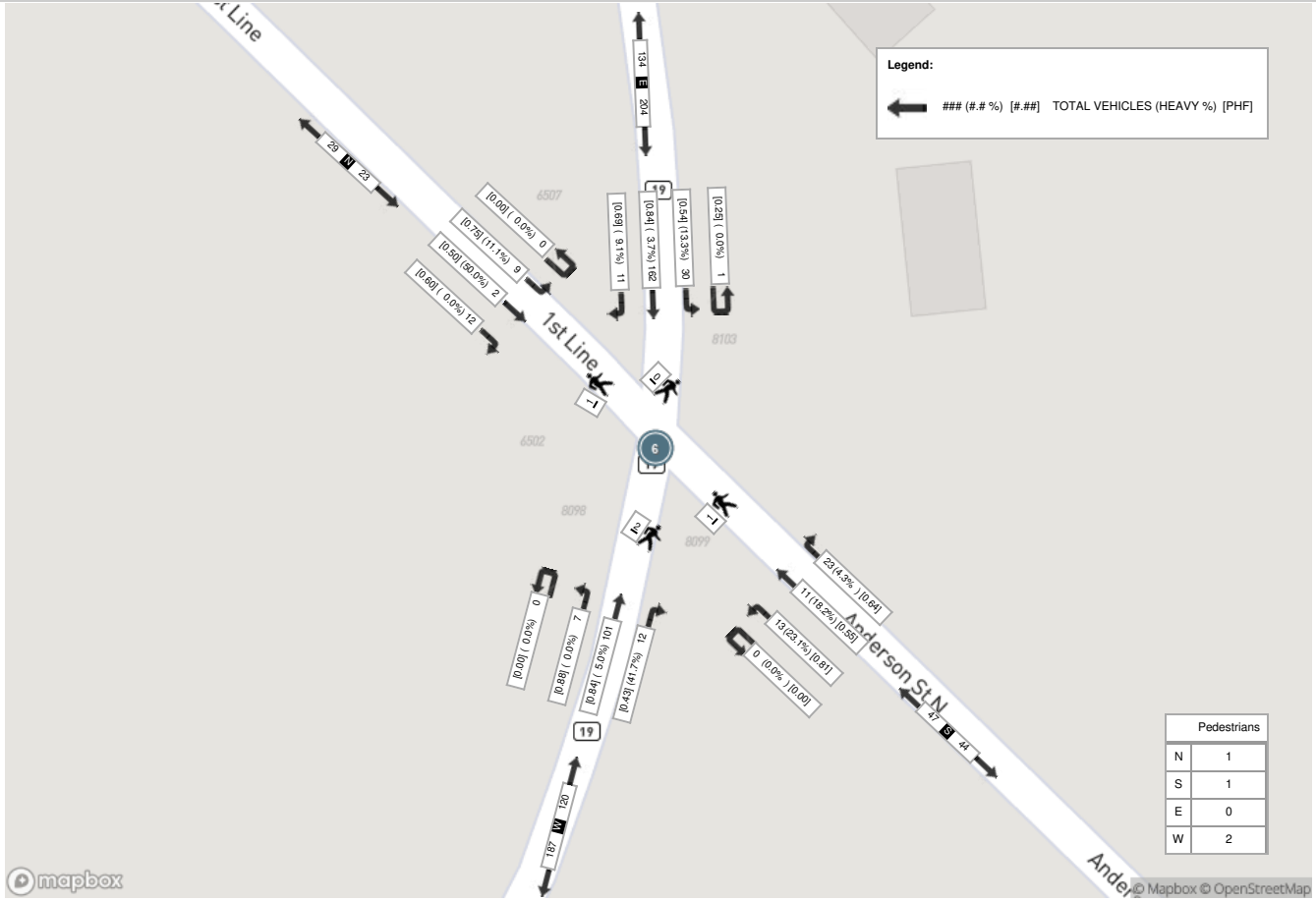
Selected Hour: 08:00 AM - 09:00 AM Weather:

Start Time	N Approach FIRST LIN						E Approach GATAFRAXA ST E						S Approach FIRST LIN						W Approach GATAFRAXA ST E						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
08:00:00	3	1	2	0	0	6	2	48	1	0	0	51	5	5	4	0	0	14	0	30	2	0	0	32	103
08:15:00	5	1	2	0	1	8	1	38	4	0	0	43	5	3	4	0	0	12	1	28	2	0	1	31	94
08:30:00	2	0	3	0	0	5	4	45	11	1	0	61	4	3	3	0	1	10	4	18	2	0	0	24	100
08:45:00	2	0	2	0	0	4	4	31	14	0	0	49	9	0	2	0	0	11	7	25	1	0	1	33	97
Grand Total	12	2	9	0	1	23	11	162	30	1	0	204	23	11	13	0	1	47	12	101	7	0	2	120	**394**
Approach%	52.2%	8.7%	39.1%	0%		-	5.4%	79.4%	14.7%	0.5%		-	48.9%	23.4%	27.7%	0%		-	10%	84.2%	5.8%	0%		-	**-**
Totals %	3%	0.5%	2.3%	0%		5.8%	2.8%	41.1%	7.6%	0.3%		51.8%	5.8%	2.8%	3.3%	0%		11.9%	3%	25.6%	1.8%	0%		30.5%	**-**
PHF	0.6	0.5	0.75	0		0.72	0.69	0.84	0.54	0.25		0.84	0.64	0.55	0.81	0		0.84	0.43	0.84	0.88	0		0.91	**-**
Heavy	0	1	1	0		2	1	6	4	0		11	1	2	3	0		6	5	5	0	0		10	**-**
Heavy %	0%	50%	11.1%	0%		8.7%	9.1%	3.7%	13.3%	0%		5.4%	4.3%	18.2%	23.1%	0%		12.8%	41.7%	5%	0%	0%		8.3%	**-**
Lights	12	1	8	0		21	10	156	26	1		193	22	9	10	0		41	7	96	7	0		110	**-**
Lights %	100%	50%	88.9%	0%		91.3%	90.9%	96.3%	86.7%	100%		94.6%	95.7%	81.8%	76.9%	0%		87.2%	58.3%	95%	100%	0%		91.7%	**-**
Single-Unit Trucks	0	0	1	0		1	0	3	1	0		4	1	1	0	0		2	0	5	0	0		5	**-**
Single-Unit Trucks %	0%	0%	11.1%	0%		4.3%	0%	1.9%	3.3%	0%		2%	4.3%	9.1%	0%	0%		4.3%	0%	5%	0%	0%		4.2%	**-**
Buses	0	1	0	0		1	1	3	3	0		7	0	0	3	0		3	5	0	0	0		5	**-**
Buses %	0%	50%	0%	0%		4.3%	9.1%	1.9%	10%	0%		3.4%	0%	0%	23.1%	0%		6.4%	41.7%	0%	0%	0%		4.2%	**-**
Articulated Trucks	0	0	0	0		0	0	0	0	0		0	0	1	0	0		1	0	0	0	0		0	**-**
Articulated Trucks %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	9.1%	0%	0%		2.1%	0%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	2	-	**-**
Pedestrians%	-	-	-	-	25%		-	-	-	-	0%		-	-	-	-	25%		-	-	-	-	50%		**-**
Bicycles on Road	0	0	0	0	0	-	0	0	0	0	0	-	2	0	0	0	0	-	0	0	0	0	0	-	**-**
Bicycles on Road%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**

Peak Hour: 04:00 PM - 05:00 PM **Weather:**



Selected Hour: 08:00 AM - 09:00 AM Weather:



Spectrum

Turning Movement Count
Location Name: GATAFRAXA ST E & ROBINSON RD
Date: Wed, Jun 19, 2024 Deployment Lead: David Chu

BA Group
1000 95 ST. CLAIR AVE W
TORONTO ONTARIO, M4V 1N6
CANADA

Turning Movement Count (3 . GATAFRAXA ST E & ROBINSON RD)

Start Time	N Approach ROBINSON RD						E Approach GATAFRAXA ST E						S Approach TOM ST						W Approach GATAFRAXA ST E						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total		
00:00:00	0	0	1	0	0	1	0	1	0	0	0	1	0	0	0	0	0	0	0	3	1	0	0	4	6	
00:15:00	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	0	0	1	0	0	0	1	3	
00:30:00	0	0	0	0	0	0	1	2	0	0	0	3	0	0	0	0	0	0	0	1	0	0	0	1	4	
00:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2	2	15
01:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9
01:15:00	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	4	0	0	0	4	5	11
01:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
01:45:00	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	6
02:00:00	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	1	2	8
02:15:00	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	1	2	5
02:30:00	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	1	1	0	0	2	3	8
02:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2	2	9
03:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	2	9
03:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
03:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
03:45:00	1	0	0	0	0	1	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	2	4
04:00:00	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	0	0	1	0	0	0	1	3	5
04:15:00	1	0	1	0	0	2	0	1	0	0	1	1	0	0	0	0	1	0	0	1	0	0	0	1	4	9
04:30:00	4	0	1	0	0	5	0	2	0	0	0	2	0	0	1	0	0	1	0	1	0	0	0	1	9	18
04:45:00	1	0	1	0	0	2	0	1	0	0	0	1	0	0	1	0	0	1	0	1	0	0	0	1	5	21
05:00:00	3	0	0	0	0	3	0	7	0	0	0	7	0	0	0	0	0	0	0	5	0	0	0	5	15	33
05:15:00	2	0	0	0	0	2	0	7	0	0	0	7	0	1	0	0	0	1	1	5	0	0	0	6	16	45
05:30:00	2	1	3	0	0	6	0	18	0	0	0	18	0	0	1	0	0	1	0	4	0	0	0	4	29	65
05:45:00	6	0	0	0	1	6	0	10	0	0	0	10	0	1	0	0	0	1	0	9	0	0	0	9	26	86
06:00:00	3	0	3	0	0	6	0	5	0	0	0	5	0	0	2	0	0	2	0	8	1	0	0	9	22	93
06:15:00	5	0	1	0	0	6	0	15	0	0	0	15	1	1	1	0	0	3	0	16	0	0	1	16	40	117
06:30:00	10	0	1	0	0	11	0	15	0	0	0	15	0	0	1	0	0	1	0	8	2	0	0	10	37	125
06:45:00	8	0	1	0	0	9	0	25	1	0	0	26	1	1	3	0	0	5	3	15	0	0	0	18	58	157
07:00:00	5	0	0	0	0	5	0	21	1	0	0	22	2	0	3	0	0	5	0	15	2	0	0	17	49	184
07:15:00	4	0	2	0	1	6	0	32	1	0	0	33	0	0	0	0	0	0	0	21	0	0	1	21	60	204
07:30:00	8	0	0	0	0	8	0	44	0	0	0	44	2	0	4	0	0	6	0	29	1	0	0	30	88	255
07:45:00	11	2	0	0	0	13	0	32	0	0	1	32	1	2	4	0	1	7	2	35	1	0	0	38	90	287
08:00:00	10	1	8	0	0	19	0	48	1	0	0	49	1	1	4	0	0	6	1	35	2	0	0	38	112	350
08:15:00	11	1	7	0	2	19	1	42	0	0	0	43	4	1	4	0	0	9	2	47	2	0	1	51	122	412
08:30:00	18	4	2	0	0	24	1	56	0	0	1	57	1	0	3	0	0	4	4	27	1	0	0	32	117	441
08:45:00	6	2	0	0	0	8	1	43	1	0	0	45	0	4	6	0	0	10	1	27	6	0	0	34	97	448
09:00:00	6	0	3	0	0	9	3	38	1	0	0	42	2	0	1	0	0	3	1	37	7	0	0	45	99	435
09:15:00	7	0	2	0	0	9	1	36	1	0	0	38	2	1	1	0	0	4	1	22	2	0	0	25	76	389
09:30:00	8	0	0	0	1	8	1	34	0	0	0	35	2	0	2	0	0	4	0	30	1	0	2	31	78	350
09:45:00	5	0	1	0	1	6	1	45	1	0	1	47	1	1	0	0	0	2	1	25	1	0	0	27	82	335
10:00:00	3	1	0	0	1	4	2	48	1	0	0	51	1	0	2	0	0	3	0	18	2	0	1	20	78	314
10:15:00	2	2	1	0	0	5	4	38	0	0	1	42	1	0	3	0	1	4	1	35	1	0	0	37	88	326
10:30:00	4	1	2	0	0	7	2	44	2	1	0	49	1	1	0	0	0	2	1	26	1	0	0	28	86	334
10:45:00	7	0	0	0	1	7	2	48	0	0	1	50	1	0	4	0	0	5	3	40	3	0	0	46	108	360
11:00:00	4	2	2	0	1	8	0	34	0	0	0	34	0	2	1	0	0	3	1	37	1	0	1	39	84	366

11:15:00	4	1	0	0	1	5	2	46	1	0	0	49	2	0	1	0	0	3	1	36	2	0	1	39	96	374
11:30:00	8	1	3	0	1	12	1	31	0	0	0	32	1	1	1	0	0	3	0	36	1	0	1	37	84	372
11:45:00	1	1	0	0	0	2	0	46	1	0	0	47	0	0	2	0	0	2	1	32	4	0	0	37	88	352
12:00:00	5	1	2	0	0	8	1	34	1	0	0	36	0	0	3	0	0	3	1	48	7	0	0	56	103	371
12:15:00	2	0	1	0	0	3	3	44	0	0	0	47	0	1	2	0	0	3	0	37	0	0	0	37	90	365
12:30:00	1	2	2	0	0	5	0	37	1	0	0	38	1	0	2	0	0	3	3	36	3	0	0	42	88	369
12:45:00	0	0	0	0	0	0	1	29	1	0	0	31	1	0	4	0	0	5	2	32	1	0	0	35	71	352
13:00:00	2	0	1	0	0	3	1	30	0	0	0	31	1	2	2	0	0	5	3	40	6	0	0	49	88	337
13:15:00	1	0	0	0	0	1	1	36	0	0	0	37	1	1	1	0	0	3	0	32	3	0	0	35	76	323
13:30:00	5	1	1	0	0	7	1	41	0	0	0	42	0	0	1	0	0	1	0	28	6	1	0	35	85	320
13:45:00	2	1	0	0	0	3	0	32	1	0	0	33	2	0	1	0	0	3	2	26	4	0	0	32	71	320
14:00:00	1	0	0	0	0	1	1	43	0	0	0	44	0	0	0	0	0	0	0	32	3	1	0	36	81	313
14:15:00	8	2	0	0	0	10	0	33	1	0	0	34	3	1	5	0	0	9	3	24	4	0	0	31	84	321
14:30:00	4	0	1	0	1	5	3	37	0	0	0	40	0	0	1	0	0	1	1	29	4	0	0	34	80	316
14:45:00	12	1	0	0	1	13	0	35	3	0	0	38	1	0	2	0	0	3	3	31	6	0	0	40	94	339
15:00:00	11	3	3	0	0	17	1	41	4	0	0	46	2	1	1	0	1	4	3	48	7	0	0	58	125	383
15:15:00	3	2	4	1	0	10	0	44	1	0	14	45	1	5	13	0	4	19	3	41	11	0	0	55	129	428
15:30:00	4	4	6	0	1	14	0	50	2	0	1	52	1	2	4	0	0	7	2	39	10	0	1	51	124	472
15:45:00	10	0	0	0	0	10	3	35	2	0	1	40	6	0	4	0	1	10	2	46	10	0	0	58	118	496
16:00:00	6	2	0	0	0	8	2	47	0	0	0	49	2	2	2	0	0	6	2	48	5	0	0	55	118	489
16:15:00	3	3	2	0	0	8	0	38	3	0	0	41	2	2	0	0	0	4	1	57	6	0	0	64	117	477
16:30:00	4	3	1	0	0	8	3	87	4	0	0	94	2	1	4	0	0	7	4	44	2	0	0	50	159	512
16:45:00	1	0	2	0	1	3	3	47	3	0	0	53	2	2	2	0	0	6	2	40	6	0	1	48	110	504
17:00:00	4	1	0	0	0	5	2	29	0	0	0	31	2	5	7	0	0	14	1	37	6	0	0	44	94	480
17:15:00	7	2	3	0	0	12	3	34	0	0	0	37	0	5	3	0	0	8	3	27	4	0	0	34	91	454
17:30:00	3	0	1	0	0	4	2	34	0	0	0	36	0	1	0	0	0	1	2	31	6	1	0	40	81	376
17:45:00	4	0	4	0	0	8	1	34	0	0	0	35	0	1	3	0	0	4	2	23	9	0	0	34	81	347
18:00:00	5	2	2	0	0	9	1	22	0	1	0	24	1	1	0	0	0	2	1	31	5	0	0	37	72	325
18:15:00	6	0	2	0	0	8	2	20	0	0	0	22	0	0	0	0	0	0	1	14	4	0	0	19	49	283
18:30:00	4	2	2	0	0	8	1	28	0	0	0	29	0	1	1	0	0	2	0	25	8	0	0	33	72	274
18:45:00	1	0	1	0	1	2	1	27	0	0	0	28	0	2	3	0	0	5	1	17	5	0	0	23	58	251
19:00:00	2	0	1	0	2	3	1	32	0	0	0	33	0	0	6	0	0	6	2	14	2	0	0	18	60	239
19:15:00	4	0	0	0	0	4	2	21	0	0	0	23	0	0	1	0	0	1	3	16	6	0	0	25	53	243
19:30:00	2	0	0	0	0	2	2	17	0	0	0	19	0	0	1	0	0	1	2	18	12	0	0	32	54	225
19:45:00	1	0	0	0	1	1	1	12	0	0	0	13	1	2	2	0	0	5	1	20	5	0	0	26	45	212
20:00:00	1	3	0	0	1	4	0	15	1	0	0	16	0	1	0	0	0	1	1	14	2	0	1	17	38	190
20:15:00	1	0	2	0	0	3	0	20	0	0	0	20	1	0	2	0	0	3	1	20	2	0	0	23	49	186
20:30:00	2	0	0	0	0	2	0	9	0	0	1	9	0	0	2	0	1	2	2	8	1	0	1	11	24	156
20:45:00	1	0	1	0	0	2	0	7	0	0	0	7	0	0	1	0	0	1	1	7	2	0	0	10	20	131
21:00:00	0	0	0	0	0	0	0	3	0	0	0	3	0	0	0	0	0	0	0	15	1	0	0	16	19	112
21:15:00	2	0	1	0	0	3	1	4	0	0	0	5	0	0	0	0	0	0	0	7	2	0	0	9	17	80
21:30:00	2	0	0	0	0	2	2	7	0	0	0	9	0	0	1	0	0	1	0	8	1	0	0	9	21	77
21:45:00	0	0	2	0	0	2	0	14	0	0	0	14	0	0	0	0	0	0	0	4	0	1	0	5	21	78
22:00:00	0	0	2	0	0	2	1	8	0	0	1	9	0	0	1	0	0	1	0	6	4	0	0	10	22	81
22:15:00	0	1	1	0	0	2	0	1	0	0	0	1	0	0	0	0	0	0	1	14	1	0	0	16	19	83
22:30:00	1	0	0	0	0	1	0	3	0	0	0	3	0	0	1	0	0	1	0	5	1	0	0	6	11	73
22:45:00	1	0	0	0	0	1	1	4	0	0	0	5	0	0	0	0	0	0	0	5	1	0	0	6	12	64
23:00:00	1	0	0	0	0	1	0	1	0	0	0	1	0	0	0	0	0	0	0	1	2	0	0	3	5	47

23:15:00	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	0	0	4	4	0	0	8	10	38
23:30:00	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	1	1	0	0	2	3	30
23:45:00	0	0	0	0	1	0	0	1	0	0	0	1	0	0	0	0	0	0	0	2	1	0	1	3	4	22
Grand Total	318	56	97	1	21	472	71	2155	41	2	24	2269	60	57	145	0	10	262	87	1851	251	4	14	2193	**5196**	-
Approach%	67.4%	11.9%	20.6%	0.2%		-	3.1%	95%	1.8%	0.1%		-	22.9%	21.8%	55.3%	0%		-	4%	84.4%	11.4%	0.2%		-	-	-
Totals %	6.1%	1.1%	1.9%	0%		9.1%	1.4%	41.5%	0.8%	0%		43.7%	1.2%	1.1%	2.8%	0%		5%	1.7%	35.6%	4.8%	0.1%		42.2%	-	-
Heavy	4	3	1	0		-	3	76	1	1		-	2	0	8	0		-	4	81	3	0		-	-	-
Heavy %	1.3%	5.4%	1%	0%		-	4.2%	3.5%	2.4%	50%		-	3.3%	0%	5.5%	0%		-	4.6%	4.4%	1.2%	0%		-	-	-
Bicycles	0	2	0	0		-	0	12	1	0		-	0	1	1	0		-	1	7	1	0		-	-	-
Bicycle %	0%	3.6%	0%	0%		-	0%	0.6%	2.4%	0%		-	0%	1.8%	0.7%	0%		-	1.1%	0.4%	0.4%	0%		-	-	-

Peak Hour: 03:45 PM - 04:45 PM Weather:

Start Time	N Approach ROBINSON RD						E Approach GATAFRAXA ST E						S Approach TOM ST						W Approach GATAFRAXA ST E						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
15:45:00	10	0	0	0	0	10	3	35	2	0	1	40	6	0	4	0	1	10	2	46	10	0	0	58	118
16:00:00	6	2	0	0	0	8	2	47	0	0	0	49	2	2	2	0	0	6	2	48	5	0	0	55	118
16:15:00	3	3	2	0	0	8	0	38	3	0	0	41	2	2	0	0	0	4	1	57	6	0	0	64	117
16:30:00	4	3	1	0	0	8	3	87	4	0	0	94	2	1	4	0	0	7	4	44	2	0	0	50	159
Grand Total	23	8	3	0	0	34	8	207	9	0	1	224	12	5	10	0	1	27	9	195	23	0	0	227	**512**
Approach%	67.6%	23.5%	8.8%	0%		-	3.6%	92.4%	4%	0%		-	44.4%	18.5%	37%	0%		-	4%	85.9%	10.1%	0%		-	**-**
Totals %	4.5%	1.6%	0.6%	0%		6.6%	1.6%	40.4%	1.8%	0%		43.8%	2.3%	1%	2%	0%		5.3%	1.8%	38.1%	4.5%	0%		44.3%	**-**
PHF	0.58	0.67	0.38	0		0.85	0.67	0.59	0.56	0		0.6	0.5	0.63	0.63	0		0.68	0.56	0.86	0.58	0		0.89	**-**
Heavy	0	1	0	0		1	0	8	0	0		8	2	0	1	0		3	0	8	0	0		8	**-**
Heavy %	0%	12.5%	0%	0%		2.9%	0%	3.9%	0%	0%		3.6%	16.7%	0%	10%	0%		11.1%	0%	4.1%	0%	0%		3.5%	**-**
Lights	23	7	3	0		33	8	199	9	0		216	10	5	9	0		24	9	187	23	0		219	**-**
Lights %	100%	87.5%	100%	0%		97.1%	100%	96.1%	100%	0%		96.4%	83.3%	100%	90%	0%		88.9%	100%	95.9%	100%	0%		96.5%	**-**
Single-Unit Trucks	0	0	0	0		0	0	3	0	0		3	2	0	1	0		3	0	1	0	0		1	**-**
Single-Unit Trucks %	0%	0%	0%	0%		0%	0%	1.4%	0%	0%		1.3%	16.7%	0%	10%	0%		11.1%	0%	0.5%	0%	0%		0.4%	**-**
Buses	0	1	0	0		1	0	5	0	0		5	0	0	0	0		0	0	6	0	0		6	**-**
Buses %	0%	12.5%	0%	0%		2.9%	0%	2.4%	0%	0%		2.2%	0%	0%	0%	0%		0%	0%	3.1%	0%	0%		2.6%	**-**
Articulated Trucks	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	1	0	0		1	**-**
Articulated Trucks %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0.5%	0%	0%		0.4%	**-**
Pedestrians	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	-	0%		-	-	-	-	50%		-	-	-	-	50%		-	-	-	-	0%		**-**
Bicycles on Road	0	0	0	0	0	-	0	9	0	0	0	-	0	0	1	0	0	-	0	1	0	0	0	-	**-**
Bicycles on Road%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Bicycles on Crosswalk%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**

Spectrum

Turning Movement Count
Location Name: GATAFRAXA ST E & ROBINSON RD
Date: Wed, Jun 19, 2024 Deployment Lead: David Chu

BA Group
1000 95 ST. CLAIR AVE W
TORONTO ONTARIO, M4V 1N6
CANADA

Selected Hour: 08:00 AM - 09:00 AM **Weather:**

Start Time	N Approach ROBINSON RD						E Approach GATAFRAXA ST E						S Approach TOM ST						W Approach GATAFRAXA ST E						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
08:00:00	10	1	8	0	0	19	0	48	1	0	0	49	1	1	4	0	0	6	1	35	2	0	0	38	112
08:15:00	11	1	7	0	2	19	1	42	0	0	0	43	4	1	4	0	0	9	2	47	2	0	1	51	122
08:30:00	18	4	2	0	0	24	1	56	0	0	1	57	1	0	3	0	0	4	4	27	1	0	0	32	117
08:45:00	6	2	0	0	0	8	1	43	1	0	0	45	0	4	6	0	0	10	1	27	6	0	0	34	97
Grand Total	45	8	17	0	2	70	3	189	2	0	1	194	6	6	17	0	0	29	8	136	11	0	1	155	**448**
Approach%	64.3%	11.4%	24.3%	0%		-	1.5%	97.4%	1%	0%		-	20.7%	20.7%	58.6%	0%		-	5.2%	87.7%	7.1%	0%		-	**-**
Totals %	10%	1.8%	3.8%	0%		15.6%	0.7%	42.2%	0.4%	0%		43.3%	1.3%	1.3%	3.8%	0%		6.5%	1.8%	30.4%	2.5%	0%		34.6%	**-**
PHF	0.63	0.5	0.53	0		0.73	0.75	0.84	0.5	0		0.85	0.38	0.38	0.71	0		0.73	0.5	0.72	0.46	0		0.76	**-**
Heavy	0	0	0	0		0	0	15	0	0		15	0	0	2	0		2	2	16	0	0		18	**-**
Heavy %	0%	0%	0%	0%		0%	0%	7.9%	0%	0%		7.7%	0%	0%	11.8%	0%		6.9%	25%	11.8%	0%	0%		11.6%	**-**
Lights	45	8	17	0		70	3	174	2	0		179	6	6	15	0		27	6	120	11	0		137	**-**
Lights %	100%	100%	100%	0%		100%	100%	92.1%	100%	0%		92.3%	100%	100%	88.2%	0%		93.1%	75%	88.2%	100%	0%		88.4%	**-**
Single-Unit Trucks	0	0	0	0		0	0	3	0	0		3	0	0	0	0		0	2	5	0	0		7	**-**
Single-Unit Trucks %	0%	0%	0%	0%		0%	0%	1.6%	0%	0%		1.5%	0%	0%	0%	0%		0%	25%	3.7%	0%	0%		4.5%	**-**
Buses	0	0	0	0		0	0	12	0	0		12	0	0	2	0		2	0	11	0	0		11	**-**
Buses %	0%	0%	0%	0%		0%	0%	6.3%	0%	0%		6.2%	0%	0%	11.8%	0%		6.9%	0%	8.1%	0%	0%		7.1%	**-**
Articulated Trucks	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	**-**
Articulated Trucks %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	-	2	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	1	-	**-**
Pedestrians%	-	-	-	-	50%		-	-	-	-	25%		-	-	-	-	0%		-	-	-	-	25%		**-**
Bicycles on Road	0	0	0	0	0	-	0	1	0	0	0	-	0	1	0	0	0	-	1	4	0	0	0	-	**-**
Bicycles on Road%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Bicycles on Crosswalk%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**

BA Group
1000 95 ST. CLAIR AVE W
TORONTO ONTARIO, M4V 1N6
CANADA

Peak Hour: 03:45 PM - 04:45 PM **Weather:**

BA Group
1000 95 ST. CLAIR AVE W
TORONTO ONTARIO, M4V 1N6
CANADA

Selected Hour: 08:00 AM - 09:00 AM **Weather:**

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

Spectrum

Turning Movement Count
Location Name: GARTSHORE ST & MIDDLETON AVE
Date: Wed, Jun 19, 2024 Deployment Lead: David Chu

BA Group
1000 95 ST. CLAIR AVE W
TORONTO ONTARIO, M4V 1N6
CANADA

Turning Movement Count (1 . GARTSHORE ST & MIDDLETON AVE)

Start Time	N Approach GARTSHORE ST						E Approach MIDDLETON AVE						S Approach GARTSHORE ST						W Approach FORFAR ST E						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total		
00:00:00	0	6	2	0	0	8	0	0	0	0	0	0	1	4	1	0	0	6	0	0	0	0	0	0	14	
00:15:00	0	2	0	0	0	2	0	0	0	0	0	0	0	8	1	0	0	9	0	0	0	0	0	0	11	
00:30:00	0	4	0	0	0	4	1	0	0	0	0	1	0	3	1	0	0	4	2	0	0	0	0	2	11	
00:45:00	0	2	0	0	0	2	0	0	0	0	0	0	1	0	0	0	0	1	1	0	0	0	0	1	4	40
01:00:00	0	4	0	0	0	4	0	0	0	0	0	0	1	3	1	0	0	5	0	0	0	0	1	0	9	35
01:15:00	0	1	1	0	0	2	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	0	4	28
01:30:00	0	1	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	2	19
01:45:00	0	1	0	0	0	1	0	0	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	0	3	18
02:00:00	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	10
02:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	1	7
02:30:00	0	4	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	9
02:45:00	0	1	0	0	0	1	0	0	0	0	0	0	0	2	1	0	0	3	0	0	0	0	0	0	4	10
03:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	0	2	11
03:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	0	2	12
03:30:00	0	3	0	0	0	3	0	0	0	0	0	0	0	2	1	0	0	3	0	0	0	0	0	0	6	14
03:45:00	0	1	0	0	0	1	0	0	1	0	0	1	0	2	1	0	0	3	0	0	0	0	0	0	5	15
04:00:00	0	5	0	0	0	5	0	0	0	0	0	0	0	3	0	0	0	3	0	0	0	0	0	0	8	21
04:15:00	0	1	1	0	0	2	0	0	0	0	0	0	0	3	0	0	0	3	0	0	0	0	1	0	5	24
04:30:00	0	11	0	0	0	11	0	0	1	0	0	1	0	2	1	0	0	3	0	0	0	0	0	0	15	33
04:45:00	0	10	0	0	0	10	0	1	3	0	0	4	0	8	0	0	0	8	1	0	1	0	0	2	24	52
05:00:00	0	6	0	0	0	6	1	2	1	0	0	4	0	7	3	0	0	10	3	1	0	0	0	4	24	68
05:15:00	0	19	0	0	0	19	1	0	3	0	0	4	1	13	4	0	0	18	6	1	1	0	0	8	49	112
05:30:00	1	20	1	0	0	22	0	0	2	0	0	2	1	24	3	0	0	28	4	0	0	0	0	4	56	153
05:45:00	1	16	0	0	0	17	1	1	2	0	0	4	0	27	1	0	0	28	1	0	2	0	0	3	52	181
06:00:00	0	22	0	0	0	22	3	2	2	0	0	7	0	28	2	0	0	30	3	1	1	0	0	5	64	221
06:15:00	2	35	0	0	0	37	4	1	2	0	0	7	0	35	4	0	0	39	9	0	2	0	0	11	94	266
06:30:00	0	41	1	0	0	42	0	2	3	0	0	5	0	45	4	0	0	49	9	0	1	0	1	10	106	316
06:45:00	1	38	0	0	0	39	0	0	2	0	1	2	0	67	3	0	0	70	7	0	4	0	2	11	122	386
07:00:00	0	48	2	0	0	50	1	1	4	0	2	6	1	42	11	0	0	54	10	0	1	0	3	11	121	443
07:15:00	1	46	2	0	0	49	3	1	7	0	0	11	0	68	8	0	0	76	5	0	1	0	1	6	142	491
07:30:00	1	76	2	0	1	79	2	4	5	0	1	11	3	69	9	0	0	81	11	0	6	0	4	17	188	573
07:45:00	3	62	2	0	0	67	8	2	4	0	0	14	4	91	12	0	1	107	12	2	4	0	1	18	206	657
08:00:00	4	80	4	0	1	88	5	2	3	0	1	10	4	75	15	0	0	94	18	2	1	0	1	21	213	749
08:15:00	3	68	5	0	0	76	4	2	7	0	0	13	1	50	9	0	5	60	16	5	1	0	1	22	171	778
08:30:00	1	90	4	0	0	95	6	12	5	0	1	23	2	55	20	0	0	77	28	7	1	0	0	36	231	821
08:45:00	1	66	3	0	0	70	2	4	1	0	1	7	3	96	16	0	2	115	14	9	2	0	1	25	217	832
09:00:00	2	81	2	0	1	85	1	1	3	0	0	5	2	56	14	0	2	72	17	3	2	0	1	22	184	803
09:15:00	1	44	0	0	1	45	1	0	4	0	0	5	3	65	5	0	1	73	8	2	6	0	0	16	139	771
09:30:00	4	53	0	0	1	57	1	1	3	0	0	5	2	62	12	0	0	76	11	3	1	0	1	15	153	693
09:45:00	1	51	1	0	0	53	6	0	3	0	1	9	0	54	13	0	0	67	2	1	2	0	0	5	134	610
10:00:00	2	44	1	0	0	47	1	0	1	0	0	2	5	62	14	0	0	81	11	1	2	0	0	14	144	570
10:15:00	1	50	1	0	0	52	0	1	1	0	0	2	3	53	11	0	0	67	7	1	2	0	0	10	131	562
10:30:00	0	40	1	0	0	41	4	0	2	0	1	6	2	56	13	0	0	71	16	4	2	0	0	22	140	549
10:45:00	4	55	2	0	0	61	5	3	2	0	0	10	0	61	9	0	0	70	14	2	6	0	0	22	163	578
11:00:00	0	54	1	0	2	55	2	1	0	0	0	3	3	51	11	0	0	65	8	0	1	0	0	9	132	566

11:15:00	1	56	4	0	0	61	1	1	1	0	1	3	2	69	10	0	0	81	17	3	1	0	1	21	166	601
11:30:00	1	53	4	0	0	58	3	1	3	0	0	7	1	59	15	0	0	75	14	3	1	0	0	18	158	619
11:45:00	5	72	5	0	0	82	2	1	0	0	0	3	0	77	10	0	0	87	15	1	3	0	0	19	191	647
12:00:00	3	76	5	0	0	84	2	0	1	0	0	3	3	67	11	0	0	81	12	1	2	0	0	15	183	698
12:15:00	1	61	2	0	0	64	5	2	1	0	0	8	7	73	13	0	0	93	13	2	6	0	0	21	186	718
12:30:00	5	72	2	0	0	79	0	3	5	0	0	8	9	75	14	0	0	98	7	4	0	0	1	11	196	756
12:45:00	2	62	2	0	1	66	3	0	3	0	0	6	3	71	7	0	2	81	17	1	1	0	1	19	172	737
13:00:00	5	58	1	0	0	64	1	2	4	0	0	7	1	56	9	0	0	66	13	1	2	0	0	16	153	707
13:15:00	3	52	3	0	0	58	1	6	0	0	0	7	2	64	8	0	0	74	12	1	1	0	0	14	153	674
13:30:00	2	58	1	0	0	61	1	0	4	0	0	5	0	69	8	0	0	77	12	1	0	0	0	13	156	634
13:45:00	1	51	0	0	0	52	2	1	2	0	0	5	1	61	17	0	1	79	17	4	2	0	0	23	159	621
14:00:00	1	65	1	0	0	67	2	1	3	0	0	6	5	70	7	0	0	82	10	1	1	0	0	12	167	635
14:15:00	2	65	0	0	0	67	1	0	3	0	0	4	5	63	15	0	0	83	8	1	2	0	0	11	165	647
14:30:00	3	68	1	0	0	72	3	2	4	0	0	9	2	70	17	0	0	89	15	5	1	0	1	21	191	682
14:45:00	2	69	0	0	0	71	4	3	1	0	0	8	4	65	21	0	0	90	11	2	3	0	0	16	185	708
15:00:00	4	103	4	0	0	111	4	5	4	0	0	13	5	73	15	0	1	93	16	3	3	0	2	22	239	780
15:15:00	1	53	6	0	0	60	4	2	4	0	0	10	5	85	33	0	8	123	25	10	2	0	3	37	230	845
15:30:00	7	75	9	0	0	91	3	2	2	0	2	7	8	85	22	0	2	115	21	3	2	0	2	26	239	893
15:45:00	2	65	5	0	1	72	7	4	4	0	0	15	13	91	17	0	0	121	12	2	2	0	0	16	224	932
16:00:00	6	104	6	0	0	116	0	3	1	0	1	4	6	80	23	0	0	109	16	2	1	0	0	19	248	941
16:15:00	3	83	5	0	0	91	3	2	3	0	0	8	8	91	22	0	0	121	13	2	0	0	0	15	235	946
16:30:00	4	85	3	0	0	92	1	3	2	0	0	6	5	107	21	0	0	133	17	3	1	0	0	21	252	959
16:45:00	1	71	4	0	1	76	4	2	5	0	0	11	6	92	34	0	0	132	11	5	0	0	1	16	235	970
17:00:00	1	97	4	0	1	102	3	4	1	0	0	8	10	80	24	0	0	114	11	0	1	0	3	12	236	958
17:15:00	0	93	5	0	0	98	5	4	1	0	0	10	9	92	29	0	3	130	9	4	1	0	0	14	252	975
17:30:00	2	70	5	0	0	77	0	5	3	0	0	8	8	65	17	0	0	90	9	4	0	0	1	13	188	911
17:45:00	1	34	5	0	0	40	2	2	3	0	1	7	4	68	18	0	0	90	17	0	1	0	0	18	155	831
18:00:00	2	44	4	0	0	50	5	3	2	0	0	10	6	70	11	0	3	87	9	6	0	0	0	15	162	757
18:15:00	1	30	3	0	0	34	1	1	3	0	0	5	7	48	17	0	0	72	7	3	0	0	0	10	121	626
18:30:00	0	39	3	0	0	42	5	4	1	0	0	10	2	47	7	0	0	56	8	1	1	0	0	10	118	556
18:45:00	4	47	3	0	0	54	0	1	2	0	0	3	2	68	15	0	0	85	10	1	1	0	0	12	154	555
19:00:00	2	38	0	0	1	40	2	1	3	0	0	6	5	57	11	0	1	73	2	2	1	0	1	5	124	517
19:15:00	0	24	2	0	0	26	4	3	0	0	0	7	6	56	17	0	0	79	8	2	1	0	2	11	123	519
19:30:00	2	40	4	0	2	46	1	5	4	0	0	10	7	70	8	0	1	85	6	6	1	0	3	13	154	555
19:45:00	0	37	1	0	2	38	1	3	1	0	2	5	3	38	9	0	0	50	5	3	0	0	0	8	101	502
20:00:00	3	39	2	0	0	44	0	1	2	0	0	3	2	48	13	0	2	63	6	2	1	0	0	9	119	497
20:15:00	0	35	2	0	0	37	0	0	0	0	0	0	5	43	14	0	0	62	6	1	1	0	0	8	107	481
20:30:00	0	16	1	0	0	17	1	1	3	0	0	5	1	33	6	0	0	40	6	2	2	0	0	10	72	399
20:45:00	0	16	0	0	0	16	1	1	1	0	0	3	1	28	10	0	2	39	3	2	1	0	0	6	64	362
21:00:00	1	27	5	0	0	33	0	2	2	0	0	4	3	28	5	0	0	36	4	1	0	0	0	5	78	321
21:15:00	0	14	1	0	0	15	1	0	3	0	0	4	4	29	4	0	0	37	3	2	0	0	1	5	61	275
21:30:00	1	15	1	0	0	17	2	0	0	0	0	2	1	20	5	0	0	26	2	2	0	0	0	4	49	252
21:45:00	0	10	1	0	0	11	2	2	1	0	0	5	2	12	5	0	0	19	4	1	0	0	0	5	40	228
22:00:00	1	14	1	0	0	16	0	1	0	0	0	1	3	15	3	0	0	21	0	1	0	0	0	1	39	189
22:15:00	1	12	3	0	0	16	0	2	1	0	0	3	4	14	0	0	1	18	2	3	0	0	0	5	42	170
22:30:00	0	9	0	0	0	9	0	0	1	0	0	1	1	12	4	0	0	17	1	0	0	0	1	1	28	149
22:45:00	1	6	0	0	0	7	1	0	0	0	0	1	1	14	2	0	0	17	0	0	1	0	0	1	26	135
23:00:00	0	5	0	0	0	5	0	0	1	0	0	1	2	7	1	0	0	10	1	0	0	0	0	1	17	113

23:15:00	1	7	0	0	0	8	0	0	0	0	0	0	0	10	1	0	0	11	1	0	0	0	0	1	20	91
23:30:00	0	5	0	0	0	5	0	1	0	0	0	1	0	10	2	0	0	12	0	0	0	0	1	0	18	81
23:45:00	1	3	0	0	1	4	0	1	0	0	0	1	1	4	1	0	0	6	0	0	0	0	0	0	11	66
Grand Total	124	3666	168	0	17	3958	157	138	176	0	16	471	244	4160	863	0	38	5267	718	155	104	0	44	977	**10673**	-
Approach%	3.1%	92.6%	4.2%	0%		-	33.3%	29.3%	37.4%	0%		-	4.6%	79%	16.4%	0%		-	73.5%	15.9%	10.6%	0%		-	**-**	-
Totals %	1.2%	34.3%	1.6%	0%		37.1%	1.5%	1.3%	1.6%	0%		4.4%	2.3%	39%	8.1%	0%		49.3%	6.7%	1.5%	1%	0%		9.2%	**-**	-
Heavy	4	280	2	0		-	5	2	2	0		-	6	263	13	0		-	12	3	1	0		-	**-**	-
Heavy %	3.2%	7.6%	1.2%	0%		-	3.2%	1.4%	1.1%	0%		-	2.5%	6.3%	1.5%	0%		-	1.7%	1.9%	1%	0%		-	**-**	-
Bicycles	3	3	1	0		-	0	7	0	0		-	0	7	0	0		-	0	3	2	0		-	**-**	-
Bicycle %	2.4%	0.1%	0.6%	0%		-	0%	5.1%	0%	0%		-	0%	0.2%	0%	0%		-	0%	1.9%	1.9%	0%		-	**-**	-

Spectrum

Turning Movement Count
Location Name: GARTSHORE ST & MIDDLETON AVE
Date: Wed, Jun 19, 2024 Deployment Lead: David Chu

BA Group
1000 95 ST. CLAIR AVE W
TORONTO ONTARIO, M4V 1N6
CANADA

Peak Hour: 04:30 PM - 05:30 PM Weather:

Start Time	N Approach GARTSHORE ST						E Approach MIDDLETON AVE						S Approach GARTSHORE ST						W Approach FORFAR ST E						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
16:30:00	4	85	3	0	0	92	1	3	2	0	0	6	5	107	21	0	0	133	17	3	1	0	0	21	252
16:45:00	1	71	4	0	1	76	4	2	5	0	0	11	6	92	34	0	0	132	11	5	0	0	1	16	235
17:00:00	1	97	4	0	1	102	3	4	1	0	0	8	10	80	24	0	0	114	11	0	1	0	3	12	236
17:15:00	0	93	5	0	0	98	5	4	1	0	0	10	9	92	29	0	3	130	9	4	1	0	0	14	252
Grand Total	6	346	16	0	2	368	13	13	9	0	0	35	30	371	108	0	3	509	48	12	3	0	4	63	**975**
Approach%	1.6%	94%	4.3%	0%		-	37.1%	37.1%	25.7%	0%		-	5.9%	72.9%	21.2%	0%		-	76.2%	19%	4.8%	0%		-	**-**
Totals %	0.6%	35.5%	1.6%	0%		37.7%	1.3%	1.3%	0.9%	0%		3.6%	3.1%	38.1%	11.1%	0%		52.2%	4.9%	1.2%	0.3%	0%		6.5%	**-**
PHF	0.38	0.89	0.8	0		0.9	0.65	0.81	0.45	0		0.8	0.75	0.87	0.79	0		0.96	0.71	0.6	0.75	0		0.75	**-**
Heavy	0	10	0	0		10	0	0	0	0		0	0	23	0	0		23	0	0	0	0		0	**-**
Heavy %	0%	2.9%	0%	0%		2.7%	0%	0%	0%	0%		0%	0%	6.2%	0%	0%		4.5%	0%	0%	0%	0%		0%	**-**
Lights	6	336	16	0		358	13	13	9	0		35	30	348	108	0		486	48	12	3	0		63	**-**
Lights %	100%	97.1%	100%	0%		97.3%	100%	100%	100%	0%		100%	100%	93.8%	100%	0%		95.5%	100%	100%	100%	0%		100%	**-**
Single-Unit Trucks	0	3	0	0		3	0	0	0	0		0	0	6	0	0		6	0	0	0	0		0	**-**
Single-Unit Trucks %	0%	0.9%	0%	0%		0.8%	0%	0%	0%	0%		0%	0%	1.6%	0%	0%		1.2%	0%	0%	0%	0%		0%	**-**
Buses	0	2	0	0		2	0	0	0	0		0	0	9	0	0		9	0	0	0	0		0	**-**
Buses %	0%	0.6%	0%	0%		0.5%	0%	0%	0%	0%		0%	0%	2.4%	0%	0%		1.8%	0%	0%	0%	0%		0%	**-**
Articulated Trucks	0	5	0	0		5	0	0	0	0		0	0	8	0	0		8	0	0	0	0		0	**-**
Articulated Trucks %	0%	1.4%	0%	0%		1.4%	0%	0%	0%	0%		0%	0%	2.2%	0%	0%		1.6%	0%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	1	-	**-**
Pedestrians%	-	-	-	-	11.1%		-	-	-	-	0%		-	-	-	-	11.1%		-	-	-	-	11.1%		**-**
Bicycles on Road	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	**-**
Bicycles on Road%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	3	-	**-**
Bicycles on Crosswalk%	-	-	-	-	11.1%		-	-	-	-	0%		-	-	-	-	22.2%		-	-	-	-	33.3%		**-**

Spectrum

Turning Movement Count
Location Name: GARTSHORE ST & MIDDLETON AVE
Date: Wed, Jun 19, 2024 Deployment Lead: David Chu

BA Group
1000 95 ST. CLAIR AVE W
TORONTO ONTARIO, M4V 1N6
CANADA

Selected Hour: 08:00 AM - 09:00 AM **Weather:**

Start Time	N Approach GARTSHORE ST						E Approach MIDDLETON AVE						S Approach GARTSHORE ST						W Approach FORFAR ST E						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
08:00:00	4	80	4	0	1	88	5	2	3	0	1	10	4	75	15	0	0	94	18	2	1	0	1	21	213
08:15:00	3	68	5	0	0	76	4	2	7	0	0	13	1	50	9	0	5	60	16	5	1	0	1	22	171
08:30:00	1	90	4	0	0	95	6	12	5	0	1	23	2	55	20	0	0	77	28	7	1	0	0	36	231
08:45:00	1	66	3	0	0	70	2	4	1	0	1	7	3	96	16	0	2	115	14	9	2	0	1	25	217
Grand Total	9	304	16	0	1	329	17	20	16	0	3	53	10	276	60	0	7	346	76	23	5	0	3	104	**832**
Approach%	2.7%	92.4%	4.9%	0%		-	32.1%	37.7%	30.2%	0%		-	2.9%	79.8%	17.3%	0%		-	73.1%	22.1%	4.8%	0%		-	**-**
Totals %	1.1%	36.5%	1.9%	0%		39.5%	2%	2.4%	1.9%	0%		6.4%	1.2%	33.2%	7.2%	0%		41.6%	9.1%	2.8%	0.6%	0%		12.5%	**-**
PHF	0.56	0.84	0.8	0		0.87	0.71	0.42	0.57	0		0.58	0.63	0.72	0.75	0		0.75	0.68	0.64	0.63	0		0.72	**-**
Heavy	0	38	1	0		39	0	1	1	0		2	0	37	3	0		40	1	0	0	0		1	**-**
Heavy %	0%	12.5%	6.3%	0%		11.9%	0%	5%	6.3%	0%		3.8%	0%	13.4%	5%	0%		11.6%	1.3%	0%	0%	0%		1%	**-**
Lights	9	266	15	0		290	17	19	15	0		51	10	239	57	0		306	75	23	5	0		103	**-**
Lights %	100%	87.5%	93.8%	0%		88.1%	100%	95%	93.8%	0%		96.2%	100%	86.6%	95%	0%		88.4%	98.7%	100%	100%	0%		99%	**-**
Single-Unit Trucks	0	14	0	0		14	0	0	0	0		0	0	15	1	0		16	0	0	0	0		0	**-**
Single-Unit Trucks %	0%	4.6%	0%	0%		4.3%	0%	0%	0%	0%		0%	0%	5.4%	1.7%	0%		4.6%	0%	0%	0%	0%		0%	**-**
Buses	0	17	1	0		18	0	1	0	0		1	0	15	1	0		16	1	0	0	0		1	**-**
Buses %	0%	5.6%	6.3%	0%		5.5%	0%	5%	0%	0%		1.9%	0%	5.4%	1.7%	0%		4.6%	1.3%	0%	0%	0%		1%	**-**
Articulated Trucks	0	7	0	0		7	0	0	1	0		1	0	7	1	0		8	0	0	0	0		0	**-**
Articulated Trucks %	0%	2.3%	0%	0%		2.1%	0%	0%	6.3%	0%		1.9%	0%	2.5%	1.7%	0%		2.3%	0%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	-	1	-	-	-	-	-	3	-	-	-	-	-	7	-	-	-	-	-	3	-	**-**
Pedestrians%	-	-	-	-	7.1%		-	-	-	-	21.4%		-	-	-	-	50%		-	-	-	-	21.4%		**-**
Bicycles on Road	0	1	0	0	0	-	0	0	0	0	0	-	0	1	0	0	0	-	0	1	0	0	0	-	**-**
Bicycles on Road%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Bicycles on Crosswalk%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**

Peak Hour: 04:30 PM - 05:30 PM **Weather:**

Spectrum

Turning Movement Count
Location Name: GARTSHORE ST & MIDDLETON AVE
Date: Wed, Jun 19, 2024 Deployment Lead: David Chu

BA Group
1000 95 ST. CLAIR AVE W
TORONTO ONTARIO, M4V 1N6
CANADA

Selected Hour: 08:00 AM - 09:00 AM **Weather:**

BA Group
1000 95 ST. CLAIR AVE W
TORONTO ONTARIO, M4V 1N6
CANADA

Turning Movement Count (1 . GARTSHORE ST & GORDON ST)

Start Time	N Approach GARTSHORE ST					S Approach GARTSHORE ST					W Approach GORDON ST					Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	UTurn N:N	Peds N:	Approach Total	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Left W:N	UTurn W:W	Peds W:	Approach Total		
2025-02-11 07:00:00	0	1	1	0	2	1	34	0	0	35	27	12	0	0	39	76	
2025-02-11 07:15:00	3	0	0	0	3	5	20	0	0	25	47	18	0	0	65	93	
2025-02-11 07:30:00	2	7	0	0	9	3	19	0	0	22	51	4	9	0	64	95	
2025-02-11 07:45:00	5	2	0	0	7	14	26	0	0	40	66	7	0	0	73	120	384
2025-02-11 08:00:00	3	2	0	0	5	13	40	0	0	53	37	6	0	0	43	101	409
2025-02-11 08:15:00	2	4	0	0	6	4	38	0	0	42	62	4	0	0	66	114	430
2025-02-11 08:30:00	6	3	0	0	9	4	30	0	0	34	55	6	0	0	61	104	439
2025-02-11 08:45:00	12	5	0	0	17	5	41	0	0	46	42	5	0	0	47	110	429
2025-02-11 09:00:00	8	3	0	0	11	8	37	0	1	45	34	8	0	0	42	98	426
2025-02-11 09:15:00	0	2	0	0	2	5	28	0	0	33	22	4	0	0	26	61	373
2025-02-11 09:30:00	4	4	0	0	8	8	17	0	0	25	20	7	0	0	27	60	329
2025-02-11 09:45:00	4	2	0	1	6	1	32	0	0	33	29	6	0	1	35	74	293
2025-02-11 10:00:00	3	5	0	0	8	4	37	0	0	41	28	8	0	0	36	85	280
2025-02-11 10:15:00	3	4	0	0	7	7	33	0	0	40	36	4	0	0	40	87	306
2025-02-11 10:30:00	2	3	0	0	5	3	29	0	0	32	16	2	0	0	18	55	301
2025-02-11 10:45:00	4	5	0	0	9	5	25	0	0	30	33	6	0	0	39	78	305
2025-02-11 11:00:00	6	2	0	0	8	6	34	0	0	40	23	4	2	0	29	77	297
2025-02-11 11:15:00	6	4	0	0	10	7	35	0	0	42	23	6	0	0	29	81	291
2025-02-11 11:30:00	6	3	0	0	9	1	28	0	0	29	34	2	0	0	36	74	310
2025-02-11 11:45:00	7	5	0	0	12	7	39	0	0	46	24	3	1	0	28	86	318
2025-02-11 12:00:00	10	12	0	0	22	11	35	0	0	46	29	7	1	0	37	105	346
2025-02-11 12:15:00	5	4	0	0	9	9	36	0	1	45	27	4	0	0	31	85	350
2025-02-11 12:30:00	7	8	0	0	15	12	36	0	0	48	33	8	0	0	41	104	380
2025-02-11 12:45:00	3	0	0	0	3	1	18	0	0	19	22	2	0	0	24	46	340
2025-02-11 13:00:00	4	11	0	0	15	4	25	0	0	29	27	8	0	0	35	79	314
2025-02-11 13:15:00	2	3	0	0	5	2	28	0	0	30	26	5	2	0	33	68	297
2025-02-11 13:30:00	5	5	0	0	10	4	18	0	0	22	40	3	0	0	43	75	268
2025-02-11 13:45:00	6	6	0	0	12	3	35	1	0	39	24	6	0	0	30	81	303
2025-02-11 14:00:00	5	5	0	0	10	3	28	0	0	31	40	5	0	0	45	86	310
2025-02-11 14:15:00	6	6	0	0	12	3	19	0	0	22	28	1	0	0	29	63	305
2025-02-11 14:30:00	9	0	0	0	9	2	44	0	0	46	35	3	0	0	38	93	323
2025-02-11 14:45:00	2	6	0	0	8	6	28	0	0	34	21	4	0	0	25	67	309
2025-02-11 15:00:00	10	4	0	0	14	5	70	0	0	75	27	1	0	0	28	117	340

2025-02-11 15:15:00	2	2	0	0	4	6	70	0	0	76	33	11	0	0	44	124	401
2025-02-11 15:30:00	12	5	0	0	17	3	28	0	0	31	33	10	0	0	43	91	399
2025-02-11 15:45:00	6	4	0	0	10	3	38	0	1	41	26	4	0	1	30	81	413
2025-02-11 16:00:00	10	7	0	0	17	0	58	0	0	58	45	3	0	0	48	123	419
2025-02-11 16:15:00	4	5	0	0	9	1	34	0	0	35	37	3	0	0	40	84	379
2025-02-11 16:30:00	6	10	0	0	16	4	49	0	0	53	20	3	0	0	23	92	380
2025-02-11 16:45:00	1	3	0	0	4	1	69	0	0	70	34	1	0	1	35	109	408
2025-02-11 17:00:00	14	5	0	0	19	3	42	0	0	45	34	5	0	0	39	103	388
2025-02-11 17:15:00	4	7	0	0	11	1	40	0	0	41	51	6	0	0	57	109	413
2025-02-11 17:30:00	11	8	0	0	19	6	50	0	0	56	24	4	0	0	28	103	424
2025-02-11 17:45:00	4	2	0	0	6	5	47	0	0	52	28	1	0	0	29	87	402
2025-02-11 18:00:00	6	3	0	0	9	2	47	0	0	49	20	1	0	0	21	79	378
2025-02-11 18:15:00	1	4	0	0	5	1	28	0	0	29	23	3	0	0	26	60	329
2025-02-11 18:30:00	4	1	0	0	5	0	31	0	0	31	27	2	0	0	29	65	291
2025-02-11 18:45:00	1	2	0	0	3	2	46	0	0	48	25	1	0	1	26	77	281
Grand Total	246	204	1	1	451	214	1719	1	3	1934	1548	237	15	4	1800	**4185**	-
Approach%	54.5%	45.2%	0.2%		-	11.1%	88.9%	0.1%		-	86%	13.2%	0.8%		-	**-**	-
Totals %	5.9%	4.9%	0%		10.8%	5.1%	41.1%	0%		46.2%	37%	5.7%	0.4%		43%	**-**	-
Heavy	19	22	0		-	22	104	0		-	119	12	0		-	**-**	-
Heavy %	7.7%	10.8%	0%		-	10.3%	6.1%	0%		-	7.7%	5.1%	0%		-	**-**	-
Bicycles	0	0	0		-	0	1	0		-	0	1	0		-	**-**	-
Bicycle %	0%	0%	0%		-	0%	0.1%	0%		-	0%	0.4%	0%		-	**-**	-

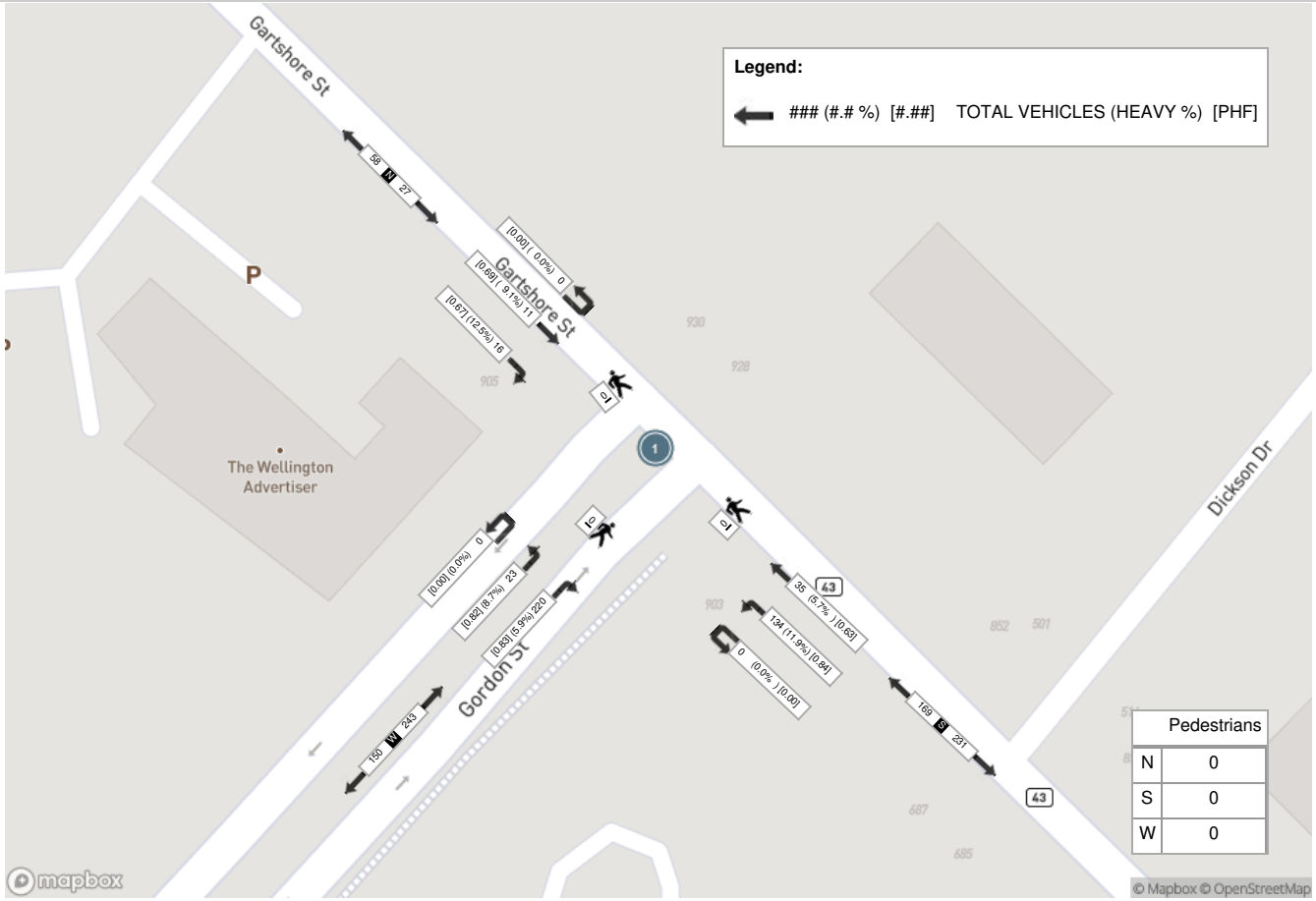
Peak Hour: 07:45 AM - 08:45 AM Weather: Overcast Clouds (-13.31 °C)

Start Time	N Approach GARTSHORE ST					S Approach GARTSHORE ST					W Approach GORDON ST					Int. Total (15 min)
	Right	Thru	UTurn	Peds	Approach Total	Thru	Left	UTurn	Peds	Approach Total	Right	Left	UTurn	Peds	Approach Total	
2025-02-11 07:45:00	5	2	0	0	7	14	26	0	0	40	66	7	0	0	73	120
2025-02-11 08:00:00	3	2	0	0	5	13	40	0	0	53	37	6	0	0	43	101
2025-02-11 08:15:00	2	4	0	0	6	4	38	0	0	42	62	4	0	0	66	114
2025-02-11 08:30:00	6	3	0	0	9	4	30	0	0	34	55	6	0	0	61	104
Grand Total	16	11	0	0	27	35	134	0	0	169	220	23	0	0	243	**439**
Approach%	59.3%	40.7%	0%		-	20.7%	79.3%	0%		-	90.5%	9.5%	0%		-	**-**
Totals %	3.6%	2.5%	0%		6.2%	8%	30.5%	0%		38.5%	50.1%	5.2%	0%		55.4%	**-**
PHF	0.67	0.69	0		0.75	0.63	0.84	0		0.8	0.83	0.82	0		0.83	0.91
Heavy	2	1	0		3	2	16	0		18	13	2	0		15	36
Heavy %	12.5%	9.1%	0%		11.1%	5.7%	11.9%	0%		10.7%	5.9%	8.7%	0%		6.2%	8.2%
Lights	14	10	0		24	33	118	0		151	207	21	0		228	403
Lights %	87.5%	90.9%	0%		88.9%	94.3%	88.1%	0%		89.3%	94.1%	91.3%	0%		93.8%	91.8%
Single-Unit Trucks	0	0	0		0	0	2	0		2	4	1	0		5	7
Single-Unit Trucks %	0%	0%	0%		0%	0%	1.5%	0%		1.2%	1.8%	4.3%	0%		2.1%	1.6%
Buses	1	0	0		1	0	11	0		11	4	1	0		5	17
Buses %	6.3%	0%	0%		3.7%	0%	8.2%	0%		6.5%	1.8%	4.3%	0%		2.1%	3.9%
Articulated Trucks	1	1	0		2	2	3	0		5	5	0	0		5	12
Articulated Trucks %	6.3%	9.1%	0%		7.4%	5.7%	2.2%	0%		3%	2.3%	0%	0%		2.1%	2.7%
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	0%		-	-	-	0%		-	-	-	0%		**-**
Bicycles on Road	0	0	0		-	0	0	0		-	0	1	0		-	**-**
Bicycles on Road%	0%	0%	0%			0%	0%	0%			0%	100%	0%			**-**

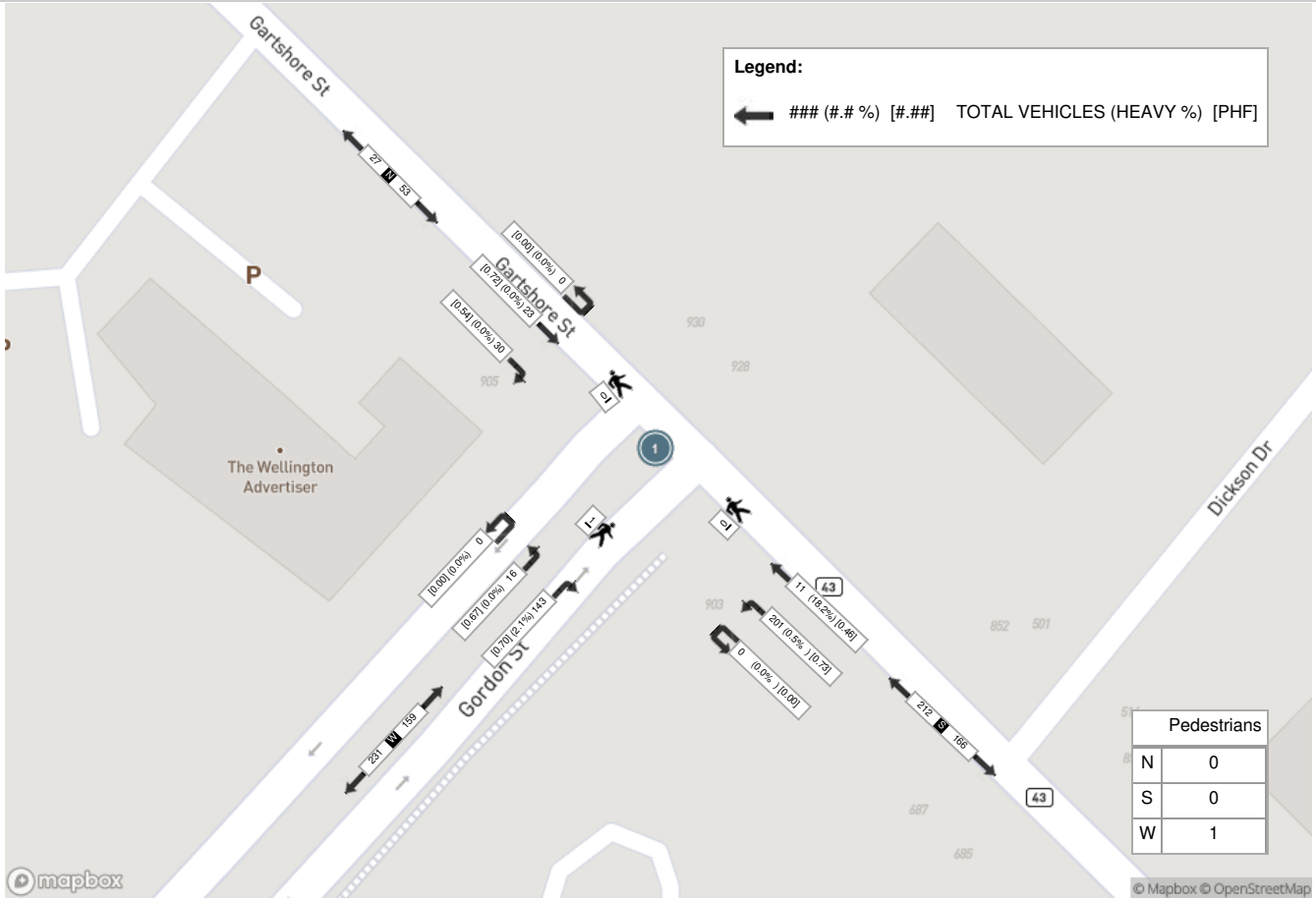
Selected Hour: 04:45 PM - 05:45 PM Weather: Overcast Clouds (-13.31 °C)

Start Time	N Approach GARTSHORE ST					S Approach GARTSHORE ST					W Approach GORDON ST					Int. Total (15 min)
	Right	Thru	UTurn	Peds	Approach Total	Thru	Left	UTurn	Peds	Approach Total	Right	Left	UTurn	Peds	Approach Total	
2025-02-11 16:45:00	1	3	0	0	4	1	69	0	0	70	34	1	0	1	35	109
2025-02-11 17:00:00	14	5	0	0	19	3	42	0	0	45	34	5	0	0	39	103
2025-02-11 17:15:00	4	7	0	0	11	1	40	0	0	41	51	6	0	0	57	109
2025-02-11 17:30:00	11	8	0	0	19	6	50	0	0	56	24	4	0	0	28	103
Grand Total	30	23	0	0	53	11	201	0	0	212	143	16	0	1	159	**424**
Approach%	56.6%	43.4%	0%		-	5.2%	94.8%	0%		-	89.9%	10.1%	0%		-	**-**
Totals %	7.1%	5.4%	0%		12.5%	2.6%	47.4%	0%		50%	33.7%	3.8%	0%		37.5%	**-**
PHF	0.54	0.72	0		0.7	0.46	0.73	0		0.76	0.7	0.67	0		0.7	0.97
Heavy	0	0	0		0	2	1	0		3	3	0	0		3	6
Heavy %	0%	0%	0%		0%	18.2%	0.5%	0%		1.4%	2.1%	0%	0%		1.9%	1.4%
Lights	30	23	0		53	9	200	0		209	140	16	0		156	418
Lights %	100%	100%	0%		100%	81.8%	99.5%	0%		98.6%	97.9%	100%	0%		98.1%	98.6%
Single-Unit Trucks	0	0	0		0	1	0	0		1	2	0	0		2	3
Single-Unit Trucks %	0%	0%	0%		0%	9.1%	0%	0%		0.5%	1.4%	0%	0%		1.3%	0.7%
Buses	0	0	0		0	1	0	0		1	1	0	0		1	2
Buses %	0%	0%	0%		0%	9.1%	0%	0%		0.5%	0.7%	0%	0%		0.6%	0.5%
Articulated Trucks	0	0	0		0	0	1	0		1	0	0	0		0	1
Articulated Trucks %	0%	0%	0%		0%	0%	0.5%	0%		0.5%	0%	0%	0%		0%	0.2%
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	1	-	**-**
Pedestrians%	-	-	-	0%		-	-	-	0%		-	-	-	100%		**-**
Bicycles on Road	0	0	0		-	0	0	0		-	0	0	0		-	**-**
Bicycles on Road%	0%	0%	0%			0%	0%	0%			0%	0%	0%			**-**

Peak Hour: 07:45 AM - 08:45 AM Weather: Overcast Clouds (-13.31 °C)



Selected Hour: 04:45 PM - 05:45 PM Weather: Overcast Clouds (-13.31 °C)



Spectrum

Turning Movement Count
Location Name: GARTSHORE ST & ST ANDREW ST E
Date: Tue, Feb 11, 2025 Deployment Lead: Rey Fernandez

BA Group
1000 95 ST. CLAIR AVE W
TORONTO ONTARIO, M4V 1N6
CANADA

Turning Movement Count (2 . GARTSHORE ST & ST ANDREW ST E)

Start Time	N Approach GARTSHORE ST						E Approach ST ANDREW ST E						S Approach GARTSHORE ST						W Approach ST ANDREW ST E						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total		
2025-02-11 07:00:00	7	66	0	0	0	73	0	5	4	0	2	9	3	56	11	0	1	70	24	0	3	0	2	27	179	
2025-02-11 07:15:00	5	78	1	0	0	84	2	2	2	0	1	6	2	52	7	0	1	61	19	4	5	0	1	28	179	
2025-02-11 07:30:00	7	71	2	0	1	80	1	3	7	0	0	11	4	58	17	0	0	79	31	2	5	0	0	38	208	
2025-02-11 07:45:00	7	88	3	0	0	98	3	4	7	0	0	14	2	72	19	0	1	93	16	2	3	0	2	21	226	792
2025-02-11 08:00:00	13	93	0	0	1	106	3	2	7	0	1	12	2	69	26	0	1	97	28	7	2	0	5	37	252	865
2025-02-11 08:15:00	18	92	1	0	11	111	1	5	8	0	0	14	5	56	23	0	0	84	27	8	5	0	12	40	249	935
2025-02-11 08:30:00	5	112	8	0	7	125	3	12	16	0	2	31	14	63	25	0	2	102	44	19	11	0	8	74	332	1059
2025-02-11 08:45:00	15	115	4	0	1	134	8	23	22	0	0	53	12	104	36	0	1	152	42	14	3	0	3	59	398	1231
2025-02-11 09:00:00	10	56	1	0	2	67	1	5	4	0	0	10	5	71	21	0	1	97	20	4	3	0	3	27	201	1180
2025-02-11 09:15:00	7	54	2	0	1	63	3	5	4	0	0	12	4	47	19	0	0	70	16	6	4	0	2	26	171	1102
2025-02-11 09:30:00	6	45	2	0	0	53	1	3	2	0	0	6	2	48	13	0	0	63	22	1	8	0	2	31	153	923
2025-02-11 09:45:00	15	52	0	0	1	67	1	9	4	0	0	14	2	52	16	0	0	70	16	2	5	0	3	23	174	699
2025-02-11 10:00:00	6	54	1	0	0	61	1	4	6	0	0	11	6	41	15	0	0	62	23	4	7	0	2	34	168	666
2025-02-11 10:15:00	10	52	1	0	0	63	1	2	5	0	0	8	2	63	20	0	0	85	18	3	4	0	0	25	181	676
2025-02-11 10:30:00	8	39	1	0	0	48	2	1	4	0	0	7	2	35	19	0	0	56	20	4	8	0	0	32	143	666
2025-02-11 10:45:00	14	47	0	0	0	61	0	5	4	0	0	9	0	45	25	0	0	70	12	4	6	0	1	22	162	654
2025-02-11 11:00:00	11	55	1	0	0	67	0	3	5	0	0	8	5	41	18	0	0	64	26	10	6	0	1	42	181	667
2025-02-11 11:15:00	6	35	1	0	0	42	0	6	7	0	0	13	4	52	17	0	0	73	26	4	3	0	0	33	161	647
2025-02-11 11:30:00	12	62	0	0	0	74	1	2	6	0	0	9	5	59	18	0	0	82	20	3	9	0	2	32	197	701
2025-02-11 11:45:00	10	55	0	0	0	65	0	2	1	0	0	3	9	60	13	0	0	82	21	6	6	0	2	33	183	722
2025-02-11 12:00:00	14	60	2	0	0	76	0	1	6	0	0	7	4	66	16	0	0	86	15	2	8	0	2	25	194	735
2025-02-11 12:15:00	7	51	0	0	0	58	1	8	6	0	0	15	6	55	18	0	0	79	17	7	6	0	2	30	182	756
2025-02-11 12:30:00	11	54	0	0	0	65	1	2	6	0	0	9	5	62	17	0	0	84	17	8	11	0	3	36	194	753
2025-02-11 12:45:00	8	57	0	0	0	65	3	7	6	0	0	16	6	61	19	0	0	86	15	7	6	0	3	28	195	765
2025-02-11 13:00:00	10	52	2	0	1	64	0	3	2	0	0	5	5	59	14	0	0	78	16	5	8	0	5	29	176	747
2025-02-11 13:15:00	8	46	1	0	2	55	3	6	6	0	0	15	4	57	16	0	0	77	26	8	5	0	1	39	186	751
2025-02-11 13:30:00	14	50	0	0	0	64	1	4	3	0	0	8	7	49	14	0	0	70	13	3	4	0	1	20	162	719
2025-02-11 13:45:00	8	44	2	0	2	54	2	4	5	0	0	11	5	60	29	0	0	94	16	10	9	0	1	35	194	718
2025-02-11 14:00:00	14	56	2	0	1	72	0	5	4	0	0	9	3	63	21	0	0	87	17	4	5	0	3	26	194	736
2025-02-11 14:15:00	14	65	1	0	0	80	0	3	2	0	0	5	3	70	14	0	0	87	27	4	9	0	3	40	212	762
2025-02-11 14:30:00	15	57	1	0	0	73	0	8	4	0	0	12	4	92	19	0	1	115	23	5	7	0	4	35	235	835
2025-02-11 14:45:00	5	76	5	0	1	86	0	3	5	0	1	8	6	64	20	0	0	90	29	8	7	0	2	44	228	869
2025-02-11 15:00:00	9	89	3	0	0	101	3	2	3	0	0	8	12	98	31	0	0	141	25	14	7	0	2	46	296	971
2025-02-11 15:15:00	8	70	3	0	16	81	11	12	18	0	0	41	23	106	32	0	3	161	33	11	7	0	14	51	334	1093
2025-02-11 15:30:00	10	80	3	0	5	93	0	2	8	0	0	10	15	84	25	0	3	124	31	6	8	0	15	45	272	1130
2025-02-11 15:45:00	9	71	3	0	1	83	0	2	7	0	0	9	9	86	22	0	0	117	23	3	5	0	5	31	240	1142
2025-02-11 16:00:00	6	90	1	0	1	97	1	3	4	0	0	8	8	89	31	0	0	128	33	7	10	0	2	50	283	1129
2025-02-11 16:15:00	16	82	0	0	0	98	0	1	4	0	0	5	11	95	26	0	0	132	38	9	11	0	4	58	293	1088
2025-02-11 16:30:00	17	109	4	0	1	130	0	5	4	0	0	9	10	120	24	0	0	154	18	8	8	0	1	34	327	1143
2025-02-11 16:45:00	16	89	0	0	0	105	1	8	13	0	0	22	8	130	29	0	0	167	37	9	8	0	2	54	348	1251
2025-02-11 17:00:00	11	101	0	0	0	112	1	8	8	0	0	17	16	115	19	0	0	150	27	11	4	0	1	42	321	1289
2025-02-11 17:15:00	1	86	1	0	1	88	1	4	11	0	0	16	8	111	21	0	0	140	42	10	10	0	0	62	306	1302
2025-02-11 17:30:00	4	76	2	0	0	82	0	4	5	0	0	9	11	107	36	0	0	154	29	1	5	0	3	35	280	1255
2025-02-11 17:45:00	11	60	2	0	0	73	3	1	5	0	0	9	11	116	23	0	0	150	16	9	4	0	2	29	261	1168
2025-02-11 18:00:00	4	49	0	0	0	53	0	0	6	0	0	6	8	84	19	0	0	111	19	10	2	0	0	31	201	1048

2025-02-11 18:15:00	3	39	1	0	0	43	1	3	2	0	1	6	8	75	22	0	1	105	19	6	4	0	1	29	183	925
2025-02-11 18:30:00	1	50	0	0	0	51	1	2	5	0	0	8	5	73	22	0	0	100	15	2	3	0	5	20	179	824
2025-02-11 18:45:00	7	51	1	0	1	59	1	1	0	0	2	2	8	76	12	0	2	96	14	5	6	0	6	25	182	745
Grand Total	453	3181	69	0	58	3703	67	215	283	0	10	565	319	3467	989	0	18	4775	1121	299	293	0	144	1713	**10756**	-
Approach%	12.2%	85.9%	1.9%	0%		-	11.9%	38.1%	50.1%	0%		-	6.7%	72.6%	20.7%	0%		-	65.4%	17.5%	17.1%	0%		-	**-**	-
Totals %	4.2%	29.6%	0.6%	0%		34.4%	0.6%	2%	2.6%	0%		5.3%	3%	32.2%	9.2%	0%		44.4%	10.4%	2.8%	2.7%	0%		15.9%	**-**	-
Heavy	13	175	2	0		-	7	2	11	0		-	8	204	11	0		-	14	5	11	0		-	**-**	-
Heavy %	2.9%	5.5%	2.9%	0%		-	10.4%	0.9%	3.9%	0%		-	2.5%	5.9%	1.1%	0%		-	1.2%	1.7%	3.8%	0%		-	**-**	-
Bicycles	0	1	0	0		-	0	0	0	0		-	0	0	1	0		-	0	0	0	0		-	**-**	-
Bicycle %	0%	0%	0%	0%		-	0%	0%	0%	0%		-	0%	0%	0.1%	0%		-	0%	0%	0%	0%		-	**-**	-

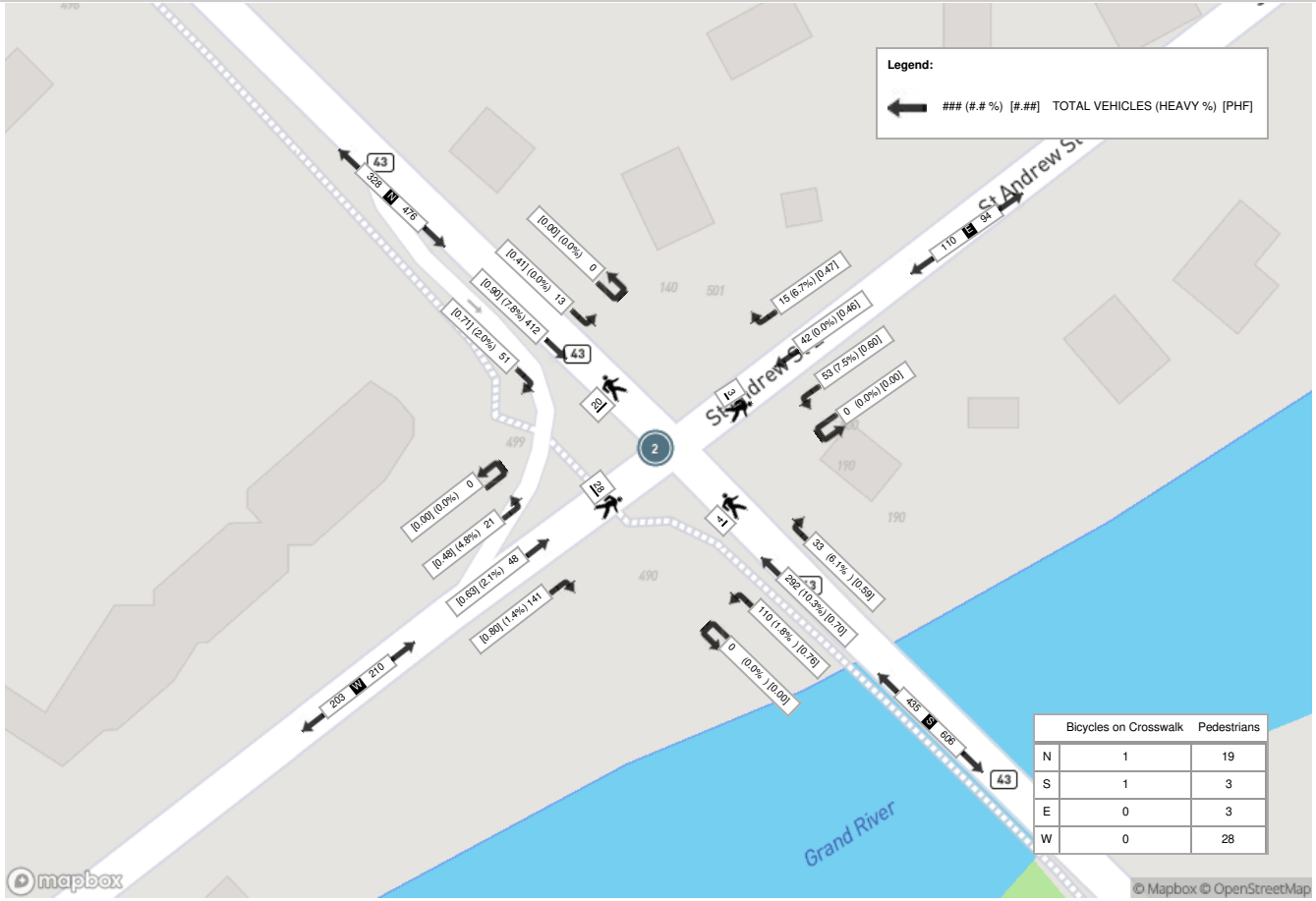
Selected Hour: 08:00 AM - 09:00 AM Weather: Overcast Clouds (-13.31 °C)

Start Time	N Approach GARTSHORE ST						E Approach ST ANDREW ST E						S Approach GARTSHORE ST						W Approach ST ANDREW ST E						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
2025-02-11 08:00:00	13	93	0	0	1	106	3	2	7	0	1	12	2	69	26	0	1	97	28	7	2	0	5	37	252
2025-02-11 08:15:00	18	92	1	0	11	111	1	5	8	0	0	14	5	56	23	0	0	84	27	8	5	0	12	40	249
2025-02-11 08:30:00	5	112	8	0	7	125	3	12	16	0	2	31	14	63	25	0	2	102	44	19	11	0	8	74	332
2025-02-11 08:45:00	15	115	4	0	1	134	8	23	22	0	0	53	12	104	36	0	1	152	42	14	3	0	3	59	398
Grand Total	51	412	13	0	20	476	15	42	53	0	3	110	33	292	110	0	4	435	141	48	21	0	28	210	**1231**
Approach%	10.7%	86.6%	2.7%	0%		-	13.6%	38.2%	48.2%	0%		-	7.6%	67.1%	25.3%	0%		-	67.1%	22.9%	10%	0%		-	**-**
Totals %	4.1%	33.5%	1.1%	0%		38.7%	1.2%	3.4%	4.3%	0%		8.9%	2.7%	23.7%	8.9%	0%		35.3%	11.5%	3.9%	1.7%	0%		17.1%	**-**
PHF	0.71	0.9	0.41	0		0.89	0.47	0.46	0.6	0		0.52	0.59	0.7	0.76	0		0.72	0.8	0.63	0.48	0		0.71	0.77
Heavy	1	32	0	0		33	1	0	4	0		5	2	30	2	0		34	2	1	1	0		4	76
Heavy %	2%	7.8%	0%	0%		6.9%	6.7%	0%	7.5%	0%		4.5%	6.1%	10.3%	1.8%	0%		7.8%	1.4%	2.1%	4.8%	0%		1.9%	6.2%
Lights	50	380	13	0		443	14	42	49	0		105	31	262	108	0		401	139	47	20	0		206	1155
Lights %	98%	92.2%	100%	0%		93.1%	93.3%	100%	92.5%	0%		95.5%	93.9%	89.7%	98.2%	0%		92.2%	98.6%	97.9%	95.2%	0%		98.1%	93.8%
Single-Unit Trucks	0	6	0	0		6	0	0	0	0		0	0	7	0	0		7	1	0	0	0		1	14
Single-Unit Trucks %	0%	1.5%	0%	0%		1.3%	0%	0%	0%	0%		0%	0%	2.4%	0%	0%		1.6%	0.7%	0%	0%	0%		0.5%	1.1%
Buses	1	20	0	0		21	1	0	4	0		5	2	17	2	0		21	1	1	1	0		3	50
Buses %	2%	4.9%	0%	0%		4.4%	6.7%	0%	7.5%	0%		4.5%	6.1%	5.8%	1.8%	0%		4.8%	0.7%	2.1%	4.8%	0%		1.4%	4.1%
Articulated Trucks	0	6	0	0		6	0	0	0	0		0	0	6	0	0		6	0	0	0	0		0	12
Articulated Trucks %	0%	1.5%	0%	0%		1.3%	0%	0%	0%	0%		0%	0%	2.1%	0%	0%		1.4%	0%	0%	0%	0%		0%	1%
Pedestrians	-	-	-	-	19	-	-	-	-	-	3	-	-	-	-	-	3	-	-	-	-	-	28	-	**-**
Pedestrians%	-	-	-	-	34.5%		-	-	-	-	5.5%		-	-	-	-	5.5%		-	-	-	-	50.9%		**-**
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	**-**
Bicycles on Crosswalk%	-	-	-	-	1.8%		-	-	-	-	0%		-	-	-	-	1.8%		-	-	-	-	0%		**-**
Bicycles on Road	0	0	0	0		-	0	0	0	0		-	0	0	0	0		-	0	0	0	0		-	**-**
Bicycles on Road%	0%	0%	0%	0%			0%	0%	0%	0%			0%	0%	0%	0%			0%	0%	0%	0%			**-**

Peak Hour: 04:30 PM - 05:30 PM Weather: Overcast Clouds (-13.31 °C)

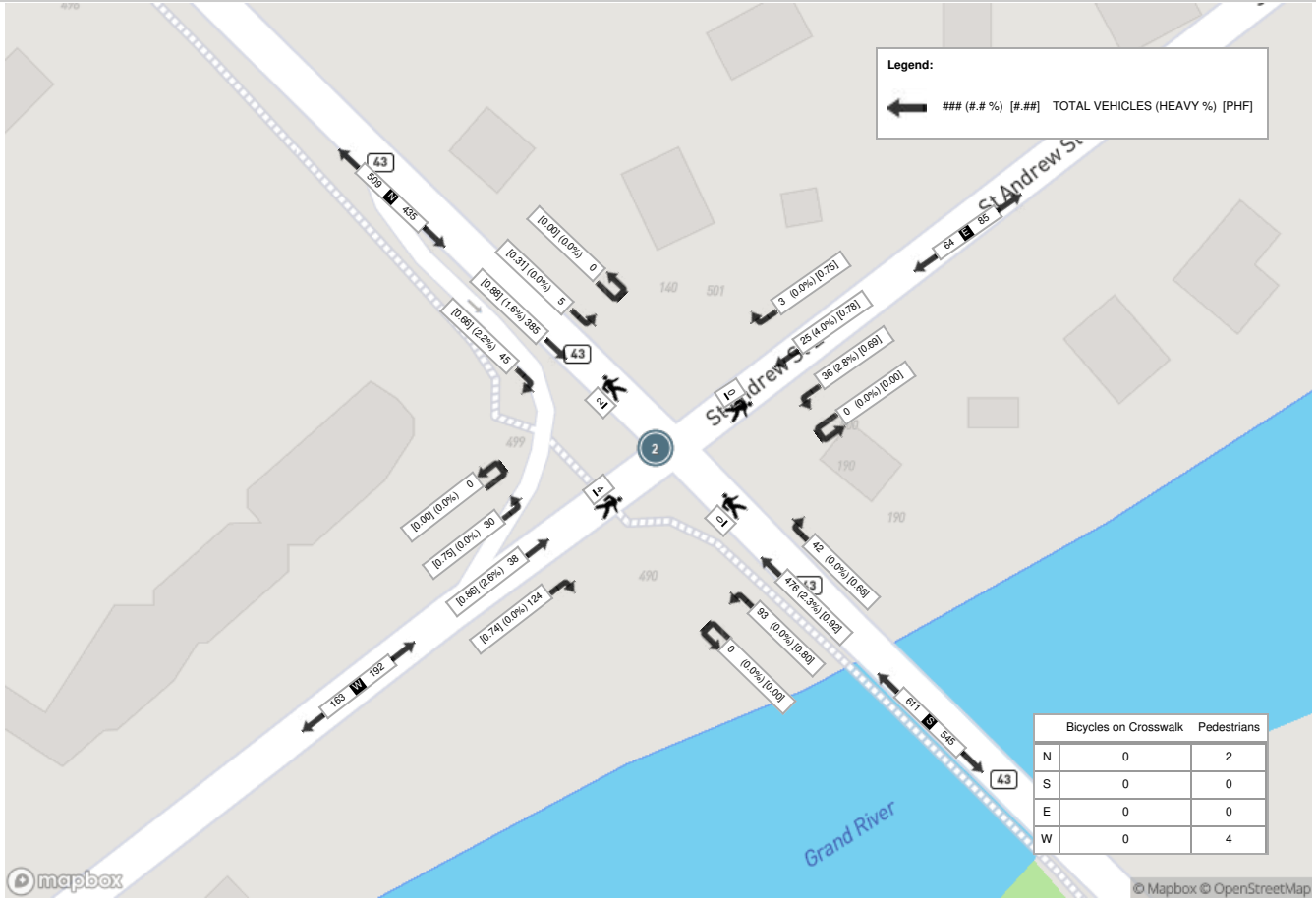
Start Time	N Approach GARTSHORE ST						E Approach ST ANDREW ST E						S Approach GARTSHORE ST						W Approach ST ANDREW ST E						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
2025-02-11 16:30:00	17	109	4	0	1	130	0	5	4	0	0	9	10	120	24	0	0	154	18	8	8	0	1	34	327
2025-02-11 16:45:00	16	89	0	0	0	105	1	8	13	0	0	22	8	130	29	0	0	167	37	9	8	0	2	54	348
2025-02-11 17:00:00	11	101	0	0	0	112	1	8	8	0	0	17	16	115	19	0	0	150	27	11	4	0	1	42	321
2025-02-11 17:15:00	1	86	1	0	1	88	1	4	11	0	0	16	8	111	21	0	0	140	42	10	10	0	0	62	306
Grand Total	45	385	5	0	2	435	3	25	36	0	0	64	42	476	93	0	0	611	124	38	30	0	4	192	**1302**
Approach%	10.3%	88.5%	1.1%	0%		-	4.7%	39.1%	56.3%	0%		-	6.9%	77.9%	15.2%	0%		-	64.6%	19.8%	15.6%	0%		-	**-**
Totals %	3.5%	29.6%	0.4%	0%		33.4%	0.2%	1.9%	2.8%	0%		4.9%	3.2%	36.6%	7.1%	0%		46.9%	9.5%	2.9%	2.3%	0%		14.7%	**-**
PHF	0.66	0.88	0.31	0		0.84	0.75	0.78	0.69	0		0.73	0.66	0.92	0.8	0		0.91	0.74	0.86	0.75	0		0.77	0.94
Heavy	1	6	0	0		7	0	1	1	0		2	0	11	0	0		11	0	1	0	0		1	21
Heavy %	2.2%	1.6%	0%	0%		1.6%	0%	4%	2.8%	0%		3.1%	0%	2.3%	0%	0%		1.8%	0%	2.6%	0%	0%		0.5%	1.6%
Lights	44	379	5	0		428	3	24	35	0		62	42	465	93	0		600	124	37	30	0		191	1281
Lights %	97.8%	98.4%	100%	0%		98.4%	100%	96%	97.2%	0%		96.9%	100%	97.7%	100%	0%		98.2%	100%	97.4%	100%	0%		99.5%	98.4%
Single-Unit Trucks	1	3	0	0		4	0	1	1	0		2	0	5	0	0		5	0	1	0	0		1	12
Single-Unit Trucks %	2.2%	0.8%	0%	0%		0.9%	0%	4%	2.8%	0%		3.1%	0%	1.1%	0%	0%		0.8%	0%	2.6%	0%	0%		0.5%	0.9%
Buses	0	1	0	0		1	0	0	0	0		0	0	4	0	0		4	0	0	0	0		0	5
Buses %	0%	0.3%	0%	0%		0.2%	0%	0%	0%	0%		0%	0%	0.8%	0%	0%		0.7%	0%	0%	0%	0%		0%	0.4%
Articulated Trucks	0	2	0	0		2	0	0	0	0		0	0	2	0	0		2	0	0	0	0		0	4
Articulated Trucks %	0%	0.5%	0%	0%		0.5%	0%	0%	0%	0%		0%	0%	0.4%	0%	0%		0.3%	0%	0%	0%	0%		0%	0.3%
Pedestrians	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	4	-	**-**
Pedestrians%	-	-	-	-	33.3%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	66.7%		**-**
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Bicycles on Crosswalk%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**
Bicycles on Road	0	0	0	0		-	0	0	0	0		-	0	0	0	0		-	0	0	0	0		-	**-**
Bicycles on Road%	0%	0%	0%	0%			0%	0%	0%	0%			0%	0%	0%	0%			0%	0%	0%	0%			**-**

Selected Hour: 08:00 AM - 09:00 AM **Weather: Overcast Clouds (-13.31 °C)**



	Bicycles on Crosswalk	Pedestrians
N	1	19
S	1	3
E	0	3
W	0	28

Peak Hour: 04:30 PM - 05:30 PM **Weather: Overcast Clouds (-13.31 °C)**



	Bicycles on Crosswalk	Pedestrians
N	0	2
S	0	0
E	0	0
W	0	4

BA Group
1000 95 ST. CLAIR AVE W
TORONTO ONTARIO, M4V 1N6
CANADA

Turning Movement Count (1 . DICKSON DR & FIRST LINE)

Start Time	N Approach FIRST LINE					S Approach FIRST LINE					W Approach DICKSON DR					Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	UTurn N:N	Peds N:	Approach Total	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Left W:N	UTurn W:W	Peds W:	Approach Total		
2026-06-23 07:00:00	1	0	0	0	1	2	5	0	0	7	3	1	0	0	4	12	
2026-06-23 07:15:00	0	1	0	0	1	6	11	0	0	17	3	2	0	0	5	23	
2026-06-23 07:30:00	3	2	0	0	5	10	4	0	0	14	4	3	0	0	7	26	
2026-06-23 07:45:00	2	3	0	0	5	8	12	0	0	20	2	5	0	0	7	32	93
2026-06-23 08:00:00	3	1	0	0	4	1	7	0	0	8	7	1	0	0	8	20	101
2026-06-23 08:15:00	1	3	0	0	4	2	6	0	0	8	3	2	0	0	5	17	95
2026-06-23 08:30:00	2	4	0	0	6	2	5	0	0	7	7	1	0	0	8	21	90
2026-06-23 08:45:00	0	2	0	0	2	2	14	0	0	16	4	0	0	0	4	22	80
BREAK																	
2026-06-23 16:00:00	0	11	0	0	11	4	2	0	0	6	6	1	0	0	7	24	
2026-06-23 16:15:00	2	8	0	0	10	8	12	0	0	20	2	1	1	0	4	34	
2026-06-23 16:30:00	2	6	0	0	8	6	5	0	0	11	14	2	1	0	17	36	
2026-06-23 16:45:00	5	5	0	0	10	4	4	0	0	8	9	1	0	0	10	28	122
2026-06-23 17:00:00	0	3	0	0	3	2	4	0	0	6	12	1	0	0	13	22	120
2026-06-23 17:15:00	1	7	0	0	8	3	5	0	0	8	9	0	0	0	9	25	111
2026-06-23 17:30:00	1	7	0	0	8	3	5	0	0	8	9	2	0	0	11	27	102
2026-06-23 17:45:00	0	2	0	0	2	3	6	0	0	9	3	2	0	0	5	16	90
Grand Total	23	65	0	0	88	66	107	0	0	173	97	25	2	0	124	**385**	-
Approach%	26.1%	73.9%	0%		-	38.2%	61.8%	0%		-	78.2%	20.2%	1.6%		-	**-**	-
Totals %	6%	16.9%	0%		22.9%	17.1%	27.8%	0%		44.9%	25.2%	6.5%	0.5%		32.2%	**-**	-
Heavy	2	18	0		-	13	9	0		-	7	2	0		-	**-**	-
Heavy %	8.7%	27.7%	0%		-	19.7%	8.4%	0%		-	7.2%	8%	0%		-	**-**	-
Bicycles	0	3	0		-	3	2	0		-	2	0	0		-	**-**	-
Bicycle %	0%	4.6%	0%		-	4.5%	1.9%	0%		-	2.1%	0%	0%		-	**-**	-

Peak Hour: 07:15 AM - 08:15 AM Weather: Clear Sky (14 °C)

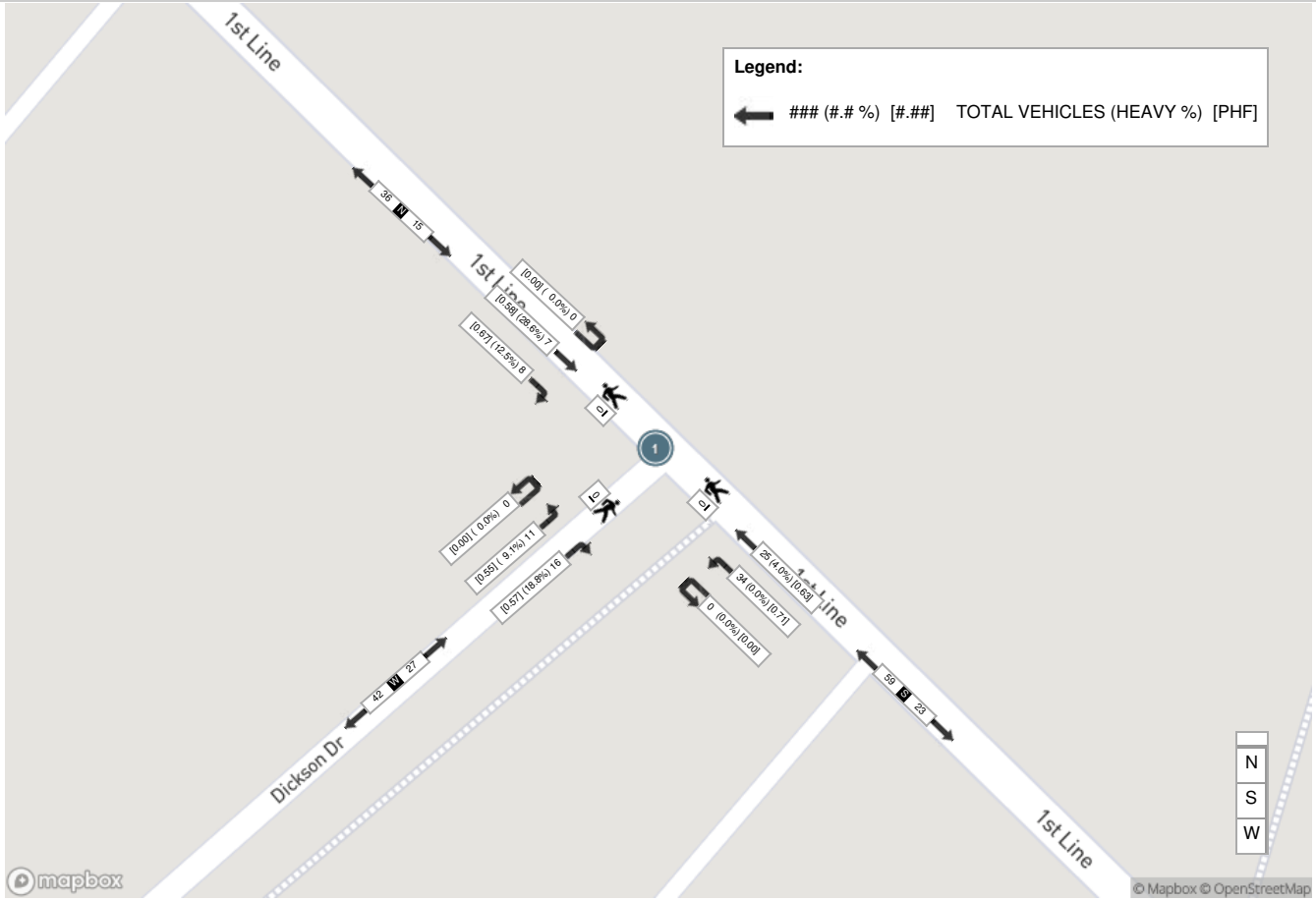
Start Time	N Approach FIRST LINE					S Approach FIRST LINE					W Approach DICKSON DR					Int. Total (15 min)
	Right	Thru	UTurn	Peds	Approach Total	Thru	Left	UTurn	Peds	Approach Total	Right	Left	UTurn	Peds	Approach Total	
2026-06-23 07:15:00	0	1	0	0	1	6	11	0	0	17	3	2	0	0	5	23
2026-06-23 07:30:00	3	2	0	0	5	10	4	0	0	14	4	3	0	0	7	26
2026-06-23 07:45:00	2	3	0	0	5	8	12	0	0	20	2	5	0	0	7	32
2026-06-23 08:00:00	3	1	0	0	4	1	7	0	0	8	7	1	0	0	8	20
Grand Total	8	7	0	0	15	25	34	0	0	59	16	11	0	0	27	**101**
Approach%	53.3%	46.7%	0%		-	42.4%	57.6%	0%		-	59.3%	40.7%	0%		-	**-**
Totals %	7.9%	6.9%	0%		14.9%	24.8%	33.7%	0%		58.4%	15.8%	10.9%	0%		26.7%	**-**
PHF	0.67	0.58	0		0.75	0.63	0.71	0		0.74	0.57	0.55	0		0.84	0.79
Heavy	1	2	0		3	1	0	0		1	3	1	0		4	8
Heavy %	12.5%	28.6%	0%		20%	4%	0%	0%		1.7%	18.8%	9.1%	0%		14.8%	7.9%
Lights	7	5	0		12	24	34	0		58	13	10	0		23	93
Lights %	87.5%	71.4%	0%		80%	96%	100%	0%		98.3%	81.3%	90.9%	0%		85.2%	92.1%
Single-Unit Trucks	0	1	0		1	1	0	0		1	0	1	0		1	3
Single-Unit Trucks %	0%	14.3%	0%		6.7%	4%	0%	0%		1.7%	0%	9.1%	0%		3.7%	3%
Buses	1	1	0		2	0	0	0		0	3	0	0		3	5
Buses %	12.5%	14.3%	0%		13.3%	0%	0%	0%		0%	18.8%	0%	0%		11.1%	5%
Bicycles on Road	0	0	0		-	1	0	0		-	0	0	0		-	**-**
Bicycles on Road%	0%	0%	0%			100%	0%	0%			0%	0%	0%			**-**

Peak Hour: 04:00 PM - 05:00 PM Weather: Clear Sky (24 °C)

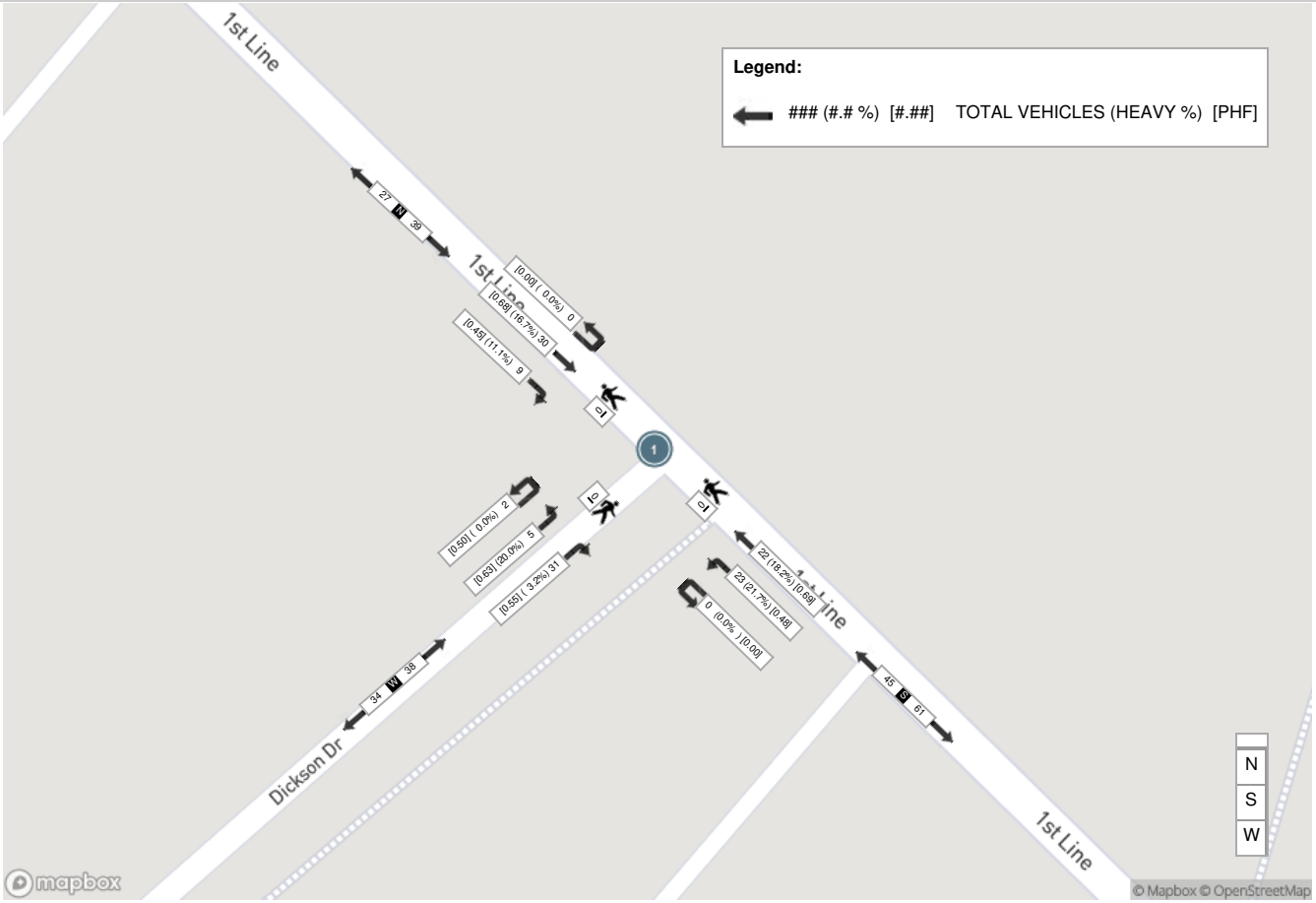
Start Time	N Approach FIRST LINE					S Approach FIRST LINE					W Approach DICKSON DR					Int. Total (15 min)
	Right	Thru	UTurn	Peds	Approach Total	Thru	Left	UTurn	Peds	Approach Total	Right	Left	UTurn	Peds	Approach Total	
2026-06-23 16:00:00	0	11	0	0	11	4	2	0	0	6	6	1	0	0	7	24
2026-06-23 16:15:00	2	8	0	0	10	8	12	0	0	20	2	1	1	0	4	34
2026-06-23 16:30:00	2	6	0	0	8	6	5	0	0	11	14	2	1	0	17	36
2026-06-23 16:45:00	5	5	0	0	10	4	4	0	0	8	9	1	0	0	10	28
Grand Total	9	30	0	0	39	22	23	0	0	45	31	5	2	0	38	**122**
Approach%	23.1%	76.9%	0%		-	48.9%	51.1%	0%		-	81.6%	13.2%	5.3%		-	**-**
Totals %	7.4%	24.6%	0%		32%	18%	18.9%	0%		36.9%	25.4%	4.1%	1.6%		31.1%	**-**
PHF	0.45	0.68	0		0.89	0.69	0.48	0		0.56	0.55	0.63	0.5		0.56	0.85
Heavy	1	5	0		6	4	5	0		9	1	1	0		2	17
Heavy %	11.1%	16.7%	0%		15.4%	18.2%	21.7%	0%		20%	3.2%	20%	0%		5.3%	13.9%
Lights	8	25	0		33	18	18	0		36	30	4	2		36	105
Lights %	88.9%	83.3%	0%		84.6%	81.8%	78.3%	0%		80%	96.8%	80%	100%		94.7%	86.1%
Single-Unit Trucks	0	5	0		5	3	2	0		5	1	1	0		2	12
Single-Unit Trucks %	0%	16.7%	0%		12.8%	13.6%	8.7%	0%		11.1%	3.2%	20%	0%		5.3%	9.8%
Buses	1	0	0		1	1	3	0		4	0	0	0		0	5
Buses %	11.1%	0%	0%		2.6%	4.5%	13%	0%		8.9%	0%	0%	0%		0%	4.1%
Bicycles on Road	0	0	0		-	2	2	0		-	2	0	0		-	**-**
Bicycles on Road%	0%	0%	0%			100%	100%	0%			100%	0%	0%			**-**

BA Group
1000 95 ST. CLAIR AVE W
TORONTO ONTARIO, M4V 1N6
CANADA

Peak Hour: 07:15 AM - 08:15 AM Weather: Clear Sky (14 °C)



Peak Hour: 04:00 PM - 05:00 PM Weather: Clear Sky (24 °C)



Turning Movement Count (2 . DICKSON DR & GARTSHORE ST)

Start Time	N Approach GARTSHORE ST					E Approach DICKSON DR					S Approach GARTSHORE ST					Int. Total (15 min)	Int. Total (1 hr)
	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	UTurn S:S	Peds S:	Approach Total		
2026-06-23 07:00:00	51	5	0	0	56	3	3	0	1	6	5	41	0	0	46	108	
2026-06-23 07:15:00	65	14	0	0	79	4	4	0	0	8	7	53	0	0	60	147	
2026-06-23 07:30:00	69	10	0	0	79	6	3	0	0	9	10	63	0	0	73	161	
2026-06-23 07:45:00	74	16	0	0	90	12	6	0	0	18	5	75	0	0	80	188	604
2026-06-23 08:00:00	86	8	0	0	94	7	6	0	0	13	3	60	0	0	63	170	666
2026-06-23 08:15:00	80	9	0	0	89	10	5	0	0	15	2	71	0	0	73	177	696
2026-06-23 08:30:00	88	11	0	0	99	5	3	0	0	8	2	79	0	0	81	188	723
2026-06-23 08:45:00	88	5	0	0	93	12	4	0	0	16	6	80	0	0	86	195	730
BREAK																	
2026-06-23 16:00:00	90	8	0	0	98	13	8	0	1	21	3	102	0	0	105	224	
2026-06-23 16:15:00	96	9	0	0	105	13	2	0	0	15	2	96	0	0	98	218	
2026-06-23 16:30:00	93	9	0	0	102	20	8	0	0	28	7	116	0	0	123	253	
2026-06-23 16:45:00	83	11	0	0	94	10	7	0	0	17	3	96	0	0	99	210	905
2026-06-23 17:00:00	91	8	0	0	99	13	8	0	0	21	2	97	0	0	99	219	900
2026-06-23 17:15:00	63	8	0	0	71	12	3	0	0	15	1	77	0	0	78	164	846
2026-06-23 17:30:00	80	11	0	0	91	9	4	0	2	13	1	95	0	0	96	200	793
2026-06-23 17:45:00	76	2	0	0	78	11	2	0	0	13	2	101	0	0	103	194	777
Grand Total	1273	144	0	0	1417	160	76	0	4	236	61	1302	0	0	1363	**3016**	-
Approach%	89.8%	10.2%	0%		-	67.8%	32.2%	0%		-	4.5%	95.5%	0%		-	**-**	-
Totals %	42.2%	4.8%	0%		47%	5.3%	2.5%	0%		7.8%	2%	43.2%	0%		45.2%	**-**	-
Heavy	55	12	0		-	15	12	0		-	8	72	0		-	**-**	-
Heavy %	4.3%	8.3%	0%		-	9.4%	15.8%	0%		-	13.1%	5.5%	0%		-	**-**	-
Bicycles	3	2	0		-	1	0	0		-	0	0	0		-	**-**	-
Bicycle %	0.2%	1.4%	0%		-	0.6%	0%	0%		-	0%	0%	0%		-	**-**	-

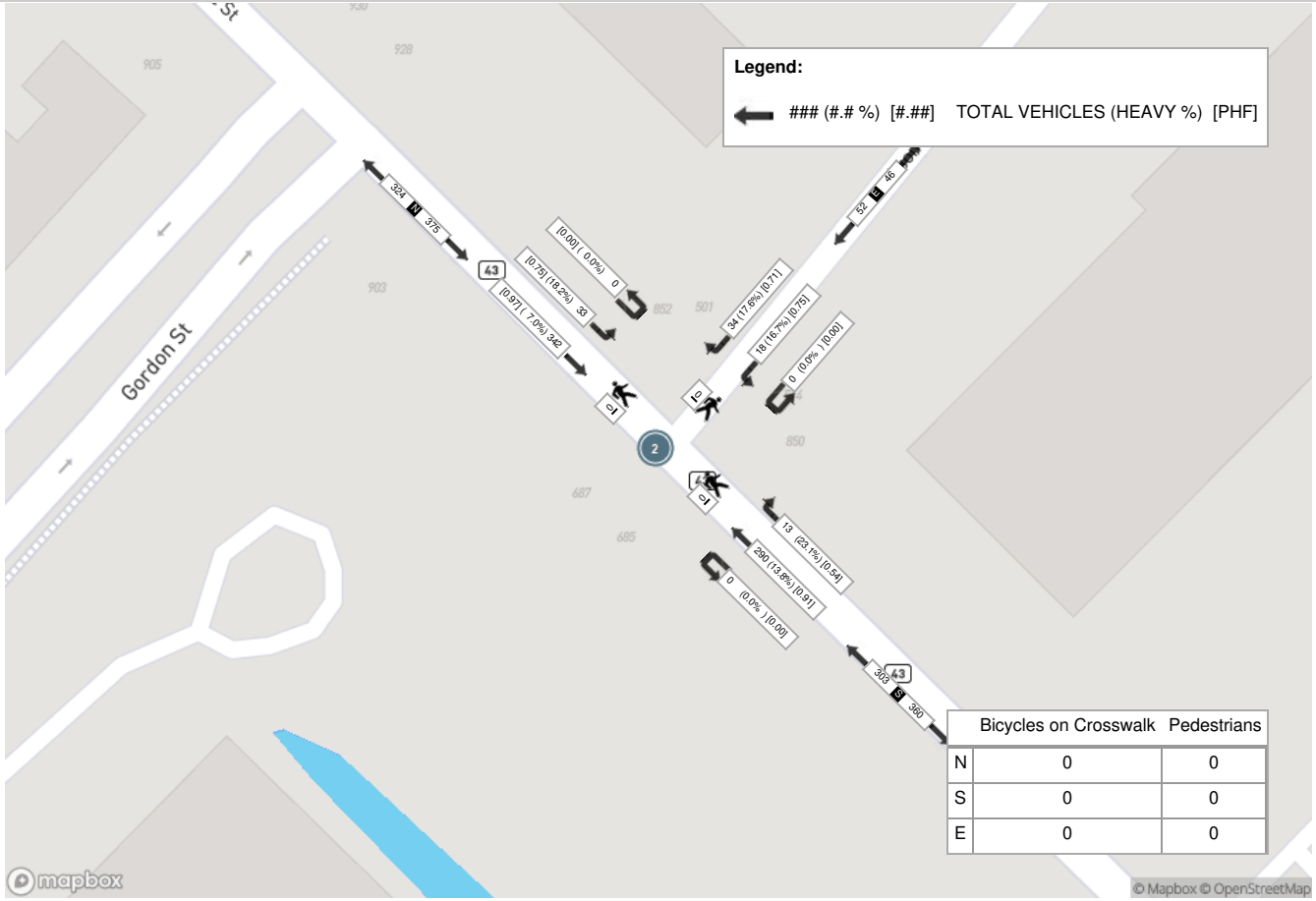
Peak Hour: 08:00 AM - 09:00 AM Weather: Clear Sky (14 °C)

Start Time	N Approach GARTSHORE ST					E Approach DICKSON DR					S Approach GARTSHORE ST					Int. Total (15 min)
	Thru	Left	UTurn	Peds	Approach Total	Right	Left	UTurn	Peds	Approach Total	Right	Thru	UTurn	Peds	Approach Total	
2026-06-23 08:00:00	86	8	0	0	94	7	6	0	0	13	3	60	0	0	63	170
2026-06-23 08:15:00	80	9	0	0	89	10	5	0	0	15	2	71	0	0	73	177
2026-06-23 08:30:00	88	11	0	0	99	5	3	0	0	8	2	79	0	0	81	188
2026-06-23 08:45:00	88	5	0	0	93	12	4	0	0	16	6	80	0	0	86	195
Grand Total	342	33	0	0	375	34	18	0	0	52	13	290	0	0	303	**730**
Approach%	91.2%	8.8%	0%		-	65.4%	34.6%	0%		-	4.3%	95.7%	0%		-	**-**
Totals %	46.8%	4.5%	0%		51.4%	4.7%	2.5%	0%		7.1%	1.8%	39.7%	0%		41.5%	**-**
PHF	0.97	0.75	0		0.95	0.71	0.75	0		0.81	0.54	0.91	0		0.88	0.94
Heavy	24	6	0		30	6	3	0		9	3	40	0		43	82
Heavy %	7%	18.2%	0%		8%	17.6%	16.7%	0%		17.3%	23.1%	13.8%	0%		14.2%	11.2%
Lights	318	27	0		345	28	15	0		43	10	250	0		260	648
Lights %	93%	81.8%	0%		92%	82.4%	83.3%	0%		82.7%	76.9%	86.2%	0%		85.8%	88.8%
Single-Unit Trucks	13	2	0		15	2	1	0		3	0	18	0		18	36
Single-Unit Trucks %	3.8%	6.1%	0%		4%	5.9%	5.6%	0%		5.8%	0%	6.2%	0%		5.9%	4.9%
Buses	8	3	0		11	4	1	0		5	2	15	0		17	33
Buses %	2.3%	9.1%	0%		2.9%	11.8%	5.6%	0%		9.6%	15.4%	5.2%	0%		5.6%	4.5%
Articulated Trucks	3	1	0		4	0	1	0		1	1	7	0		8	13
Articulated Trucks %	0.9%	3%	0%		1.1%	0%	5.6%	0%		1.9%	7.7%	2.4%	0%		2.6%	1.8%
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	0%		-	-	-	0%		-	-	-	0%		**-**
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	**-**
Bicycles on Crosswalk%	-	-	-	0%		-	-	-	0%		-	-	-	0%		**-**
Bicycles on Road	0	0	0		-	0	0	0		-	0	0	0		-	**-**
Bicycles on Road%	0%	0%	0%			0%	0%	0%			0%	0%	0%			**-**

Peak Hour: 04:00 PM - 05:00 PM Weather: Clear Sky (24 °C)

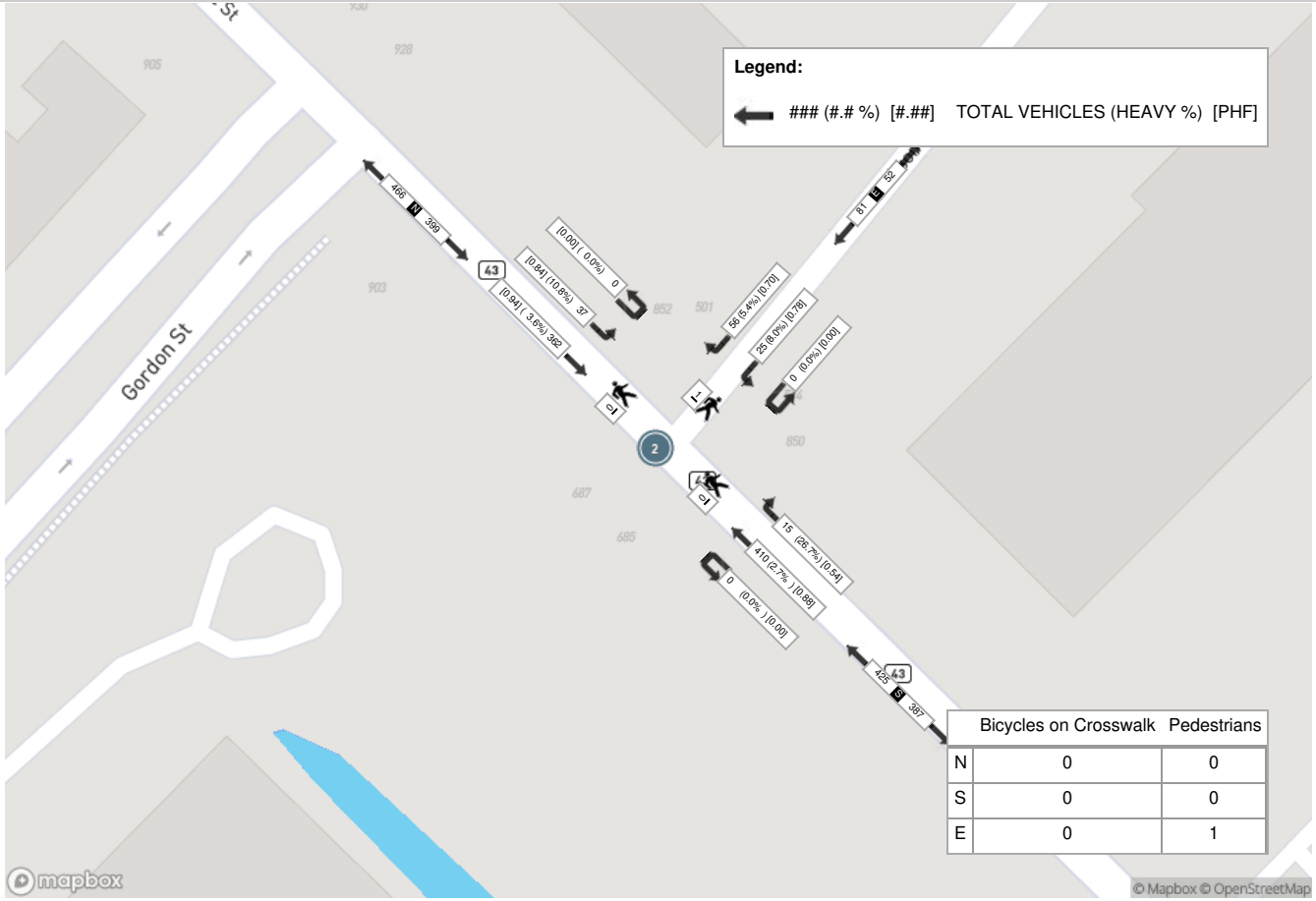
Start Time	N Approach GARTSHORE ST					E Approach DICKSON DR					S Approach GARTSHORE ST					Int. Total (15 min)
	Thru	Left	UTurn	Peds	Approach Total	Right	Left	UTurn	Peds	Approach Total	Right	Thru	UTurn	Peds	Approach Total	
2026-06-23 16:00:00	90	8	0	0	98	13	8	0	1	21	3	102	0	0	105	224
2026-06-23 16:15:00	96	9	0	0	105	13	2	0	0	15	2	96	0	0	98	218
2026-06-23 16:30:00	93	9	0	0	102	20	8	0	0	28	7	116	0	0	123	253
2026-06-23 16:45:00	83	11	0	0	94	10	7	0	0	17	3	96	0	0	99	210
Grand Total	362	37	0	0	399	56	25	0	1	81	15	410	0	0	425	**905**
Approach%	90.7%	9.3%	0%		-	69.1%	30.9%	0%		-	3.5%	96.5%	0%		-	**-**
Totals %	40%	4.1%	0%		44.1%	6.2%	2.8%	0%		9%	1.7%	45.3%	0%		47%	**-**
PHF	0.94	0.84	0		0.95	0.7	0.78	0		0.72	0.54	0.88	0		0.86	0.89
Heavy	13	4	0		17	3	2	0		5	4	11	0		15	37
Heavy %	3.6%	10.8%	0%		4.3%	5.4%	8%	0%		6.2%	26.7%	2.7%	0%		3.5%	4.1%
Lights	349	33	0		382	53	23	0		76	11	399	0		410	868
Lights %	96.4%	89.2%	0%		95.7%	94.6%	92%	0%		93.8%	73.3%	97.3%	0%		96.5%	95.9%
Single-Unit Trucks	9	1	0		10	2	0	0		2	0	5	0		5	17
Single-Unit Trucks %	2.5%	2.7%	0%		2.5%	3.6%	0%	0%		2.5%	0%	1.2%	0%		1.2%	1.9%
Buses	1	1	0		2	1	0	0		1	1	1	0		2	5
Buses %	0.3%	2.7%	0%		0.5%	1.8%	0%	0%		1.2%	6.7%	0.2%	0%		0.5%	0.6%
Articulated Trucks	3	2	0		5	0	2	0		2	3	5	0		8	15
Articulated Trucks %	0.8%	5.4%	0%		1.3%	0%	8%	0%		2.5%	20%	1.2%	0%		1.9%	1.7%
Pedestrians	-	-	-	0	-	-	-	-	1	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	0%		-	-	-	100%		-	-	-	0%		**-**
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	**-**
Bicycles on Crosswalk%	-	-	-	0%		-	-	-	0%		-	-	-	0%		**-**
Bicycles on Road	1	2	0		-	1	0	0		-	0	0	0		-	**-**
Bicycles on Road%	100%	100%	0%			100%	0%	0%			0%	0%	0%			**-**

Peak Hour: 08:00 AM - 09:00 AM Weather: Clear Sky (14 °C)



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

Peak Hour: 04:00 PM - 05:00 PM Weather: Clear Sky (24 °C)



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

Spectrum

Turning Movement Count
Location Name: WELLINGTON RD 19 & SECOND LINE
Date: Tue, Jun 23, 2026 Deployment Lead: Rey Fernandez

BA Group
1000 95 ST. CLAIR AVE W
TORONTO ONTARIO, M4V 1N6
CANADA

Turning Movement Count (3 . WELLINGTON RD 19 & SECOND LINE)

Start Time	N Approach 2 LINE						E Approach WELLINGTON RD 19						S Approach 2 LINE						W Approach WELLINGTON RD 19						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total		
2026-06-23 07:00:00	5	3	0	0	0	8	1	25	10	0	0	36	8	2	1	0	0	11	2	15	2	0	0	19	74	
2026-06-23 07:15:00	1	4	1	0	0	6	1	43	20	0	0	64	7	5	4	0	0	16	3	33	1	0	0	37	123	
2026-06-23 07:30:00	8	5	1	0	0	14	2	37	14	0	0	53	13	11	2	0	0	26	3	48	4	0	0	55	148	
2026-06-23 07:45:00	1	4	0	0	0	5	1	54	17	0	0	72	12	3	5	0	0	20	5	27	4	0	0	36	133	478
2026-06-23 08:00:00	4	4	1	0	0	9	1	45	17	0	0	63	14	3	1	0	0	18	4	39	3	0	0	46	136	540
2026-06-23 08:15:00	3	5	1	0	0	9	2	56	22	0	0	80	8	3	0	0	0	11	2	22	5	0	0	29	129	546
2026-06-23 08:30:00	7	6	0	0	0	13	1	52	20	0	0	73	8	2	3	0	0	13	5	33	4	0	0	42	141	539
2026-06-23 08:45:00	2	4	0	0	0	6	0	44	8	0	0	52	11	2	2	0	0	15	3	37	3	0	0	43	116	522
BREAK																										
2026-06-23 16:00:00	7	10	3	0	0	20	0	42	11	0	0	53	26	7	2	0	0	35	1	62	1	0	0	64	172	
2026-06-23 16:15:00	8	6	1	0	0	15	1	46	16	0	0	63	13	5	5	0	0	23	6	46	3	0	0	55	156	
2026-06-23 16:30:00	7	3	1	0	0	11	2	62	19	0	0	83	25	2	6	0	0	33	11	45	4	0	0	60	187	
2026-06-23 16:45:00	1	4	1	0	0	6	0	28	14	0	0	42	22	5	5	0	0	32	7	55	1	0	0	63	143	658
2026-06-23 17:00:00	5	6	3	0	0	14	0	46	22	0	0	68	23	2	1	0	0	26	5	58	10	0	0	73	181	667
2026-06-23 17:15:00	5	7	1	0	0	13	2	51	14	0	0	67	18	5	3	0	0	26	8	34	3	0	0	45	151	662
2026-06-23 17:30:00	6	0	3	0	0	9	0	41	13	0	0	54	28	3	2	0	0	33	4	37	4	0	0	45	141	616
2026-06-23 17:45:00	3	4	0	0	0	7	1	33	12	0	0	46	12	4	2	0	0	18	3	36	1	0	0	40	111	584
Grand Total	73	75	17	0	0	165	15	705	249	0	0	969	248	64	44	0	0	356	72	627	53	0	0	752	**2242**	-
Approach%	44.2%	45.5%	10.3%	0%		-	1.5%	72.8%	25.7%	0%		-	69.7%	18%	12.4%	0%		-	9.6%	83.4%	7%	0%		-	-	-
Totals %	3.3%	3.3%	0.8%	0%		7.4%	0.7%	31.4%	11.1%	0%		43.2%	11.1%	2.9%	2%	0%		15.9%	3.2%	28%	2.4%	0%		33.5%	-	-
Heavy	6	2	3	0		-	0	43	10	0		-	21	0	4	0		-	1	38	1	0		-	-	-
Heavy %	8.2%	2.7%	17.6%	0%		-	0%	6.1%	4%	0%		-	8.5%	0%	9.1%	0%		-	1.4%	6.1%	1.9%	0%		-	-	-
Bicycles	0	0	0	0		-	0	0	0	0		-	1	2	0	0		-	0	0	0	0		-	-	-
Bicycle %	0%	0%	0%	0%		-	0%	0%	0%	0%		-	0.4%	3.1%	0%	0%		-	0%	0%	0%	0%		-	-	-

Spectrum

Turning Movement Count
Location Name: WELLINGTON RD 19 & SECOND LINE
Date: Tue, Jun 23, 2026 Deployment Lead: Rey Fernandez

BA Group
1000 95 ST. CLAIR AVE W
TORONTO ONTARIO, M4V 1N6
CANADA

Peak Hour: 07:30 AM - 08:30 AM Weather: Clear Sky (14 °C)

Start Time	N Approach 2 LINE						E Approach WELLINGTON RD 19						S Approach 2 LINE						W Approach WELLINGTON RD 19						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
2026-06-23 07:30:00	8	5	1	0	0	14	2	37	14	0	0	53	13	11	2	0	0	26	3	48	4	0	0	55	148
2026-06-23 07:45:00	1	4	0	0	0	5	1	54	17	0	0	72	12	3	5	0	0	20	5	27	4	0	0	36	133
2026-06-23 08:00:00	4	4	1	0	0	9	1	45	17	0	0	63	14	3	1	0	0	18	4	39	3	0	0	46	136
2026-06-23 08:15:00	3	5	1	0	0	9	2	56	22	0	0	80	8	3	0	0	0	11	2	22	5	0	0	29	129
Grand Total	16	18	3	0	0	37	6	192	70	0	0	268	47	20	8	0	0	75	14	136	16	0	0	166	**546**
Approach%	43.2%	48.6%	8.1%	0%		-	2.2%	71.6%	26.1%	0%		-	62.7%	26.7%	10.7%	0%		-	8.4%	81.9%	9.6%	0%		-	**-**
Totals %	2.9%	3.3%	0.5%	0%		6.8%	1.1%	35.2%	12.8%	0%		49.1%	8.6%	3.7%	1.5%	0%		13.7%	2.6%	24.9%	2.9%	0%		30.4%	**-**
PHF	0.5	0.9	0.75	0		0.66	0.75	0.86	0.8	0		0.84	0.84	0.45	0.4	0		0.72	0.7	0.71	0.8	0		0.75	0.92
Heavy	4	1	0	0		5	0	17	4	0		21	10	0	1	0		11	0	16	0	0		16	53
Heavy %	25%	5.6%	0%	0%		13.5%	0%	8.9%	5.7%	0%		7.8%	21.3%	0%	12.5%	0%		14.7%	0%	11.8%	0%	0%		9.6%	9.7%
Lights	12	17	3	0		32	6	175	66	0		247	37	20	7	0		64	14	120	16	0		150	493
Lights %	75%	94.4%	100%	0%		86.5%	100%	91.1%	94.3%	0%		92.2%	78.7%	100%	87.5%	0%		85.3%	100%	88.2%	100%	0%		90.4%	90.3%
Single-Unit Trucks	2	1	0	0		3	0	9	3	0		12	5	0	0	0		5	0	10	0	0		10	30
Single-Unit Trucks %	12.5%	5.6%	0%	0%		8.1%	0%	4.7%	4.3%	0%		4.5%	10.6%	0%	0%	0%		6.7%	0%	7.4%	0%	0%		6%	5.5%
Buses	2	0	0	0		2	0	6	0	0		6	0	0	1	0		1	0	4	0	0		4	13
Buses %	12.5%	0%	0%	0%		5.4%	0%	3.1%	0%	0%		2.2%	0%	0%	12.5%	0%		1.3%	0%	2.9%	0%	0%		2.4%	2.4%
Articulated Trucks	0	0	0	0		0	0	2	1	0		3	5	0	0	0		5	0	2	0	0		2	10
Articulated Trucks %	0%	0%	0%	0%		0%	0%	1%	1.4%	0%		1.1%	10.6%	0%	0%	0%		6.7%	0%	1.5%	0%	0%		1.2%	1.8%
Bicycles on Road	0	0	0	0		-	0	0	0	0		-	0	0	0	0		-	0	0	0	0		-	**-**
Bicycles on Road%	0%	0%	0%	0%			0%	0%	0%	0%			0%	0%	0%	0%			0%	0%	0%	0%			**-**

Spectrum

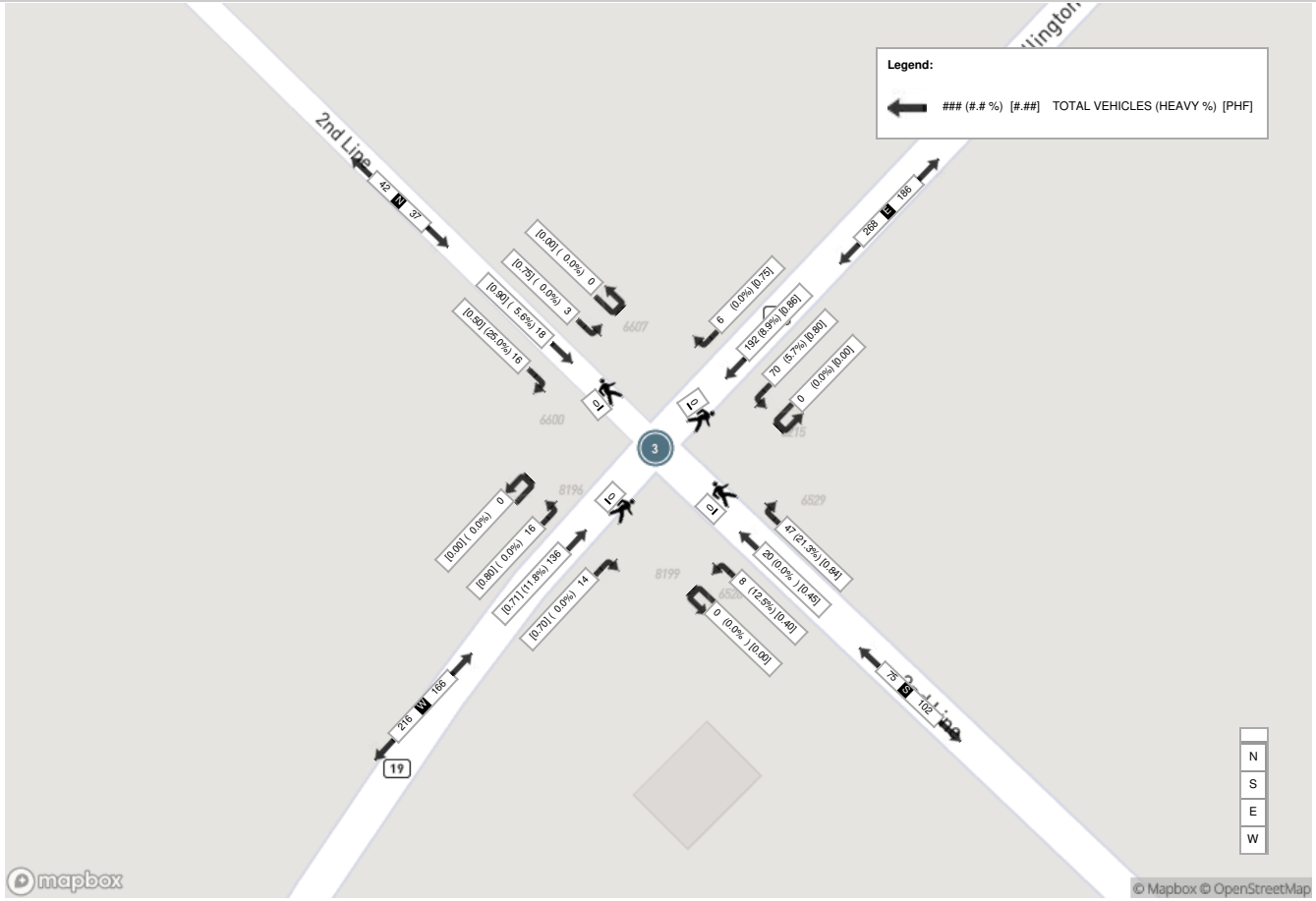
Turning Movement Count
Location Name: WELLINGTON RD 19 & SECOND LINE
Date: Tue, Jun 23, 2026 Deployment Lead: Rey Fernandez

BA Group
1000 95 ST. CLAIR AVE W
TORONTO ONTARIO, M4V 1N6
CANADA

Peak Hour: 04:15 PM - 05:15 PM Weather: Clear Sky (24 °C)

Start Time	N Approach 2 LINE						E Approach WELLINGTON RD 19						S Approach 2 LINE						W Approach WELLINGTON RD 19						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
2026-06-23 16:15:00	8	6	1	0	0	15	1	46	16	0	0	63	13	5	5	0	0	23	6	46	3	0	0	55	156
2026-06-23 16:30:00	7	3	1	0	0	11	2	62	19	0	0	83	25	2	6	0	0	33	11	45	4	0	0	60	187
2026-06-23 16:45:00	1	4	1	0	0	6	0	28	14	0	0	42	22	5	5	0	0	32	7	55	1	0	0	63	143
2026-06-23 17:00:00	5	6	3	0	0	14	0	46	22	0	0	68	23	2	1	0	0	26	5	58	10	0	0	73	181
Grand Total	21	19	6	0	0	46	3	182	71	0	0	256	83	14	17	0	0	114	29	204	18	0	0	251	**667**
Approach%	45.7%	41.3%	13%	0%		-	1.2%	71.1%	27.7%	0%		-	72.8%	12.3%	14.9%	0%		-	11.6%	81.3%	7.2%	0%		-	**-**
Totals %	3.1%	2.8%	0.9%	0%		6.9%	0.4%	27.3%	10.6%	0%		38.4%	12.4%	2.1%	2.5%	0%		17.1%	4.3%	30.6%	2.7%	0%		37.6%	**-**
PHF	0.66	0.79	0.5	0		0.77	0.38	0.73	0.81	0		0.77	0.83	0.7	0.71	0		0.86	0.66	0.88	0.45	0		0.86	0.89
Heavy	1	0	2	0		3	0	5	4	0		9	5	0	2	0		7	0	5	0	0		5	24
Heavy %	4.8%	0%	33.3%	0%		6.5%	0%	2.7%	5.6%	0%		3.5%	6%	0%	11.8%	0%		6.1%	0%	2.5%	0%	0%		2%	3.6%
Lights	20	19	4	0		43	3	177	67	0		247	78	14	15	0		107	29	199	18	0		246	643
Lights %	95.2%	100%	66.7%	0%		93.5%	100%	97.3%	94.4%	0%		96.5%	94%	100%	88.2%	0%		93.9%	100%	97.5%	100%	0%		98%	96.4%
Single-Unit Trucks	1	0	2	0		3	0	2	2	0		4	2	0	1	0		3	0	4	0	0		4	14
Single-Unit Trucks %	4.8%	0%	33.3%	0%		6.5%	0%	1.1%	2.8%	0%		1.6%	2.4%	0%	5.9%	0%		2.6%	0%	2%	0%	0%		1.6%	2.1%
Buses	0	0	0	0		0	0	2	0	0		2	2	0	1	0		3	0	0	0	0		0	5
Buses %	0%	0%	0%	0%		0%	0%	1.1%	0%	0%		0.8%	2.4%	0%	5.9%	0%		2.6%	0%	0%	0%	0%		0%	0.7%
Articulated Trucks	0	0	0	0		0	0	1	2	0		3	1	0	0	0		1	0	1	0	0		1	5
Articulated Trucks %	0%	0%	0%	0%		0%	0%	0.5%	2.8%	0%		1.2%	1.2%	0%	0%	0%		0.9%	0%	0.5%	0%	0%		0.4%	0.7%
Bicycles on Road	0	0	0	0		-	0	0	0	0		-	0	2	0	0		-	0	0	0	0		-	**-**
Bicycles on Road%	0%	0%	0%	0%			0%	0%	0%	0%			0%	100%	0%	0%			0%	0%	0%	0%			**-**

Peak Hour: 07:30 AM - 08:30 AM **Weather: Clear Sky (14 °C)**

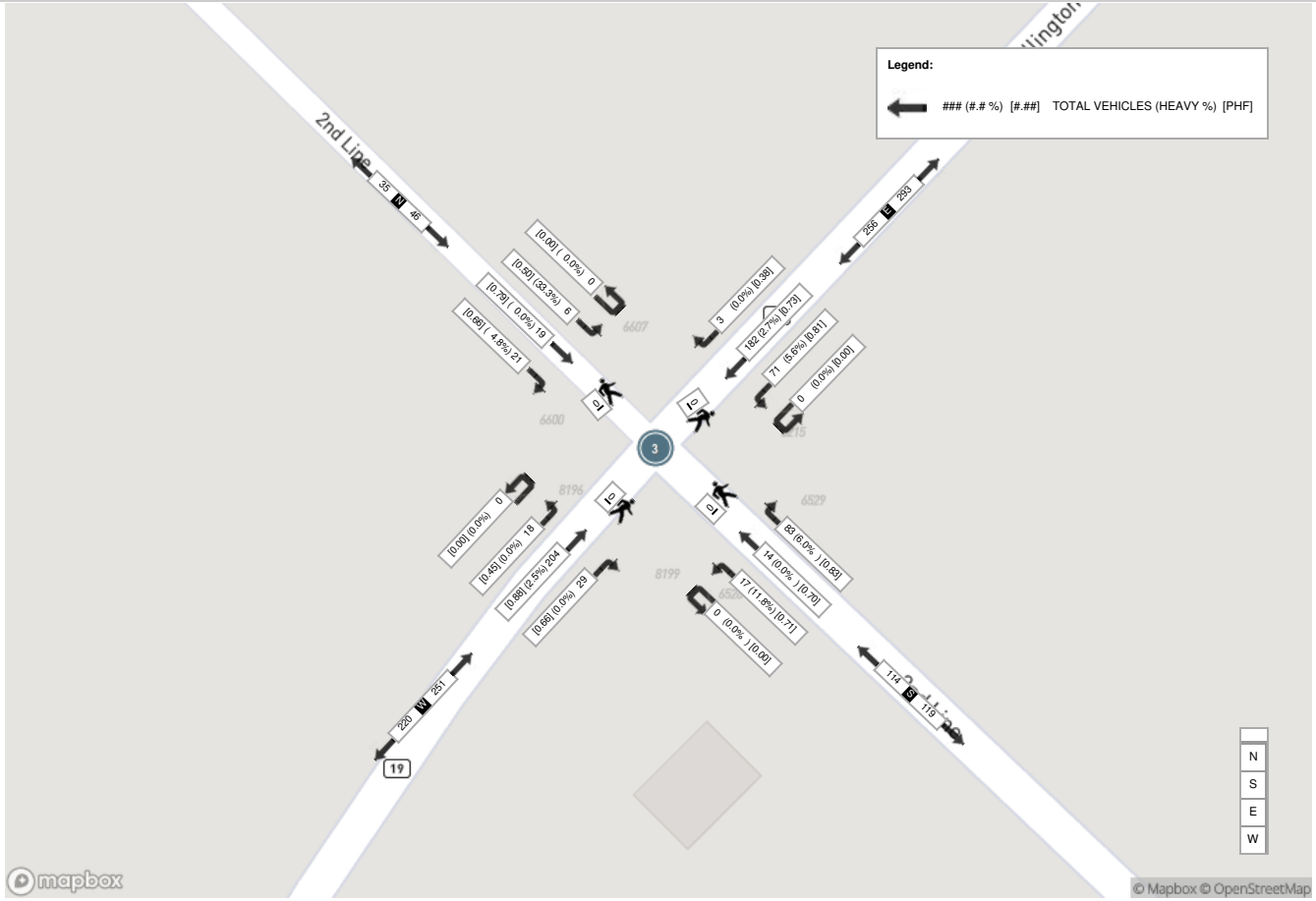


Spectrum

Turning Movement Count
Location Name: WELLINGTON RD 19 & SECOND LINE
Date: Tue, Jun 23, 2026 Deployment Lead: Rey Fernandez

BA Group
1000 95 ST. CLAIR AVE W
TORONTO ONTARIO, M4V 1N6
CANADA

Peak Hour: 04:15 PM - 05:15 PM **Weather: Clear Sky (24 °C)**

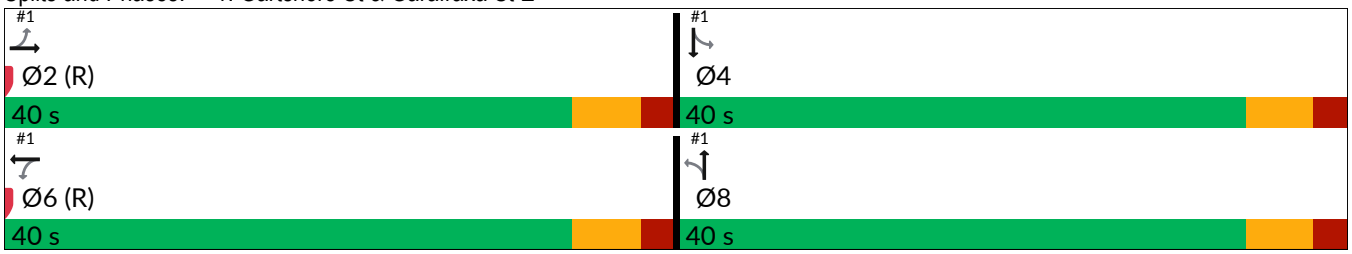


Appendix E:
Synchro Outputs

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	10	70	85	115	80	275	55	330
Future Volume (vph)	10	70	85	115	80	275	55	330
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		2		6		8		4
Permitted Phases	2		6		8		4	
Detector Phase	2	2	6	6	8	8	4	4
Switch Phase								
Minimum Initial (s)	30.0	30.0	30.0	30.0	10.0	10.0	10.0	10.0
Minimum Split (s)	36.1	36.1	36.1	36.1	27.1	27.1	27.1	27.1
Total Split (s)	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Yellow Time (s)	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	C-Min	C-Min	C-Min	C-Min	None	None	None	None
Act Effct Green (s)	44.2	44.2	44.2	44.2	23.6	23.6	23.6	23.6
Actuated g/C Ratio	0.55	0.55	0.55	0.55	0.30	0.30	0.30	0.30
v/c Ratio	0.02	0.22	0.16	0.19	0.54	0.74	0.35	0.76
Control Delay (s/veh)	11.0	5.4	11.7	9.3	28.2	27.8	25.7	34.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	11.0	5.4	11.7	9.3	28.2	27.8	25.7	34.7
LOS	B	A	B	A	C	C	C	C
Approach Delay (s/veh)		5.6		10.1		27.9		33.4
Approach LOS		A		B		C		C

Intersection Summary	
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 11.4 (14%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 65	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.76	
Intersection Signal Delay (s/veh): 22.6	Intersection LOS: C
Intersection Capacity Utilization 97.0%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 1: Gartshore St & Garafraxa St E

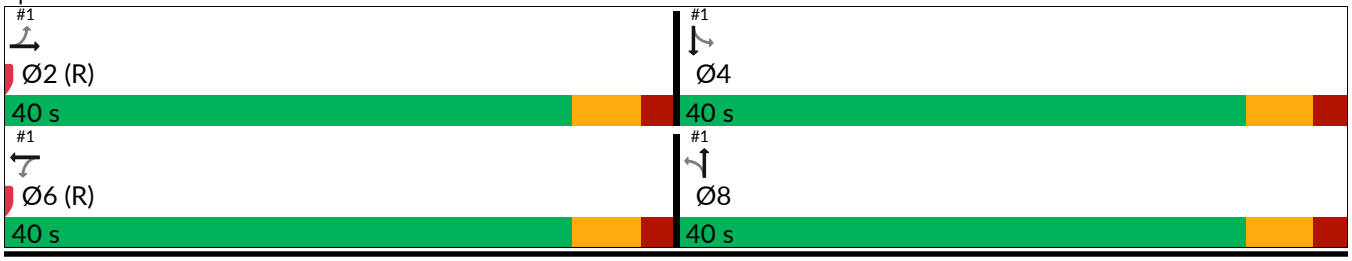


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	10	70	85	115	80	275	55	330
Future Volume (vph)	10	70	85	115	80	275	55	330
Lane Group Flow (vph)	11	216	97	188	91	364	63	392
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		2		6		8		4
Permitted Phases	2		6		8		4	
Detector Phase	2	2	6	6	8	8	4	4
Switch Phase								
Minimum Initial (s)	30.0	30.0	30.0	30.0	10.0	10.0	10.0	10.0
Minimum Split (s)	36.1	36.1	36.1	36.1	27.1	27.1	27.1	27.1
Total Split (s)	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Yellow Time (s)	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	C-Min	C-Min	C-Min	C-Min	None	None	None	None
v/c Ratio	0.02	0.22	0.16	0.19	0.54	0.74	0.35	0.76
Control Delay (s/veh)	11.0	5.4	11.7	9.3	28.2	27.8	25.7	34.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	11.0	5.4	11.7	9.3	28.2	27.8	25.7	34.7
Queue Length 50th (m)	0.7	5.6	6.8	11.1	8.0	29.3	7.5	54.1
Queue Length 95th (m)	3.5	18.7	17.5	26.0	12.5	33.9	15.3	70.1
Internal Link Dist (m)		114.2		223.2		361.2		201.3
Turn Bay Length (m)	40.0		35.0		30.0		35.0	
Base Capacity (vph)	593	964	592	987	242	698	259	740
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	0.02	0.22	0.16	0.19	0.38	0.52	0.24	0.53

Intersection Summary

Cycle Length: 80
Actuated Cycle Length: 80
Offset: 11.4 (14%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated

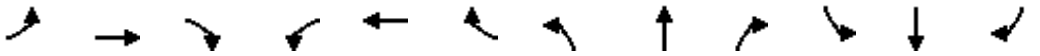
Splits and Phases: 1: Gartshore St & Garafraxa St E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	70	120	85	115	50	80	275	45	55	330	15
Future Volume (vph)	10	70	120	85	115	50	80	275	45	55	330	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.1	6.1		6.1	6.1		6.1	6.1		6.1	6.1	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		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	0.91		1.00	0.95		1.00	0.98		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)	1597	1636		1633	1757		1728	1630		1641	1743	
Flt Permitted	0.64	1.00		0.62	1.00		0.31	1.00		0.36	1.00	
Satd. Flow (perm)	1075	1636		1071	1757		572	1630		613	1743	
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	0.88
Adj. Flow (vph)	11	80	136	97	131	57	91	312	51	63	375	17
RTOR Reduction (vph)	0	60	0	0	15	0	0	9	0	0	3	0
Lane Group Flow (vph)	11	156	0	97	173	0	91	355	0	63	389	0
Confl. Peds. (#/hr)			5	5			5					5
Heavy Vehicles (%)	13%	6%	4%	10%	2%	6%	4%	14%	15%	10%	8%	14%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	44.2	44.2		44.2	44.2		23.6	23.6		23.6	23.6	
Effective Green, g (s)	44.2	44.2		44.2	44.2		23.6	23.6		23.6	23.6	
Actuated g/C Ratio	0.55	0.55		0.55	0.55		0.30	0.30		0.30	0.30	
Clearance Time (s)	6.1	6.1		6.1	6.1		6.1	6.1		6.1	6.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	593	903		591	970		168	480		180	514	
v/s Ratio Prot		0.10			c0.10			0.22			c0.22	
v/s Ratio Perm	0.01			0.09			0.16			0.10		
v/c Ratio	0.02	0.17		0.16	0.18		0.54	0.74		0.35	0.76	
Uniform Delay, d1	8.1	8.9		8.8	8.9		23.7	25.4		22.2	25.6	
Progression Factor	1.00	1.00		1.00	1.00		0.74	0.77		1.00	1.00	
Incremental Delay, d2	0.1	0.4		0.6	0.4		3.4	5.7		1.2	6.3	
Delay (s)	8.2	9.3		9.4	9.3		21.0	25.3		23.3	31.9	
Level of Service	A	A		A	A		C	C		C	C	
Approach Delay (s/veh)		9.2			9.3			24.4			30.7	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	21.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.2
Intersection Capacity Utilization	97.0%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

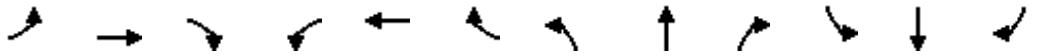


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	150	10	0	190	5	15	5	5	15	10	45
Future Volume (Veh/h)	10	150	10	0	190	5	15	5	5	15	10	45
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	163	11	0	207	5	16	5	5	16	11	49
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		247										
pX, platoon unblocked												
vC, conflicting volume	212			174			455	403	169	408	406	210
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	212			174			455	403	169	408	406	210
tC, single (s)	4.1			4.1			7.2	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.6	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			97	99	99	97	98	94
cM capacity (veh/h)	1370			1415			460	535	881	547	533	836

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	185	212	26	76
Volume Left	11	0	16	16
Volume Right	11	5	5	49
cSH	1370	1415	522	701
Volume to Capacity	0.00*	0.00	0.05	0.11
Queue Length 95th (m)	0.2	0.0	1.3	2.9
Control Delay (s/veh)	0.5	0.0	12.3	10.8
Lane LOS	A		B	B
Approach Delay (s/veh)	0.5	0.0	12.3	10.8
Approach LOS			B	B

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	27.6%	ICU Level of Service	A
Analysis Period (min)	15		

* Value less than 0.01.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	110	10	30	165	10	15	10	25	10	0	10
Future Volume (Veh/h)	5	110	10	30	165	10	15	10	25	10	0	10
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
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
Hourly flow rate (vph)	5	115	10	31	172	10	16	10	26	10	0	10
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	182			125			369	369	115	390	369	172
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	182			125			369	369	115	390	369	172
tC, single (s)	4.1			4.2			7.3	6.7	6.2	7.2	7.0	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.7	4.2	3.3	3.6	4.4	3.3
p0 queue free %	100			98			97	98	97	98	100	99
cM capacity (veh/h)	1405			1396			534	522	932	519	479	877

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	120	10	203	10	52	20
Volume Left	5	0	31	0	16	10
Volume Right	0	10	0	10	26	10
cSH	1405	1700	1396	1700	675	652
Volume to Capacity	0.00*	0.00*	0.02	0.00*	0.08	0.03
Queue Length 95th (m)	0.1	0.0	0.5	0.0	2.0	0.8
Control Delay (s/veh)	0.3	0.0	1.3	0.0	10.8	10.7
Lane LOS	A		A		B	B
Approach Delay (s/veh)	0.3		1.3		10.8	10.7
Approach LOS					B	B

Intersection Summary			
Average Delay	2.6		
Intersection Capacity Utilization	27.0%	ICU Level of Service	A
Analysis Period (min)	15		

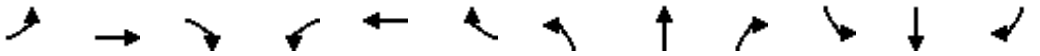
* Value less than 0.01.

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	25	365	290	35	10	15
Future Volume (Veh/h)	25	365	290	35	10	15
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	27	401	319	38	11	16
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	695	19	27			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	695	19	27			
tC, single (s)	6.5	6.3	4.2			
tC, 2 stage (s)						
tF (s)	3.6	3.4	2.3			
p0 queue free %	91	62	79			
cM capacity (veh/h)	315	1048	1524			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	428	357	27
Volume Left	27	319	0
Volume Right	401	0	16
cSH	913	1524	1700
Volume to Capacity	0.47	0.21	0.02
Queue Length 95th (m)	20.3	6.3	0.0
Control Delay (s/veh)	12.4	7.3	0.0
Lane LOS	B	A	
Approach Delay (s/veh)	12.4	7.3	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	9.7		
Intersection Capacity Utilization	55.2%	ICU Level of Service	B
Analysis Period (min)	15		

* Value less than 0.01.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	25	75	15	20	15	60	275	10	15	305	10
Future Volume (Veh/h)	5	25	75	15	20	15	60	275	10	15	305	10
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	6	28	83	17	22	17	67	306	11	17	339	11
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)								225				
pX, platoon unblocked	0.85	0.85		0.85	0.85	0.85				0.85		
vC, conflicting volume	852	830	345	921	830	312	350			317		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	739	712	345	820	712	104	350			110		
tC, single (s)	7.1	6.5	6.2	7.2	6.6	6.2	4.1			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.0	3.3	2.2			2.3		
p0 queue free %	98	90	88	91	92	98	94			99		
cM capacity (veh/h)	249	285	701	190	280	814	1192			1239		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	117	56	384	367
Volume Left	6	17	67	17
Volume Right	83	17	11	11
cSH	486	297	1192	1239
Volume to Capacity	0.24	0.19	0.06	0.01
Queue Length 95th (m)	7.5	5.5	1.4	0.3
Control Delay (s/veh)	14.7	19.9	1.9	0.5
Lane LOS	B	C	A	A
Approach Delay (s/veh)	14.7	19.9	1.9	0.5
Approach LOS	B	C		

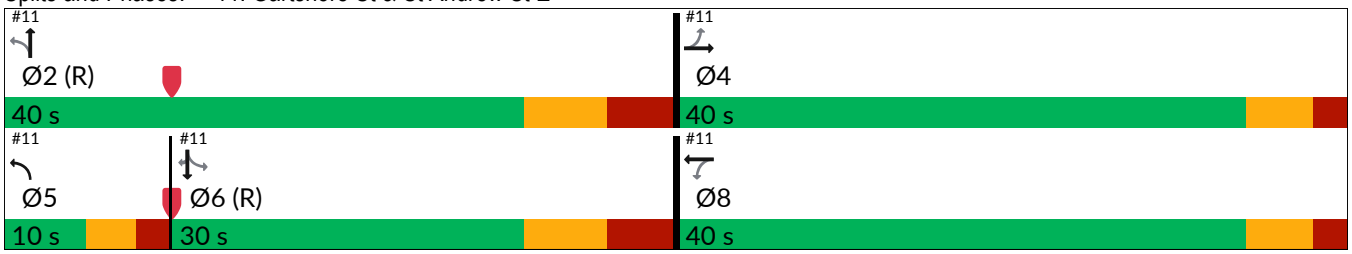
Intersection Summary				
Average Delay	4.1			
Intersection Capacity Utilization	54.2%	ICU Level of Service	A	
Analysis Period (min)	15			

* Value less than 0.01.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	20	50	55	40	110	290	15	410	50
Future Volume (vph)	20	50	55	40	110	290	15	410	50
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	Perm	NA	Perm
Protected Phases		4		8	5	2		6	
Permitted Phases	4		8		2		6		6
Detector Phase	4	4	8	8	5	2	6	6	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.1	24.1	24.1	24.1	10.0	27.0	27.0	27.0	27.0
Total Split (s)	40.0	40.0	40.0	40.0	10.0	40.0	30.0	30.0	30.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	12.5%	50.0%	37.5%	37.5%	37.5%
Yellow Time (s)	4.1	4.1	4.1	4.1	3.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	4.0	4.0	4.0	4.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.1	5.0	9.0	9.0	9.0	9.0
Lead/Lag					Lead		Lag	Lag	Lag
Lead-Lag Optimize?					Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	11.0	11.0	11.0	11.0	57.9	53.9	41.0	41.0	41.0
Actuated g/C Ratio	0.14	0.14	0.14	0.14	0.72	0.67	0.51	0.51	0.51
v/c Ratio	0.15	0.64	0.82	0.27	0.25	0.37	0.04	0.59	0.08
Control Delay (s/veh)	30.1	17.6	89.1	25.2	5.2	7.4	22.6	31.1	7.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	30.1	17.6	89.1	25.2	5.2	7.4	22.6	31.1	7.7
LOS	C	B	F	C	A	A	C	C	A
Approach Delay (s/veh)		18.8		57.1		6.8		28.4	
Approach LOS		B		E		A		C	

Intersection Summary	
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 56.1 (70%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 65	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.82	
Intersection Signal Delay (s/veh): 21.7	Intersection LOS: C
Intersection Capacity Utilization 65.8%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 11: Gartshore St & St Andrew St E

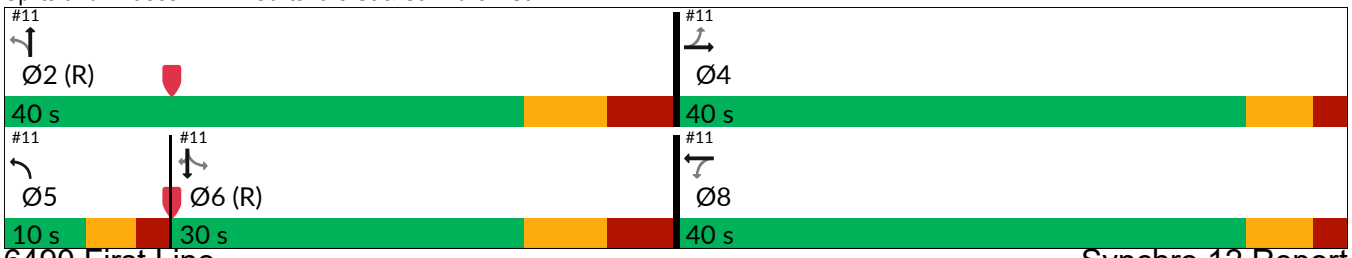


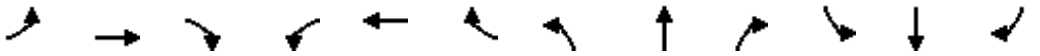
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	20	50	55	40	110	290	15	410	50
Future Volume (vph)	20	50	55	40	110	290	15	410	50
Lane Group Flow (vph)	26	247	71	71	143	422	19	532	65
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	Perm	NA	Perm
Protected Phases		4		8	5	2		6	
Permitted Phases	4		8		2		6		6
Detector Phase	4	4	8	8	5	2	6	6	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.1	24.1	24.1	24.1	10.0	27.0	27.0	27.0	27.0
Total Split (s)	40.0	40.0	40.0	40.0	10.0	40.0	30.0	30.0	30.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	12.5%	50.0%	37.5%	37.5%	37.5%
Yellow Time (s)	4.1	4.1	4.1	4.1	3.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	4.0	4.0	4.0	4.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.1	5.0	9.0	9.0	9.0	9.0
Lead/Lag					Lead		Lag	Lag	Lag
Lead-Lag Optimize?					Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	C-Max	C-Max
v/c Ratio	0.15	0.64	0.82	0.27	0.25	0.37	0.04	0.59	0.08
Control Delay (s/veh)	30.1	17.6	89.1	25.2	5.2	7.4	22.6	31.1	7.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	30.1	17.6	89.1	25.2	5.2	7.4	22.6	31.1	7.7
Queue Length 50th (m)	3.7	9.4	10.8	7.5	5.5	23.1	2.5	75.4	1.5
Queue Length 95th (m)	8.3	19.5	19.3	14.5	11.6	37.9	m6.0	95.3	4.6
Internal Link Dist (m)		95.5		92.4		135.0		361.2	
Turn Bay Length (m)	15.0		15.0		15.0		15.0		50.0
Base Capacity (vph)	523	805	269	760	571	1151	499	901	811
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.31	0.26	0.09	0.25	0.37	0.04	0.59	0.08

Intersection Summary

Cycle Length: 80
Actuated Cycle Length: 80
Offset: 56.1 (70%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 11: Gartshore St & St Andrew St E





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	50	140	55	40	15	110	290	35	15	410	50
Future Volume (vph)	20	50	140	55	40	15	110	290	35	15	410	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.1	6.1		6.1	6.1		5.0	9.0		9.0	9.0	9.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	1.00	0.93
Flpb, ped/bikes	0.96	1.00		0.99	1.00		0.99	1.00		0.99	1.00	1.00
Frt	1.00	0.89		1.00	0.96		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1650	1655		1660	1769		1758	1704		1794	1759	1478
Flt Permitted	0.71	1.00		0.36	1.00		0.34	1.00		0.52	1.00	1.00
Satd. Flow (perm)	1234	1655		635	1769		631	1704		974	1759	1478
Peak-hour factor, PHF	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
Adj. Flow (vph)	26	65	182	71	52	19	143	377	45	19	532	65
RTOR Reduction (vph)	0	157	0	0	16	0	0	3	0	0	0	32
Lane Group Flow (vph)	26	90	0	71	55	0	143	419	0	19	532	33
Confl. Peds. (#/hr)	20		5	5		20	30		5	5		30
Heavy Vehicles (%)	5%	2%	1%	8%	0%	7%	2%	10%	6%	0%	8%	2%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)	11.0	11.0		11.0	11.0		53.9	53.9		41.0	41.0	41.0
Effective Green, g (s)	11.0	11.0		11.0	11.0		53.9	53.9		41.0	41.0	41.0
Actuated g/C Ratio	0.14	0.14		0.14	0.14		0.67	0.67		0.51	0.51	0.51
Clearance Time (s)	6.1	6.1		6.1	6.1		5.0	9.0		9.0	9.0	9.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	169	227		87	243		536	1148		499	901	757
v/s Ratio Prot		0.05			0.03		0.03	c0.25			c0.30	
v/s Ratio Perm	0.02			c0.11			0.15			0.02		0.02
v/c Ratio	0.15	0.40		0.82	0.22		0.27	0.37		0.04	0.59	0.04
Uniform Delay, d1	30.4	31.5		33.5	30.7		5.8	5.6		9.7	13.6	9.7
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.80	1.80	7.41
Incremental Delay, d2	0.4	1.1		42.3	0.5		0.3	0.9		0.1	2.7	0.1
Delay (s)	30.8	32.6		75.8	31.2		6.0	6.5		17.6	27.2	72.2
Level of Service	C	C		E	C		A	A		B	C	E
Approach Delay (s/veh)		32.4			53.5			6.4			31.7	
Approach LOS		C			D			A			C	

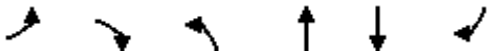
Intersection Summary			
HCM 2000 Control Delay (s/veh)	24.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	20.1
Intersection Capacity Utilization	65.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	20	35	290	15	35	340
Future Volume (Veh/h)	20	35	290	15	35	340
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	21	37	309	16	37	362
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	753	317			325	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	753	317			325	
tC, single (s)	6.6	6.4			4.3	
tC, 2 stage (s)						
tF (s)	3.7	3.5			2.4	
p0 queue free %	94	95			97	
cM capacity (veh/h)	345	688			1150	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	58	325	399
Volume Left	21	0	37
Volume Right	37	16	0
cSH	506	1700	1150
Volume to Capacity	0.11	0.19	0.03
Queue Length 95th (m)	3.1	0.0	0.8
Control Delay (s/veh)	13.0	0.0	1.1
Lane LOS	B		A
Approach Delay (s/veh)	13.0	0.0	1.1
Approach LOS	B		

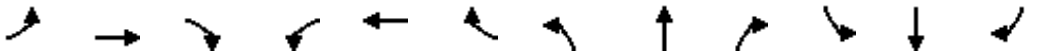
Intersection Summary			
Average Delay		1.5	
Intersection Capacity Utilization		49.3%	ICU Level of Service A
Analysis Period (min)		15	



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	10	15	35	25	5	10
Future Volume (Veh/h)	10	15	35	25	5	10
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79
Hourly flow rate (vph)	13	19	44	32	6	13
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	133	13	19			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	133	13	19			
tC, single (s)	6.5	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.6	3.3	2.2			
p0 queue free %	98	98	97			
cM capacity (veh/h)	822	1074	1611			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	32	76	19
Volume Left	13	44	0
Volume Right	19	0	13
cSH	955	1611	1700
Volume to Capacity	0.03	0.03	0.01
Queue Length 95th (m)	0.8	0.7	0.0
Control Delay (s/veh)	8.9	4.3	0.0
Lane LOS	A	A	
Approach Delay (s/veh)	8.9	4.3	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	4.8		
Intersection Capacity Utilization	19.9%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	135	15	70	190	5	10	20	45	5	20	15
Future Volume (Veh/h)	15	135	15	70	190	5	10	20	45	5	20	15
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	16	147	16	76	207	5	11	22	49	5	22	16
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	212			163			565	543	147	598	554	207
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	212			163			565	543	147	598	554	207
tC, single (s)	4.1			4.2			7.2	6.5	6.4	7.1	6.6	6.4
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.6	4.0	3.5	3.5	4.1	3.5
p0 queue free %	99			95			97	95	94	99	95	98
cM capacity (veh/h)	1370			1392			374	420	852	359	406	779

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	163	16	283	5	82	43
Volume Left	16	0	76	0	11	5
Volume Right	0	16	0	5	49	16
cSH	1370	1700	1392	1700	589	485
Volume to Capacity	0.01	0.00*	0.05	0.00*	0.14	0.09
Queue Length 95th (m)	0.3	0.0	1.4	0.0	3.9	2.3
Control Delay (s/veh)	0.8	0.0	2.4	0.0	12.1	13.1
Lane LOS	A		A		B	B
Approach Delay (s/veh)	0.8		2.4		12.1	13.1
Approach LOS					B	B

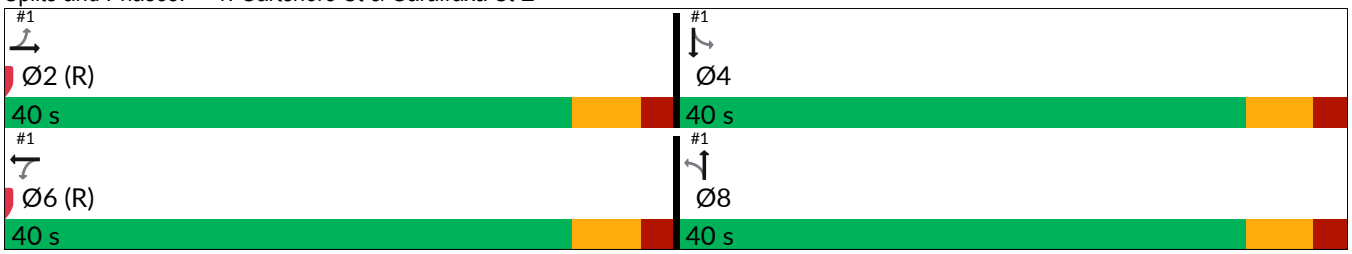
Intersection Summary				
Average Delay	4.0			
Intersection Capacity Utilization	37.7%	ICU Level of Service		A
Analysis Period (min)	15			

* Value less than 0.01.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	20	100	90	75	75	395	70	315
Future Volume (vph)	20	100	90	75	75	395	70	315
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		2		6		8		4
Permitted Phases	2		6		8		4	
Detector Phase	2	2	6	6	8	8	4	4
Switch Phase								
Minimum Initial (s)	30.0	30.0	30.0	30.0	10.0	10.0	10.0	10.0
Minimum Split (s)	36.1	36.1	36.1	36.1	27.1	27.1	27.1	27.1
Total Split (s)	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Yellow Time (s)	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	C-Min	C-Min	C-Min	C-Min	None	None	None	None
Act Effct Green (s)	39.5	39.5	39.5	39.5	28.3	28.3	28.3	28.3
Actuated g/C Ratio	0.49	0.49	0.49	0.49	0.35	0.35	0.35	0.35
v/c Ratio	0.04	0.26	0.18	0.20	0.31	0.81	0.52	0.57
Control Delay (s/veh)	13.7	9.7	14.6	7.9	15.7	28.0	31.8	23.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	13.7	9.7	14.6	7.9	15.7	28.0	31.8	23.4
LOS	B	A	B	A	B	C	C	C
Approach Delay (s/veh)		10.0		10.3		26.3		24.9
Approach LOS		B		B		C		C

Intersection Summary	
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 11.4 (14%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 65	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.81	
Intersection Signal Delay (s/veh): 20.5	Intersection LOS: C
Intersection Capacity Utilization 103.7%	ICU Level of Service G
Analysis Period (min) 15	

Splits and Phases: 1: Gartshore St & Garafraxa St E

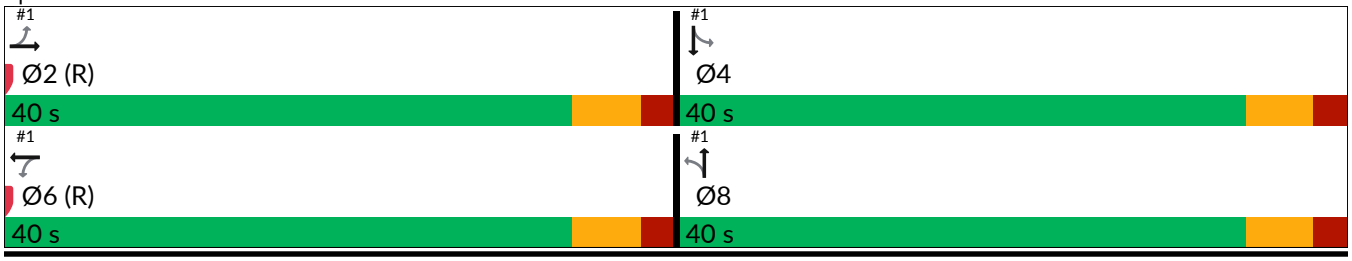


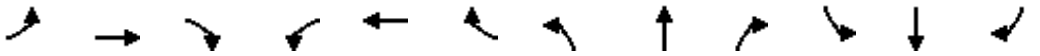
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	20	100	90	75	75	395	70	315
Future Volume (vph)	20	100	90	75	75	395	70	315
Lane Group Flow (vph)	22	228	100	177	83	517	78	372
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		2		6		8		4
Permitted Phases	2		6		8		4	
Detector Phase	2	2	6	6	8	8	4	4
Switch Phase								
Minimum Initial (s)	30.0	30.0	30.0	30.0	10.0	10.0	10.0	10.0
Minimum Split (s)	36.1	36.1	36.1	36.1	27.1	27.1	27.1	27.1
Total Split (s)	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Yellow Time (s)	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	C-Min	C-Min	C-Min	C-Min	None	None	None	None
v/c Ratio	0.04	0.26	0.18	0.20	0.31	0.81	0.52	0.57
Control Delay (s/veh)	13.7	9.7	14.6	7.9	15.7	28.0	31.8	23.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	13.7	9.7	14.6	7.9	15.7	28.0	31.8	23.4
Queue Length 50th (m)	1.6	12.3	8.4	7.3	6.3	71.8	9.6	45.9
Queue Length 95th (m)	6.1	31.0	21.0	21.8	9.9	40.3	21.1	61.1
Internal Link Dist (m)		114.2		223.2		361.2		201.3
Turn Bay Length (m)	40.0		35.0		30.0		35.0	
Base Capacity (vph)	511	894	567	876	326	767	182	788
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	0.04	0.26	0.18	0.20	0.25	0.67	0.43	0.47

Intersection Summary

Cycle Length: 80
Actuated Cycle Length: 80
Offset: 11.4 (14%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated

Splits and Phases: 1: Gartshore St & Garafraxa St E





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	100	105	90	75	85	75	395	70	70	315	20
Future Volume (vph)	20	100	105	90	75	85	75	395	70	70	315	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.1	6.1		6.1	6.1		6.1	6.1		6.1	6.1	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		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	0.92		1.00	0.92		1.00	0.98		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)	1504	1710		1752	1668		1805	1773		1787	1831	
Flt Permitted	0.65	1.00		0.62	1.00		0.40	1.00		0.23	1.00	
Satd. Flow (perm)	1022	1710		1137	1668		759	1773		426	1831	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	22	111	117	100	83	94	83	439	78	78	350	22
RTOR Reduction (vph)	0	42	0	0	45	0	0	9	0	0	3	0
Lane Group Flow (vph)	22	186	0	100	132	0	83	508	0	78	369	0
Confl. Bikes (#/hr)						5						
Heavy Vehicles (%)	20%	1%	4%	3%	0%	7%	0%	4%	9%	1%	3%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	39.5	39.5		39.5	39.5		28.3	28.3		28.3	28.3	
Effective Green, g (s)	39.5	39.5		39.5	39.5		28.3	28.3		28.3	28.3	
Actuated g/C Ratio	0.49	0.49		0.49	0.49		0.35	0.35		0.35	0.35	
Clearance Time (s)	6.1	6.1		6.1	6.1		6.1	6.1		6.1	6.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	504	844		561	823		268	627		150	647	
v/s Ratio Prot		c0.11			0.08			c0.29			0.20	
v/s Ratio Perm	0.02			0.09			0.11			0.18		
v/c Ratio	0.04	0.22		0.18	0.16		0.31	0.81		0.52	0.57	
Uniform Delay, d1	10.5	11.5		11.2	11.1		18.8	23.4		20.5	20.9	
Progression Factor	1.00	1.00		1.00	1.00		0.75	0.79		1.00	1.00	
Incremental Delay, d2	0.2	0.6		0.7	0.4		0.6	7.5		3.2	1.2	
Delay (s)	10.6	12.1		11.9	11.6		14.7	26.0		23.7	22.1	
Level of Service	B	B		B	B		B	C		C	C	
Approach Delay (s/veh)		12.0			11.7			24.4			22.4	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	19.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.2
Intersection Capacity Utilization	103.7%	ICU Level of Service	G
Analysis Period (min)	15		

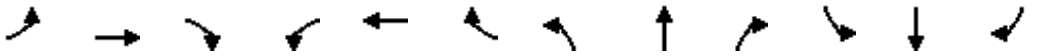
c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	205	10	10	215	10	10	5	10	5	10	25
Future Volume (Veh/h)	25	205	10	10	215	10	10	5	10	5	10	25
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Hourly flow rate (vph)	31	253	12	12	265	12	12	6	12	6	12	31
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		247										
pX, platoon unblocked												
vC, conflicting volume	277			265			653	622	259	631	622	271
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	277			265			653	622	259	631	622	271
tC, single (s)	4.1			4.1			7.2	6.5	6.4	7.1	6.6	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.6	4.0	3.5	3.5	4.1	3.3
p0 queue free %	98			99			96	98	98	98	97	96
cM capacity (veh/h)	1298			1311			338	392	745	376	376	773

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	296	289	30	49
Volume Left	31	12	12	6
Volume Right	12	12	12	31
cSH	1298	1311	448	557
Volume to Capacity	0.02	0.00*	0.07	0.09
Queue Length 95th (m)	0.6	0.2	1.7	2.3
Control Delay (s/veh)	1.0	0.4	13.6	12.1
Lane LOS	A	A	B	B
Approach Delay (s/veh)	1.0	0.4	13.6	12.1
Approach LOS			B	B

Intersection Summary				
Average Delay	2.1			
Intersection Capacity Utilization	31.3%	ICU Level of Service	A	
Analysis Period (min)	15			

* Value less than 0.01.

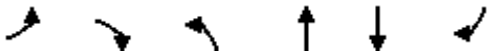


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	180	15	20	165	10	5	10	35	25	10	15
Future Volume (Veh/h)	10	180	15	20	165	10	5	10	35	25	10	15
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	11	191	16	21	176	11	5	11	37	27	11	16
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	187			207			453	442	191	474	447	176
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	187			207			453	442	191	474	447	176
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.2	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.6	4.0	3.3
p0 queue free %	99			98			99	98	96	94	98	98
cM capacity (veh/h)	1399			1346			494	501	856	454	498	872

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	202	16	197	11	53	54
Volume Left	11	0	21	0	5	27
Volume Right	0	16	0	11	37	16
cSH	1399	1700	1346	1700	704	540
Volume to Capacity	0.00*	0.00*	0.02	0.00*	0.08	0.10
Queue Length 95th (m)	0.2	0.0	0.4	0.0	1.9	2.7
Control Delay (s/veh)	0.5	0.0	0.9	0.0	10.5	12.4
Lane LOS	A		A		B	B
Approach Delay (s/veh)	0.4		0.9		10.5	12.4
Approach LOS					B	B

Intersection Summary				
Average Delay	2.8			
Intersection Capacity Utilization	39.0%	ICU Level of Service		A
Analysis Period (min)	15			

* Value less than 0.01.

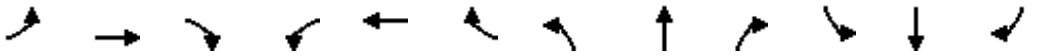


Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	15	370	455	10	25	30
Future Volume (Veh/h)	15	370	455	10	25	30
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	15	381	469	10	26	31
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	990	42	57			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	990	42	57			
tC, single (s)	6.4	6.2	4.3			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.4			
p0 queue free %	92	63	68			
cM capacity (veh/h)	187	1029	1451			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	396	479	57
Volume Left	15	469	0
Volume Right	381	0	31
cSH	879	1451	1700
Volume to Capacity	0.45	0.32	0.03
Queue Length 95th (m)	18.9	11.3	0.0
Control Delay (s/veh)	12.4	8.5	0.0
Lane LOS	B	A	
Approach Delay (s/veh)	12.4	8.5	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	9.7		
Intersection Capacity Utilization	62.8%	ICU Level of Service	B
Analysis Period (min)	15		

* Value less than 0.01.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	10	50	10	15	15	110	360	30	15	345	5
Future Volume (Veh/h)	5	10	50	10	15	15	110	360	30	15	345	5
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	5	10	52	10	15	15	113	371	31	15	356	5
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)								225				
pX, platoon unblocked	0.78	0.78		0.78	0.78	0.78				0.78		
vC, conflicting volume	1024	1017	359	1058	1004	387	361			402		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	891	882	359	935	866	78	361			98		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	97	95	92	94	93	98	91			99		
cM capacity (veh/h)	177	201	690	159	206	774	1209			1181		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	67	40	515	376
Volume Left	5	10	113	15
Volume Right	52	15	31	5
cSH	437	257	1209	1181
Volume to Capacity	0.15	0.16	0.09	0.01
Queue Length 95th (m)	4.3	4.3	2.5	0.3
Control Delay (s/veh)	14.7	21.5	2.6	0.4
Lane LOS	B	C	A	A
Approach Delay (s/veh)	14.7	21.5	2.6	0.4
Approach LOS	B	C		

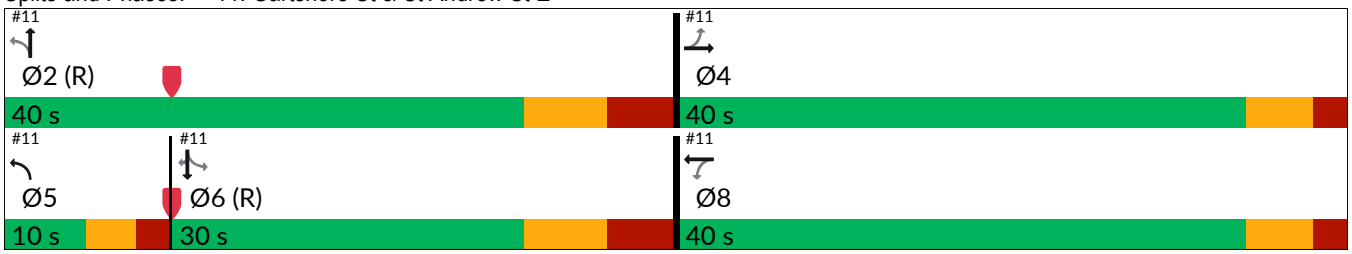
Intersection Summary				
Average Delay	3.4			
Intersection Capacity Utilization	61.1%	ICU Level of Service	B	
Analysis Period (min)	15			

* Value less than 0.01.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	30	40	35	25	95	475	5	385	45
Future Volume (vph)	30	40	35	25	95	475	5	385	45
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	Perm	NA	Perm
Protected Phases		4		8	5	2		6	
Permitted Phases	4		8		2		6		6
Detector Phase	4	4	8	8	5	2	6	6	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.1	24.1	24.1	24.1	10.0	27.0	27.0	27.0	27.0
Total Split (s)	40.0	40.0	40.0	40.0	10.0	40.0	30.0	30.0	30.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	12.5%	50.0%	37.5%	37.5%	37.5%
Yellow Time (s)	4.1	4.1	4.1	4.1	3.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	4.0	4.0	4.0	4.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.1	5.0	9.0	9.0	9.0	9.0
Lead/Lag					Lead		Lag	Lag	Lag
Lead-Lag Optimize?					Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	8.7	8.7	8.7	8.7	60.2	56.2	46.6	46.6	46.6
Actuated g/C Ratio	0.11	0.11	0.11	0.11	0.75	0.70	0.58	0.58	0.58
v/c Ratio	0.21	0.59	0.35	0.16	0.14	0.42	0.01	0.38	0.05
Control Delay (s/veh)	34.2	18.6	41.0	28.8	3.6	6.7	18.0	21.5	3.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	34.2	18.6	41.0	28.8	3.6	6.7	18.0	21.5	3.7
LOS	C	B	D	C	A	A	B	C	A
Approach Delay (s/veh)		21.0		35.4		6.2		19.6	
Approach LOS		C		D		A		B	

Intersection Summary	
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 56.1 (70%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 65	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.59	
Intersection Signal Delay (s/veh): 14.3	Intersection LOS: B
Intersection Capacity Utilization 70.7%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 11: Gartshore St & St Andrew St E

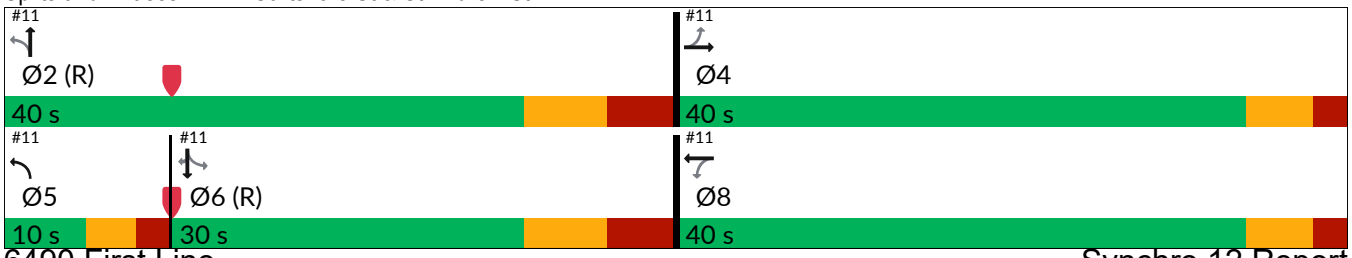


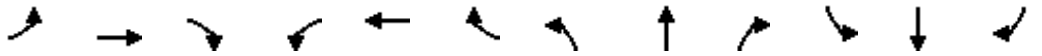
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	30	40	35	25	95	475	5	385	45
Future Volume (vph)	30	40	35	25	95	475	5	385	45
Lane Group Flow (vph)	32	176	37	32	101	548	5	410	48
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	Perm	NA	Perm
Protected Phases		4		8	5	2		6	
Permitted Phases	4		8		2		6		6
Detector Phase	4	4	8	8	5	2	6	6	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.1	24.1	24.1	24.1	10.0	27.0	27.0	27.0	27.0
Total Split (s)	40.0	40.0	40.0	40.0	10.0	40.0	30.0	30.0	30.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	12.5%	50.0%	37.5%	37.5%	37.5%
Yellow Time (s)	4.1	4.1	4.1	4.1	3.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	4.0	4.0	4.0	4.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.1	5.0	9.0	9.0	9.0	9.0
Lead/Lag					Lead		Lag	Lag	Lag
Lead-Lag Optimize?					Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	C-Max	C-Max
v/c Ratio	0.21	0.59	0.35	0.16	0.14	0.42	0.01	0.38	0.05
Control Delay (s/veh)	34.2	18.6	41.0	28.8	3.6	6.7	18.0	21.5	3.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	34.2	18.6	41.0	28.8	3.6	6.7	18.0	21.5	3.7
Queue Length 50th (m)	4.8	6.4	5.6	4.0	3.1	28.9	0.5	56.0	0.5
Queue Length 95th (m)	12.2	23.0	13.8	11.1	8.9	59.3	m1.7	88.0	m2.9
Internal Link Dist (m)		95.5		92.4		135.0		361.2	
Turn Bay Length (m)	15.0		15.0		15.0		15.0		50.0
Base Capacity (vph)	592	785	410	763	731	1296	507	1084	957
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.22	0.09	0.04	0.14	0.42	0.01	0.38	0.05

Intersection Summary

Cycle Length: 80
Actuated Cycle Length: 80
Offset: 56.1 (70%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 11: Gartshore St & St Andrew St E





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	40	125	35	25	5	95	475	40	5	385	45
Future Volume (vph)	30	40	125	35	25	5	95	475	40	5	385	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.1	6.1		6.1	6.1		5.0	9.0		9.0	9.0	9.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	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	1.00
Frt	1.00	0.89		1.00	0.98		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1805	1672		1752	1795		1801	1844		1805	1863	1566
Flt Permitted	0.74	1.00		0.53	1.00		0.46	1.00		0.46	1.00	1.00
Satd. Flow (perm)	1399	1672		969	1795		869	1844		873	1863	1566
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)	32	43	133	37	27	5	101	505	43	5	410	48
RTOR Reduction (vph)	0	119	0	0	4	0	0	2	0	0	0	21
Lane Group Flow (vph)	32	57	0	37	28	0	101	546	0	5	410	27
Confl. Peds. (#/hr)							5					5
Heavy Vehicles (%)	0%	3%	0%	3%	4%	0%	0%	2%	0%	0%	2%	2%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)	8.7	8.7		8.7	8.7		56.2	56.2		45.6	45.6	45.6
Effective Green, g (s)	8.7	8.7		8.7	8.7		56.2	56.2		45.6	45.6	45.6
Actuated g/C Ratio	0.11	0.11		0.11	0.11		0.70	0.70		0.57	0.57	0.57
Clearance Time (s)	6.1	6.1		6.1	6.1		5.0	9.0		9.0	9.0	9.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	152	181		105	195		675	1295		497	1061	892
v/s Ratio Prot		0.03			0.02		0.01	c0.30			0.22	
v/s Ratio Perm	0.02			c0.04			0.09			0.01		0.02
v/c Ratio	0.21	0.32		0.35	0.14		0.15	0.42		0.01	0.39	0.03
Uniform Delay, d1	32.5	32.9		33.0	32.3		4.0	5.0		7.4	9.5	7.5
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.78	1.88	1.00
Incremental Delay, d2	0.7	1.0		2.0	0.3		0.1	1.0		0.0	1.0	0.1
Delay (s)	33.2	33.9		35.1	32.6		4.1	6.0		13.3	18.9	7.6
Level of Service	C	C		D	C		A	A		B	B	A
Approach Delay (s/veh)		33.8			33.9			5.7			17.6	
Approach LOS		C			C			A			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	15.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	20.1
Intersection Capacity Utilization	70.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	25	55	410	15	35	360
Future Volume (Veh/h)	25	55	410	15	35	360
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	28	62	461	17	39	404
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	952	470			478	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	952	470			478	
tC, single (s)	6.5	6.2			4.2	
tC, 2 stage (s)						
tF (s)	3.6	3.3			2.3	
p0 queue free %	90	89			96	
cM capacity (veh/h)	270	588			1039	

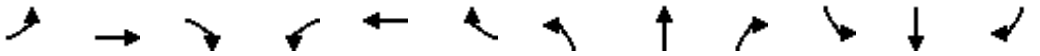
Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	90	478	443
Volume Left	28	0	39
Volume Right	62	17	0
cSH	431	1700	1039
Volume to Capacity	0.21	0.28	0.04
Queue Length 95th (m)	6.2	0.0	0.9
Control Delay (s/veh)	15.6	0.0	1.1
Lane LOS	C		A
Approach Delay (s/veh)	15.6	0.0	1.1
Approach LOS	C		

Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	58.1%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	30	25	20	30	10
Future Volume (Veh/h)	5	30	25	20	30	10
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	6	35	29	24	35	12
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	123	41	47			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	123	41	47			
tC, single (s)	6.4	6.2	4.3			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.4			
p0 queue free %	99	97	98			
cM capacity (veh/h)	848	1036	1441			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	41	53	47
Volume Left	6	29	0
Volume Right	35	0	12
cSH	1003	1441	1700
Volume to Capacity	0.04	0.02	0.03
Queue Length 95th (m)	1.0	0.5	0.0
Control Delay (s/veh)	8.7	4.2	0.0
Lane LOS	A	A	
Approach Delay (s/veh)	8.7	4.2	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	4.1		
Intersection Capacity Utilization	19.1%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	205	30	70	180	5	15	15	85	5	20	20
Future Volume (Veh/h)	20	205	30	70	180	5	15	15	85	5	20	20
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	22	230	34	79	202	6	17	17	96	6	22	22
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	208			264			667	640	230	739	668	202
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	208			264			667	640	230	739	668	202
tC, single (s)	4.1			4.2			7.2	6.5	6.3	7.4	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.6	4.0	3.4	3.8	4.0	3.3
p0 queue free %	98			94			95	95	88	97	94	97
cM capacity (veh/h)	1375			1277			314	366	799	238	352	831

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	252	34	281	6	130	50
Volume Left	22	0	79	0	17	6
Volume Right	0	34	0	6	96	22
cSH	1375	1700	1277	1700	589	438
Volume to Capacity	0.02	0.02	0.06	0.00*	0.22	0.11
Queue Length 95th (m)	0.4	0.0	1.6	0.0	6.7	3.1
Control Delay (s/veh)	0.8	0.0	2.7	0.0	12.8	14.3
Lane LOS	A		A		B	B
Approach Delay (s/veh)	0.7		2.6		12.8	14.3
Approach LOS					B	B

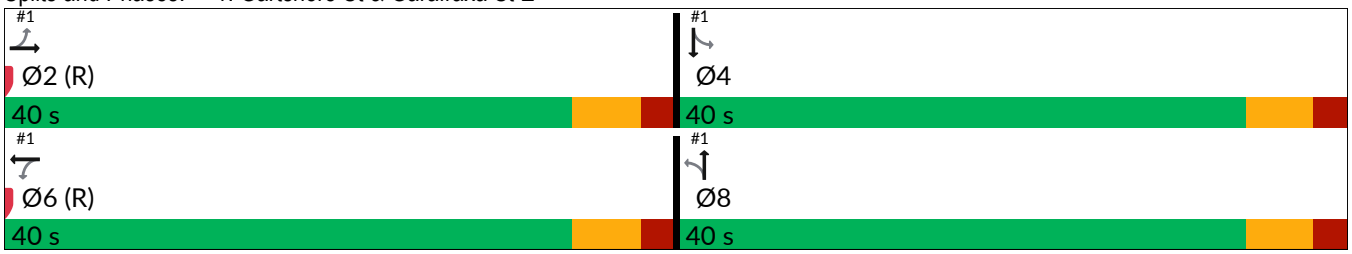
Intersection Summary				
Average Delay	4.4			
Intersection Capacity Utilization	44.8%	ICU Level of Service		A
Analysis Period (min)	15			

* Value less than 0.01.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	120	130	90	155	95	385	60	370
Future Volume (vph)	120	130	90	155	95	385	60	370
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		2		6		8		4
Permitted Phases	2		6		8		4	
Detector Phase	2	2	6	6	8	8	4	4
Switch Phase								
Minimum Initial (s)	30.0	30.0	30.0	30.0	10.0	10.0	10.0	10.0
Minimum Split (s)	36.1	36.1	36.1	36.1	27.1	27.1	27.1	27.1
Total Split (s)	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Yellow Time (s)	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	C-Min	C-Min	C-Min	C-Min	None	None	None	None
Act Effct Green (s)	38.6	38.6	38.6	38.6	29.2	29.2	29.2	29.2
Actuated g/C Ratio	0.48	0.48	0.48	0.48	0.37	0.37	0.37	0.37
v/c Ratio	0.28	0.37	0.23	0.28	0.53	0.82	0.41	0.72
Control Delay (s/veh)	16.7	12.3	16.5	13.7	39.8	45.1	24.6	27.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	16.7	12.3	16.5	13.7	39.8	45.1	24.6	27.8
LOS	B	B	B	B	D	D	C	C
Approach Delay (s/veh)		13.6		14.5		44.1		27.4
Approach LOS		B		B		D		C

Intersection Summary	
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 11.4 (14%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 65	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.82	
Intersection Signal Delay (s/veh): 27.1	Intersection LOS: C
Intersection Capacity Utilization 102.0%	ICU Level of Service G
Analysis Period (min) 15	

Splits and Phases: 1: Gartshore St & Garafraxa St E

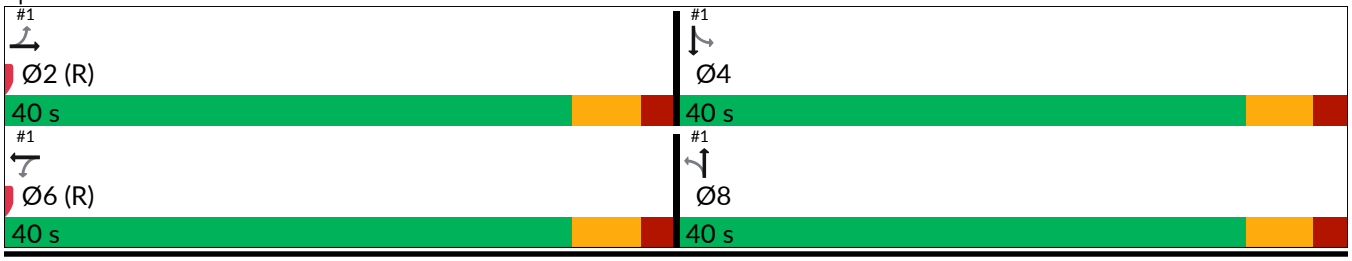


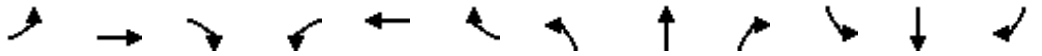
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	120	130	90	155	95	385	60	370
Future Volume (vph)	120	130	90	155	95	385	60	370
Lane Group Flow (vph)	136	313	102	239	108	495	68	460
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		2		6		8		4
Permitted Phases	2		6		8		4	
Detector Phase	2	2	6	6	8	8	4	4
Switch Phase								
Minimum Initial (s)	30.0	30.0	30.0	30.0	10.0	10.0	10.0	10.0
Minimum Split (s)	36.1	36.1	36.1	36.1	27.1	27.1	27.1	27.1
Total Split (s)	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Yellow Time (s)	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	C-Min	C-Min	C-Min	C-Min	None	None	None	None
v/c Ratio	0.28	0.37	0.23	0.28	0.53	0.82	0.41	0.72
Control Delay (s/veh)	16.7	12.3	16.5	13.7	39.8	45.1	24.6	27.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	16.7	12.3	16.5	13.7	39.8	45.1	24.6	27.8
Queue Length 50th (m)	11.7	20.2	8.7	18.8	16.1	74.9	7.6	59.0
Queue Length 95th (m)	27.9	45.4	22.0	40.2	29.6	94.3	15.5	72.8
Internal Link Dist (m)		114.2		223.2		361.2		201.3
Turn Bay Length (m)	40.0		35.0		30.0		35.0	
Base Capacity (vph)	501	862	450	885	240	715	198	752
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	0.27	0.36	0.23	0.27	0.45	0.69	0.34	0.61

Intersection Summary

Cycle Length: 80
Actuated Cycle Length: 80
Offset: 11.4 (14%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated

Splits and Phases: 1: Gartshore St & Garafraxa St E

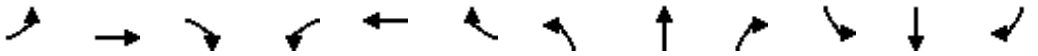




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	120	130	145	90	155	55	95	385	50	60	370	35
Future Volume (vph)	120	130	145	90	155	55	95	385	50	60	370	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.1	6.1		6.1	6.1		6.1	6.1		6.1	6.1	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		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	0.92		1.00	0.96		1.00	0.98		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)	1597	1661		1634	1771		1729	1636		1641	1727	
Flt Permitted	0.61	1.00		0.53	1.00		0.30	1.00		0.26	1.00	
Satd. Flow (perm)	1020	1661		914	1771		555	1636		457	1727	
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	0.88
Adj. Flow (vph)	136	148	165	102	176	63	108	438	57	68	420	40
RTOR Reduction (vph)	0	45	0	0	14	0	0	6	0	0	4	0
Lane Group Flow (vph)	136	268	0	102	225	0	108	489	0	68	456	0
Confl. Peds. (#/hr)			5	5			5					5
Heavy Vehicles (%)	13%	6%	4%	10%	2%	6%	4%	14%	15%	10%	8%	14%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	38.6	38.6		38.6	38.6		29.2	29.2		29.2	29.2	
Effective Green, g (s)	38.6	38.6		38.6	38.6		29.2	29.2		29.2	29.2	
Actuated g/C Ratio	0.48	0.48		0.48	0.48		0.37	0.37		0.37	0.37	
Clearance Time (s)	6.1	6.1		6.1	6.1		6.1	6.1		6.1	6.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	492	801		441	854		202	597		166	630	
v/s Ratio Prot		c0.16			0.13			c0.30			0.26	
v/s Ratio Perm	0.13			0.11			0.19			0.15		
v/c Ratio	0.28	0.33		0.23	0.26		0.53	0.82		0.41	0.72	
Uniform Delay, d1	12.4	12.8		12.1	12.3		20.0	23.0		19.0	21.9	
Progression Factor	1.00	1.00		1.00	1.00		1.64	1.58		1.00	1.00	
Incremental Delay, d2	1.4	1.1		1.2	0.8		2.4	7.8		1.6	4.1	
Delay (s)	13.8	13.9		13.3	13.0		35.4	44.1		20.6	26.0	
Level of Service	B	B		B	B		D	D		C	C	
Approach Delay (s/veh)		13.9			13.1			42.5			25.3	
Approach LOS		B			B			D			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	25.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.2
Intersection Capacity Utilization	102.0%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

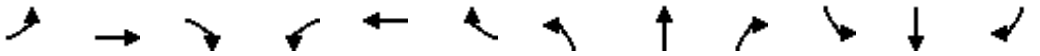


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	220	10	0	240	5	15	5	5	15	10	45
Future Volume (Veh/h)	10	220	10	0	240	5	15	5	5	15	10	45
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	239	11	0	261	5	16	5	5	16	11	49
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		247										
pX, platoon unblocked												
vC, conflicting volume	266			250			585	533	245	538	536	264
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	266			250			585	533	245	538	536	264
tC, single (s)	4.1			4.1			7.2	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.6	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			96	99	99	96	98	94
cM capacity (veh/h)	1310			1327			373	452	799	448	450	780

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	261	266	26	76
Volume Left	11	0	16	16
Volume Right	11	5	5	49
cSH	1310	1327	432	618
Volume to Capacity	0.00*	0.00	0.06	0.12
Queue Length 95th (m)	0.2	0.0	1.5	3.3
Control Delay (s/veh)	0.4	0.0	13.9	11.6
Lane LOS	A		B	B
Approach Delay (s/veh)	0.4	0.0	13.9	11.6
Approach LOS			B	B

Intersection Summary			
Average Delay	2.1		
Intersection Capacity Utilization	31.2%	ICU Level of Service	A
Analysis Period (min)	15		

* Value less than 0.01.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	140	10	30	205	70	15	15	25	20	0	20
Future Volume (Veh/h)	45	140	10	30	205	70	15	15	25	20	0	20
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
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
Hourly flow rate (vph)	47	146	10	31	214	73	16	16	26	21	0	21
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	287			156			537	589	146	550	526	214
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	287			156			537	589	146	550	526	214
tC, single (s)	4.1			4.2			7.3	6.7	6.2	7.2	7.0	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.7	4.2	3.3	3.6	4.4	3.3
p0 queue free %	96			98			96	96	97	95	100	97
cM capacity (veh/h)	1287			1360			394	376	896	388	373	831

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	193	10	245	73	58	42
Volume Left	47	0	31	0	16	21
Volume Right	0	10	0	73	26	21
cSH	1287	1700	1360	1700	517	529
Volume to Capacity	0.04	0.00*	0.02	0.04	0.11	0.08
Queue Length 95th (m)	0.9	0.0	0.6	0.0	3.0	2.1
Control Delay (s/veh)	2.2	0.0	1.2	0.0	12.8	12.4
Lane LOS	A		A		B	B
Approach Delay (s/veh)	2.1		0.9		12.8	12.4
Approach LOS					B	B

Intersection Summary				
Average Delay	3.2			
Intersection Capacity Utilization	36.5%	ICU Level of Service		A
Analysis Period (min)	15			

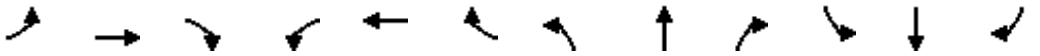
* Value less than 0.01.

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	25	500	325	70	20	15
Future Volume (Veh/h)	25	500	325	70	20	15
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	27	549	357	77	22	16
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	821	30	38			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	821	30	38			
tC, single (s)	6.5	6.3	4.2			
tC, 2 stage (s)						
tF (s)	3.6	3.4	2.3			
p0 queue free %	89	47	76			
cM capacity (veh/h)	256	1033	1510			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	576	434	38
Volume Left	27	357	0
Volume Right	549	0	16
cSH	904	1510	1700
Volume to Capacity	0.64	0.24	0.02
Queue Length 95th (m)	37.8	7.4	0.0
Control Delay (s/veh)	15.7	7.0	0.0
Lane LOS	C	A	
Approach Delay (s/veh)	15.7	7.0	0.0
Approach LOS	C		

Intersection Summary			
Average Delay	11.5		
Intersection Capacity Utilization	67.3%	ICU Level of Service	C
Analysis Period (min)	15		

* Value less than 0.01.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	25	75	15	20	15	60	500	10	15	370	10
Future Volume (Veh/h)	5	25	75	15	20	15	60	500	10	15	370	10
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	6	28	83	17	22	17	67	556	11	17	411	11
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)								225				
pX, platoon unblocked	0.76	0.76		0.76	0.76	0.76				0.76		
vC, conflicting volume	1174	1152	417	1243	1152	562	422			567		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1074	1044	417	1164	1044	273	422			280		
tC, single (s)	7.1	6.5	6.2	7.2	6.6	6.2	4.1			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.0	3.3	2.2			2.3		
p0 queue free %	95	83	87	81	86	97	94			98		
cM capacity (veh/h)	125	163	638	92	160	589	1121			964		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	117	56	634	439
Volume Left	6	17	67	17
Volume Right	83	17	11	11
cSH	334	159	1121	964
Volume to Capacity	0.35	0.35	0.06	0.02
Queue Length 95th (m)	12.2	11.7	1.5	0.4
Control Delay (s/veh)	21.4	39.4	1.6	0.5
Lane LOS	C	E	A	A
Approach Delay (s/veh)	21.4	39.4	1.6	0.5
Approach LOS	C	E		

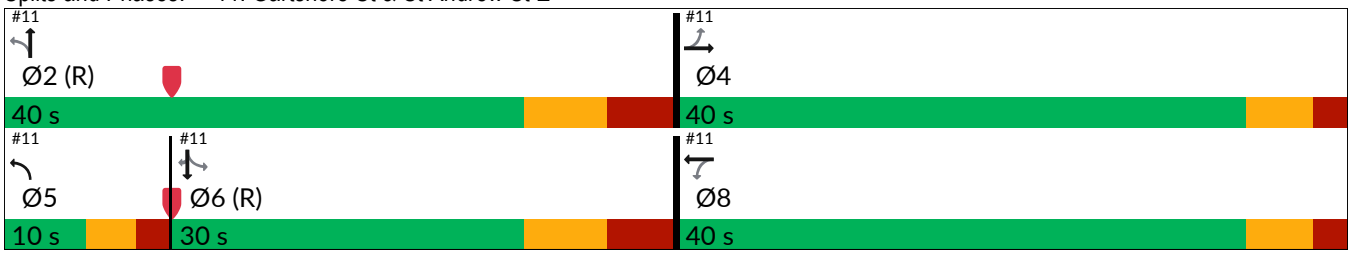
Intersection Summary				
Average Delay	4.8			
Intersection Capacity Utilization	67.0%	ICU Level of Service	C	
Analysis Period (min)	15			

* Value less than 0.01.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	20	50	55	40	110	420	15	480	50
Future Volume (vph)	20	50	55	40	110	420	15	480	50
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	Perm	NA	Perm
Protected Phases		4		8	5	2		6	
Permitted Phases	4		8		2		6		6
Detector Phase	4	4	8	8	5	2	6	6	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.1	24.1	24.1	24.1	10.0	27.0	27.0	27.0	27.0
Total Split (s)	40.0	40.0	40.0	40.0	10.0	40.0	30.0	30.0	30.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	12.5%	50.0%	37.5%	37.5%	37.5%
Yellow Time (s)	4.1	4.1	4.1	4.1	3.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	4.0	4.0	4.0	4.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.1	5.0	9.0	9.0	9.0	9.0
Lead/Lag					Lead		Lag	Lag	Lag
Lead-Lag Optimize?					Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	11.0	11.0	11.0	11.0	57.9	53.9	41.0	41.0	41.0
Actuated g/C Ratio	0.14	0.14	0.14	0.14	0.72	0.67	0.51	0.51	0.51
v/c Ratio	0.15	0.64	0.82	0.27	0.29	0.51	0.04	0.69	0.08
Control Delay (s/veh)	30.1	17.6	89.1	25.2	5.6	9.2	10.5	16.9	1.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	30.1	17.6	89.1	25.2	5.6	9.2	10.5	16.9	1.5
LOS	C	B	F	C	A	A	B	B	A
Approach Delay (s/veh)		18.8		57.1		8.5		15.3	
Approach LOS		B		E		A		B	

Intersection Summary	
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 75	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.82	
Intersection Signal Delay (s/veh): 16.3	Intersection LOS: B
Intersection Capacity Utilization 69.9%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 11: Gartshore St & St Andrew St E

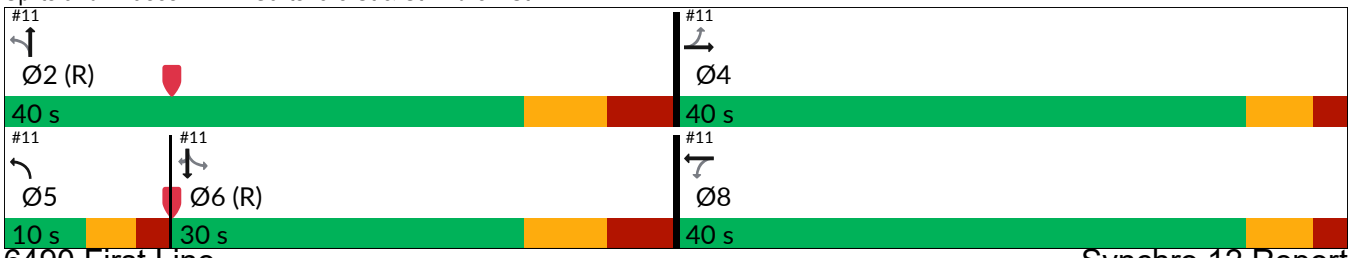


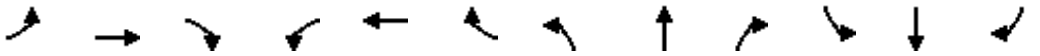
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	20	50	55	40	110	420	15	480	50
Future Volume (vph)	20	50	55	40	110	420	15	480	50
Lane Group Flow (vph)	26	247	71	71	143	590	19	623	65
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	Perm	NA	Perm
Protected Phases		4		8	5	2		6	
Permitted Phases	4		8		2		6		6
Detector Phase	4	4	8	8	5	2	6	6	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.1	24.1	24.1	24.1	10.0	27.0	27.0	27.0	27.0
Total Split (s)	40.0	40.0	40.0	40.0	10.0	40.0	30.0	30.0	30.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	12.5%	50.0%	37.5%	37.5%	37.5%
Yellow Time (s)	4.1	4.1	4.1	4.1	3.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	4.0	4.0	4.0	4.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.1	5.0	9.0	9.0	9.0	9.0
Lead/Lag					Lead		Lag	Lag	Lag
Lead-Lag Optimize?					Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	C-Max	C-Max
v/c Ratio	0.15	0.64	0.82	0.27	0.29	0.51	0.04	0.69	0.08
Control Delay (s/veh)	30.1	17.6	89.1	25.2	5.6	9.2	10.5	16.9	1.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	30.1	17.6	89.1	25.2	5.6	9.2	10.5	16.9	1.5
Queue Length 50th (m)	3.7	9.4	10.8	7.5	5.5	37.9	1.1	40.4	0.0
Queue Length 95th (m)	8.3	19.5	19.3	14.5	11.6	58.5	m3.0	67.8	m1.5
Internal Link Dist (m)		95.5		92.4		135.0		361.2	
Turn Bay Length (m)	15.0		15.0		15.0		15.0		50.0
Base Capacity (vph)	523	805	269	760	492	1155	428	901	811
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.31	0.26	0.09	0.29	0.51	0.04	0.69	0.08

Intersection Summary

Cycle Length: 80
Actuated Cycle Length: 80
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 11: Gartshore St & St Andrew St E





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	50	140	55	40	15	110	420	35	15	480	50
Future Volume (vph)	20	50	140	55	40	15	110	420	35	15	480	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.1	6.1		6.1	6.1		5.0	9.0		9.0	9.0	9.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	1.00	0.93
Flpb, ped/bikes	0.96	1.00		0.99	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.89		1.00	0.96		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1650	1655		1660	1769		1763	1711		1796	1759	1478
Flt Permitted	0.71	1.00		0.36	1.00		0.27	1.00		0.44	1.00	1.00
Satd. Flow (perm)	1234	1655		635	1769		508	1711		835	1759	1478
Peak-hour factor, PHF	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
Adj. Flow (vph)	26	65	182	71	52	19	143	545	45	19	623	65
RTOR Reduction (vph)	0	157	0	0	16	0	0	2	0	0	0	32
Lane Group Flow (vph)	26	90	0	71	55	0	143	588	0	19	623	33
Confl. Peds. (#/hr)	20		5	5		20	30		5	5		30
Heavy Vehicles (%)	5%	2%	1%	8%	0%	7%	2%	10%	6%	0%	8%	2%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)	11.0	11.0		11.0	11.0		53.9	53.9		41.0	41.0	41.0
Effective Green, g (s)	11.0	11.0		11.0	11.0		53.9	53.9		41.0	41.0	41.0
Actuated g/C Ratio	0.14	0.14		0.14	0.14		0.67	0.67		0.51	0.51	0.51
Clearance Time (s)	6.1	6.1		6.1	6.1		5.0	9.0		9.0	9.0	9.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	169	227		87	243		466	1152		427	901	757
v/s Ratio Prot		0.05			0.03		0.03	c0.34			c0.35	
v/s Ratio Perm	0.02			c0.11			0.18			0.02		0.02
v/c Ratio	0.15	0.40		0.82	0.22		0.31	0.51		0.04	0.69	0.04
Uniform Delay, d1	30.4	31.5		33.5	30.7		6.7	6.5		9.7	14.7	9.7
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		0.82	0.70	1.30
Incremental Delay, d2	0.4	1.1		42.3	0.5		0.4	1.6		0.2	3.9	0.1
Delay (s)	30.8	32.6		75.8	31.2		7.1	8.1		8.1	14.2	12.7
Level of Service	C	C		E	C		A	A		A	B	B
Approach Delay (s/veh)		32.4			53.5			7.9			13.9	
Approach LOS		C			D			A			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	17.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	20.1
Intersection Capacity Utilization	69.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	55	55	340	190	150	370
Future Volume (Veh/h)	55	55	340	190	150	370
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	59	59	362	202	160	394
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1177	463			564	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1177	463			564	
tC, single (s)	6.6	6.4			4.3	
tC, 2 stage (s)						
tF (s)	3.7	3.5			2.4	
p0 queue free %	64	90			83	
cM capacity (veh/h)	163	567			933	

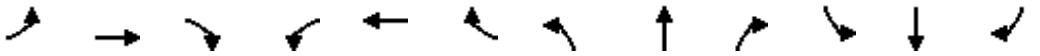
Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	118	564	554
Volume Left	59	0	160
Volume Right	59	202	0
cSH	254	1700	933
Volume to Capacity	0.47	0.33	0.17
Queue Length 95th (m)	18.4	0.0	4.9
Control Delay (s/veh)	31.0	0.0	4.3
Lane LOS	D		A
Approach Delay (s/veh)	31.0	0.0	4.3
Approach LOS	D		

Intersection Summary			
Average Delay	4.9		
Intersection Capacity Utilization	73.7%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	10	30	130	35	10	10
Future Volume (Veh/h)	10	30	130	35	10	10
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79
Hourly flow rate (vph)	13	38	165	44	13	13
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	394	20	26			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	394	20	26			
tC, single (s)	6.5	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.6	3.3	2.2			
p0 queue free %	98	96	90			
cM capacity (veh/h)	536	1064	1601			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	51	209	26
Volume Left	13	165	0
Volume Right	38	0	13
cSH	851	1601	1700
Volume to Capacity	0.06	0.10	0.02
Queue Length 95th (m)	1.5	2.8	0.0
Control Delay (s/veh)	9.5	6.1	0.0
Lane LOS	A	A	
Approach Delay (s/veh)	9.5	6.1	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	6.1		
Intersection Capacity Utilization	25.7%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	175	15	70	290	5	10	20	45	5	20	15
Future Volume (Veh/h)	15	175	15	70	290	5	10	20	45	5	20	15
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	16	190	16	76	315	5	11	22	49	5	22	16
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	320			206			716	694	190	749	705	315
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	320			206			716	694	190	749	705	315
tC, single (s)	4.1			4.2			7.2	6.5	6.4	7.1	6.6	6.4
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.6	4.0	3.5	3.5	4.1	3.5
p0 queue free %	99			94			96	94	94	98	93	98
cM capacity (veh/h)	1251			1342			291	343	805	280	332	675

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	206	16	391	5	82	43
Volume Left	16	0	76	0	11	5
Volume Right	0	16	0	5	49	16
cSH	1251	1700	1342	1700	504	398
Volume to Capacity	0.01	0.00*	0.06	0.00*	0.16	0.11
Queue Length 95th (m)	0.3	0.0	1.4	0.0	4.6	2.9
Control Delay (s/veh)	0.7	0.0	2.0	0.0	13.5	15.1
Lane LOS	A		A		B	C
Approach Delay (s/veh)	0.7		1.9		13.5	15.1
Approach LOS					B	C

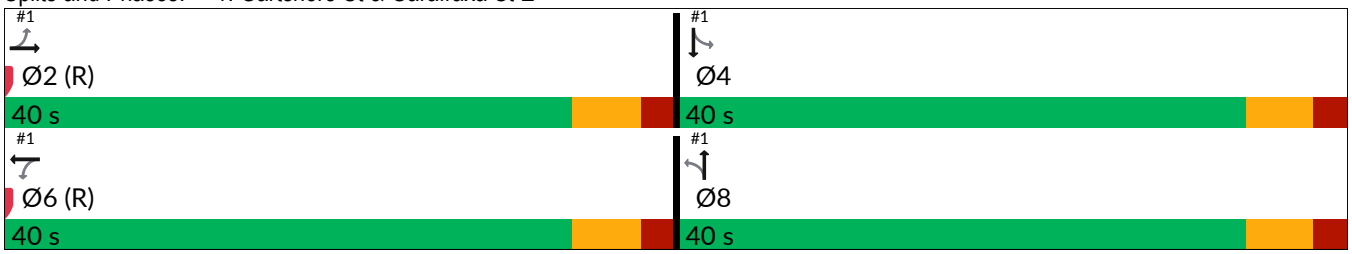
Intersection Summary			
Average Delay	3.6		
Intersection Capacity Utilization	45.1%	ICU Level of Service	A
Analysis Period (min)	15		

* Value less than 0.01.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	50	140	95	140	100	445	80	420
Future Volume (vph)	50	140	95	140	100	445	80	420
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		2		6		8		4
Permitted Phases	2		6		8		4	
Detector Phase	2	2	6	6	8	8	4	4
Switch Phase								
Minimum Initial (s)	30.0	30.0	30.0	30.0	10.0	10.0	10.0	10.0
Minimum Split (s)	36.1	36.1	36.1	36.1	27.1	27.1	27.1	27.1
Total Split (s)	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Yellow Time (s)	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	C-Min	C-Min	C-Min	C-Min	None	None	None	None
Act Effct Green (s)	36.8	36.8	36.8	36.8	31.0	31.0	31.0	31.0
Actuated g/C Ratio	0.46	0.46	0.46	0.46	0.39	0.39	0.39	0.39
v/c Ratio	0.13	0.36	0.23	0.31	0.83	0.84	0.63	0.84
Control Delay (s/veh)	16.0	13.3	17.0	13.6	68.5	38.1	39.1	32.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	16.0	13.3	17.0	13.6	68.5	38.1	39.1	32.3
LOS	B	B	B	B	E	D	D	C
Approach Delay (s/veh)		13.7		14.6		43.0		33.2
Approach LOS		B		B		D		C

Intersection Summary	
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 11.4 (14%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 70	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.84	
Intersection Signal Delay (s/veh): 30.0	Intersection LOS: C
Intersection Capacity Utilization 107.8%	ICU Level of Service G
Analysis Period (min) 15	

Splits and Phases: 1: Gartshore St & Garafraxa St E

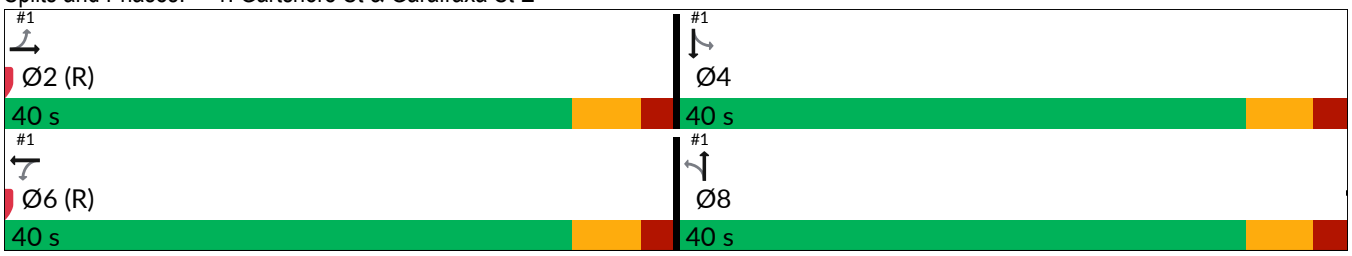


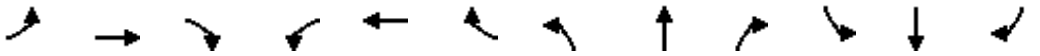
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	50	140	95	140	100	445	80	420
Future Volume (vph)	50	140	95	140	100	445	80	420
Lane Group Flow (vph)	56	295	106	256	111	583	89	595
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		2		6		8		4
Permitted Phases	2		6		8		4	
Detector Phase	2	2	6	6	8	8	4	4
Switch Phase								
Minimum Initial (s)	30.0	30.0	30.0	30.0	10.0	10.0	10.0	10.0
Minimum Split (s)	36.1	36.1	36.1	36.1	27.1	27.1	27.1	27.1
Total Split (s)	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Yellow Time (s)	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	C-Min	C-Min	C-Min	C-Min	None	None	None	None
v/c Ratio	0.13	0.36	0.23	0.31	0.83	0.84	0.63	0.84
Control Delay (s/veh)	16.0	13.3	17.0	13.6	68.5	38.1	39.1	32.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	16.0	13.3	17.0	13.6	68.5	38.1	39.1	32.3
Queue Length 50th (m)	4.6	21.9	9.9	19.9	14.5	73.0	10.9	78.8
Queue Length 95th (m)	12.9	46.7	23.8	42.2	#39.5	104.9	#26.7	105.5
Internal Link Dist (m)		114.2		223.2		361.2		201.3
Turn Bay Length (m)	40.0		35.0		30.0		35.0	
Base Capacity (vph)	435	850	471	841	151	779	159	794
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	0.35	0.23	0.30	0.74	0.75	0.56	0.75

Intersection Summary

Cycle Length: 80
Actuated Cycle Length: 80
Offset: 11.4 (14%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Gartshore St & Garafraxa St E

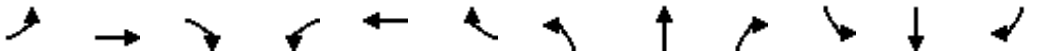




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	140	125	95	140	90	100	445	80	80	420	115
Future Volume (vph)	50	140	125	95	140	90	100	445	80	80	420	115
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.1	6.1		6.1	6.1		6.1	6.1		6.1	6.1	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		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	0.94		1.00	0.98		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1504	1724		1752	1727		1805	1772		1787	1796	
Flt Permitted	0.58	1.00		0.54	1.00		0.18	1.00		0.20	1.00	
Satd. Flow (perm)	924	1724		1001	1727		348	1772		368	1796	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	56	156	139	106	156	100	111	494	89	89	467	128
RTOR Reduction (vph)	0	38	0	0	27	0	0	9	0	0	13	0
Lane Group Flow (vph)	56	257	0	106	229	0	111	574	0	89	582	0
Confl. Bikes (#/hr)						5						
Heavy Vehicles (%)	20%	1%	4%	3%	0%	7%	0%	4%	9%	1%	3%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	36.8	36.8		36.8	36.8		31.0	31.0		31.0	31.0	
Effective Green, g (s)	36.8	36.8		36.8	36.8		31.0	31.0		31.0	31.0	
Actuated g/C Ratio	0.46	0.46		0.46	0.46		0.39	0.39		0.39	0.39	
Clearance Time (s)	6.1	6.1		6.1	6.1		6.1	6.1		6.1	6.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	425	793		460	794		134	686		142	695	
v/s Ratio Prot		c0.15			0.13			c0.32			0.32	
v/s Ratio Perm	0.06			0.11			0.32			0.24		
v/c Ratio	0.13	0.32		0.23	0.29		0.83	0.84		0.63	0.84	
Uniform Delay, d1	12.4	13.7		13.0	13.4		22.1	22.2		19.8	22.2	
Progression Factor	1.00	1.00		1.00	1.00		1.25	1.29		1.00	1.00	
Incremental Delay, d2	0.6	1.1		1.2	0.9		30.5	8.2		8.4	8.7	
Delay (s)	13.1	14.8		14.2	14.4		58.2	36.8		28.2	30.9	
Level of Service	B	B		B	B		E	D		C	C	
Approach Delay (s/veh)		14.5			14.3			40.2			30.6	
Approach LOS		B			B			D			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	28.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.2
Intersection Capacity Utilization	107.8%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

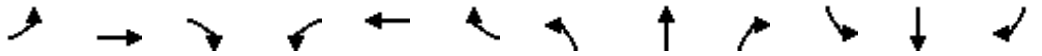


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	265	10	10	290	10	10	5	10	5	10	25
Future Volume (Veh/h)	25	265	10	10	290	10	10	5	10	5	10	25
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Hourly flow rate (vph)	31	327	12	12	358	12	12	6	12	6	12	31
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		247										
pX, platoon unblocked												
vC, conflicting volume	370			339			820	789	333	798	789	364
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	370			339			820	789	333	798	789	364
tC, single (s)	4.1			4.1			7.2	6.5	6.4	7.1	6.6	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.6	4.0	3.5	3.5	4.1	3.3
p0 queue free %	97			99			95	98	98	98	96	95
cM capacity (veh/h)	1200			1231			257	314	676	289	299	685

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	370	382	30	49
Volume Left	31	12	12	6
Volume Right	12	12	12	31
cSH	1200	1231	359	462
Volume to Capacity	0.03	0.00*	0.08	0.11
Queue Length 95th (m)	0.6	0.2	2.2	2.8
Control Delay (s/veh)	0.9	0.3	16.0	13.7
Lane LOS	A	A	C	B
Approach Delay (s/veh)	0.9	0.3	16.0	13.7
Approach LOS			C	B

Intersection Summary				
Average Delay	2.0			
Intersection Capacity Utilization	35.7%	ICU Level of Service	A	
Analysis Period (min)	15			

* Value less than 0.01.

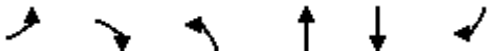


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	230	15	20	205	30	5	15	35	75	15	50
Future Volume (Veh/h)	20	230	15	20	205	30	5	15	35	75	15	50
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	21	245	16	21	218	32	5	16	37	80	16	53
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	250			261			608	579	245	592	563	218
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	250			261			608	579	245	592	563	218
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.2	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.6	4.0	3.3
p0 queue free %	98			98			99	96	95	78	96	94
cM capacity (veh/h)	1327			1286			364	415	799	370	424	827

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	266	16	239	32	58	149
Volume Left	21	0	21	0	5	80
Volume Right	0	16	0	32	37	53
cSH	1327	1700	1286	1700	588	468
Volume to Capacity	0.02	0.00*	0.02	0.02	0.10	0.32
Queue Length 95th (m)	0.4	0.0	0.4	0.0	2.6	10.8
Control Delay (s/veh)	0.7	0.0	0.8	0.0	11.8	16.2
Lane LOS	A		A		B	C
Approach Delay (s/veh)	0.7		0.7		11.8	16.2
Approach LOS					B	C

Intersection Summary				
Average Delay	4.6			
Intersection Capacity Utilization	49.8%	ICU Level of Service		A
Analysis Period (min)	15			

* Value less than 0.01.

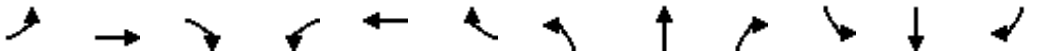


Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	15	425	580	20	60	30
Future Volume (Veh/h)	15	425	580	20	60	30
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	15	438	598	21	62	31
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1295	78	93			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1295	78	93			
tC, single (s)	6.4	6.2	4.3			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.4			
p0 queue free %	86	55	57			
cM capacity (veh/h)	104	983	1407			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	453	619	93
Volume Left	15	598	0
Volume Right	438	0	31
cSH	768	1407	1700
Volume to Capacity	0.59	0.43	0.05
Queue Length 95th (m)	31.4	17.4	0.0
Control Delay (s/veh)	16.2	9.3	0.0
Lane LOS	C	A	
Approach Delay (s/veh)	16.2	9.3	0.0
Approach LOS	C		

Intersection Summary			
Average Delay	11.2		
Intersection Capacity Utilization	73.6%	ICU Level of Service	D
Analysis Period (min)	15		

* Value less than 0.01.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	10	50	10	15	15	110	445	30	15	555	5
Future Volume (Veh/h)	5	10	50	10	15	15	110	445	30	15	555	5
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	5	10	52	10	15	15	113	459	31	15	572	5
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)								225				
pX, platoon unblocked	0.75	0.75		0.75	0.75	0.75				0.75		
vC, conflicting volume	1328	1321	575	1362	1308	475	577			490		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1269	1260	575	1315	1242	126	577			147		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	94	91	90	87	87	98	89			99		
cM capacity (veh/h)	87	112	522	77	115	694	1006			1080		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	67	40	603	592
Volume Left	5	10	113	15
Volume Right	52	15	31	5
cSH	273	142	1006	1080
Volume to Capacity	0.25	0.28	0.11	0.01
Queue Length 95th (m)	7.5	8.7	3.0	0.3
Control Delay (s/veh)	22.5	39.9	2.8	0.4
Lane LOS	C	E	A	A
Approach Delay (s/veh)	22.5	39.9	2.8	0.4
Approach LOS	C	E		

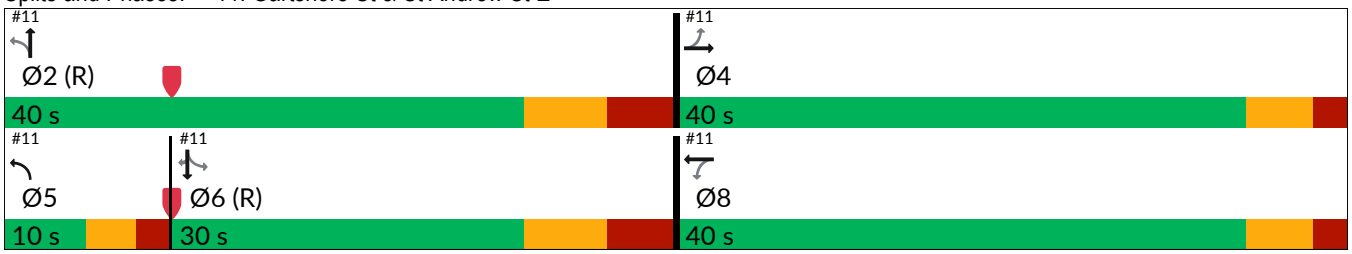
Intersection Summary				
Average Delay	3.9			
Intersection Capacity Utilization	76.6%	ICU Level of Service	D	
Analysis Period (min)	15			

* Value less than 0.01.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	30	40	35	25	95	560	5	515	45
Future Volume (vph)	30	40	35	25	95	560	5	515	45
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	Perm	NA	Perm
Protected Phases		4		8	5	2		6	
Permitted Phases	4		8		2		6		6
Detector Phase	4	4	8	8	5	2	6	6	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.1	24.1	24.1	24.1	10.0	27.0	27.0	27.0	27.0
Total Split (s)	40.0	40.0	40.0	40.0	10.0	40.0	30.0	30.0	30.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	12.5%	50.0%	37.5%	37.5%	37.5%
Yellow Time (s)	4.1	4.1	4.1	4.1	3.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	4.0	4.0	4.0	4.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.1	5.0	9.0	9.0	9.0	9.0
Lead/Lag					Lead		Lag	Lag	Lag
Lead-Lag Optimize?					Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	8.7	8.7	8.7	8.7	60.2	56.2	46.6	46.6	46.6
Actuated g/C Ratio	0.11	0.11	0.11	0.11	0.75	0.70	0.58	0.58	0.58
v/c Ratio	0.21	0.59	0.35	0.16	0.17	0.49	0.01	0.51	0.05
Control Delay (s/veh)	34.2	18.6	41.0	28.8	3.8	7.5	10.2	10.9	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	34.2	18.6	41.0	28.8	3.8	7.5	10.2	10.9	0.8
LOS	C	B	D	C	A	A	B	B	A
Approach Delay (s/veh)		21.0		35.4		7.0		10.1	
Approach LOS		C		D		A		B	

Intersection Summary	
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 65	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.59	
Intersection Signal Delay (s/veh): 11.2	Intersection LOS: B
Intersection Capacity Utilization 75.2%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 11: Gartshore St & St Andrew St E

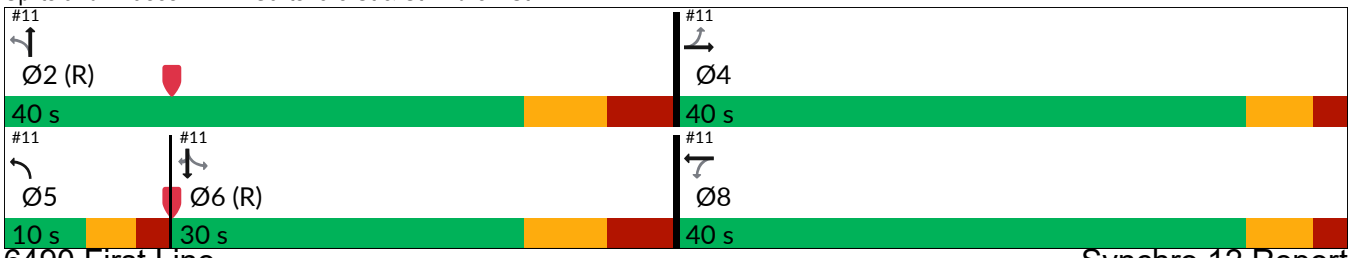


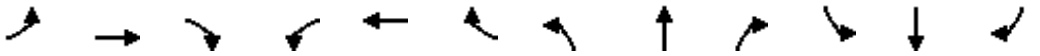
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	30	40	35	25	95	560	5	515	45
Future Volume (vph)	30	40	35	25	95	560	5	515	45
Lane Group Flow (vph)	32	176	37	32	101	639	5	548	48
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	Perm	NA	Perm
Protected Phases		4		8	5	2		6	
Permitted Phases	4		8		2		6		6
Detector Phase	4	4	8	8	5	2	6	6	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.1	24.1	24.1	24.1	10.0	27.0	27.0	27.0	27.0
Total Split (s)	40.0	40.0	40.0	40.0	10.0	40.0	30.0	30.0	30.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	12.5%	50.0%	37.5%	37.5%	37.5%
Yellow Time (s)	4.1	4.1	4.1	4.1	3.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	4.0	4.0	4.0	4.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.1	5.0	9.0	9.0	9.0	9.0
Lead/Lag					Lead		Lag	Lag	Lag
Lead-Lag Optimize?					Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	C-Max	C-Max
v/c Ratio	0.21	0.59	0.35	0.16	0.17	0.49	0.01	0.51	0.05
Control Delay (s/veh)	34.2	18.6	41.0	28.8	3.8	7.5	10.2	10.9	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	34.2	18.6	41.0	28.8	3.8	7.5	10.2	10.9	0.8
Queue Length 50th (m)	4.8	6.4	5.6	4.0	3.1	36.3	0.3	32.5	0.2
Queue Length 95th (m)	12.2	23.0	13.8	11.1	8.9	74.2	m0.8	66.1	m0.2
Internal Link Dist (m)		95.5		92.4		135.0		361.2	
Turn Bay Length (m)	15.0		15.0		15.0		15.0		50.0
Base Capacity (vph)	592	785	410	763	608	1299	466	1084	957
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.22	0.09	0.04	0.17	0.49	0.01	0.51	0.05

Intersection Summary

Cycle Length: 80
Actuated Cycle Length: 80
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 11: Gartshore St & St Andrew St E





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	40	125	35	25	5	95	560	40	5	515	45
Future Volume (vph)	30	40	125	35	25	5	95	560	40	5	515	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.1	6.1		6.1	6.1		5.0	9.0		9.0	9.0	9.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	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	1.00
Frt	1.00	0.89		1.00	0.98		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1805	1672		1752	1795		1803	1846		1805	1863	1566
Flt Permitted	0.74	1.00		0.53	1.00		0.36	1.00		0.42	1.00	1.00
Satd. Flow (perm)	1399	1672		969	1795		681	1846		802	1863	1566
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)	32	43	133	37	27	5	101	596	43	5	548	48
RTOR Reduction (vph)	0	119	0	0	4	0	0	1	0	0	0	21
Lane Group Flow (vph)	32	57	0	37	28	0	101	638	0	5	548	27
Confl. Peds. (#/hr)							5					5
Heavy Vehicles (%)	0%	3%	0%	3%	4%	0%	0%	2%	0%	0%	2%	2%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)	8.7	8.7		8.7	8.7		56.2	56.2		45.6	45.6	45.6
Effective Green, g (s)	8.7	8.7		8.7	8.7		56.2	56.2		45.6	45.6	45.6
Actuated g/C Ratio	0.11	0.11		0.11	0.11		0.70	0.70		0.57	0.57	0.57
Clearance Time (s)	6.1	6.1		6.1	6.1		5.0	9.0		9.0	9.0	9.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	152	181		105	195		556	1296		457	1061	892
v/s Ratio Prot		0.03			0.02		0.01	c0.35			0.29	
v/s Ratio Perm	0.02			c0.04			0.11			0.01		0.02
v/c Ratio	0.21	0.32		0.35	0.14		0.18	0.49		0.01	0.52	0.03
Uniform Delay, d1	32.5	32.9		33.0	32.3		4.6	5.4		7.4	10.5	7.5
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.01	0.79	1.00
Incremental Delay, d2	0.7	1.0		2.0	0.3		0.2	1.3		0.0	1.5	0.1
Delay (s)	33.2	33.9		35.1	32.6		4.8	6.7		7.5	9.7	7.6
Level of Service	C	C		D	C		A	A		A	A	A
Approach Delay (s/veh)		33.8			33.9			6.5			9.6	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	12.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	20.1
Intersection Capacity Utilization	75.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	180	155	445	65	70	415
Future Volume (Veh/h)	180	155	445	65	70	415
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	202	174	500	73	79	466
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1161	537			573	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1161	537			573	
tC, single (s)	6.5	6.2			4.2	
tC, 2 stage (s)						
tF (s)	3.6	3.3			2.3	
p0 queue free %	0	68			92	
cM capacity (veh/h)	193	538			957	

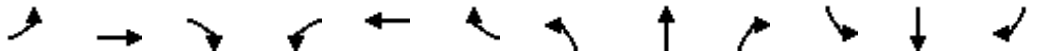
Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	376	573	545
Volume Left	202	0	79
Volume Right	174	73	0
cSH	274	1700	957
Volume to Capacity	1.37	0.34	0.08
Queue Length 95th (m)	158.6	0.0	2.2
Control Delay (s/veh)	224.3	0.0	2.2
Lane LOS	F		A
Approach Delay (s/veh)	224.3	0.0	2.2
Approach LOS	F		

Intersection Summary			
Average Delay	57.3		
Intersection Capacity Utilization	82.5%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	115	55	25	35	10
Future Volume (Veh/h)	5	115	55	25	35	10
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	6	135	65	29	41	12
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	206	47	53			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	206	47	53			
tC, single (s)	6.4	6.2	4.3			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.4			
p0 queue free %	99	87	95			
cM capacity (veh/h)	741	1028	1434			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	141	94	53
Volume Left	6	65	0
Volume Right	135	0	12
cSH	1011	1434	1700
Volume to Capacity	0.14	0.05	0.03
Queue Length 95th (m)	3.9	1.1	0.0
Control Delay (s/veh)	9.1	5.4	0.0
Lane LOS	A	A	
Approach Delay (s/veh)	9.1	5.4	0.0
Approach LOS	A		

Intersection Summary			
Average Delay		6.2	
Intersection Capacity Utilization		25.1%	ICU Level of Service A
Analysis Period (min)		15	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	305	30	70	240	5	15	15	85	5	20	20
Future Volume (Veh/h)	20	305	30	70	240	5	15	15	85	5	20	20
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	22	343	34	79	270	6	17	17	96	6	22	22
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	276			377			848	821	343	920	849	270
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	276			377			848	821	343	920	849	270
tC, single (s)	4.1			4.2			7.2	6.5	6.3	7.4	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.6	4.0	3.4	3.8	4.0	3.3
p0 queue free %	98			93			93	94	86	96	92	97
cM capacity (veh/h)	1299			1160			231	285	691	171	275	761

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	365	34	349	6	130	50
Volume Left	22	0	79	0	17	6
Volume Right	0	34	0	6	96	22
cSH	1299	1700	1160	1700	478	347
Volume to Capacity	0.02	0.02	0.07	0.00*	0.27	0.14
Queue Length 95th (m)	0.4	0.0	1.8	0.0	8.8	4.0
Control Delay (s/veh)	0.6	0.0	2.4	0.0	15.3	17.1
Lane LOS	A		A		C	C
Approach Delay (s/veh)	0.6		2.4		15.3	17.1
Approach LOS					C	C

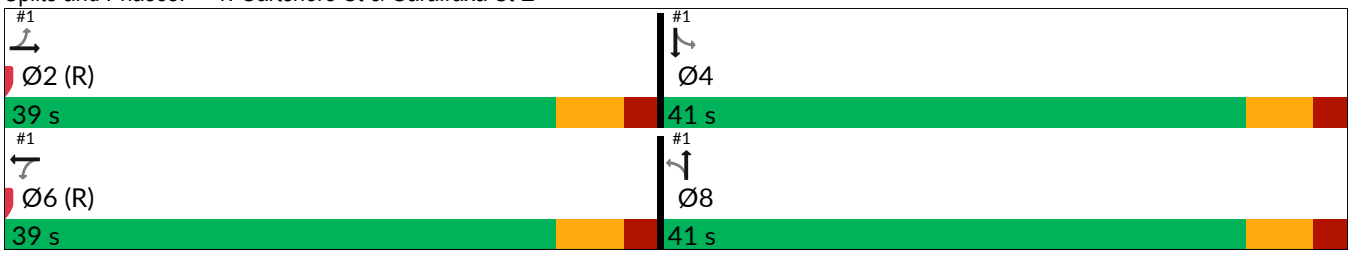
Intersection Summary				
Average Delay	4.2			
Intersection Capacity Utilization	53.2%	ICU Level of Service		A
Analysis Period (min)	15			

* Value less than 0.01.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	120	150	90	175	115	400	60	395
Future Volume (vph)	120	150	90	175	115	400	60	395
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		2		6		8		4
Permitted Phases	2		6		8		4	
Detector Phase	2	2	6	6	8	8	4	4
Switch Phase								
Minimum Initial (s)	30.0	30.0	30.0	30.0	10.0	10.0	10.0	10.0
Minimum Split (s)	36.1	36.1	36.1	36.1	27.1	27.1	27.1	27.1
Total Split (s)	39.0	39.0	39.0	39.0	41.0	41.0	41.0	41.0
Total Split (%)	48.8%	48.8%	48.8%	48.8%	51.3%	51.3%	51.3%	51.3%
Yellow Time (s)	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	C-Min	C-Min	C-Min	C-Min	None	None	None	None
Act Effct Green (s)	37.9	37.9	37.9	37.9	29.9	29.9	29.9	29.9
Actuated g/C Ratio	0.47	0.47	0.47	0.47	0.37	0.37	0.37	0.37
v/c Ratio	0.29	0.43	0.26	0.31	0.69	0.83	0.41	0.75
Control Delay (s/veh)	17.5	13.9	17.5	14.6	48.8	44.6	24.8	28.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	17.5	13.9	17.5	14.6	48.8	44.6	24.8	28.6
LOS	B	B	B	B	D	D	C	C
Approach Delay (s/veh)		14.9		15.4		45.5		28.1
Approach LOS		B		B		D		C

Intersection Summary	
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 11.4 (14%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 65	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.83	
Intersection Signal Delay (s/veh): 28.1	Intersection LOS: C
Intersection Capacity Utilization 102.8%	ICU Level of Service G
Analysis Period (min) 15	

Splits and Phases: 1: Gartshore St & Garafraxa St E

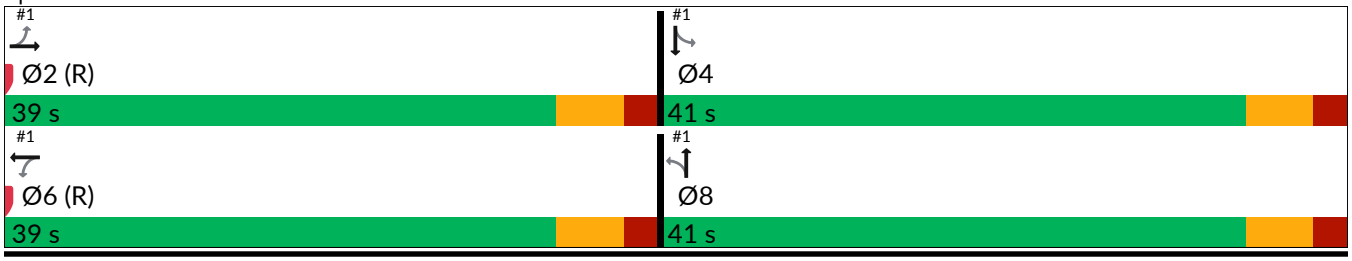


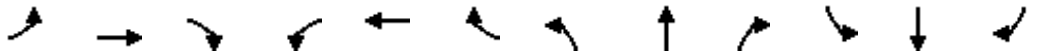
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	120	150	90	175	115	400	60	395
Future Volume (vph)	120	150	90	175	115	400	60	395
Lane Group Flow (vph)	136	358	102	262	131	512	68	489
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		2		6		8		4
Permitted Phases	2		6		8		4	
Detector Phase	2	2	6	6	8	8	4	4
Switch Phase								
Minimum Initial (s)	30.0	30.0	30.0	30.0	10.0	10.0	10.0	10.0
Minimum Split (s)	36.1	36.1	36.1	36.1	27.1	27.1	27.1	27.1
Total Split (s)	39.0	39.0	39.0	39.0	41.0	41.0	41.0	41.0
Total Split (%)	48.8%	48.8%	48.8%	48.8%	51.3%	51.3%	51.3%	51.3%
Yellow Time (s)	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	C-Min	C-Min	C-Min	C-Min	None	None	None	None
v/c Ratio	0.29	0.43	0.26	0.31	0.69	0.83	0.41	0.75
Control Delay (s/veh)	17.5	13.9	17.5	14.6	48.8	44.6	24.8	28.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	17.5	13.9	17.5	14.6	48.8	44.6	24.8	28.6
Queue Length 50th (m)	12.1	26.1	9.0	22.1	20.4	75.7	7.5	63.0
Queue Length 95th (m)	28.3	54.8	22.6	44.8	34.9	97.9	15.8	79.0
Internal Link Dist (m)		114.2		223.2		361.2		201.3
Turn Bay Length (m)	40.0		35.0		30.0		35.0	
Base Capacity (vph)	469	843	400	868	227	731	194	770
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	0.29	0.42	0.26	0.30	0.58	0.70	0.35	0.64

Intersection Summary

Cycle Length: 80
Actuated Cycle Length: 80
Offset: 11.4 (14%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated

Splits and Phases: 1: Gartshore St & Garafraxa St E

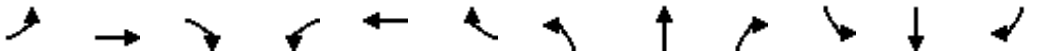




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	120	150	165	90	175	55	115	400	50	60	395	35
Future Volume (vph)	120	150	165	90	175	55	115	400	50	60	395	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.1	6.1		6.1	6.1		6.1	6.1		6.1	6.1	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		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	0.92		1.00	0.96		1.00	0.98		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)	1597	1662		1635	1779		1730	1637		1641	1728	
Flt Permitted	0.58	1.00		0.48	1.00		0.28	1.00		0.26	1.00	
Satd. Flow (perm)	976	1662		833	1779		511	1637		441	1728	
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	0.88
Adj. Flow (vph)	136	170	188	102	199	63	131	455	57	68	449	40
RTOR Reduction (vph)	0	45	0	0	13	0	0	6	0	0	4	0
Lane Group Flow (vph)	136	313	0	102	249	0	131	506	0	68	485	0
Confl. Peds. (#/hr)			5	5			5					5
Heavy Vehicles (%)	13%	6%	4%	10%	2%	6%	4%	14%	15%	10%	8%	14%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	37.9	37.9		37.9	37.9		29.9	29.9		29.9	29.9	
Effective Green, g (s)	37.9	37.9		37.9	37.9		29.9	29.9		29.9	29.9	
Actuated g/C Ratio	0.47	0.47		0.47	0.47		0.37	0.37		0.37	0.37	
Clearance Time (s)	6.1	6.1		6.1	6.1		6.1	6.1		6.1	6.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	462	787		394	842		190	611		164	645	
v/s Ratio Prot		c0.19			0.14			c0.31			0.28	
v/s Ratio Perm	0.14			0.12			0.26			0.15		
v/c Ratio	0.29	0.40		0.26	0.30		0.69	0.83		0.41	0.75	
Uniform Delay, d1	12.9	13.7		12.6	12.9		21.1	22.7		18.6	21.8	
Progression Factor	1.00	1.00		1.00	1.00		1.59	1.57		1.00	1.00	
Incremental Delay, d2	1.6	1.5		1.6	0.9		8.8	8.0		1.7	4.9	
Delay (s)	14.5	15.2		14.2	13.8		42.3	43.6		20.3	26.7	
Level of Service	B	B		B	B		D	D		C	C	
Approach Delay (s/veh)		15.0			13.9			43.3			25.9	
Approach LOS		B			B			D			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	26.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.2
Intersection Capacity Utilization	102.8%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	240	10	0	260	5	15	5	5	15	10	45
Future Volume (Veh/h)	10	240	10	0	260	5	15	5	5	15	10	45
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	261	11	0	283	5	16	5	5	16	11	49
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		247										
pX, platoon unblocked												
vC, conflicting volume	288			272			629	577	267	582	580	286
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	288			272			629	577	267	582	580	286
tC, single (s)	4.1			4.1			7.2	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.6	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			95	99	99	96	97	94
cM capacity (veh/h)	1286			1303			347	427	777	418	425	758

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	283	288	26	76
Volume Left	11	0	16	16
Volume Right	11	5	5	49
cSH	1286	1303	405	590
Volume to Capacity	0.00*	0.00	0.06	0.13
Queue Length 95th (m)	0.2	0.0	1.6	3.5
Control Delay (s/veh)	0.4	0.0	14.5	12.0
Lane LOS	A		B	B
Approach Delay (s/veh)	0.4	0.0	14.5	12.0
Approach LOS			B	B

Intersection Summary			
Average Delay	2.1		
Intersection Capacity Utilization	32.2%	ICU Level of Service	A
Analysis Period (min)	15		

* Value less than 0.01.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	160	10	30	225	70	15	15	25	20	5	20
Future Volume (Veh/h)	45	160	10	30	225	70	15	15	25	20	5	20
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
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
Hourly flow rate (vph)	47	167	10	31	234	73	16	16	26	21	5	21
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	307			177			581	630	167	591	567	234
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	307			177			581	630	167	591	567	234
tC, single (s)	4.1			4.2			7.3	6.7	6.2	7.2	7.0	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.7	4.2	3.3	3.6	4.4	3.3
p0 queue free %	96			98			96	96	97	94	99	97
cM capacity (veh/h)	1265			1335			364	356	872	363	351	810

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	214	10	265	73	58	47
Volume Left	47	0	31	0	16	21
Volume Right	0	10	0	73	26	21
cSH	1265	1700	1335	1700	488	479
Volume to Capacity	0.04	0.00*	0.02	0.04	0.12	0.10
Queue Length 95th (m)	0.9	0.0	0.6	0.0	3.2	2.6
Control Delay (s/veh)	2.0	0.0	1.1	0.0	13.4	13.3
Lane LOS	A		A		B	B
Approach Delay (s/veh)	1.9		0.9		13.4	13.3
Approach LOS					B	B

Intersection Summary				
Average Delay	3.2			
Intersection Capacity Utilization	38.7%	ICU Level of Service		A
Analysis Period (min)	15			

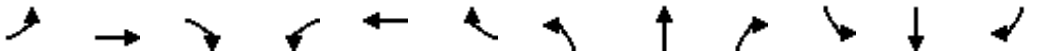
* Value less than 0.01.

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	25	525	340	70	20	15
Future Volume (Veh/h)	25	525	340	70	20	15
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	27	577	374	77	22	16
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	855	30	38			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	855	30	38			
tC, single (s)	6.5	6.3	4.2			
tC, 2 stage (s)						
tF (s)	3.6	3.4	2.3			
p0 queue free %	89	44	75			
cM capacity (veh/h)	240	1033	1510			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	604	451	38
Volume Left	27	374	0
Volume Right	577	0	16
cSH	900	1510	1700
Volume to Capacity	0.67	0.25	0.02
Queue Length 95th (m)	42.7	7.8	0.0
Control Delay (s/veh)	16.7	7.1	0.0
Lane LOS	C	A	
Approach Delay (s/veh)	16.7	7.1	0.0
Approach LOS	C		

Intersection Summary			
Average Delay	12.2		
Intersection Capacity Utilization	69.7%	ICU Level of Service	C
Analysis Period (min)	15		

* Value less than 0.01.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	25	75	15	20	15	60	515	10	15	395	10
Future Volume (Veh/h)	5	25	75	15	20	15	60	515	10	15	395	10
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	6	28	83	17	22	17	67	572	11	17	439	11
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)								225				
pX, platoon unblocked	0.75	0.75		0.75	0.75	0.75				0.75		
vC, conflicting volume	1218	1196	445	1287	1196	578	450			583		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1126	1096	445	1217	1096	275	450			283		
tC, single (s)	7.1	6.5	6.2	7.2	6.6	6.2	4.1			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.0	3.3	2.2			2.3		
p0 queue free %	95	81	87	79	85	97	94			98		
cM capacity (veh/h)	112	149	616	81	146	579	1095			947		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	117	56	650	467
Volume Left	6	17	67	17
Volume Right	83	17	11	11
cSH	311	144	1095	947
Volume to Capacity	0.38	0.39	0.06	0.02
Queue Length 95th (m)	13.5	13.3	1.6	0.4
Control Delay (s/veh)	23.4	45.1	1.6	0.5
Lane LOS	C	E	A	A
Approach Delay (s/veh)	23.4	45.1	1.6	0.5
Approach LOS	C	E		

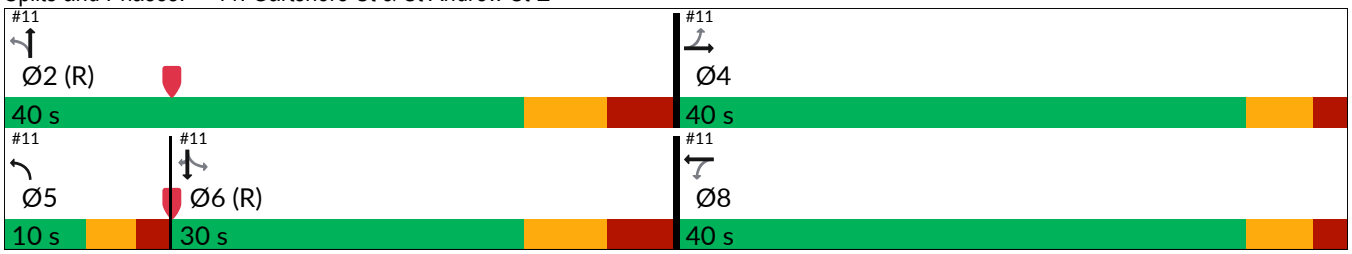
Intersection Summary				
Average Delay	5.1			
Intersection Capacity Utilization	68.5%	ICU Level of Service	C	
Analysis Period (min)	15			

* Value less than 0.01.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	20	50	55	40	110	455	15	525	50
Future Volume (vph)	20	50	55	40	110	455	15	525	50
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	Perm	NA	Perm
Protected Phases		4		8	5	2		6	
Permitted Phases	4		8		2		6		6
Detector Phase	4	4	8	8	5	2	6	6	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.1	24.1	24.1	24.1	10.0	27.0	27.0	27.0	27.0
Total Split (s)	40.0	40.0	40.0	40.0	10.0	40.0	30.0	30.0	30.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	12.5%	50.0%	37.5%	37.5%	37.5%
Yellow Time (s)	4.1	4.1	4.1	4.1	3.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	4.0	4.0	4.0	4.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.1	5.0	9.0	9.0	9.0	9.0
Lead/Lag					Lead		Lag	Lag	Lag
Lead-Lag Optimize?					Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	11.0	11.0	11.0	11.0	57.9	53.9	41.0	41.0	41.0
Actuated g/C Ratio	0.14	0.14	0.14	0.14	0.72	0.67	0.51	0.51	0.51
v/c Ratio	0.15	0.64	0.82	0.27	0.32	0.55	0.05	0.76	0.08
Control Delay (s/veh)	30.1	17.6	89.1	25.2	6.0	9.9	10.7	19.5	1.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	30.1	17.6	89.1	25.2	6.0	9.9	10.7	19.5	1.4
LOS	C	B	F	C	A	A	B	B	A
Approach Delay (s/veh)		18.8		57.1		9.2		17.7	
Approach LOS		B		E		A		B	

Intersection Summary	
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 75	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.82	
Intersection Signal Delay (s/veh): 17.3	Intersection LOS: B
Intersection Capacity Utilization 71.9%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 11: Gartshore St & St Andrew St E



Queues

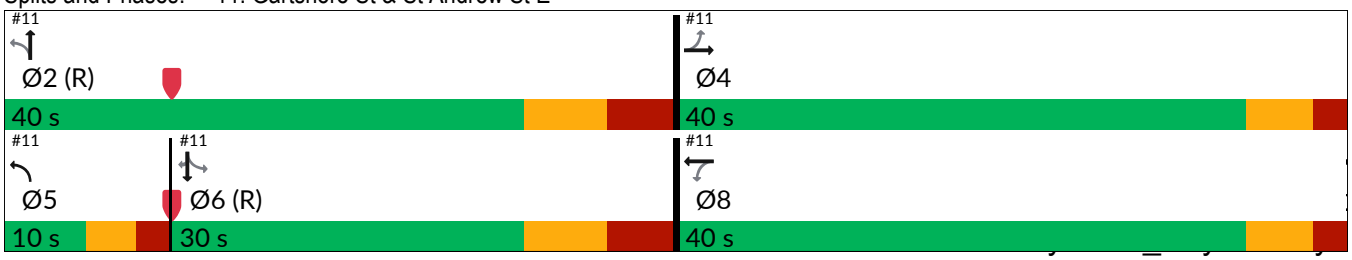
11: Gartshore St & St Andrew St E — Future Background AM Peak Hour - 10 Year

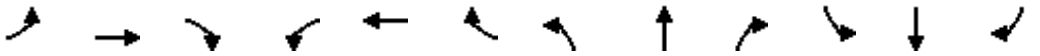
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	20	50	55	40	110	455	15	525	50
Future Volume (vph)	20	50	55	40	110	455	15	525	50
Lane Group Flow (vph)	26	247	71	71	143	636	19	682	65
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	Perm	NA	Perm
Protected Phases		4		8	5	2		6	
Permitted Phases	4		8		2		6		6
Detector Phase	4	4	8	8	5	2	6	6	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.1	24.1	24.1	24.1	10.0	27.0	27.0	27.0	27.0
Total Split (s)	40.0	40.0	40.0	40.0	10.0	40.0	30.0	30.0	30.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	12.5%	50.0%	37.5%	37.5%	37.5%
Yellow Time (s)	4.1	4.1	4.1	4.1	3.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	4.0	4.0	4.0	4.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.1	5.0	9.0	9.0	9.0	9.0
Lead/Lag					Lead		Lag	Lag	Lag
Lead-Lag Optimize?					Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	C-Max	C-Max
v/c Ratio	0.15	0.64	0.82	0.27	0.32	0.55	0.05	0.76	0.08
Control Delay (s/veh)	30.1	17.6	89.1	25.2	6.0	9.9	10.7	19.5	1.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	30.1	17.6	89.1	25.2	6.0	9.9	10.7	19.5	1.4
Queue Length 50th (m)	3.7	9.4	10.8	7.5	5.5	42.6	1.2	46.8	0.0
Queue Length 95th (m)	8.3	19.5	19.3	14.5	11.6	65.1	m3.1	#97.3	m0.9
Internal Link Dist (m)		95.5		92.4		135.0		361.2	
Turn Bay Length (m)	15.0		15.0		15.0		15.0		50.0
Base Capacity (vph)	523	805	269	760	443	1154	410	901	811
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.31	0.26	0.09	0.32	0.55	0.05	0.76	0.08

Intersection Summary

Cycle Length: 80
Actuated Cycle Length: 80
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 11: Gartshore St & St Andrew St E

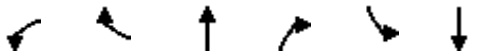




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	50	140	55	40	15	110	455	35	15	525	50
Future Volume (vph)	20	50	140	55	40	15	110	455	35	15	525	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.1	6.1		6.1	6.1		5.0	9.0		9.0	9.0	9.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	1.00	0.93
Flpb, ped/bikes	0.96	1.00		0.99	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.89		1.00	0.96		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1650	1655		1660	1769		1770	1712		1797	1759	1478
Flt Permitted	0.71	1.00		0.36	1.00		0.23	1.00		0.42	1.00	1.00
Satd. Flow (perm)	1234	1655		635	1769		431	1712		801	1759	1478
Peak-hour factor, PHF	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
Adj. Flow (vph)	26	65	182	71	52	19	143	591	45	19	682	65
RTOR Reduction (vph)	0	157	0	0	16	0	0	2	0	0	0	32
Lane Group Flow (vph)	26	90	0	71	55	0	143	634	0	19	682	33
Confl. Peds. (#/hr)	20		5	5		20	30		5	5		30
Heavy Vehicles (%)	5%	2%	1%	8%	0%	7%	2%	10%	6%	0%	8%	2%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)	11.0	11.0		11.0	11.0		53.9	53.9		41.0	41.0	41.0
Effective Green, g (s)	11.0	11.0		11.0	11.0		53.9	53.9		41.0	41.0	41.0
Actuated g/C Ratio	0.14	0.14		0.14	0.14		0.67	0.67		0.51	0.51	0.51
Clearance Time (s)	6.1	6.1		6.1	6.1		5.0	9.0		9.0	9.0	9.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	169	227		87	243		422	1153		410	901	757
v/s Ratio Prot		0.05			0.03		0.03	c0.37			c0.39	
v/s Ratio Perm	0.02			c0.11			0.19			0.02		0.02
v/c Ratio	0.15	0.40		0.82	0.22		0.34	0.55		0.05	0.76	0.04
Uniform Delay, d1	30.4	31.5		33.5	30.7		7.7	6.8		9.7	15.5	9.7
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		0.83	0.71	1.19
Incremental Delay, d2	0.4	1.1		42.3	0.5		0.5	1.9		0.2	5.2	0.1
Delay (s)	30.8	32.6		75.8	31.2		8.1	8.7		8.3	16.3	11.7
Level of Service	C	C		E	C		A	A		A	B	B
Approach Delay (s/veh)		32.4			53.5			8.6			15.7	
Approach LOS		C			D			A			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	17.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	20.1
Intersection Capacity Utilization	71.9%	ICU Level of Service	C
Analysis Period (min)	15		

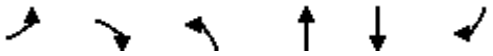
c Critical Lane Group



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	55	55	355	190	150	395
Future Volume (Veh/h)	55	55	355	190	150	395
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	59	59	378	202	160	420
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1219	479			580	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1219	479			580	
tC, single (s)	6.6	6.4			4.3	
tC, 2 stage (s)						
tF (s)	3.7	3.5			2.4	
p0 queue free %	62	89			83	
cM capacity (veh/h)	153	555			920	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	118	580	580
Volume Left	59	0	160
Volume Right	59	202	0
cSH	240	1700	920
Volume to Capacity	0.49	0.34	0.17
Queue Length 95th (m)	19.9	0.0	5.0
Control Delay (s/veh)	33.6	0.0	4.3
Lane LOS	D		A
Approach Delay (s/veh)	33.6	0.0	4.3
Approach LOS	D		

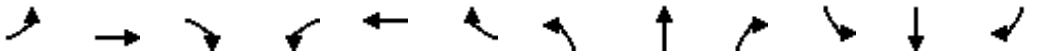
Intersection Summary			
Average Delay	5.1		
Intersection Capacity Utilization	75.8%	ICU Level of Service	D
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	10	30	130	35	15	10
Future Volume (Veh/h)	10	30	130	35	15	10
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79
Hourly flow rate (vph)	13	38	165	44	19	13
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	400	26	32			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	400	26	32			
tC, single (s)	6.5	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.6	3.3	2.2			
p0 queue free %	98	96	90			
cM capacity (veh/h)	531	1056	1593			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	51	209	32
Volume Left	13	165	0
Volume Right	38	0	13
cSH	844	1593	1700
Volume to Capacity	0.06	0.10	0.02
Queue Length 95th (m)	1.5	2.8	0.0
Control Delay (s/veh)	9.5	6.1	0.0
Lane LOS	A	A	
Approach Delay (s/veh)	9.5	6.1	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	6.0		
Intersection Capacity Utilization	25.7%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	195	15	70	310	5	10	20	45	5	20	15
Future Volume (Veh/h)	15	195	15	70	310	5	10	20	45	5	20	15
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	16	212	16	76	337	5	11	22	49	5	22	16
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	342			228			760	738	212	793	749	337
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	342			228			760	738	212	793	749	337
tC, single (s)	4.1			4.2			7.2	6.5	6.4	7.1	6.6	6.4
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.6	4.0	3.5	3.5	4.1	3.5
p0 queue free %	99			94			96	93	94	98	93	98
cM capacity (veh/h)	1228			1317			270	324	783	260	312	656

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	228	16	413	5	82	43
Volume Left	16	0	76	0	11	5
Volume Right	0	16	0	5	49	16
cSH	1228	1700	1317	1700	479	377
Volume to Capacity	0.01	0.00*	0.06	0.00*	0.17	0.11
Queue Length 95th (m)	0.3	0.0	1.5	0.0	4.9	3.1
Control Delay (s/veh)	0.7	0.0	1.9	0.0	14.1	15.8
Lane LOS	A		A		B	C
Approach Delay (s/veh)	0.6		1.9		14.1	15.8
Approach LOS					B	C

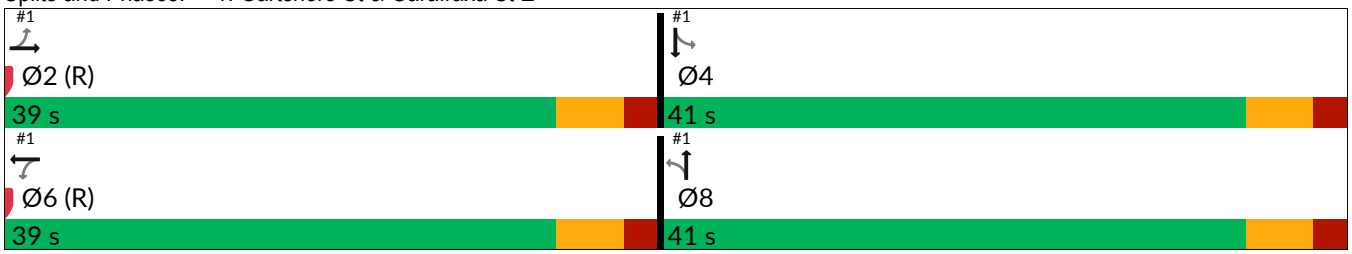
Intersection Summary				
Average Delay	3.5			
Intersection Capacity Utilization	47.2%	ICU Level of Service		A
Analysis Period (min)	15			

* Value less than 0.01.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	50	165	95	165	140	460	80	430
Future Volume (vph)	50	165	95	165	140	460	80	430
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		2		6		8		4
Permitted Phases	2		6		8		4	
Detector Phase	2	2	6	6	8	8	4	4
Switch Phase								
Minimum Initial (s)	30.0	30.0	30.0	30.0	10.0	10.0	10.0	10.0
Minimum Split (s)	36.1	36.1	36.1	36.1	27.1	27.1	27.1	27.1
Total Split (s)	39.0	39.0	39.0	39.0	41.0	41.0	41.0	41.0
Total Split (%)	48.8%	48.8%	48.8%	48.8%	51.3%	51.3%	51.3%	51.3%
Yellow Time (s)	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	C-Min	C-Min	C-Min	C-Min	None	None	None	None
Act Effct Green (s)	34.2	34.2	34.2	34.2	33.6	33.6	33.6	33.6
Actuated g/C Ratio	0.43	0.43	0.43	0.43	0.42	0.42	0.42	0.42
v/c Ratio	0.15	0.47	0.29	0.37	0.94	0.80	0.53	0.79
Control Delay (s/veh)	17.9	16.5	20.1	16.3	79.5	31.2	28.3	27.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	17.9	16.5	20.1	16.3	79.5	31.2	28.3	27.1
LOS	B	B	C	B	E	C	C	C
Approach Delay (s/veh)		16.7		17.3		41.2		27.3
Approach LOS		B		B		D		C

Intersection Summary	
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 11.4 (14%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 75	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.94	
Intersection Signal Delay (s/veh): 28.2	Intersection LOS: C
Intersection Capacity Utilization 108.3%	ICU Level of Service G
Analysis Period (min) 15	

Splits and Phases: 1: Gartshore St & Garafraxa St E

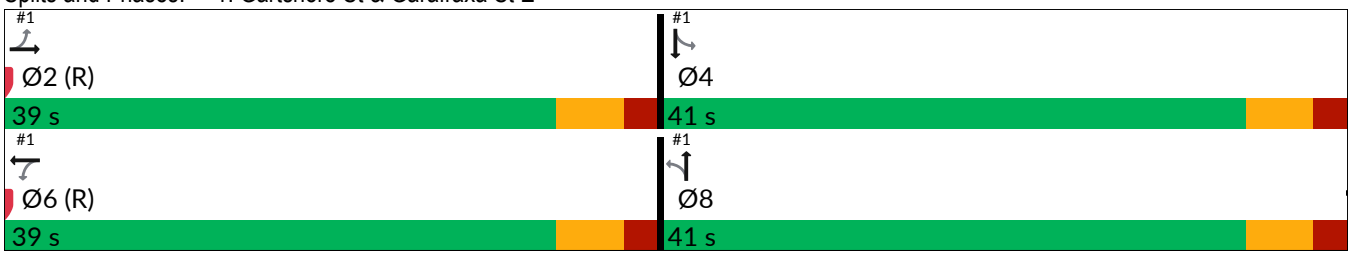


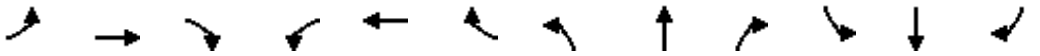
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	50	165	95	165	140	460	80	430
Future Volume (vph)	50	165	95	165	140	460	80	430
Lane Group Flow (vph)	56	361	106	283	156	600	89	606
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		2		6		8		4
Permitted Phases	2		6		8		4	
Detector Phase	2	2	6	6	8	8	4	4
Switch Phase								
Minimum Initial (s)	30.0	30.0	30.0	30.0	10.0	10.0	10.0	10.0
Minimum Split (s)	36.1	36.1	36.1	36.1	27.1	27.1	27.1	27.1
Total Split (s)	39.0	39.0	39.0	39.0	41.0	41.0	41.0	41.0
Total Split (%)	48.8%	48.8%	48.8%	48.8%	51.3%	51.3%	51.3%	51.3%
Yellow Time (s)	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	C-Min	C-Min	C-Min	C-Min	None	None	None	None
v/c Ratio	0.15	0.47	0.29	0.37	0.94	0.80	0.53	0.79
Control Delay (s/veh)	17.9	16.5	20.1	16.3	79.5	31.2	28.3	27.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	17.9	16.5	20.1	16.3	79.5	31.2	28.3	27.1
Queue Length 50th (m)	5.4	34.1	11.7	27.5	15.9	54.6	9.1	69.8
Queue Length 95th (m)	13.1	59.8	25.0	48.3	#56.8	109.7	24.5	108.5
Internal Link Dist (m)		114.2		223.2		361.2		201.3
Turn Bay Length (m)	40.0		35.0		30.0		35.0	
Base Capacity (vph)	386	811	381	805	181	819	184	834
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	0.15	0.45	0.28	0.35	0.86	0.73	0.48	0.73

Intersection Summary

Cycle Length: 80
Actuated Cycle Length: 80
Offset: 11.4 (14%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Gartshore St & Garafraxa St E

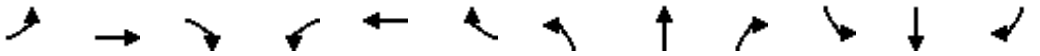




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	165	160	95	165	90	140	460	80	80	430	115
Future Volume (vph)	50	165	160	95	165	90	140	460	80	80	430	115
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.1	6.1		6.1	6.1		6.1	6.1		6.1	6.1	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		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	0.95		1.00	0.98		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1504	1717		1752	1743		1805	1774		1787	1797	
Flt Permitted	0.54	1.00		0.46	1.00		0.21	1.00		0.21	1.00	
Satd. Flow (perm)	862	1717		848	1743		398	1774		404	1797	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	56	183	178	106	183	100	156	511	89	89	478	128
RTOR Reduction (vph)	0	42	0	0	24	0	0	8	0	0	12	0
Lane Group Flow (vph)	56	319	0	106	259	0	156	592	0	89	594	0
Confl. Bikes (#/hr)						5						
Heavy Vehicles (%)	20%	1%	4%	3%	0%	7%	0%	4%	9%	1%	3%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	34.2	34.2		34.2	34.2		33.6	33.6		33.6	33.6	
Effective Green, g (s)	34.2	34.2		34.2	34.2		33.6	33.6		33.6	33.6	
Actuated g/C Ratio	0.43	0.43		0.43	0.43		0.42	0.42		0.42	0.42	
Clearance Time (s)	6.1	6.1		6.1	6.1		6.1	6.1		6.1	6.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	368	734		362	745		167	745		169	754	
v/s Ratio Prot		c0.19			0.15			0.33			0.33	
v/s Ratio Perm	0.06			0.13			c0.39			0.22		
v/c Ratio	0.15	0.43		0.29	0.35		0.93	0.79		0.53	0.79	
Uniform Delay, d1	14.0	16.1		15.0	15.4		22.1	20.2		17.3	20.1	
Progression Factor	1.00	1.00		1.00	1.00		1.15	1.21		1.00	1.00	
Incremental Delay, d2	0.9	1.9		2.0	1.3		47.1	5.3		2.9	5.5	
Delay (s)	14.9	18.0		17.0	16.7		72.6	29.8		20.2	25.6	
Level of Service	B	B		B	B		E	C		C	C	
Approach Delay (s/veh)		17.6			16.8			38.6			24.9	
Approach LOS		B			B			D			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	26.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.2
Intersection Capacity Utilization	108.3%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	290	10	10	315	10	10	5	10	5	10	25
Future Volume (Veh/h)	25	290	10	10	315	10	10	5	10	5	10	25
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Hourly flow rate (vph)	31	358	12	12	389	12	12	6	12	6	12	31
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		247										
pX, platoon unblocked												
vC, conflicting volume	401			370			882	851	364	860	851	395
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	401			370			882	851	364	860	851	395
tC, single (s)	4.1			4.1			7.2	6.5	6.4	7.1	6.6	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.6	4.0	3.5	3.5	4.1	3.3
p0 queue free %	97			99			95	98	98	98	96	95
cM capacity (veh/h)	1169			1200			231	289	649	261	275	659

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	401	413	30	49
Volume Left	31	12	12	6
Volume Right	12	12	12	31
cSH	1169	1200	329	431
Volume to Capacity	0.03	0.01	0.09	0.11
Queue Length 95th (m)	0.7	0.2	2.4	3.1
Control Delay (s/veh)	0.9	0.3	17.0	14.4
Lane LOS	A	A	C	B
Approach Delay (s/veh)	0.9	0.3	17.0	14.4
Approach LOS			C	B

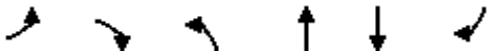
Intersection Summary				
Average Delay	1.9			
Intersection Capacity Utilization	37.3%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	255	15	20	230	30	5	15	35	75	20	50
Future Volume (Veh/h)	20	255	15	20	230	30	5	15	35	75	20	50
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
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
Hourly flow rate (vph)	21	271	16	21	245	32	5	16	37	80	21	53
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	277			287			664	632	271	645	616	245
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	277			287			664	632	271	645	616	245
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.2	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.6	4.0	3.3
p0 queue free %	98			98			98	96	95	76	95	93
cM capacity (veh/h)	1298			1258			329	387	773	339	395	799

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	292	16	266	32	58	154
Volume Left	21	0	21	0	5	80
Volume Right	0	16	0	32	37	53
cSH	1298	1700	1258	1700	556	433
Volume to Capacity	0.02	0.00*	0.02	0.02	0.10	0.36
Queue Length 95th (m)	0.4	0.0	0.4	0.0	2.8	12.7
Control Delay (s/veh)	0.7	0.0	0.8	0.0	12.2	17.8
Lane LOS	A		A		B	C
Approach Delay (s/veh)	0.7		0.7		12.2	17.8
Approach LOS					B	C

Intersection Summary				
Average Delay	4.7			
Intersection Capacity Utilization	51.5%	ICU Level of Service		A
Analysis Period (min)	15			

* Value less than 0.01.

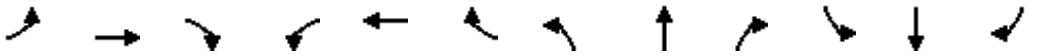


Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	15	435	595	20	60	30
Future Volume (Veh/h)	15	435	595	20	60	30
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	15	448	613	21	62	31
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1325	78	93			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1325	78	93			
tC, single (s)	6.4	6.2	4.3			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.4			
p0 queue free %	85	54	56			
cM capacity (veh/h)	98	983	1407			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	463	634	93
Volume Left	15	613	0
Volume Right	448	0	31
cSH	761	1407	1700
Volume to Capacity	0.61	0.44	0.05
Queue Length 95th (m)	33.6	18.1	0.0
Control Delay (s/veh)	16.8	9.3	0.0
Lane LOS	C	A	
Approach Delay (s/veh)	16.8	9.3	0.0
Approach LOS	C		

Intersection Summary			
Average Delay	11.5		
Intersection Capacity Utilization	75.1%	ICU Level of Service	D
Analysis Period (min)	15		

* Value less than 0.01.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	10	50	10	15	15	110	460	30	15	565	5
Future Volume (Veh/h)	5	10	50	10	15	15	110	460	30	15	565	5
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	5	10	52	10	15	15	113	474	31	15	582	5
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)								225				
pX, platoon unblocked	0.75	0.75		0.75	0.75	0.75				0.75		
vC, conflicting volume	1353	1346	585	1387	1333	490	587			505		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1303	1294	585	1349	1276	150	587			171		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	94	91	90	86	86	98	89			99		
cM capacity (veh/h)	82	107	515	73	110	675	998			1062		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	67	40	618	602
Volume Left	5	10	113	15
Volume Right	52	15	31	5
cSH	263	135	998	1062
Volume to Capacity	0.25	0.30	0.11	0.01
Queue Length 95th (m)	7.9	9.2	3.1	0.3
Control Delay (s/veh)	23.3	42.4	2.9	0.4
Lane LOS	C	E	A	A
Approach Delay (s/veh)	23.3	42.4	2.9	0.4
Approach LOS	C	E		

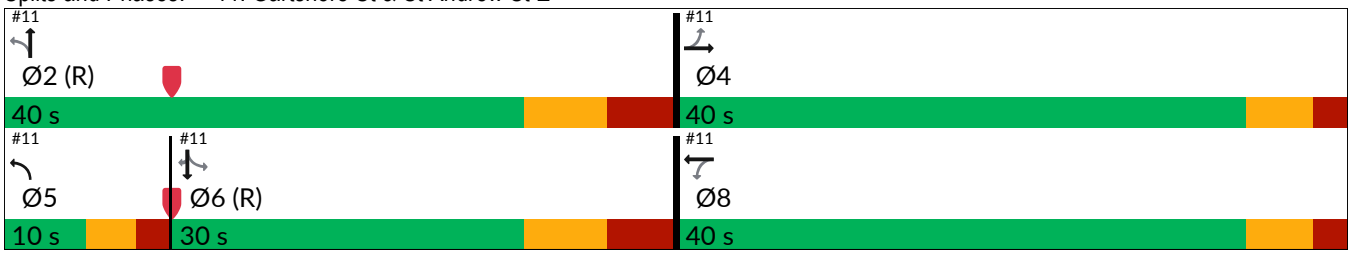
Intersection Summary				
Average Delay	4.0			
Intersection Capacity Utilization	77.9%	ICU Level of Service	D	
Analysis Period (min)	15			

* Value less than 0.01.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	30	40	35	25	95	615	5	560	45
Future Volume (vph)	30	40	35	25	95	615	5	560	45
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	Perm	NA	Perm
Protected Phases		4		8	5	2		6	
Permitted Phases	4		8		2		6		6
Detector Phase	4	4	8	8	5	2	6	6	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.1	24.1	24.1	24.1	10.0	27.0	27.0	27.0	27.0
Total Split (s)	40.0	40.0	40.0	40.0	10.0	40.0	30.0	30.0	30.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	12.5%	50.0%	37.5%	37.5%	37.5%
Yellow Time (s)	4.1	4.1	4.1	4.1	3.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	4.0	4.0	4.0	4.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.1	5.0	9.0	9.0	9.0	9.0
Lead/Lag					Lead		Lag	Lag	Lag
Lead-Lag Optimize?					Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	8.7	8.7	8.7	8.7	60.2	56.2	46.6	46.6	46.6
Actuated g/C Ratio	0.11	0.11	0.11	0.11	0.75	0.70	0.58	0.58	0.58
v/c Ratio	0.21	0.59	0.35	0.16	0.18	0.54	0.01	0.55	0.05
Control Delay (s/veh)	34.2	18.6	41.0	28.8	3.9	8.1	10.0	11.9	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	34.2	18.6	41.0	28.8	3.9	8.1	10.0	11.9	0.7
LOS	C	B	D	C	A	A	A	B	A
Approach Delay (s/veh)		21.0		35.4		7.6		11.0	
Approach LOS		C		D		A		B	

Intersection Summary	
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 70	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.59	
Intersection Signal Delay (s/veh): 11.6	Intersection LOS: B
Intersection Capacity Utilization 78.1%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 11: Gartshore St & St Andrew St E

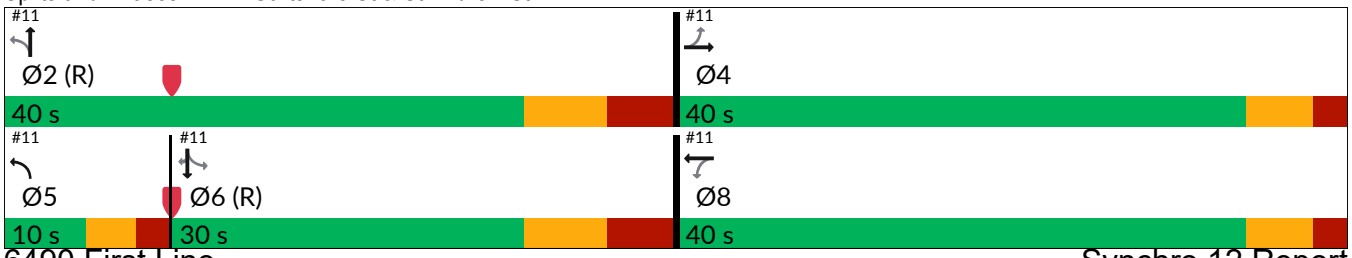


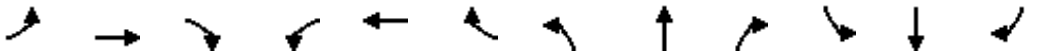
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	30	40	35	25	95	615	5	560	45
Future Volume (vph)	30	40	35	25	95	615	5	560	45
Lane Group Flow (vph)	32	176	37	32	101	697	5	596	48
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	Perm	NA	Perm
Protected Phases		4		8	5	2		6	
Permitted Phases	4		8		2		6		6
Detector Phase	4	4	8	8	5	2	6	6	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.1	24.1	24.1	24.1	10.0	27.0	27.0	27.0	27.0
Total Split (s)	40.0	40.0	40.0	40.0	10.0	40.0	30.0	30.0	30.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	12.5%	50.0%	37.5%	37.5%	37.5%
Yellow Time (s)	4.1	4.1	4.1	4.1	3.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	4.0	4.0	4.0	4.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.1	5.0	9.0	9.0	9.0	9.0
Lead/Lag					Lead		Lag	Lag	Lag
Lead-Lag Optimize?					Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	C-Max	C-Max
v/c Ratio	0.21	0.59	0.35	0.16	0.18	0.54	0.01	0.55	0.05
Control Delay (s/veh)	34.2	18.6	41.0	28.8	3.9	8.1	10.0	11.9	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	34.2	18.6	41.0	28.8	3.9	8.1	10.0	11.9	0.7
Queue Length 50th (m)	4.8	6.4	5.6	4.0	3.1	41.6	0.3	43.5	0.0
Queue Length 95th (m)	12.2	23.0	13.8	11.1	8.9	85.2	m0.9	75.3	m0.1
Internal Link Dist (m)		95.5		92.4		135.0		361.2	
Turn Bay Length (m)	15.0		15.0		15.0		15.0		50.0
Base Capacity (vph)	592	785	410	763	565	1299	442	1084	957
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.22	0.09	0.04	0.18	0.54	0.01	0.55	0.05

Intersection Summary

Cycle Length: 80
Actuated Cycle Length: 80
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 11: Gartshore St & St Andrew St E

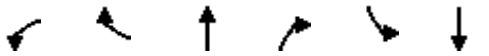




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	40	125	35	25	5	95	615	40	5	560	45
Future Volume (vph)	30	40	125	35	25	5	95	615	40	5	560	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.1	6.1		6.1	6.1		5.0	9.0		9.0	9.0	9.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	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	1.00
Frt	1.00	0.89		1.00	0.98		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1805	1672		1752	1795		1803	1848		1805	1863	1566
Flt Permitted	0.74	1.00		0.53	1.00		0.33	1.00		0.40	1.00	1.00
Satd. Flow (perm)	1399	1672		969	1795		619	1848		760	1863	1566
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)	32	43	133	37	27	5	101	654	43	5	596	48
RTOR Reduction (vph)	0	119	0	0	4	0	0	1	0	0	0	21
Lane Group Flow (vph)	32	57	0	37	28	0	101	696	0	5	596	27
Confl. Peds. (#/hr)							5					5
Heavy Vehicles (%)	0%	3%	0%	3%	4%	0%	0%	2%	0%	0%	2%	2%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)	8.7	8.7		8.7	8.7		56.2	56.2		45.6	45.6	45.6
Effective Green, g (s)	8.7	8.7		8.7	8.7		56.2	56.2		45.6	45.6	45.6
Actuated g/C Ratio	0.11	0.11		0.11	0.11		0.70	0.70		0.57	0.57	0.57
Clearance Time (s)	6.1	6.1		6.1	6.1		5.0	9.0		9.0	9.0	9.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	152	181		105	195		517	1298		433	1061	892
v/s Ratio Prot		0.03			0.02		0.01	c0.38			0.32	
v/s Ratio Perm	0.02			c0.04			0.12			0.01		0.02
v/c Ratio	0.21	0.32		0.35	0.14		0.20	0.54		0.01	0.56	0.03
Uniform Delay, d1	32.5	32.9		33.0	32.3		5.0	5.7		7.4	10.9	7.5
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		0.99	0.81	1.00
Incremental Delay, d2	0.7	1.0		2.0	0.3		0.2	1.6		0.0	1.7	0.1
Delay (s)	33.2	33.9		35.1	32.6		5.1	7.3		7.4	10.6	7.6
Level of Service	C	C		D	C		A	A		A	B	A
Approach Delay (s/veh)		33.8			33.9			7.0			10.3	
Approach LOS		C			C			A			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	12.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	20.1
Intersection Capacity Utilization	78.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	180	155	460	65	70	425
Future Volume (Veh/h)	180	155	460	65	70	425
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	202	174	517	73	79	478
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1190	554			590	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1190	554			590	
tC, single (s)	6.5	6.2			4.2	
tC, 2 stage (s)						
tF (s)	3.6	3.3			2.3	
p0 queue free %	0	67			92	
cM capacity (veh/h)	185	527			943	

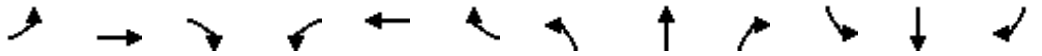
Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	376	590	557
Volume Left	202	0	79
Volume Right	174	73	0
cSH	264	1700	943
Volume to Capacity	1.42	0.35	0.08
Queue Length 95th (m)	166.1	0.0	2.2
Control Delay (s/veh)	247.2	0.0	2.2
Lane LOS	F		A
Approach Delay (s/veh)	247.2	0.0	2.2
Approach LOS	F		

Intersection Summary			
Average Delay	61.8		
Intersection Capacity Utilization	83.9%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	115	55	25	40	10
Future Volume (Veh/h)	5	115	55	25	40	10
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	6	135	65	29	47	12
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	212	53	59			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	212	53	59			
tC, single (s)	6.4	6.2	4.3			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.4			
p0 queue free %	99	87	95			
cM capacity (veh/h)	735	1020	1426			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	141	94	59
Volume Left	6	65	0
Volume Right	135	0	12
cSH	1004	1426	1700
Volume to Capacity	0.14	0.05	0.03
Queue Length 95th (m)	3.9	1.1	0.0
Control Delay (s/veh)	9.2	5.4	0.0
Lane LOS	A	A	
Approach Delay (s/veh)	9.2	5.4	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	6.1		
Intersection Capacity Utilization	25.1%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	330	30	70	265	5	15	15	85	5	20	20
Future Volume (Veh/h)	20	330	30	70	265	5	15	15	85	5	20	20
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	22	371	34	79	298	6	17	17	96	6	22	22
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	304			405			904	877	371	976	905	298
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	304			405			904	877	371	976	905	298
tC, single (s)	4.1			4.2			7.2	6.5	6.3	7.4	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.6	4.0	3.4	3.8	4.0	3.3
p0 queue free %	98			93			92	94	86	96	91	97
cM capacity (veh/h)	1268			1132			210	264	666	154	255	734

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	393	34	377	6	130	50
Volume Left	22	0	79	0	17	6
Volume Right	0	34	0	6	96	22
cSH	1268	1700	1132	1700	449	322
Volume to Capacity	0.02	0.02	0.07	0.00*	0.29	0.16
Queue Length 95th (m)	0.4	0.0	1.8	0.0	9.5	4.3
Control Delay (s/veh)	0.6	0.0	2.3	0.0	16.3	18.2
Lane LOS	A		A		C	C
Approach Delay (s/veh)	0.6		2.3		16.3	18.2
Approach LOS					C	C

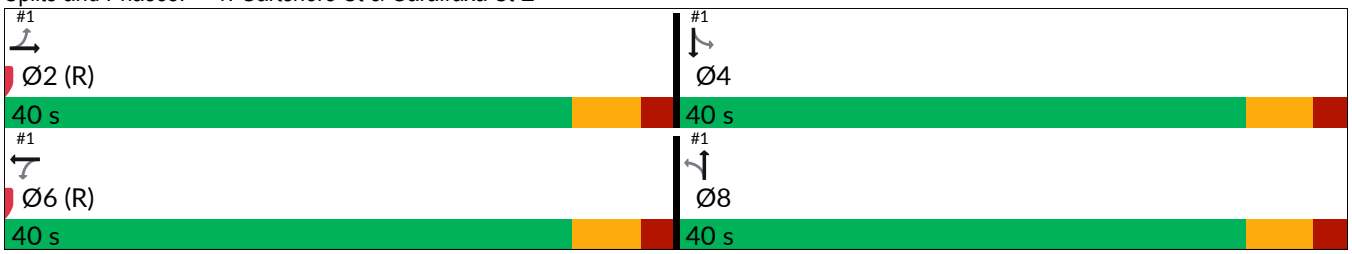
Intersection Summary			
Average Delay	4.2		
Intersection Capacity Utilization	55.8%	ICU Level of Service	B
Analysis Period (min)	15		

* Value less than 0.01.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	120	185	185	300	95	385	65	370
Future Volume (vph)	120	185	185	300	95	385	65	370
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		2		6		8		4
Permitted Phases	2		6		8		4	
Detector Phase	2	2	6	6	8	8	4	4
Switch Phase								
Minimum Initial (s)	30.0	30.0	30.0	30.0	10.0	10.0	10.0	10.0
Minimum Split (s)	36.1	36.1	36.1	36.1	27.1	27.1	27.1	27.1
Total Split (s)	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Yellow Time (s)	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	C-Min	C-Min	C-Min	C-Min	None	None	None	None
Act Effct Green (s)	37.8	37.8	37.8	37.8	30.0	30.0	30.0	30.0
Actuated g/C Ratio	0.47	0.47	0.47	0.47	0.38	0.38	0.38	0.38
v/c Ratio	0.40	0.45	0.55	0.49	0.50	0.87	0.49	0.70
Control Delay (s/veh)	20.2	15.0	23.9	17.5	36.3	46.0	30.3	26.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	20.2	15.0	23.9	17.5	36.3	46.0	30.3	26.8
LOS	C	B	C	B	D	D	C	C
Approach Delay (s/veh)		16.4		19.6		44.4		27.3
Approach LOS		B		B		D		C

Intersection Summary	
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 11.4 (14%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 70	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.87	
Intersection Signal Delay (s/veh): 27.5	Intersection LOS: C
Intersection Capacity Utilization 104.1%	ICU Level of Service G
Analysis Period (min) 15	

Splits and Phases: 1: Gartshore St & Garafraxa St E

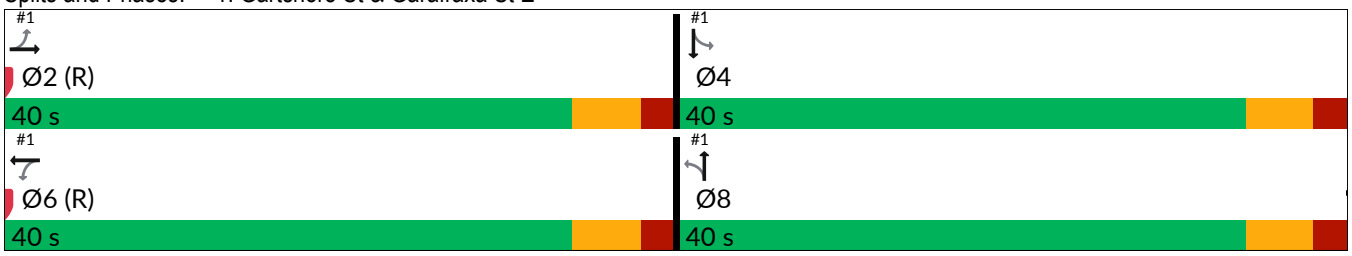


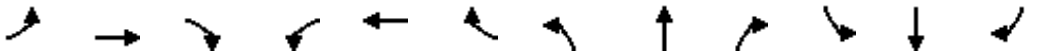
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	120	185	185	300	95	385	65	370
Future Volume (vph)	120	185	185	300	95	385	65	370
Lane Group Flow (vph)	136	375	210	421	108	535	74	460
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		2		6		8		4
Permitted Phases	2		6		8		4	
Detector Phase	2	2	6	6	8	8	4	4
Switch Phase								
Minimum Initial (s)	30.0	30.0	30.0	30.0	10.0	10.0	10.0	10.0
Minimum Split (s)	36.1	36.1	36.1	36.1	27.1	27.1	27.1	27.1
Total Split (s)	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Yellow Time (s)	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	C-Min	C-Min	C-Min	C-Min	None	None	None	None
v/c Ratio	0.40	0.45	0.55	0.49	0.50	0.87	0.49	0.70
Control Delay (s/veh)	20.2	15.0	23.9	17.5	36.3	46.0	30.3	26.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	20.2	15.0	23.9	17.5	36.3	46.0	30.3	26.8
Queue Length 50th (m)	13.3	31.9	22.8	43.5	14.9	75.3	8.2	56.2
Queue Length 95th (m)	29.1	56.2	46.8	70.9	30.4	#102.3	20.2	80.6
Internal Link Dist (m)		114.2		223.2		361.2		201.3
Turn Bay Length (m)	40.0		35.0		30.0		35.0	
Base Capacity (vph)	338	829	380	860	242	698	170	739
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	0.40	0.45	0.55	0.49	0.45	0.77	0.44	0.62

Intersection Summary

Cycle Length: 80
Actuated Cycle Length: 80
Offset: 11.4 (14%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Gartshore St & Garafraxa St E

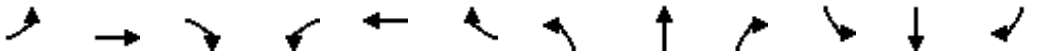




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	120	185	145	185	300	70	95	385	85	65	370	35
Future Volume (vph)	120	185	145	185	300	70	95	385	85	65	370	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.1	6.1		6.1	6.1		6.1	6.1		6.1	6.1	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		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	0.97		1.00	0.97		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)	1597	1683		1635	1796		1729	1619		1641	1727	
Flt Permitted	0.42	1.00		0.47	1.00		0.31	1.00		0.23	1.00	
Satd. Flow (perm)	712	1683		804	1796		572	1619		400	1727	
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	0.88
Adj. Flow (vph)	136	210	165	210	341	80	108	438	97	74	420	40
RTOR Reduction (vph)	0	32	0	0	9	0	0	11	0	0	4	0
Lane Group Flow (vph)	136	343	0	210	412	0	108	524	0	74	456	0
Confl. Peds. (#/hr)			5	5			5					5
Heavy Vehicles (%)	13%	6%	4%	10%	2%	6%	4%	14%	15%	10%	8%	14%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	37.8	37.8		37.8	37.8		30.0	30.0		30.0	30.0	
Effective Green, g (s)	37.8	37.8		37.8	37.8		30.0	30.0		30.0	30.0	
Actuated g/C Ratio	0.47	0.47		0.47	0.47		0.38	0.38		0.38	0.38	
Clearance Time (s)	6.1	6.1		6.1	6.1		6.1	6.1		6.1	6.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	336	795		379	848		214	607		150	647	
v/s Ratio Prot		0.20			0.23			c0.32			0.26	
v/s Ratio Perm	0.19			c0.26			0.19			0.18		
v/c Ratio	0.40	0.43		0.55	0.49		0.50	0.86		0.49	0.70	
Uniform Delay, d1	13.8	14.0		15.1	14.4		19.3	23.1		19.2	21.2	
Progression Factor	1.00	1.00		1.00	1.00		1.53	1.47		1.00	1.00	
Incremental Delay, d2	3.6	1.7		5.7	2.0		1.6	10.9		2.5	3.5	
Delay (s)	17.4	15.7		20.8	16.4		31.2	44.8		21.7	24.7	
Level of Service	B	B		C	B		C	D		C	C	
Approach Delay (s/veh)		16.1			17.9			42.5			24.3	
Approach LOS		B			B			D			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	25.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.2
Intersection Capacity Utilization	104.1%	ICU Level of Service	G
Analysis Period (min)	15		

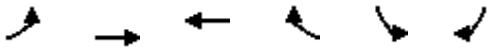
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	315	10	0	495	5	15	5	5	15	10	45
Future Volume (Veh/h)	10	315	10	0	495	5	15	5	5	15	10	45
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	342	11	0	538	5	16	5	5	16	11	49
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		247										
pX, platoon unblocked												
vC, conflicting volume	543			353			965	913	348	918	916	541
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	543			353			965	913	348	918	916	541
tC, single (s)	4.1			4.1			7.2	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.6	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			92	98	99	94	96	91
cM capacity (veh/h)	1036			1217			197	273	700	247	272	545

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	364	543	26	76
Volume Left	11	0	16	16
Volume Right	11	5	5	49
cSH	1036	1217	244	390
Volume to Capacity	0.01	0.00	0.11	0.20
Queue Length 95th (m)	0.3	0.0	2.8	5.7
Control Delay (s/veh)	0.4	0.0	21.5	16.5
Lane LOS	A		C	C
Approach Delay (s/veh)	0.4	0.0	21.5	16.5
Approach LOS			C	C

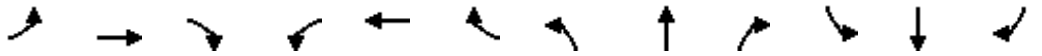
Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	37.2%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	75	215	305	5	15	190
Future Volume (Veh/h)	75	215	305	5	15	190
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	75	215	305	5	15	190
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	310				673	308
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	310				673	308
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	94				96	74
cM capacity (veh/h)	1262				399	737

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	75	215	310	205
Volume Left	75	0	0	15
Volume Right	0	0	5	190
cSH	1262	1700	1700	694
Volume to Capacity	0.06	0.13	0.18	0.30
Queue Length 95th (m)	1.5	0.0	0.0	9.9
Control Delay (s/veh)	8.0	0.0	0.0	12.3
Lane LOS	A			B
Approach Delay (s/veh)	2.1		0.0	12.3
Approach LOS				B

Intersection Summary			
Average Delay	3.9		
Intersection Capacity Utilization	43.1%	ICU Level of Service	A
Analysis Period (min)	15		

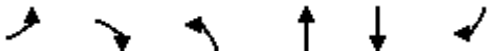


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	65	155	10	30	210	75	15	20	25	40	15	85
Future Volume (Veh/h)	65	155	10	30	210	75	15	20	25	40	15	85
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	68	161	10	31	219	78	16	21	26	42	16	89
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	297			171			675	656	161	615	588	219
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	297			171			675	656	161	615	588	219
tC, single (s)	4.1			4.2			7.3	6.7	6.2	7.2	7.0	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.7	4.2	3.3	3.6	4.4	3.3
p0 queue free %	95			98			94	94	97	88	95	89
cM capacity (veh/h)	1276			1342			276	338	879	341	336	826

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	229	10	250	78	63	147
Volume Left	68	0	31	0	16	42
Volume Right	0	10	0	78	26	89
cSH	1276	1700	1342	1700	421	528
Volume to Capacity	0.05	0.00*	0.02	0.05	0.15	0.28
Queue Length 95th (m)	1.3	0.0	0.6	0.0	4.2	9.1
Control Delay (s/veh)	2.7	0.0	1.1	0.0	15.0	14.4
Lane LOS	A		A		C	B
Approach Delay (s/veh)	2.6		0.9		15.0	14.4
Approach LOS					C	B

Intersection Summary				
Average Delay	5.1			
Intersection Capacity Utilization	46.0%	ICU Level of Service		A
Analysis Period (min)	15			

* Value less than 0.01.

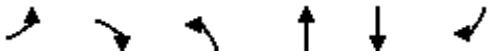


Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	50	15	145	90	0
Future Volume (Veh/h)	0	50	15	145	90	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	50	15	145	90	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	265	90	90			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	265	90	90			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	95	99			
cM capacity (veh/h)	721	973	1518			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	50	160	90
Volume Left	0	15	0
Volume Right	50	0	0
cSH	973	1518	1700
Volume to Capacity	0.05	0.00*	0.05
Queue Length 95th (m)	1.3	0.2	0.0
Control Delay (s/veh)	8.9	0.8	0.0
Lane LOS	A	A	
Approach Delay (s/veh)	8.9	0.8	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	25.1%	ICU Level of Service	A
Analysis Period (min)	15		

* Value less than 0.01.

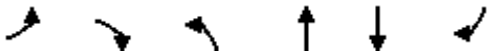


Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	15	50	15	130	40	0
Future Volume (Veh/h)	15	50	15	130	40	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	15	50	15	130	40	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	200	40	40			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	200	40	40			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	98	95	99			
cM capacity (veh/h)	786	1037	1583			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	65	145	40
Volume Left	15	15	0
Volume Right	50	0	0
cSH	966	1583	1700
Volume to Capacity	0.07	0.00*	0.02
Queue Length 95th (m)	1.7	0.2	0.0
Control Delay (s/veh)	9.0	0.8	0.0
Lane LOS	A	A	
Approach Delay (s/veh)	9.0	0.8	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	2.8		
Intersection Capacity Utilization	24.9%	ICU Level of Service	A
Analysis Period (min)	15		

* Value less than 0.01.

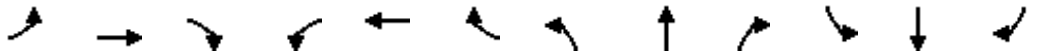


Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	25	505	340	70	20	15
Future Volume (Veh/h)	25	505	340	70	20	15
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	27	555	374	77	22	16
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	855	30	38			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	855	30	38			
tC, single (s)	6.5	6.3	4.2			
tC, 2 stage (s)						
tF (s)	3.6	3.4	2.3			
p0 queue free %	89	46	75			
cM capacity (veh/h)	240	1033	1510			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	582	451	38
Volume Left	27	374	0
Volume Right	555	0	16
cSH	896	1510	1700
Volume to Capacity	0.65	0.25	0.02
Queue Length 95th (m)	39.5	7.8	0.0
Control Delay (s/veh)	16.1	7.1	0.0
Lane LOS	C	A	
Approach Delay (s/veh)	16.1	7.1	0.0
Approach LOS	C		

Intersection Summary			
Average Delay	11.8		
Intersection Capacity Utilization	68.5%	ICU Level of Service	C
Analysis Period (min)	15		

* Value less than 0.01.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	25	75	15	20	15	60	515	10	15	375	10
Future Volume (Veh/h)	5	25	75	15	20	15	60	515	10	15	375	10
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	6	28	83	17	22	17	67	572	11	17	417	11
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)								225				
pX, platoon unblocked	0.75	0.75		0.75	0.75	0.75				0.75		
vC, conflicting volume	1196	1174	423	1265	1174	578	428			583		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1097	1067	423	1189	1067	278	428			285		
tC, single (s)	7.1	6.5	6.2	7.2	6.6	6.2	4.1			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.0	3.3	2.2			2.3		
p0 queue free %	95	82	87	80	86	97	94			98		
cM capacity (veh/h)	118	156	633	86	153	578	1116			947		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	117	56	650	445
Volume Left	6	17	67	17
Volume Right	83	17	11	11
cSH	324	151	1116	947
Volume to Capacity	0.36	0.37	0.06	0.02
Queue Length 95th (m)	12.8	12.5	1.5	0.4
Control Delay (s/veh)	22.3	42.2	1.6	0.5
Lane LOS	C	E	A	A
Approach Delay (s/veh)	22.3	42.2	1.6	0.5
Approach LOS	C	E		

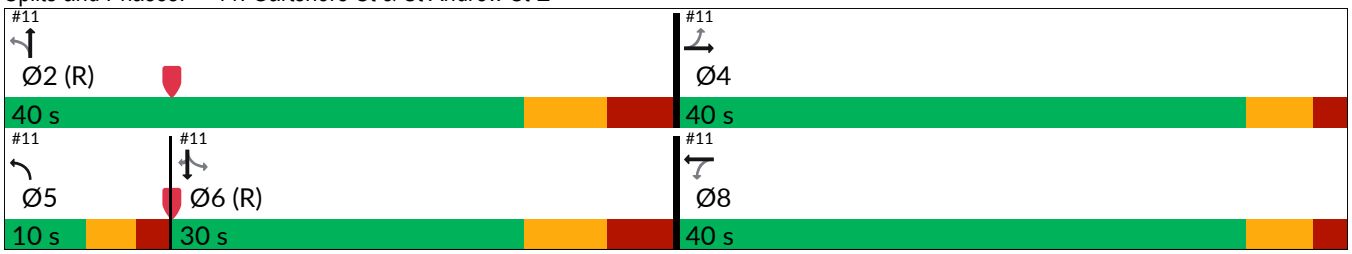
Intersection Summary				
Average Delay	4.9			
Intersection Capacity Utilization	67.9%	ICU Level of Service	C	
Analysis Period (min)	15			

* Value less than 0.01.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	25	55	55	55	110	450	15	560	65
Future Volume (vph)	25	55	55	55	110	450	15	560	65
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	Perm	NA	Perm
Protected Phases		4		8	5	2		6	
Permitted Phases	4		8		2		6		6
Detector Phase	4	4	8	8	5	2	6	6	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.1	24.1	24.1	24.1	10.0	27.0	27.0	27.0	27.0
Total Split (s)	40.0	40.0	40.0	40.0	10.0	40.0	30.0	30.0	30.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	12.5%	50.0%	37.5%	37.5%	37.5%
Yellow Time (s)	4.1	4.1	4.1	4.1	3.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	4.0	4.0	4.0	4.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.1	5.0	9.0	9.0	9.0	9.0
Lead/Lag					Lead		Lag	Lag	Lag
Lead-Lag Optimize?					Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	11.1	11.1	11.1	11.1	57.8	53.8	40.9	40.9	40.9
Actuated g/C Ratio	0.14	0.14	0.14	0.14	0.72	0.67	0.51	0.51	0.51
v/c Ratio	0.19	0.66	0.82	0.34	0.35	0.55	0.05	0.81	0.10
Control Delay (s/veh)	30.9	18.3	89.5	27.1	6.6	9.8	11.5	23.8	2.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	30.9	18.3	89.5	27.1	6.6	9.8	11.5	23.8	2.4
LOS	C	B	F	C	A	A	B	C	A
Approach Delay (s/veh)		19.7		54.6		9.2		21.4	
Approach LOS		B		D		A		C	

Intersection Summary	
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.82	
Intersection Signal Delay (s/veh): 19.2	Intersection LOS: B
Intersection Capacity Utilization 73.9%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 11: Gartshore St & St Andrew St E



Queues

11: Gartshore St & St Andrew St E — Future Total AM Peak Hour - 5 Year

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	25	55	55	55	110	450	15	560	65
Future Volume (vph)	25	55	55	55	110	450	15	560	65
Lane Group Flow (vph)	32	253	71	90	143	629	19	727	84
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	Perm	NA	Perm
Protected Phases		4		8	5	2		6	
Permitted Phases	4		8		2		6		6
Detector Phase	4	4	8	8	5	2	6	6	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.1	24.1	24.1	24.1	10.0	27.0	27.0	27.0	27.0
Total Split (s)	40.0	40.0	40.0	40.0	10.0	40.0	30.0	30.0	30.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	12.5%	50.0%	37.5%	37.5%	37.5%
Yellow Time (s)	4.1	4.1	4.1	4.1	3.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	4.0	4.0	4.0	4.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.1	5.0	9.0	9.0	9.0	9.0
Lead/Lag					Lead		Lag	Lag	Lag
Lead-Lag Optimize?					Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	C-Max	C-Max
v/c Ratio	0.19	0.66	0.82	0.34	0.35	0.55	0.05	0.81	0.10
Control Delay (s/veh)	30.9	18.3	89.5	27.1	6.6	9.8	11.5	23.8	2.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	30.9	18.3	89.5	27.1	6.6	9.8	11.5	23.8	2.4
Queue Length 50th (m)	4.5	10.3	10.8	10.4	5.5	42.1	1.4	63.3	0.5
Queue Length 95th (m)	9.5	20.5	19.3	18.0	11.7	64.5	m3.1	#137.0	m2.9
Internal Link Dist (m)		95.5		92.4		135.0		361.2	
Turn Bay Length (m)	15.0		15.0		15.0		15.0		50.0
Base Capacity (vph)	514	808	266	771	405	1152	412	899	809
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.31	0.27	0.12	0.35	0.55	0.05	0.81	0.10

Intersection Summary

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

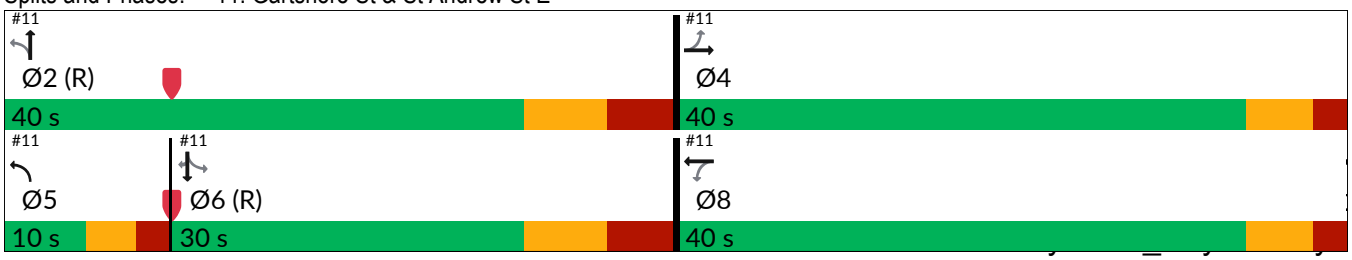
Natural Cycle: 80

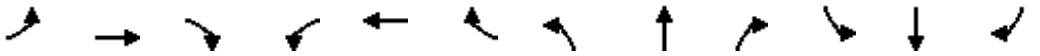
Control Type: Actuated-Coordinated

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

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

Splits and Phases: 11: Gartshore St & St Andrew St E





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	55	140	55	55	15	110	450	35	15	560	65
Future Volume (vph)	25	55	140	55	55	15	110	450	35	15	560	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.1	6.1		6.1	6.1		5.0	9.0		9.0	9.0	9.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	1.00	0.93
Flpb, ped/bikes	0.96	1.00		0.99	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.89		1.00	0.97		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1652	1660		1660	1796		1770	1712		1797	1759	1478
Flt Permitted	0.70	1.00		0.36	1.00		0.20	1.00		0.43	1.00	1.00
Satd. Flow (perm)	1215	1660		630	1796		370	1712		806	1759	1478
Peak-hour factor, PHF	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
Adj. Flow (vph)	32	71	182	71	71	19	143	584	45	19	727	84
RTOR Reduction (vph)	0	157	0	0	16	0	0	2	0	0	0	41
Lane Group Flow (vph)	32	96	0	71	74	0	143	627	0	19	727	43
Confl. Peds. (#/hr)	20		5	5		20	30		5	5		30
Heavy Vehicles (%)	5%	2%	1%	8%	0%	7%	2%	10%	6%	0%	8%	2%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)	11.1	11.1		11.1	11.1		53.8	53.8		40.9	40.9	40.9
Effective Green, g (s)	11.1	11.1		11.1	11.1		53.8	53.8		40.9	40.9	40.9
Actuated g/C Ratio	0.14	0.14		0.14	0.14		0.67	0.67		0.51	0.51	0.51
Clearance Time (s)	6.1	6.1		6.1	6.1		5.0	9.0		9.0	9.0	9.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	168	230		87	249		387	1151		412	899	755
v/s Ratio Prot		0.06			0.04		0.04	c0.37			c0.41	
v/s Ratio Perm	0.03			c0.11			0.21			0.02		0.03
v/c Ratio	0.19	0.42		0.82	0.30		0.37	0.54		0.05	0.81	0.06
Uniform Delay, d1	30.5	31.5		33.5	30.9		8.6	6.8		9.8	16.3	9.8
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		0.89	0.83	1.12
Incremental Delay, d2	0.6	1.2		42.3	0.7		0.6	1.9		0.2	6.7	0.1
Delay (s)	31.0	32.7		75.7	31.6		9.2	8.6		8.9	20.2	11.1
Level of Service	C	C		E	C		A	A		A	C	B
Approach Delay (s/veh)		32.5			51.1			8.7			19.0	
Approach LOS		C			D			A			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	19.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	20.1
Intersection Capacity Utilization	73.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	55	55	355	190	150	375
Future Volume (Veh/h)	55	55	355	190	150	375
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	59	59	378	202	160	399
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1198	479			580	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1198	479			580	
tC, single (s)	6.6	6.4			4.3	
tC, 2 stage (s)						
tF (s)	3.7	3.5			2.4	
p0 queue free %	63	89			83	
cM capacity (veh/h)	158	555			920	

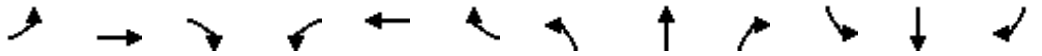
Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	118	580	559
Volume Left	59	0	160
Volume Right	59	202	0
cSH	246	1700	920
Volume to Capacity	0.48	0.34	0.17
Queue Length 95th (m)	19.2	0.0	5.0
Control Delay (s/veh)	32.4	0.0	4.4
Lane LOS	D		A
Approach Delay (s/veh)	32.4	0.0	4.4
Approach LOS	D		

Intersection Summary			
Average Delay	5.0		
Intersection Capacity Utilization	74.7%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	10	30	130	50	10	10
Future Volume (Veh/h)	10	30	130	50	10	10
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79
Hourly flow rate (vph)	13	38	165	63	13	13
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	413	20	26			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	413	20	26			
tC, single (s)	6.5	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.6	3.3	2.2			
p0 queue free %	98	96	90			
cM capacity (veh/h)	523	1064	1601			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	51	228	26
Volume Left	13	165	0
Volume Right	38	0	13
cSH	842	1601	1700
Volume to Capacity	0.06	0.10	0.02
Queue Length 95th (m)	1.5	2.8	0.0
Control Delay (s/veh)	9.6	5.7	0.0
Lane LOS	A	A	
Approach Delay (s/veh)	9.6	5.7	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	5.8		
Intersection Capacity Utilization	26.5%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	205	15	70	300	5	10	20	45	5	20	15
Future Volume (Veh/h)	15	205	15	70	300	5	10	20	45	5	20	15
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	16	223	16	76	326	5	11	22	49	5	22	16
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	331			239			760	738	223	793	749	326
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	331			239			760	738	223	793	749	326
tC, single (s)	4.1			4.2			7.2	6.5	6.4	7.1	6.6	6.4
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.6	4.0	3.5	3.5	4.1	3.5
p0 queue free %	99			94			96	93	94	98	93	98
cM capacity (veh/h)	1240			1305			270	323	771	260	312	665

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	239	16	402	5	82	43
Volume Left	16	0	76	0	11	5
Volume Right	0	16	0	5	49	16
cSH	1240	1700	1305	1700	476	378
Volume to Capacity	0.01	0.00*	0.06	0.00*	0.17	0.11
Queue Length 95th (m)	0.3	0.0	1.5	0.0	4.9	3.1
Control Delay (s/veh)	0.6	0.0	2.0	0.0	14.1	15.7
Lane LOS	A		A		B	C
Approach Delay (s/veh)	0.6		1.9		14.1	15.7
Approach LOS					B	C

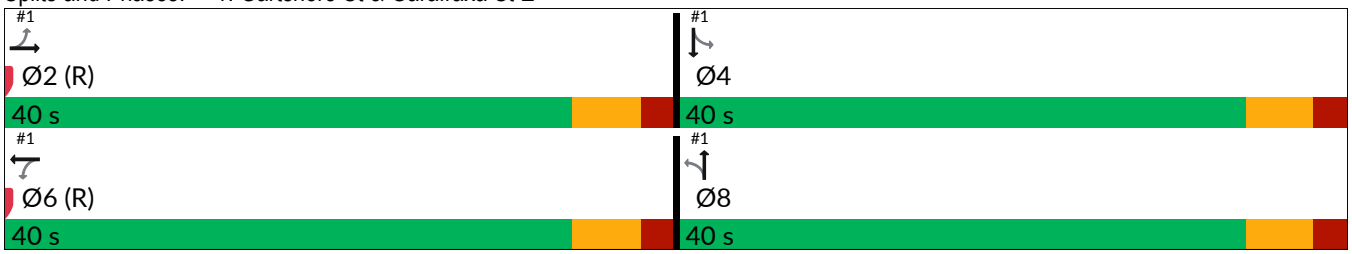
Intersection Summary			
Average Delay	3.5		
Intersection Capacity Utilization	47.2%	ICU Level of Service	A
Analysis Period (min)	15		

* Value less than 0.01.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	50	315	160	235	100	445	95	420
Future Volume (vph)	50	315	160	235	100	445	95	420
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		2		6		8		4
Permitted Phases	2		6		8		4	
Detector Phase	2	2	6	6	8	8	4	4
Switch Phase								
Minimum Initial (s)	30.0	30.0	30.0	30.0	10.0	10.0	10.0	10.0
Minimum Split (s)	36.1	36.1	36.1	36.1	27.1	27.1	27.1	27.1
Total Split (s)	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Yellow Time (s)	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	C-Min	C-Min	C-Min	C-Min	None	None	None	None
Act Effct Green (s)	31.6	31.6	31.6	31.6	36.2	36.2	36.2	36.2
Actuated g/C Ratio	0.40	0.40	0.40	0.40	0.45	0.45	0.45	0.45
v/c Ratio	0.21	0.68	0.81	0.52	0.51	0.88	0.79	0.72
Control Delay (s/veh)	17.8	23.9	51.3	19.4	30.7	35.2	61.9	23.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	17.8	23.9	51.3	19.4	30.7	35.2	61.9	23.9
LOS	B	C	D	B	C	D	E	C
Approach Delay (s/veh)		23.3		29.7		34.6		29.7
Approach LOS		C		C		C		C

Intersection Summary	
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 11.4 (14%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.88	
Intersection Signal Delay (s/veh): 29.9	Intersection LOS: C
Intersection Capacity Utilization 113.4%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 1: Gartshore St & Garafraxa St E



Queues

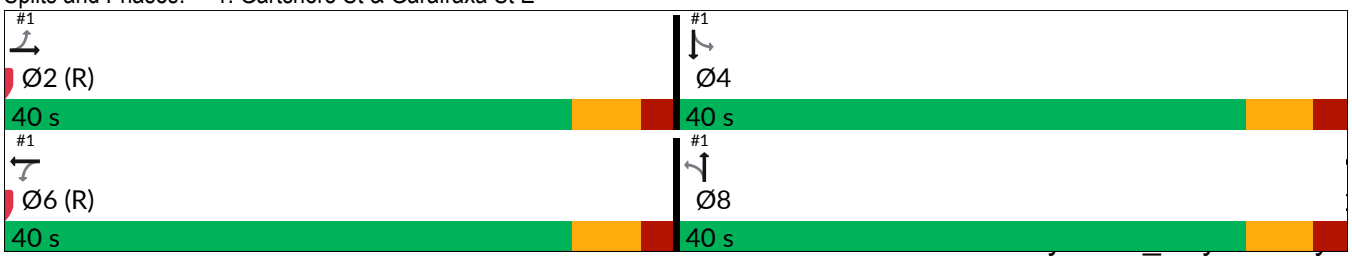
1: Gartshore St & Garafraxa St E — Future Total PM Peak Hour - 5 Year

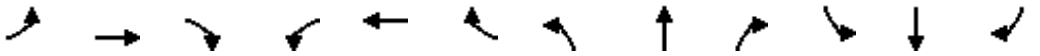
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	50	315	160	235	100	445	95	420
Future Volume (vph)	50	315	160	235	100	445	95	420
Lane Group Flow (vph)	56	489	178	372	111	700	106	595
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		2		6		8		4
Permitted Phases	2		6		8		4	
Detector Phase	2	2	6	6	8	8	4	4
Switch Phase								
Minimum Initial (s)	30.0	30.0	30.0	30.0	10.0	10.0	10.0	10.0
Minimum Split (s)	36.1	36.1	36.1	36.1	27.1	27.1	27.1	27.1
Total Split (s)	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Yellow Time (s)	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	C-Min	C-Min	C-Min	C-Min	None	None	None	None
v/c Ratio	0.21	0.68	0.81	0.52	0.51	0.88	0.79	0.72
Control Delay (s/veh)	17.8	23.9	51.3	19.4	30.7	35.2	61.9	23.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	17.8	23.9	51.3	19.4	30.7	35.2	61.9	23.9
Queue Length 50th (m)	5.4	60.9	25.3	41.4	10.9	72.5	13.2	67.8
Queue Length 95th (m)	12.5	87.9	#58.4	62.1	m29.4	#164.9	#45.3	#118.5
Internal Link Dist (m)		114.2		223.2		361.2		201.3
Turn Bay Length (m)	40.0		35.0		30.0		35.0	
Base Capacity (vph)	287	774	236	767	216	798	135	825
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	0.20	0.63	0.75	0.49	0.51	0.88	0.79	0.72

Intersection Summary

Cycle Length: 80
Actuated Cycle Length: 80
Offset: 11.4 (14%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Gartshore St & Garafraxa St E

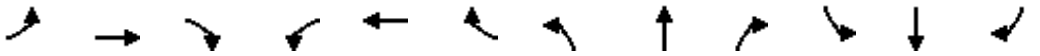




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	315	125	160	235	100	100	445	185	95	420	115
Future Volume (vph)	50	315	125	160	235	100	100	445	185	95	420	115
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.1	6.1		6.1	6.1		6.1	6.1		6.1	6.1	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		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	0.96		1.00	0.96		1.00	0.96		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1504	1786		1752	1767		1805	1722		1787	1796	
Flt Permitted	0.43	1.00		0.30	1.00		0.25	1.00		0.16	1.00	
Satd. Flow (perm)	679	1786		556	1767		477	1722		299	1796	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	56	350	139	178	261	111	111	494	206	106	467	128
RTOR Reduction (vph)	0	19	0	0	20	0	0	18	0	0	11	0
Lane Group Flow (vph)	56	470	0	178	352	0	111	682	0	106	584	0
Confl. Bikes (#/hr)						5						
Heavy Vehicles (%)	20%	1%	4%	3%	0%	7%	0%	4%	9%	1%	3%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	31.6	31.6		31.6	31.6		36.2	36.2		36.2	36.2	
Effective Green, g (s)	31.6	31.6		31.6	31.6		36.2	36.2		36.2	36.2	
Actuated g/C Ratio	0.40	0.40		0.40	0.40		0.45	0.45		0.45	0.45	
Clearance Time (s)	6.1	6.1		6.1	6.1		6.1	6.1		6.1	6.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	268	705		219	697		215	779		135	812	
v/s Ratio Prot		0.26			0.20			c0.40			0.32	
v/s Ratio Perm	0.08			c0.32			0.23			0.35		
v/c Ratio	0.21	0.67		0.81	0.51		0.52	0.88		0.79	0.72	
Uniform Delay, d1	16.0	19.9		21.6	18.3		15.6	19.9		18.6	17.8	
Progression Factor	1.00	1.00		1.00	1.00		1.25	1.11		1.00	1.00	
Incremental Delay, d2	1.8	5.0		27.0	2.6		1.8	9.7		25.2	3.1	
Delay (s)	17.7	24.8		48.6	20.9		21.4	31.8		43.8	20.8	
Level of Service	B	C		D	C		C	C		D	C	
Approach Delay (s/veh)		24.1			29.9			30.4			24.3	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	27.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.2
Intersection Capacity Utilization	113.4%	ICU Level of Service	H
Analysis Period (min)	15		

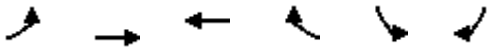
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	560	10	10	460	10	10	5	10	5	10	25
Future Volume (Veh/h)	25	560	10	10	460	10	10	5	10	5	10	25
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Hourly flow rate (vph)	31	691	12	12	568	12	12	6	12	6	12	31
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		247										
pX, platoon unblocked				0.86			0.86	0.86	0.86	0.86	0.86	
vC, conflicting volume	580			703			1394	1363	697	1372	1363	574
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	580			570			1376	1340	563	1351	1340	574
tC, single (s)	4.1			4.1			7.2	6.5	6.4	7.1	6.6	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.6	4.0	3.5	3.5	4.1	3.3
p0 queue free %	97			99			86	95	97	94	90	94
cM capacity (veh/h)	1004			868			85	126	427	100	119	522

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	734	592	30	49
Volume Left	31	12	12	6
Volume Right	12	12	12	31
cSH	1004	868	138	222
Volume to Capacity	0.03	0.01	0.22	0.22
Queue Length 95th (m)	0.8	0.3	6.3	6.5
Control Delay (s/veh)	0.8	0.4	38.2	25.7
Lane LOS	A	A	E	D
Approach Delay (s/veh)	0.8	0.4	38.2	25.7
Approach LOS			E	D

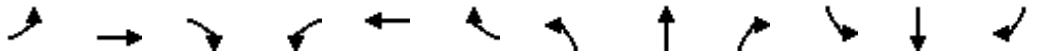
Intersection Summary				
Average Delay	2.3			
Intersection Capacity Utilization	52.9%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	225	335	305	15	10	125
Future Volume (Veh/h)	225	335	305	15	10	125
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	225	335	305	15	10	125
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	320				1098	313
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	320				1098	313
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	82				95	83
cM capacity (veh/h)	1251				195	732

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	225	335	320	135
Volume Left	225	0	0	10
Volume Right	0	0	15	125
cSH	1251	1700	1700	608
Volume to Capacity	0.18	0.20	0.19	0.22
Queue Length 95th (m)	5.2	0.0	0.0	6.7
Control Delay (s/veh)	8.5	0.0	0.0	12.6
Lane LOS	A			B
Approach Delay (s/veh)	3.4		0.0	12.6
Approach LOS				B

Intersection Summary			
Average Delay	3.6		
Intersection Capacity Utilization	47.7%	ICU Level of Service	A
Analysis Period (min)	15		

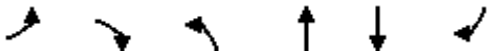


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	240	15	20	220	50	5	30	35	85	25	95
Future Volume (Veh/h)	90	240	15	20	220	50	5	30	35	85	25	95
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	96	255	16	21	234	53	5	32	37	90	27	101
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	287			271			838	776	255	776	739	234
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	287			271			838	776	255	776	739	234
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.2	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.6	4.0	3.3
p0 queue free %	93			98			98	89	95	64	91	88
cM capacity (veh/h)	1287			1275			220	301	789	251	316	810

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	351	16	255	53	74	218
Volume Left	96	0	21	0	5	90
Volume Right	0	16	0	53	37	101
cSH	1287	1700	1275	1700	421	383
Volume to Capacity	0.07	0.00*	0.02	0.03	0.18	0.57
Queue Length 95th (m)	1.9	0.0	0.4	0.0	5.1	27.2
Control Delay (s/veh)	2.7	0.0	0.8	0.0	15.4	26.1
Lane LOS	A		A		C	D
Approach Delay (s/veh)	2.6		0.7		15.4	26.1
Approach LOS					C	D

Intersection Summary				
Average Delay	8.2			
Intersection Capacity Utilization	58.8%	ICU Level of Service		B
Analysis Period (min)	15			

* Value less than 0.01.

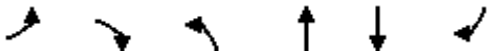


Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	35	55	115	170	0
Future Volume (Veh/h)	0	35	55	115	170	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	35	55	115	170	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	395	170	170			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	395	170	170			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	96	96			
cM capacity (veh/h)	590	879	1420			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	35	170	170
Volume Left	0	55	0
Volume Right	35	0	0
cSH	879	1420	1700
Volume to Capacity	0.04	0.04	0.10
Queue Length 95th (m)	1.0	1.0	0.0
Control Delay (s/veh)	9.3	2.7	0.0
Lane LOS	A	A	
Approach Delay (s/veh)	9.3	2.7	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	2.1		
Intersection Capacity Utilization	31.4%	ICU Level of Service	A
Analysis Period (min)	15		

* Value less than 0.01.

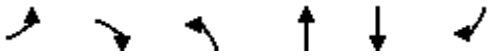


Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	15	30	50	65	140	0
Future Volume (Veh/h)	15	30	50	65	140	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	15	30	50	65	140	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	305	140	140			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	305	140	140			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	98	97	97			
cM capacity (veh/h)	667	913	1456			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	45	115	140
Volume Left	15	50	0
Volume Right	30	0	0
cSH	813	1456	1700
Volume to Capacity	0.06	0.03	0.08
Queue Length 95th (m)	1.4	0.9	0.0
Control Delay (s/veh)	9.7	3.4	0.0
Lane LOS	A	A	
Approach Delay (s/veh)	9.7	3.4	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	2.8		
Intersection Capacity Utilization	26.9%	ICU Level of Service	A
Analysis Period (min)	15		

* Value less than 0.01.

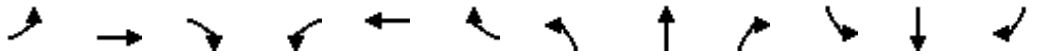


Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	15	440	590	20	60	30
Future Volume (Veh/h)	15	440	590	20	60	30
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	15	454	608	21	62	31
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1315	78	93			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1315	78	93			
tC, single (s)	6.4	6.2	4.3			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.4			
p0 queue free %	85	54	57			
cM capacity (veh/h)	100	983	1407			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	469	629	93
Volume Left	15	608	0
Volume Right	454	0	31
cSH	767	1407	1700
Volume to Capacity	0.61	0.43	0.05
Queue Length 95th (m)	33.9	17.9	0.0
Control Delay (s/veh)	16.8	9.3	0.0
Lane LOS	C	A	
Approach Delay (s/veh)	16.8	9.3	0.0
Approach LOS	C		

Intersection Summary			
Average Delay	11.5		
Intersection Capacity Utilization	75.1%	ICU Level of Service	D
Analysis Period (min)	15		

* Value less than 0.01.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	10	50	10	15	15	110	455	30	15	570	5
Future Volume (Veh/h)	5	10	50	10	15	15	110	455	30	15	570	5
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	5	10	52	10	15	15	113	469	31	15	588	5
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)								225				
pX, platoon unblocked	0.75	0.75		0.75	0.75	0.75				0.75		
vC, conflicting volume	1354	1347	591	1388	1334	485	593			500		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1305	1296	591	1351	1278	148	593			169		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	94	91	90	86	86	98	89			99		
cM capacity (veh/h)	82	107	511	73	110	679	993			1067		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	67	40	613	608
Volume Left	5	10	113	15
Volume Right	52	15	31	5
cSH	262	135	993	1067
Volume to Capacity	0.26	0.30	0.11	0.01
Queue Length 95th (m)	7.9	9.2	3.1	0.3
Control Delay (s/veh)	23.4	42.4	2.9	0.4
Lane LOS	C	E	A	A
Approach Delay (s/veh)	23.4	42.4	2.9	0.4
Approach LOS	C	E		

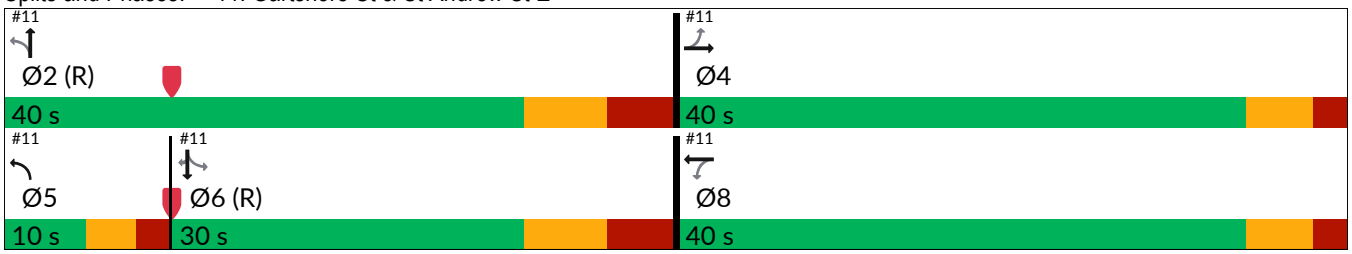
Intersection Summary				
Average Delay	4.0			
Intersection Capacity Utilization	77.9%	ICU Level of Service	D	
Analysis Period (min)	15			

* Value less than 0.01.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	45	55	35	35	95	650	5	570	55
Future Volume (vph)	45	55	35	35	95	650	5	570	55
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	Perm	NA	Perm
Protected Phases		4		8	5	2		6	
Permitted Phases	4		8		2		6		6
Detector Phase	4	4	8	8	5	2	6	6	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.1	24.1	24.1	24.1	10.0	27.0	27.0	27.0	27.0
Total Split (s)	40.0	40.0	40.0	40.0	10.0	40.0	30.0	30.0	30.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	12.5%	50.0%	37.5%	37.5%	37.5%
Yellow Time (s)	4.1	4.1	4.1	4.1	3.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	4.0	4.0	4.0	4.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.1	5.0	9.0	9.0	9.0	9.0
Lead/Lag					Lead		Lag	Lag	Lag
Lead-Lag Optimize?					Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	9.2	9.2	9.2	9.2	59.7	55.7	46.0	46.0	46.0
Actuated g/C Ratio	0.12	0.12	0.12	0.12	0.75	0.70	0.58	0.58	0.58
v/c Ratio	0.30	0.62	0.37	0.20	0.18	0.57	0.01	0.57	0.06
Control Delay (s/veh)	35.7	20.4	41.5	29.5	4.1	9.0	10.8	12.5	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	35.7	20.4	41.5	29.5	4.1	9.0	10.8	12.5	0.8
LOS	D	C	D	C	A	A	B	B	A
Approach Delay (s/veh)		23.5		35.1		8.4		11.5	
Approach LOS		C		D		A		B	

Intersection Summary	
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 70	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.62	
Intersection Signal Delay (s/veh): 12.7	Intersection LOS: B
Intersection Capacity Utilization 80.7%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 11: Gartshore St & St Andrew St E

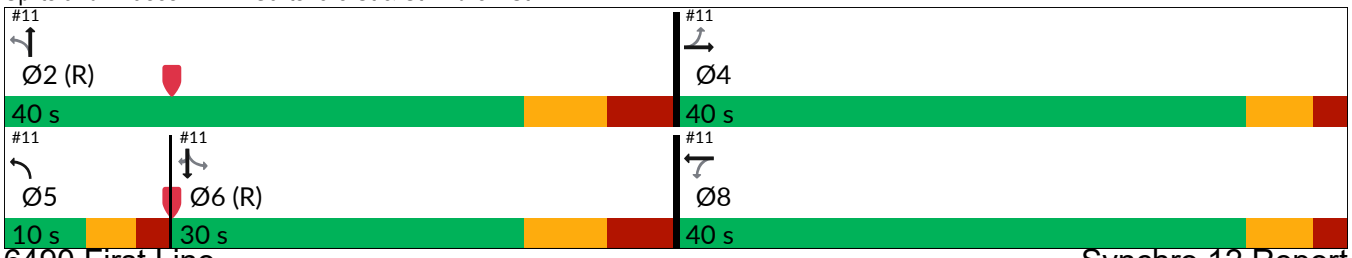


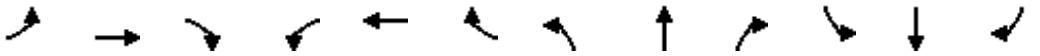
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	45	55	35	35	95	650	5	570	55
Future Volume (vph)	45	55	35	35	95	650	5	570	55
Lane Group Flow (vph)	48	192	37	42	101	734	5	606	59
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	Perm	NA	Perm
Protected Phases		4		8	5	2		6	
Permitted Phases	4		8		2		6		6
Detector Phase	4	4	8	8	5	2	6	6	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.1	24.1	24.1	24.1	10.0	27.0	27.0	27.0	27.0
Total Split (s)	40.0	40.0	40.0	40.0	10.0	40.0	30.0	30.0	30.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	12.5%	50.0%	37.5%	37.5%	37.5%
Yellow Time (s)	4.1	4.1	4.1	4.1	3.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	4.0	4.0	4.0	4.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.1	5.0	9.0	9.0	9.0	9.0
Lead/Lag					Lead		Lag	Lag	Lag
Lead-Lag Optimize?					Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	C-Max	C-Max
v/c Ratio	0.30	0.62	0.37	0.20	0.18	0.57	0.01	0.57	0.06
Control Delay (s/veh)	35.7	20.4	41.5	29.5	4.1	9.0	10.8	12.5	0.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	35.7	20.4	41.5	29.5	4.1	9.0	10.8	12.5	0.8
Queue Length 50th (m)	7.3	8.8	5.6	5.4	3.2	46.6	0.3	49.2	0.0
Queue Length 95th (m)	16.1	26.3	13.7	13.4	9.4	97.1	m0.6	86.7	m0.2
Internal Link Dist (m)		95.5		92.4		135.0		361.2	
Turn Bay Length (m)	15.0		15.0		15.0		15.0		50.0
Base Capacity (vph)	587	791	370	766	548	1287	421	1071	947
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.24	0.10	0.05	0.18	0.57	0.01	0.57	0.06

Intersection Summary

Cycle Length: 80
Actuated Cycle Length: 80
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 11: Gartshore St & St Andrew St E

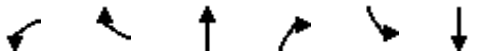




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	55	125	35	35	5	95	650	40	5	570	55
Future Volume (vph)	45	55	125	35	35	5	95	650	40	5	570	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.1	6.1		6.1	6.1		5.0	9.0		9.0	9.0	9.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	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	1.00
Frt	1.00	0.90		1.00	0.98		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1805	1687		1752	1803		1804	1848		1805	1863	1566
Flt Permitted	0.73	1.00		0.47	1.00		0.32	1.00		0.39	1.00	1.00
Satd. Flow (perm)	1386	1687		874	1803		599	1848		734	1863	1566
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)	48	59	133	37	37	5	101	691	43	5	606	59
RTOR Reduction (vph)	0	118	0	0	4	0	0	2	0	0	0	26
Lane Group Flow (vph)	48	74	0	37	38	0	101	732	0	5	606	33
Confl. Peds. (#/hr)							5					5
Heavy Vehicles (%)	0%	3%	0%	3%	4%	0%	0%	2%	0%	0%	2%	2%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)	9.2	9.2		9.2	9.2		55.7	55.7		45.0	45.0	45.0
Effective Green, g (s)	9.2	9.2		9.2	9.2		55.7	55.7		45.0	45.0	45.0
Actuated g/C Ratio	0.12	0.12		0.12	0.12		0.70	0.70		0.56	0.56	0.56
Clearance Time (s)	6.1	6.1		6.1	6.1		5.0	9.0		9.0	9.0	9.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	159	194		100	207		502	1286		412	1047	880
v/s Ratio Prot		c0.04			0.02		0.01	c0.40			0.33	
v/s Ratio Perm	0.03			0.04			0.13			0.01		0.02
v/c Ratio	0.30	0.38		0.37	0.18		0.20	0.57		0.01	0.58	0.04
Uniform Delay, d1	32.5	32.8		32.7	32.0		5.3	6.1		7.7	11.4	7.8
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.83	1.16
Incremental Delay, d2	1.1	1.3		2.3	0.4		0.2	1.8		0.0	1.6	0.1
Delay (s)	33.5	34.0		35.0	32.4		5.5	8.0		7.8	11.1	9.1
Level of Service	C	C		D	C		A	A		A	B	A
Approach Delay (s/veh)		33.9			33.6			7.6			10.9	
Approach LOS		C			C			A			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	13.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	20.1
Intersection Capacity Utilization	80.7%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	180	155	455	65	70	430
Future Volume (Veh/h)	180	155	455	65	70	430
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	202	174	511	73	79	483
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1189	548			584	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1189	548			584	
tC, single (s)	6.5	6.2			4.2	
tC, 2 stage (s)						
tF (s)	3.6	3.3			2.3	
p0 queue free %	0	67			92	
cM capacity (veh/h)	185	531			948	

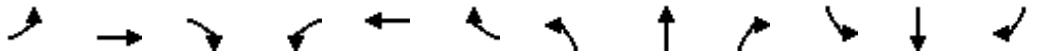
Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	376	584	562
Volume Left	202	0	79
Volume Right	174	73	0
cSH	265	1700	948
Volume to Capacity	1.42	0.34	0.08
Queue Length 95th (m)	165.5	0.0	2.2
Control Delay (s/veh)	245.1	0.0	2.2
Lane LOS	F		A
Approach Delay (s/veh)	245.1	0.0	2.2
Approach LOS	F		

Intersection Summary			
Average Delay	61.4		
Intersection Capacity Utilization	83.9%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	115	55	40	35	10
Future Volume (Veh/h)	5	115	55	40	35	10
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	6	135	65	47	41	12
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	224	47	53			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	224	47	53			
tC, single (s)	6.4	6.2	4.3			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.4			
p0 queue free %	99	87	95			
cM capacity (veh/h)	723	1028	1434			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	141	112	53
Volume Left	6	65	0
Volume Right	135	0	12
cSH	1010	1434	1700
Volume to Capacity	0.14	0.05	0.03
Queue Length 95th (m)	3.9	1.1	0.0
Control Delay (s/veh)	9.1	4.6	0.0
Lane LOS	A	A	
Approach Delay (s/veh)	9.1	4.6	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	5.9		
Intersection Capacity Utilization	25.9%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	325	30	70	275	5	15	15	85	5	20	20
Future Volume (Veh/h)	20	325	30	70	275	5	15	15	85	5	20	20
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	22	365	34	79	309	6	17	17	96	6	22	22
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	315			399			909	882	365	981	910	309
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	315			399			909	882	365	981	910	309
tC, single (s)	4.1			4.2			7.2	6.5	6.3	7.4	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.6	4.0	3.4	3.8	4.0	3.3
p0 queue free %	98			93			92	94	86	96	91	97
cM capacity (veh/h)	1257			1138			208	263	671	153	253	724

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	387	34	388	6	130	50
Volume Left	22	0	79	0	17	6
Volume Right	0	34	0	6	96	22
cSH	1257	1700	1138	1700	449	319
Volume to Capacity	0.02	0.02	0.07	0.00*	0.29	0.16
Queue Length 95th (m)	0.4	0.0	1.8	0.0	9.5	4.4
Control Delay (s/veh)	0.6	0.0	2.3	0.0	16.3	18.4
Lane LOS	A		A		C	C
Approach Delay (s/veh)	0.6		2.2		16.3	18.4
Approach LOS					C	C

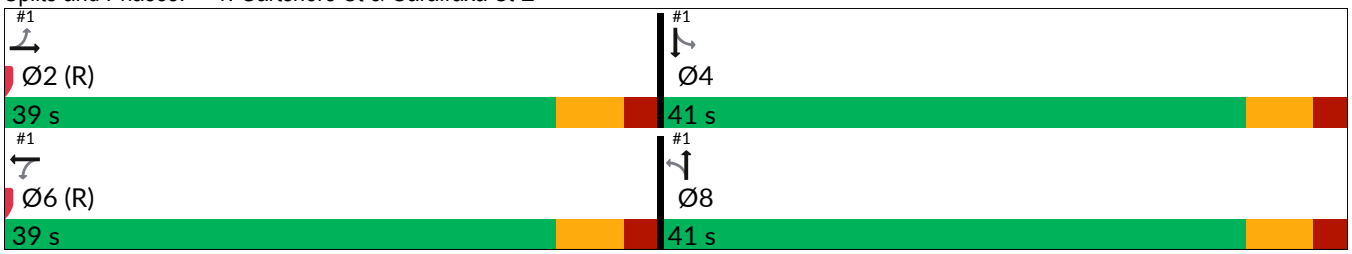
Intersection Summary				
Average Delay	4.2			
Intersection Capacity Utilization	56.1%	ICU Level of Service		B
Analysis Period (min)	15			

* Value less than 0.01.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	120	205	185	320	115	400	65	395
Future Volume (vph)	120	205	185	320	115	400	65	395
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		2		6		8		4
Permitted Phases	2		6		8		4	
Detector Phase	2	2	6	6	8	8	4	4
Switch Phase								
Minimum Initial (s)	30.0	30.0	30.0	30.0	10.0	10.0	10.0	10.0
Minimum Split (s)	36.1	36.1	36.1	36.1	27.1	27.1	27.1	27.1
Total Split (s)	39.0	39.0	39.0	39.0	41.0	41.0	41.0	41.0
Total Split (%)	48.8%	48.8%	48.8%	48.8%	51.3%	51.3%	51.3%	51.3%
Yellow Time (s)	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	C-Min	C-Min	C-Min	C-Min	None	None	None	None
Act Effct Green (s)	37.0	37.0	37.0	37.0	30.8	30.8	30.8	30.8
Actuated g/C Ratio	0.46	0.46	0.46	0.46	0.39	0.39	0.39	0.39
v/c Ratio	0.44	0.52	0.63	0.53	0.64	0.87	0.50	0.73
Control Delay (s/veh)	22.2	16.8	29.4	18.7	41.9	44.4	30.0	27.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	22.2	16.8	29.4	18.7	41.9	44.4	30.0	27.2
LOS	C	B	C	B	D	D	C	C
Approach Delay (s/veh)		18.1		22.2		43.9		27.5
Approach LOS		B		C		D		C

Intersection Summary	
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 70	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.87	
Intersection Signal Delay (s/veh): 28.5	Intersection LOS: C
Intersection Capacity Utilization 104.9%	ICU Level of Service G
Analysis Period (min) 15	

Splits and Phases: 1: Gartshore St & Garafraxa St E



Queues

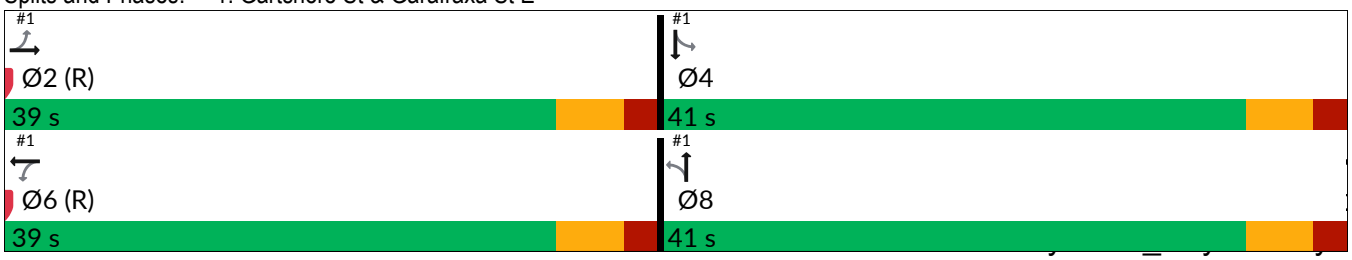
1: Gartshore St & Garafraxa St E — Future Total AM Peak Hour - 10 Year

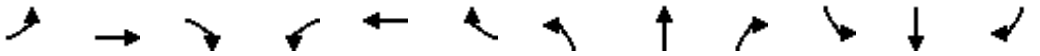
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	120	205	185	320	115	400	65	395
Future Volume (vph)	120	205	185	320	115	400	65	395
Lane Group Flow (vph)	136	421	210	444	131	552	74	489
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		2		6		8		4
Permitted Phases	2		6		8		4	
Detector Phase	2	2	6	6	8	8	4	4
Switch Phase								
Minimum Initial (s)	30.0	30.0	30.0	30.0	10.0	10.0	10.0	10.0
Minimum Split (s)	36.1	36.1	36.1	36.1	27.1	27.1	27.1	27.1
Total Split (s)	39.0	39.0	39.0	39.0	41.0	41.0	41.0	41.0
Total Split (%)	48.8%	48.8%	48.8%	48.8%	51.3%	51.3%	51.3%	51.3%
Yellow Time (s)	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	C-Min	C-Min	C-Min	C-Min	None	None	None	None
v/c Ratio	0.44	0.52	0.63	0.53	0.64	0.87	0.50	0.73
Control Delay (s/veh)	22.2	16.8	29.4	18.7	41.9	44.4	30.0	27.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	22.2	16.8	29.4	18.7	41.9	44.4	30.0	27.2
Queue Length 50th (m)	14.0	39.5	24.7	48.6	21.1	84.1	8.0	59.2
Queue Length 95th (m)	30.8	67.0	#57.5	78.1	m39.0	116.9	20.1	85.3
Internal Link Dist (m)		114.2		223.2		361.2		201.3
Turn Bay Length (m)	40.0		35.0		30.0		35.0	
Base Capacity (vph)	308	810	332	840	232	716	169	758
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	0.52	0.63	0.53	0.56	0.77	0.44	0.65

Intersection Summary

Cycle Length: 80
Actuated Cycle Length: 80
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Gartshore St & Garafraxa St E

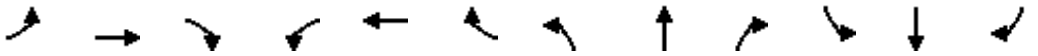




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	120	205	165	185	320	70	115	400	85	65	395	35
Future Volume (vph)	120	205	165	185	320	70	115	400	85	65	395	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.1	6.1		6.1	6.1		6.1	6.1		6.1	6.1	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		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	0.97		1.00	0.97		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)	1597	1682		1636	1800		1730	1620		1641	1728	
Flt Permitted	0.40	1.00		0.42	1.00		0.29	1.00		0.22	1.00	
Satd. Flow (perm)	667	1682		720	1800		532	1620		389	1728	
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	0.88
Adj. Flow (vph)	136	233	188	210	364	80	131	455	97	74	449	40
RTOR Reduction (vph)	0	33	0	0	9	0	0	10	0	0	4	0
Lane Group Flow (vph)	136	388	0	210	435	0	131	542	0	74	485	0
Confl. Peds. (#/hr)			5	5			5					5
Heavy Vehicles (%)	13%	6%	4%	10%	2%	6%	4%	14%	15%	10%	8%	14%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	37.0	37.0		37.0	37.0		30.8	30.8		30.8	30.8	
Effective Green, g (s)	37.0	37.0		37.0	37.0		30.8	30.8		30.8	30.8	
Actuated g/C Ratio	0.46	0.46		0.46	0.46		0.39	0.39		0.39	0.39	
Clearance Time (s)	6.1	6.1		6.1	6.1		6.1	6.1		6.1	6.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	308	777		333	832		204	623		149	665	
v/s Ratio Prot		0.23			0.24			c0.33			0.28	
v/s Ratio Perm	0.20			c0.29			0.25			0.19		
v/c Ratio	0.44	0.50		0.63	0.52		0.64	0.87		0.50	0.73	
Uniform Delay, d1	14.5	15.0		16.3	15.2		20.1	22.7		18.7	21.0	
Progression Factor	1.00	1.00		1.00	1.00		1.46	1.44		1.00	1.00	
Incremental Delay, d2	4.5	2.3		8.8	2.3		5.7	10.7		2.6	4.0	
Delay (s)	19.1	17.3		25.1	17.6		35.1	43.3		21.3	25.0	
Level of Service	B	B		C	B		D	D		C	C	
Approach Delay (s/veh)		17.7			20.0			41.8			24.5	
Approach LOS		B			B			D			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	26.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.2
Intersection Capacity Utilization	104.9%	ICU Level of Service	G
Analysis Period (min)	15		

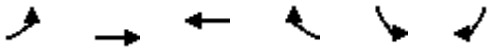
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	335	10	0	515	5	15	5	5	15	10	45
Future Volume (Veh/h)	10	335	10	0	515	5	15	5	5	15	10	45
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	364	11	0	560	5	16	5	5	16	11	49
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		247										
pX, platoon unblocked												
vC, conflicting volume	565			375			1009	957	370	962	960	563
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	565			375			1009	957	370	962	960	563
tC, single (s)	4.1			4.1			7.2	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.6	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			91	98	99	93	96	91
cM capacity (veh/h)	1017			1195			183	257	681	231	256	530

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	386	565	26	76
Volume Left	11	0	16	16
Volume Right	11	5	5	49
cSH	1017	1195	227	371
Volume to Capacity	0.01	0.00	0.11	0.20
Queue Length 95th (m)	0.3	0.0	3.1	6.1
Control Delay (s/veh)	0.4	0.0	22.9	17.2
Lane LOS	A		C	C
Approach Delay (s/veh)	0.4	0.0	22.9	17.2
Approach LOS			C	C

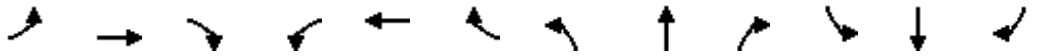
Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	38.2%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	75	235	325	5	15	190
Future Volume (Veh/h)	75	235	325	5	15	190
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	75	235	325	5	15	190
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	330				713	328
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	330				713	328
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	94				96	74
cM capacity (veh/h)	1241				377	718

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	75	235	330	205
Volume Left	75	0	0	15
Volume Right	0	0	5	190
cSH	1241	1700	1700	674
Volume to Capacity	0.06	0.14	0.19	0.30
Queue Length 95th (m)	1.5	0.0	0.0	10.3
Control Delay (s/veh)	8.1	0.0	0.0	12.7
Lane LOS	A			B
Approach Delay (s/veh)	2.0		0.0	12.7
Approach LOS				B

Intersection Summary			
Average Delay	3.8		
Intersection Capacity Utilization	44.1%	ICU Level of Service	A
Analysis Period (min)	15		

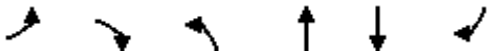


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	65	175	10	30	230	75	15	20	25	40	20	85
Future Volume (Veh/h)	65	175	10	30	230	75	15	20	25	40	20	85
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	68	182	10	31	240	78	16	21	26	42	21	89
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	318			192			720	698	182	657	630	240
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	318			192			720	698	182	657	630	240
tC, single (s)	4.1			4.2			7.3	6.7	6.2	7.2	7.0	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.7	4.2	3.3	3.6	4.4	3.3
p0 queue free %	95			98			94	93	97	87	93	89
cM capacity (veh/h)	1253			1318			253	319	855	318	316	804

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	250	10	271	78	63	152
Volume Left	68	0	31	0	16	42
Volume Right	0	10	0	78	26	89
cSH	1253	1700	1318	1700	395	491
Volume to Capacity	0.05	0.00*	0.02	0.05	0.16	0.31
Queue Length 95th (m)	1.4	0.0	0.6	0.0	4.5	10.4
Control Delay (s/veh)	2.5	0.0	1.1	0.0	15.8	15.6
Lane LOS	A		A		C	C
Approach Delay (s/veh)	2.4		0.8		15.8	15.6
Approach LOS					C	C

Intersection Summary				
Average Delay	5.2			
Intersection Capacity Utilization	48.3%	ICU Level of Service		A
Analysis Period (min)	15			

* Value less than 0.01.

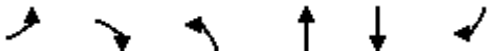


Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	50	15	145	95	0
Future Volume (Veh/h)	0	50	15	145	95	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	50	15	145	95	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	270	95	95			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	270	95	95			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	95	99			
cM capacity (veh/h)	716	967	1512			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	50	160	95
Volume Left	0	15	0
Volume Right	50	0	0
cSH	967	1512	1700
Volume to Capacity	0.05	0.00*	0.06
Queue Length 95th (m)	1.3	0.2	0.0
Control Delay (s/veh)	8.9	0.8	0.0
Lane LOS	A	A	
Approach Delay (s/veh)	8.9	0.8	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	25.1%	ICU Level of Service	A
Analysis Period (min)	15		

* Value less than 0.01.

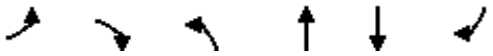


Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	15	50	15	130	45	0
Future Volume (Veh/h)	15	50	15	130	45	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	15	50	15	130	45	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	205	45	45			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	205	45	45			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	98	95	99			
cM capacity (veh/h)	780	1031	1576			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	65	145	45
Volume Left	15	15	0
Volume Right	50	0	0
cSH	960	1576	1700
Volume to Capacity	0.07	0.00*	0.03
Queue Length 95th (m)	1.7	0.2	0.0
Control Delay (s/veh)	9.0	0.8	0.0
Lane LOS	A	A	
Approach Delay (s/veh)	9.0	0.8	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	2.8		
Intersection Capacity Utilization	24.9%	ICU Level of Service	A
Analysis Period (min)	15		

* Value less than 0.01.

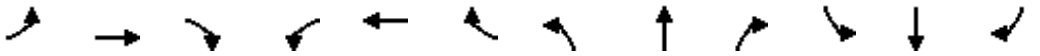


Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	25	530	355	70	20	15
Future Volume (Veh/h)	25	530	355	70	20	15
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	27	582	390	77	22	16
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	887	30	38			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	887	30	38			
tC, single (s)	6.5	6.3	4.2			
tC, 2 stage (s)						
tF (s)	3.6	3.4	2.3			
p0 queue free %	88	44	74			
cM capacity (veh/h)	227	1033	1510			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	609	467	38
Volume Left	27	390	0
Volume Right	582	0	16
cSH	892	1510	1700
Volume to Capacity	0.68	0.26	0.02
Queue Length 95th (m)	44.6	8.3	0.0
Control Delay (s/veh)	17.2	7.2	0.0
Lane LOS	C	A	
Approach Delay (s/veh)	17.2	7.2	0.0
Approach LOS	C		

Intersection Summary			
Average Delay	12.4		
Intersection Capacity Utilization	70.8%	ICU Level of Service	C
Analysis Period (min)	15		

* Value less than 0.01.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	25	75	15	20	15	60	530	10	15	400	10
Future Volume (Veh/h)	5	25	75	15	20	15	60	530	10	15	400	10
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	6	28	83	17	22	17	67	589	11	17	444	11
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)								225				
pX, platoon unblocked	0.74	0.74		0.74	0.74	0.74				0.74		
vC, conflicting volume	1240	1218	450	1309	1218	595	455			600		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1150	1119	450	1243	1119	280	455			288		
tC, single (s)	7.1	6.5	6.2	7.2	6.6	6.2	4.1			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.0	3.3	2.2			2.3		
p0 queue free %	94	80	86	78	84	97	94			98		
cM capacity (veh/h)	105	143	612	76	140	567	1090			929		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	117	56	667	472
Volume Left	6	17	67	17
Volume Right	83	17	11	11
cSH	301	136	1090	929
Volume to Capacity	0.39	0.41	0.06	0.02
Queue Length 95th (m)	14.2	14.2	1.6	0.4
Control Delay (s/veh)	24.4	48.7	1.6	0.5
Lane LOS	C	E	A	A
Approach Delay (s/veh)	24.4	48.7	1.6	0.5
Approach LOS	C	E		

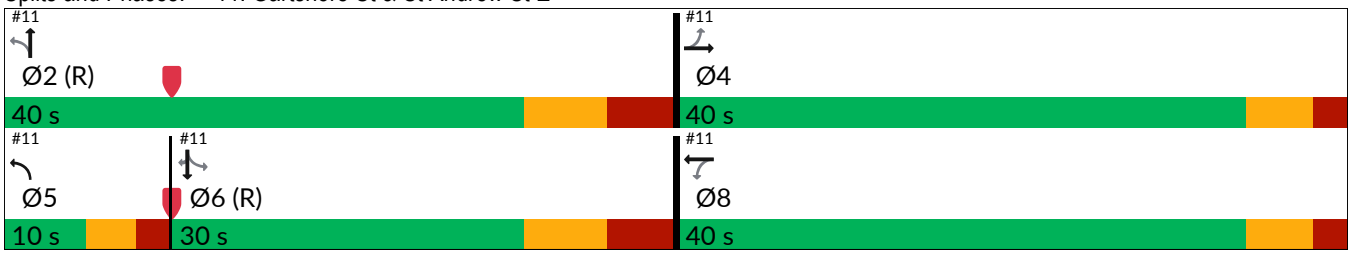
Intersection Summary				
Average Delay	5.3			
Intersection Capacity Utilization	69.4%	ICU Level of Service	C	
Analysis Period (min)	15			

* Value less than 0.01.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	25	55	55	55	110	485	15	605	65
Future Volume (vph)	25	55	55	55	110	485	15	605	65
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	Perm	NA	Perm
Protected Phases		4		8	5	2		6	
Permitted Phases	4		8		2		6		6
Detector Phase	4	4	8	8	5	2	6	6	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.1	24.1	24.1	24.1	10.0	27.0	27.0	27.0	27.0
Total Split (s)	40.0	40.0	40.0	40.0	10.0	40.0	30.0	30.0	30.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	12.5%	50.0%	37.5%	37.5%	37.5%
Yellow Time (s)	4.1	4.1	4.1	4.1	3.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	4.0	4.0	4.0	4.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.1	5.0	9.0	9.0	9.0	9.0
Lead/Lag					Lead		Lag	Lag	Lag
Lead-Lag Optimize?					Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	11.1	11.1	11.1	11.1	57.8	53.8	40.9	40.9	40.9
Actuated g/C Ratio	0.14	0.14	0.14	0.14	0.72	0.67	0.51	0.51	0.51
v/c Ratio	0.19	0.66	0.82	0.34	0.40	0.58	0.05	0.87	0.10
Control Delay (s/veh)	30.9	18.3	89.5	27.1	7.5	10.6	12.1	30.2	2.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	30.9	18.3	89.5	27.1	7.5	10.6	12.1	30.2	2.9
LOS	C	B	F	C	A	B	B	C	A
Approach Delay (s/veh)		19.7		54.6		10.0		27.2	
Approach LOS		B		D		B		C	

Intersection Summary	
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.87	
Intersection Signal Delay (s/veh): 21.7	Intersection LOS: C
Intersection Capacity Utilization 76.3%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 11: Gartshore St & St Andrew St E



Queues

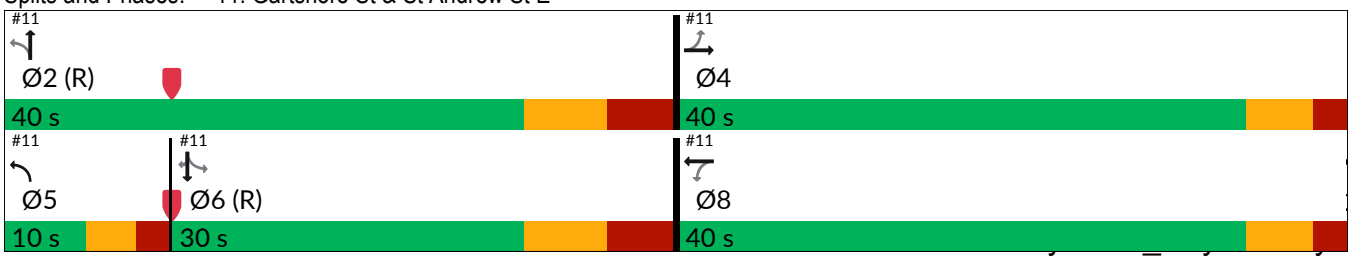
11: Gartshore St & St Andrew St E — Future Total AM Peak Hour - 10 Year

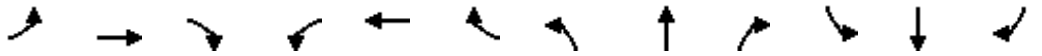
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	25	55	55	55	110	485	15	605	65
Future Volume (vph)	25	55	55	55	110	485	15	605	65
Lane Group Flow (vph)	32	253	71	90	143	675	19	786	84
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	Perm	NA	Perm
Protected Phases		4		8	5	2		6	
Permitted Phases	4		8		2		6		6
Detector Phase	4	4	8	8	5	2	6	6	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.1	24.1	24.1	24.1	10.0	27.0	27.0	27.0	27.0
Total Split (s)	40.0	40.0	40.0	40.0	10.0	40.0	30.0	30.0	30.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	12.5%	50.0%	37.5%	37.5%	37.5%
Yellow Time (s)	4.1	4.1	4.1	4.1	3.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	4.0	4.0	4.0	4.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.1	5.0	9.0	9.0	9.0	9.0
Lead/Lag					Lead		Lag	Lag	Lag
Lead-Lag Optimize?					Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	C-Max	C-Max
v/c Ratio	0.19	0.66	0.82	0.34	0.40	0.58	0.05	0.87	0.10
Control Delay (s/veh)	30.9	18.3	89.5	27.1	7.5	10.6	12.1	30.2	2.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	30.9	18.3	89.5	27.1	7.5	10.6	12.1	30.2	2.9
Queue Length 50th (m)	4.5	10.3	10.8	10.4	5.5	47.3	1.5	125.0	0.5
Queue Length 95th (m)	9.5	20.5	19.3	18.0	11.7	71.6	m2.7	#161.0	m2.8
Internal Link Dist (m)		95.5		92.4		135.0		361.2	
Turn Bay Length (m)	15.0		15.0		15.0		15.0		50.0
Base Capacity (vph)	514	808	266	771	357	1154	395	899	809
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.31	0.27	0.12	0.40	0.58	0.05	0.87	0.10

Intersection Summary

Cycle Length: 80
Actuated Cycle Length: 80
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 11: Gartshore St & St Andrew St E

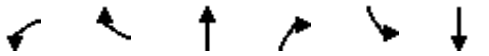




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	55	140	55	55	15	110	485	35	15	605	65
Future Volume (vph)	25	55	140	55	55	15	110	485	35	15	605	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.1	6.1		6.1	6.1		5.0	9.0		9.0	9.0	9.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	1.00	0.93
Flpb, ped/bikes	0.96	1.00		0.99	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.89		1.00	0.97		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1652	1660		1660	1796		1770	1713		1797	1759	1478
Flt Permitted	0.70	1.00		0.36	1.00		0.16	1.00		0.41	1.00	1.00
Satd. Flow (perm)	1215	1660		630	1796		293	1713		772	1759	1478
Peak-hour factor, PHF	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
Adj. Flow (vph)	32	71	182	71	71	19	143	630	45	19	786	84
RTOR Reduction (vph)	0	157	0	0	16	0	0	2	0	0	0	41
Lane Group Flow (vph)	32	96	0	71	74	0	143	673	0	19	786	43
Confl. Peds. (#/hr)	20		5	5		20	30		5	5		30
Heavy Vehicles (%)	5%	2%	1%	8%	0%	7%	2%	10%	6%	0%	8%	2%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)	11.1	11.1		11.1	11.1		53.8	53.8		40.9	40.9	40.9
Effective Green, g (s)	11.1	11.1		11.1	11.1		53.8	53.8		40.9	40.9	40.9
Actuated g/C Ratio	0.14	0.14		0.14	0.14		0.67	0.67		0.51	0.51	0.51
Clearance Time (s)	6.1	6.1		6.1	6.1		5.0	9.0		9.0	9.0	9.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	168	230		87	249		342	1151		394	899	755
v/s Ratio Prot		0.06			0.04		0.04	c0.39			c0.45	
v/s Ratio Perm	0.03			c0.11			0.24			0.02		0.03
v/c Ratio	0.19	0.42		0.82	0.30		0.42	0.59		0.05	0.87	0.06
Uniform Delay, d1	30.5	31.5		33.5	30.9		10.1	7.1		9.8	17.3	9.8
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		0.93	0.95	1.39
Incremental Delay, d2	0.6	1.2		42.3	0.7		0.8	2.2		0.2	9.7	0.1
Delay (s)	31.0	32.7		75.7	31.6		11.0	9.3		9.3	26.2	13.8
Level of Service	C	C		E	C		B	A		A	C	B
Approach Delay (s/veh)		32.5			51.1			9.6			24.6	
Approach LOS		C			D			A			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	21.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	20.1
Intersection Capacity Utilization	76.3%	ICU Level of Service	D
Analysis Period (min)	15		

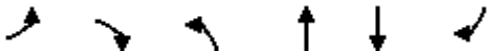
c Critical Lane Group



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	55	55	370	190	150	400
Future Volume (Veh/h)	55	55	370	190	150	400
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	59	59	394	202	160	426
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1241	495			596	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1241	495			596	
tC, single (s)	6.6	6.4			4.3	
tC, 2 stage (s)						
tF (s)	3.7	3.5			2.4	
p0 queue free %	60	89			82	
cM capacity (veh/h)	148	544			907	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	118	596	586
Volume Left	59	0	160
Volume Right	59	202	0
cSH	233	1700	907
Volume to Capacity	0.51	0.35	0.18
Queue Length 95th (m)	20.9	0.0	5.1
Control Delay (s/veh)	35.3	0.0	4.4
Lane LOS	E		A
Approach Delay (s/veh)	35.3	0.0	4.4
Approach LOS	E		

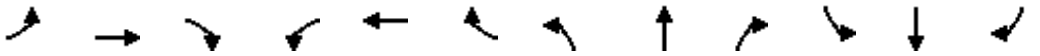
Intersection Summary			
Average Delay	5.2		
Intersection Capacity Utilization	76.8%	ICU Level of Service	D
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	10	30	130	50	15	10
Future Volume (Veh/h)	10	30	130	50	15	10
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79
Hourly flow rate (vph)	13	38	165	63	19	13
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	419	26	32			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	419	26	32			
tC, single (s)	6.5	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.6	3.3	2.2			
p0 queue free %	97	96	90			
cM capacity (veh/h)	518	1056	1593			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	51	228	32
Volume Left	13	165	0
Volume Right	38	0	13
cSH	835	1593	1700
Volume to Capacity	0.06	0.10	0.02
Queue Length 95th (m)	1.6	2.8	0.0
Control Delay (s/veh)	9.6	5.7	0.0
Lane LOS	A	A	
Approach Delay (s/veh)	9.6	5.7	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	5.7		
Intersection Capacity Utilization	26.5%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	225	15	70	320	5	10	20	45	5	20	15
Future Volume (Veh/h)	15	225	15	70	320	5	10	20	45	5	20	15
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	16	245	16	76	348	5	11	22	49	5	22	16
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	353			261			804	782	245	837	793	348
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	353			261			804	782	245	837	793	348
tC, single (s)	4.1			4.2			7.2	6.5	6.4	7.1	6.6	6.4
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.6	4.0	3.5	3.5	4.1	3.5
p0 queue free %	99			94			96	93	93	98	93	98
cM capacity (veh/h)	1217			1280			251	305	749	241	294	646

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	261	16	424	5	82	43
Volume Left	16	0	76	0	11	5
Volume Right	0	16	0	5	49	16
cSH	1217	1700	1280	1700	452	357
Volume to Capacity	0.01	0.00*	0.06	0.00*	0.18	0.12
Queue Length 95th (m)	0.3	0.0	1.5	0.0	5.2	3.3
Control Delay (s/veh)	0.6	0.0	1.9	0.0	14.7	16.5
Lane LOS	A		A		B	C
Approach Delay (s/veh)	0.6		1.9		14.7	16.5
Approach LOS					B	C

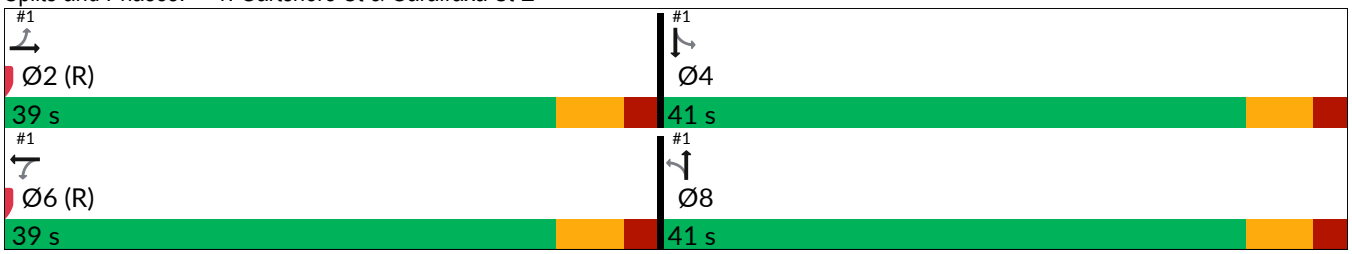
Intersection Summary			
Average Delay	3.5		
Intersection Capacity Utilization	49.3%	ICU Level of Service	A
Analysis Period (min)	15		

* Value less than 0.01.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	50	340	160	260	140	460	95	430
Future Volume (vph)	50	340	160	260	140	460	95	430
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		2		6		8		4
Permitted Phases	2		6		8		4	
Detector Phase	2	2	6	6	8	8	4	4
Switch Phase								
Minimum Initial (s)	30.0	30.0	30.0	30.0	10.0	10.0	10.0	10.0
Minimum Split (s)	36.1	36.1	36.1	36.1	27.1	27.1	27.1	27.1
Total Split (s)	39.0	39.0	39.0	39.0	41.0	41.0	41.0	41.0
Total Split (%)	48.8%	48.8%	48.8%	48.8%	51.3%	51.3%	51.3%	51.3%
Yellow Time (s)	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	C-Min	C-Min	C-Min	C-Min	None	None	None	None
Act Effct Green (s)	32.3	32.3	32.3	32.3	35.5	35.5	35.5	35.5
Actuated g/C Ratio	0.40	0.40	0.40	0.40	0.44	0.44	0.44	0.44
v/c Ratio	0.22	0.75	0.99	0.54	0.80	0.92	0.95	0.75
Control Delay (s/veh)	18.0	26.7	93.6	20.0	51.7	39.8	103.7	25.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	18.0	26.7	93.6	20.0	51.7	39.8	103.7	25.4
LOS	B	C	F	B	D	D	F	C
Approach Delay (s/veh)		25.9		42.6		41.9		37.0
Approach LOS		C		D		D		D

Intersection Summary	
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 11.4 (14%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.99	
Intersection Signal Delay (s/veh): 37.3	Intersection LOS: D
Intersection Capacity Utilization 116.8%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 1: Gartshore St & Garafraxa St E



Queues

1: Gartshore St & Garafraxa St E

Future Total PM Peak Hour - 10 Year

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	50	340	160	260	140	460	95	430
Future Volume (vph)	50	340	160	260	140	460	95	430
Lane Group Flow (vph)	56	556	178	400	156	717	106	606
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		2		6		8		4
Permitted Phases	2		6		8		4	
Detector Phase	2	2	6	6	8	8	4	4
Switch Phase								
Minimum Initial (s)	30.0	30.0	30.0	30.0	10.0	10.0	10.0	10.0
Minimum Split (s)	36.1	36.1	36.1	36.1	27.1	27.1	27.1	27.1
Total Split (s)	39.0	39.0	39.0	39.0	41.0	41.0	41.0	41.0
Total Split (%)	48.8%	48.8%	48.8%	48.8%	51.3%	51.3%	51.3%	51.3%
Yellow Time (s)	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	C-Min	C-Min	C-Min	C-Min	None	None	None	None
v/c Ratio	0.22	0.75	0.99	0.54	0.80	0.92	0.95	0.75
Control Delay (s/veh)	18.0	26.7	93.6	20.0	51.7	39.8	103.7	25.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	18.0	26.7	93.6	20.0	51.7	39.8	103.7	25.4
Queue Length 50th (m)	5.1	68.3	26.8	43.2	17.9	78.4	15.9	75.3
Queue Length 95th (m)	13.0	107.6	#67.2	70.2	m#53.0	#167.8	#48.2	117.2
Internal Link Dist (m)		114.2		223.2		361.2		201.3
Turn Bay Length (m)	40.0		35.0		30.0		35.0	
Base Capacity (vph)	263	750	183	747	196	782	111	808
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	0.21	0.74	0.97	0.54	0.80	0.92	0.95	0.75

Intersection Summary

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 11.4 (14%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

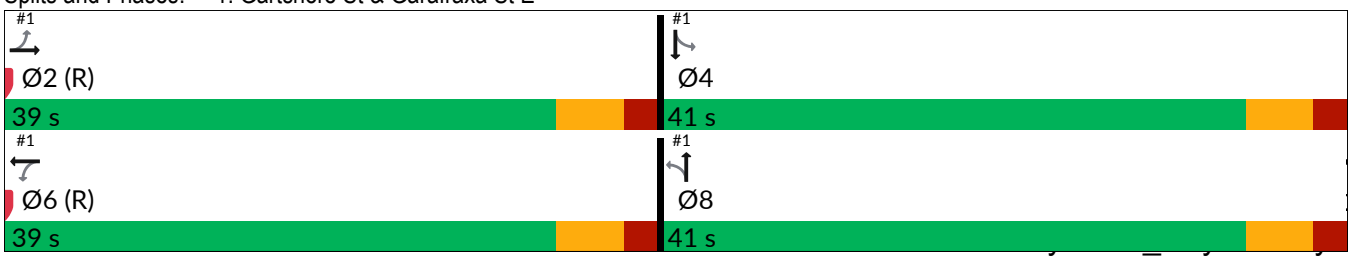
Natural Cycle: 80

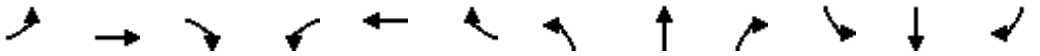
Control Type: Actuated-Coordinated

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

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

Splits and Phases: 1: Gartshore St & Garafraxa St E

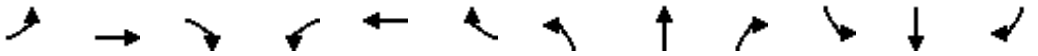




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	340	160	160	260	100	140	460	185	95	430	115
Future Volume (vph)	50	340	160	160	260	100	140	460	185	95	430	115
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.1	6.1		6.1	6.1		6.1	6.1		6.1	6.1	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		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	0.95		1.00	0.96		1.00	0.96		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1504	1774		1752	1776		1805	1724		1787	1797	
Flt Permitted	0.40	1.00		0.24	1.00		0.23	1.00		0.13	1.00	
Satd. Flow (perm)	639	1774		445	1776		443	1724		253	1797	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	56	378	178	178	289	111	156	511	206	106	478	128
RTOR Reduction (vph)	0	21	0	0	17	0	0	18	0	0	12	0
Lane Group Flow (vph)	56	535	0	178	383	0	156	699	0	106	594	0
Confl. Bikes (#/hr)						5						
Heavy Vehicles (%)	20%	1%	4%	3%	0%	7%	0%	4%	9%	1%	3%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	32.3	32.3		32.3	32.3		35.5	35.5		35.5	35.5	
Effective Green, g (s)	32.3	32.3		32.3	32.3		35.5	35.5		35.5	35.5	
Actuated g/C Ratio	0.40	0.40		0.40	0.40		0.44	0.44		0.44	0.44	
Clearance Time (s)	6.1	6.1		6.1	6.1		6.1	6.1		6.1	6.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	257	716		179	717		196	765		112	797	
v/s Ratio Prot		0.30			0.22			0.41			0.33	
v/s Ratio Perm	0.09			c0.40			0.35			c0.42		
v/c Ratio	0.22	0.75		0.99	0.53		0.80	0.91		0.95	0.75	
Uniform Delay, d1	15.6	20.4		23.8	18.1		19.1	20.8		21.3	18.5	
Progression Factor	1.00	1.00		1.00	1.00		1.18	1.12		1.00	1.00	
Incremental Delay, d2	1.9	7.0		65.8	2.8		17.2	13.6		67.5	3.8	
Delay (s)	17.5	27.3		89.6	21.0		39.8	36.9		88.9	22.3	
Level of Service	B	C		F	C		D	D		F	C	
Approach Delay (s/veh)		26.4			42.1			37.4			32.2	
Approach LOS		C			D			D			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	34.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.2
Intersection Capacity Utilization	116.8%	ICU Level of Service	H
Analysis Period (min)	15		

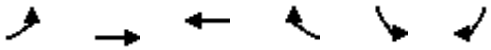
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	585	10	10	485	10	10	5	10	5	10	25
Future Volume (Veh/h)	25	585	10	10	485	10	10	5	10	5	10	25
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Hourly flow rate (vph)	31	722	12	12	599	12	12	6	12	6	12	31
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		247										
pX, platoon unblocked				0.83			0.83	0.83	0.83	0.83	0.83	
vC, conflicting volume	611			734			1456	1425	728	1434	1425	605
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	611			580			1447	1410	573	1421	1410	605
tC, single (s)	4.1			4.1			7.2	6.5	6.4	7.1	6.6	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.6	4.0	3.5	3.5	4.1	3.3
p0 queue free %	97			99			83	95	97	93	88	94
cM capacity (veh/h)	978			836			72	111	409	86	104	501

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	765	623	30	49
Volume Left	31	12	12	6
Volume Right	12	12	12	31
cSH	978	836	120	199
Volume to Capacity	0.03	0.01	0.25	0.25
Queue Length 95th (m)	0.8	0.3	7.4	7.5
Control Delay (s/veh)	0.8	0.4	44.6	28.9
Lane LOS	A	A	E	D
Approach Delay (s/veh)	0.8	0.4	44.6	28.9
Approach LOS			E	D

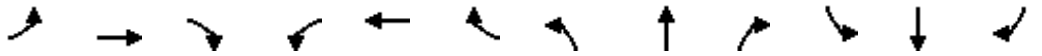
Intersection Summary				
Average Delay	2.5			
Intersection Capacity Utilization	54.4%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	225	360	330	15	10	125
Future Volume (Veh/h)	225	360	330	15	10	125
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	225	360	330	15	10	125
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	345				1148	338
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	345				1148	338
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	82				94	82
cM capacity (veh/h)	1225				181	709

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	225	360	345	135
Volume Left	225	0	0	10
Volume Right	0	0	15	125
cSH	1225	1700	1700	583
Volume to Capacity	0.18	0.21	0.20	0.23
Queue Length 95th (m)	5.4	0.0	0.0	7.1
Control Delay (s/veh)	8.6	0.0	0.0	13.0
Lane LOS	A			B
Approach Delay (s/veh)	3.3		0.0	13.0
Approach LOS				B

Intersection Summary			
Average Delay	3.5		
Intersection Capacity Utilization	49.0%	ICU Level of Service	A
Analysis Period (min)	15		

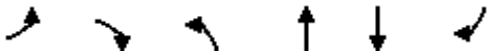


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	265	15	20	245	50	5	30	35	85	30	95
Future Volume (Veh/h)	90	265	15	20	245	50	5	30	35	85	30	95
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	96	282	16	21	261	53	5	32	37	90	32	101
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	314			298			894	830	282	830	793	261
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	314			298			894	830	282	830	793	261
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.2	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.6	4.0	3.3
p0 queue free %	92			98			97	89	95	61	89	87
cM capacity (veh/h)	1258			1246			196	280	762	228	294	783

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	378	16	282	53	74	223
Volume Left	96	0	21	0	5	90
Volume Right	0	16	0	53	37	101
cSH	1258	1700	1246	1700	393	353
Volume to Capacity	0.08	0.00*	0.02	0.03	0.19	0.63
Queue Length 95th (m)	2.0	0.0	0.4	0.0	5.5	32.9
Control Delay (s/veh)	2.6	0.0	0.7	0.0	16.3	31.2
Lane LOS	A		A		C	D
Approach Delay (s/veh)	2.5		0.6		16.3	31.2
Approach LOS					C	D

Intersection Summary				
Average Delay	9.1			
Intersection Capacity Utilization	61.7%	ICU Level of Service		B
Analysis Period (min)	15			

* Value less than 0.01.

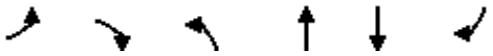


Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	35	55	115	175	0
Future Volume (Veh/h)	0	35	55	115	175	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	35	55	115	175	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	400	175	175			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	400	175	175			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	96	96			
cM capacity (veh/h)	586	874	1414			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	35	170	175
Volume Left	0	55	0
Volume Right	35	0	0
cSH	874	1414	1700
Volume to Capacity	0.04	0.04	0.10
Queue Length 95th (m)	1.0	1.0	0.0
Control Delay (s/veh)	9.3	2.7	0.0
Lane LOS	A	A	
Approach Delay (s/veh)	9.3	2.7	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	2.1		
Intersection Capacity Utilization	31.6%	ICU Level of Service	A
Analysis Period (min)	15		

* Value less than 0.01.

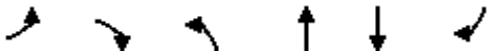


Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	15	30	50	65	145	0
Future Volume (Veh/h)	15	30	50	65	145	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	15	30	50	65	145	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	310	145	145			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	310	145	145			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	98	97	97			
cM capacity (veh/h)	663	908	1450			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	45	115	145
Volume Left	15	50	0
Volume Right	30	0	0
cSH	808	1450	1700
Volume to Capacity	0.06	0.03	0.09
Queue Length 95th (m)	1.4	0.9	0.0
Control Delay (s/veh)	9.7	3.4	0.0
Lane LOS	A	A	
Approach Delay (s/veh)	9.7	3.4	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	2.7		
Intersection Capacity Utilization	27.2%	ICU Level of Service	A
Analysis Period (min)	15		

* Value less than 0.01.

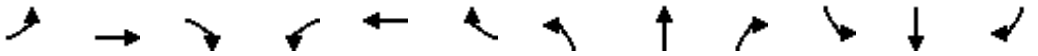


Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	15	450	605	20	60	30
Future Volume (Veh/h)	15	450	605	20	60	30
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	15	464	624	21	62	31
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1347	78	93			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1347	78	93			
tC, single (s)	6.4	6.2	4.3			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.4			
p0 queue free %	84	53	56			
cM capacity (veh/h)	94	983	1407			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	479	645	93
Volume Left	15	624	0
Volume Right	464	0	31
cSH	758	1407	1700
Volume to Capacity	0.63	0.44	0.05
Queue Length 95th (m)	36.4	18.7	0.0
Control Delay (s/veh)	17.5	9.4	0.0
Lane LOS	C	A	
Approach Delay (s/veh)	17.5	9.4	0.0
Approach LOS	C		

Intersection Summary			
Average Delay	11.9		
Intersection Capacity Utilization	76.6%	ICU Level of Service	D
Analysis Period (min)	15		

* Value less than 0.01.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	10	50	10	15	15	110	470	30	15	580	5
Future Volume (Veh/h)	5	10	50	10	15	15	110	470	30	15	580	5
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	5	10	52	10	15	15	113	485	31	15	598	5
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)								225				
pX, platoon unblocked	0.72	0.72		0.72	0.72	0.72				0.72		
vC, conflicting volume	1380	1373	601	1414	1360	501	603			516		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1333	1324	601	1381	1306	118	603			139		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	93	90	90	85	85	98	89			99		
cM capacity (veh/h)	75	99	504	66	102	679	984			1053		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	67	40	629	618
Volume Left	5	10	113	15
Volume Right	52	15	31	5
cSH	248	125	984	1053
Volume to Capacity	0.27	0.32	0.11	0.01
Queue Length 95th (m)	8.5	10.1	3.1	0.3
Control Delay (s/veh)	24.8	46.8	2.9	0.4
Lane LOS	C	E	A	A
Approach Delay (s/veh)	24.8	46.8	2.9	0.4
Approach LOS	C	E		

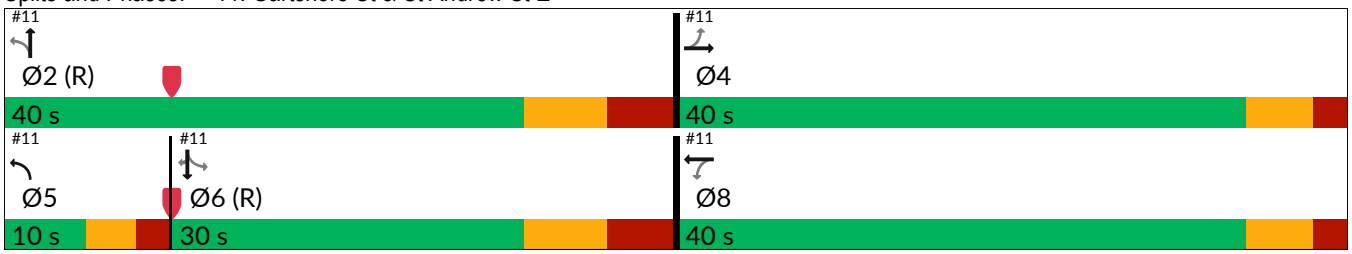
Intersection Summary				
Average Delay	4.1			
Intersection Capacity Utilization	79.2%	ICU Level of Service	D	
Analysis Period (min)	15			

* Value less than 0.01.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	45	55	35	35	95	705	5	615	55
Future Volume (vph)	45	55	35	35	95	705	5	615	55
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	Perm	NA	Perm
Protected Phases		4		8	5	2		6	
Permitted Phases	4		8		2		6		6
Detector Phase	4	4	8	8	5	2	6	6	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.1	24.1	24.1	24.1	10.0	27.0	27.0	27.0	27.0
Total Split (s)	40.0	40.0	40.0	40.0	10.0	40.0	30.0	30.0	30.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	12.5%	50.0%	37.5%	37.5%	37.5%
Yellow Time (s)	4.1	4.1	4.1	4.1	3.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	4.0	4.0	4.0	4.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.1	5.0	9.0	9.0	9.0	9.0
Lead/Lag					Lead		Lag	Lag	Lag
Lead-Lag Optimize?					Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	9.2	9.2	9.2	9.2	59.7	55.7	46.0	46.0	46.0
Actuated g/C Ratio	0.12	0.12	0.12	0.12	0.75	0.70	0.58	0.58	0.58
v/c Ratio	0.30	0.62	0.37	0.20	0.20	0.62	0.01	0.61	0.06
Control Delay (s/veh)	35.7	20.4	41.5	29.5	4.3	9.8	10.0	12.7	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	35.7	20.4	41.5	29.5	4.3	9.8	10.0	12.7	0.6
LOS	D	C	D	C	A	A	A	B	A
Approach Delay (s/veh)		23.5		35.1		9.2		11.7	
Approach LOS		C		D		A		B	

Intersection Summary	
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 70	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.62	
Intersection Signal Delay (s/veh): 13.0	Intersection LOS: B
Intersection Capacity Utilization 83.6%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 11: Gartshore St & St Andrew St E

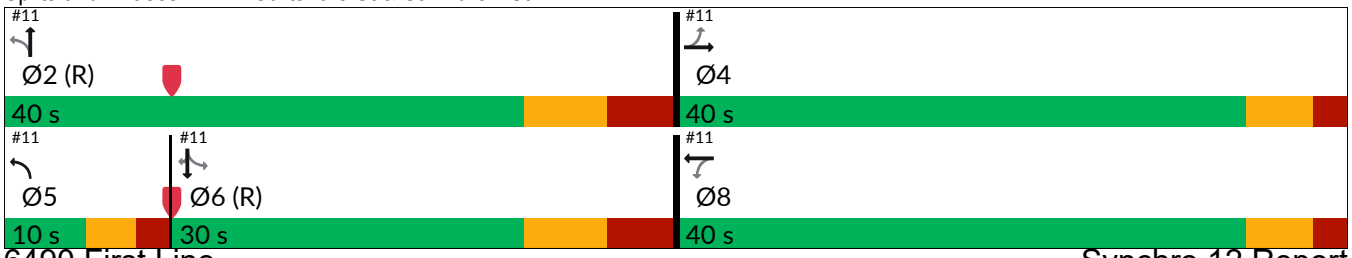


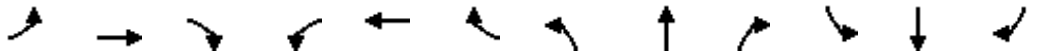
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	45	55	35	35	95	705	5	615	55
Future Volume (vph)	45	55	35	35	95	705	5	615	55
Lane Group Flow (vph)	48	192	37	42	101	793	5	654	59
Turn Type	Perm	NA	Perm	NA	pm+pt	NA	Perm	NA	Perm
Protected Phases		4		8	5	2		6	
Permitted Phases	4		8		2		6		6
Detector Phase	4	4	8	8	5	2	6	6	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	24.1	24.1	24.1	24.1	10.0	27.0	27.0	27.0	27.0
Total Split (s)	40.0	40.0	40.0	40.0	10.0	40.0	30.0	30.0	30.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	12.5%	50.0%	37.5%	37.5%	37.5%
Yellow Time (s)	4.1	4.1	4.1	4.1	3.0	5.0	5.0	5.0	5.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	4.0	4.0	4.0	4.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.1	6.1	6.1	6.1	5.0	9.0	9.0	9.0	9.0
Lead/Lag					Lead		Lag	Lag	Lag
Lead-Lag Optimize?					Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None	C-Max	C-Max	C-Max	C-Max
v/c Ratio	0.30	0.62	0.37	0.20	0.20	0.62	0.01	0.61	0.06
Control Delay (s/veh)	35.7	20.4	41.5	29.5	4.3	9.8	10.0	12.7	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	35.7	20.4	41.5	29.5	4.3	9.8	10.0	12.7	0.6
Queue Length 50th (m)	7.3	8.8	5.6	5.4	3.2	53.2	0.2	49.5	0.0
Queue Length 95th (m)	16.1	26.3	13.7	13.4	9.4	111.7	m0.5	m98.6	m0.0
Internal Link Dist (m)		95.5		92.4		135.0		361.2	
Turn Bay Length (m)	15.0		15.0		15.0		15.0		50.0
Base Capacity (vph)	587	791	370	766	508	1288	399	1071	947
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.24	0.10	0.05	0.20	0.62	0.01	0.61	0.06

Intersection Summary

Cycle Length: 80
Actuated Cycle Length: 80
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 11: Gartshore St & St Andrew St E





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	55	125	35	35	5	95	705	40	5	615	55
Future Volume (vph)	45	55	125	35	35	5	95	705	40	5	615	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.1	6.1		6.1	6.1		5.0	9.0		9.0	9.0	9.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	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	1.00
Frt	1.00	0.90		1.00	0.98		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1805	1687		1752	1803		1804	1850		1805	1863	1566
Flt Permitted	0.73	1.00		0.47	1.00		0.28	1.00		0.37	1.00	1.00
Satd. Flow (perm)	1386	1687		874	1803		538	1850		695	1863	1566
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)	48	59	133	37	37	5	101	750	43	5	654	59
RTOR Reduction (vph)	0	118	0	0	4	0	0	1	0	0	0	26
Lane Group Flow (vph)	48	74	0	37	38	0	101	792	0	5	654	33
Confl. Peds. (#/hr)							5					5
Heavy Vehicles (%)	0%	3%	0%	3%	4%	0%	0%	2%	0%	0%	2%	2%
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		6
Actuated Green, G (s)	9.2	9.2		9.2	9.2		55.7	55.7		45.0	45.0	45.0
Effective Green, g (s)	9.2	9.2		9.2	9.2		55.7	55.7		45.0	45.0	45.0
Actuated g/C Ratio	0.12	0.12		0.12	0.12		0.70	0.70		0.56	0.56	0.56
Clearance Time (s)	6.1	6.1		6.1	6.1		5.0	9.0		9.0	9.0	9.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	159	194		100	207		464	1288		390	1047	880
v/s Ratio Prot		c0.04			0.02		0.02	c0.43			0.35	
v/s Ratio Perm	0.03			0.04			0.14			0.01		0.02
v/c Ratio	0.30	0.38		0.37	0.18		0.22	0.61		0.01	0.62	0.04
Uniform Delay, d1	32.5	32.8		32.7	32.0		5.7	6.5		7.7	11.8	7.8
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		0.94	0.80	0.88
Incremental Delay, d2	1.1	1.3		2.3	0.4		0.2	2.2		0.0	1.6	0.0
Delay (s)	33.5	34.0		35.0	32.4		6.0	8.7		7.3	11.1	6.9
Level of Service	C	C		D	C		A	A		A	B	A
Approach Delay (s/veh)		33.9			33.6			8.4			10.7	
Approach LOS		C			C			A			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	13.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	20.1
Intersection Capacity Utilization	83.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	180	155	470	65	70	440
Future Volume (Veh/h)	180	155	470	65	70	440
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	202	174	528	73	79	494
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1217	565			601	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1217	565			601	
tC, single (s)	6.5	6.2			4.2	
tC, 2 stage (s)						
tF (s)	3.6	3.3			2.3	
p0 queue free %	0	66			92	
cM capacity (veh/h)	178	519			934	

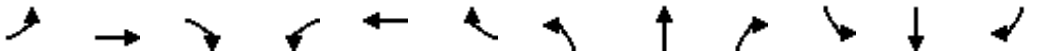
Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	376	601	573
Volume Left	202	0	79
Volume Right	174	73	0
cSH	256	1700	934
Volume to Capacity	1.47	0.35	0.08
Queue Length 95th (m)	172.7	0.0	2.2
Control Delay (s/veh)	268.4	0.0	2.2
Lane LOS	F		A
Approach Delay (s/veh)	268.4	0.0	2.2
Approach LOS	F		

Intersection Summary			
Average Delay	65.9		
Intersection Capacity Utilization	85.2%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	115	55	40	40	10
Future Volume (Veh/h)	5	115	55	40	40	10
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	6	135	65	47	47	12
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	230	53	59			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	230	53	59			
tC, single (s)	6.4	6.2	4.3			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.4			
p0 queue free %	99	87	95			
cM capacity (veh/h)	717	1020	1426			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	141	112	59
Volume Left	6	65	0
Volume Right	135	0	12
cSH	1002	1426	1700
Volume to Capacity	0.14	0.05	0.03
Queue Length 95th (m)	3.9	1.1	0.0
Control Delay (s/veh)	9.2	4.6	0.0
Lane LOS	A	A	
Approach Delay (s/veh)	9.2	4.6	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	5.8		
Intersection Capacity Utilization	25.9%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	350	30	70	300	5	15	15	85	5	20	20
Future Volume (Veh/h)	20	350	30	70	300	5	15	15	85	5	20	20
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	22	393	34	79	337	6	17	17	96	6	22	22
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	343			427			965	938	393	1037	966	337
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	343			427			965	938	393	1037	966	337
tC, single (s)	4.1			4.2			7.2	6.5	6.3	7.4	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.6	4.0	3.4	3.8	4.0	3.3
p0 queue free %	98			93			91	93	85	96	91	97
cM capacity (veh/h)	1227			1111			189	243	647	138	234	698

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	415	34	416	6	130	50
Volume Left	22	0	79	0	17	6
Volume Right	0	34	0	6	96	22
cSH	1227	1700	1111	1700	422	296
Volume to Capacity	0.02	0.02	0.07	0.00*	0.31	0.17
Queue Length 95th (m)	0.4	0.0	1.8	0.0	10.3	4.8
Control Delay (s/veh)	0.6	0.0	2.2	0.0	17.3	19.6
Lane LOS	A		A		C	C
Approach Delay (s/veh)	0.6		2.2		17.3	19.6
Approach LOS					C	C

Intersection Summary				
Average Delay	4.2			
Intersection Capacity Utilization	58.7%	ICU Level of Service		B
Analysis Period (min)	15			

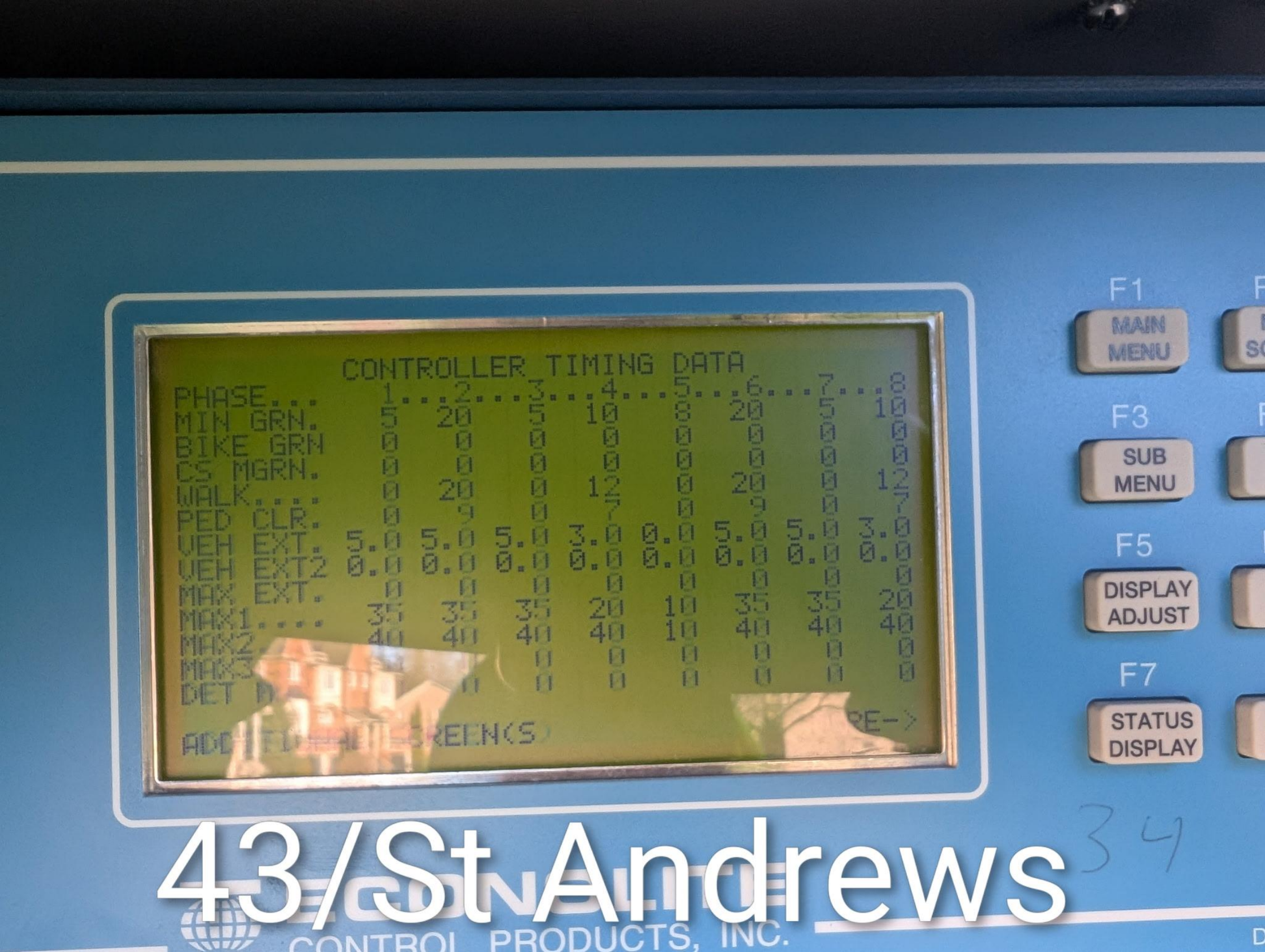
* Value less than 0.01.

Appendix F:
Signal Timing Plans

Wellington County 24-36 Garthshore & Garafraxa Fergus 7/4/2013 6:10

By-Phase Timing Data

	Phase											
	1	2	3	4	5	6	7	8	9	10	11	
Direction												
Minimum Green	5	30	5	10	5	30	5	10	5	5	5	5
Bike Min Green	0	0	0	0	0	0	0	0	0	0	0	0
Cond Serv Min Grn	0	0	0	0	0	0	0	0	0	0	0	0
Walk	0	17	0	12	0	17	0	12	0	10	0	10
Ped Clearance	0	13	0	9	0	13	0	9	0	16	0	16
Veh Extension	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Alt Veh Exten	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max Extension	0	0	0	0	0	0	0	0	0	0	0	0
Max 1	35	35	35	25	35	35	35	25	35	35	35	35
Max 2	40	40	40	40	40	40	40	40	40	40	40	40
Max 3	0	0	0	0	0	0	0	0	0	0	0	0
Det. Fail Max	0	0	0	0	0	0	0	0	0	0	0	0
Yellow Change	3.0	4.1	3.0	4.1	3.0	4.1	3.0	4.1	3.0	3.0	3.0	3.0
Red Clearance	1.0	2.0	1.0	2.0	1.0	2.0	1.0	2.0	1.0	1.0	1.0	1.0
Red Revert	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Act. B4 Init	0	0	0	0	0	0	0	0	0	0	0	0
Sec/Actuation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max Initial	30	30	30	30	30	30	30	30	30	30	30	30
Time B4 Reduction	0	0	0	0	0	0	0	0	0	0	0	0
Cars Waiting	0	0	0	0	0	0	0	0	0	0	0	0
Time To Reduce	0	0	0	0	0	0	0	0	0	0	0	0
Minimum Gap	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



43/St Andrews

CONTROL PRODUCTS, INC.

43/St Andrews

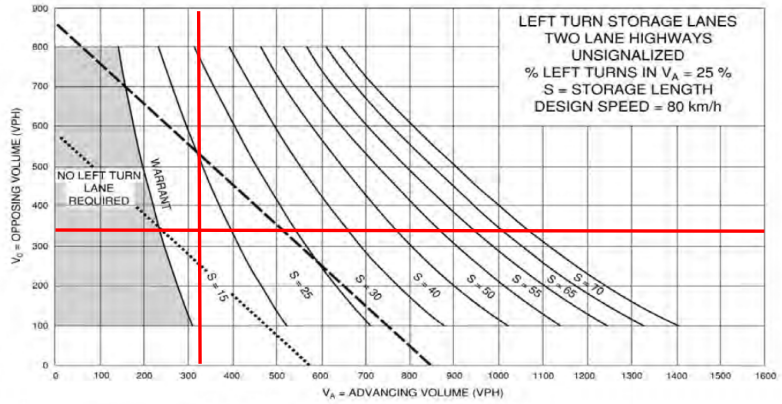
Appendix G:
Left Turn Lane Warrants

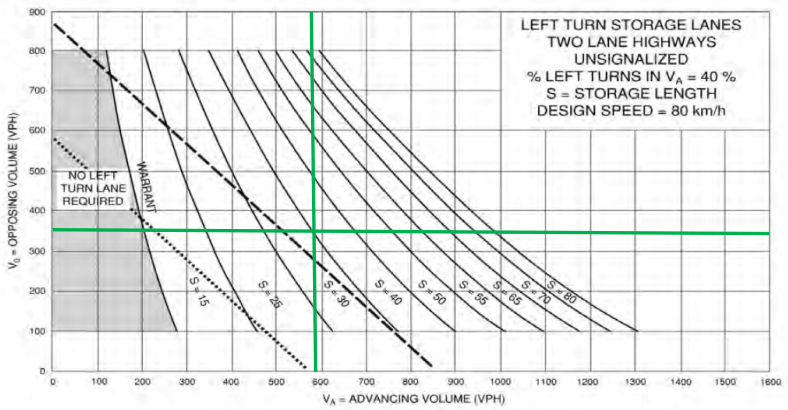
UNSIGNALIZED LEFT TURN LANE WARRANT (2-Lane)

Garafraxa EBL @ Street A

INPUTS

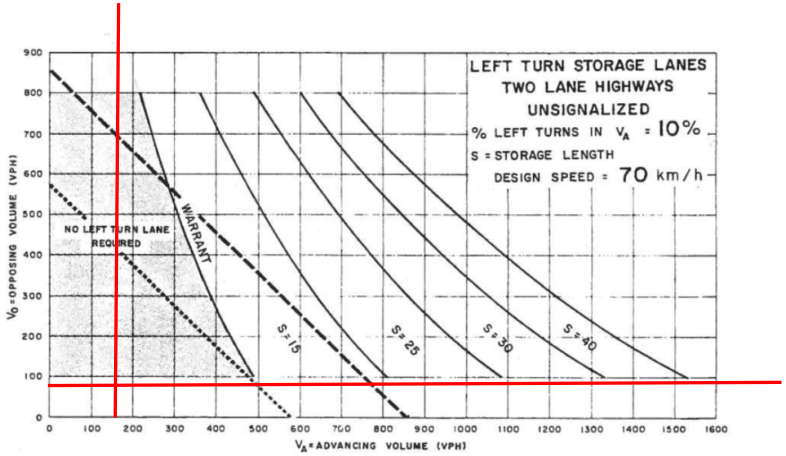
	FT 10	
	AM Peak	**PM Peak**
Advancing Volume (V_A)	310	585
Opposing Volume (V_O)	330	345
Left Turn Volume	75	225
Percentage Left Turns in V_A	24%	38%
Design Speed (km/h)	80	80

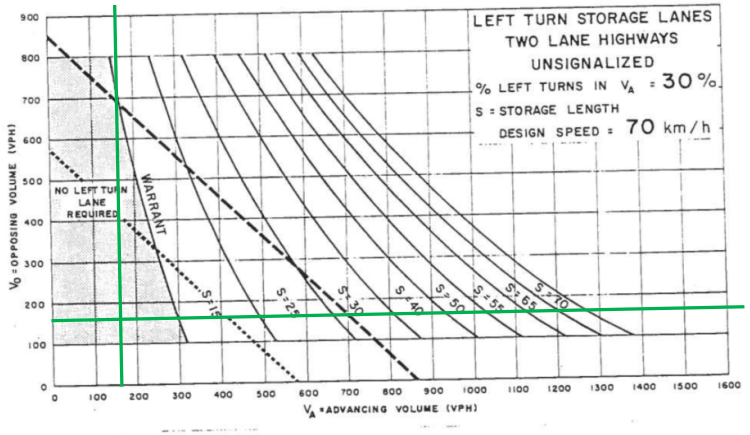




UNSIGNALIZED LEFT TURN LANE WARRANT (2-Lane)
First Line NBL @ Street C
INPUTS

	FT 10	
	AM Peak	PM Peak
Advancing Volume (V_A)	160	170
Opposing Volume (V_O)	95	175
Left Turn Volume	15	55
Percentage Left Turns in V_A	9%	32%
Design Speed (km/h)	70	70



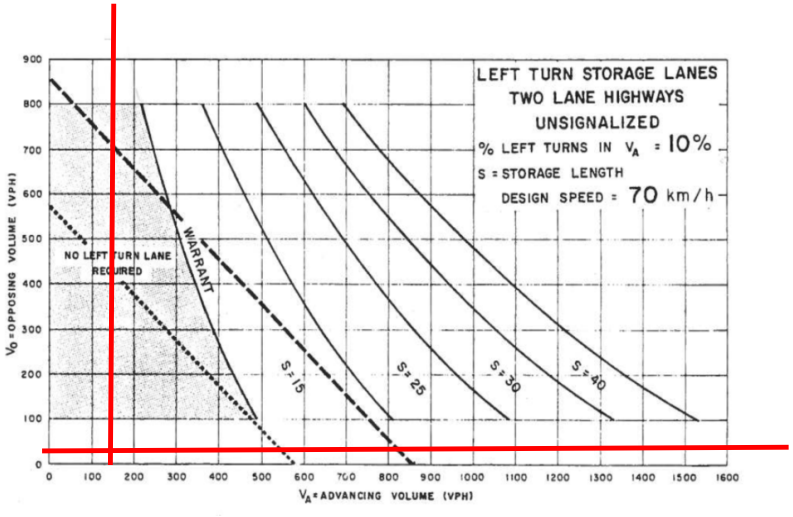


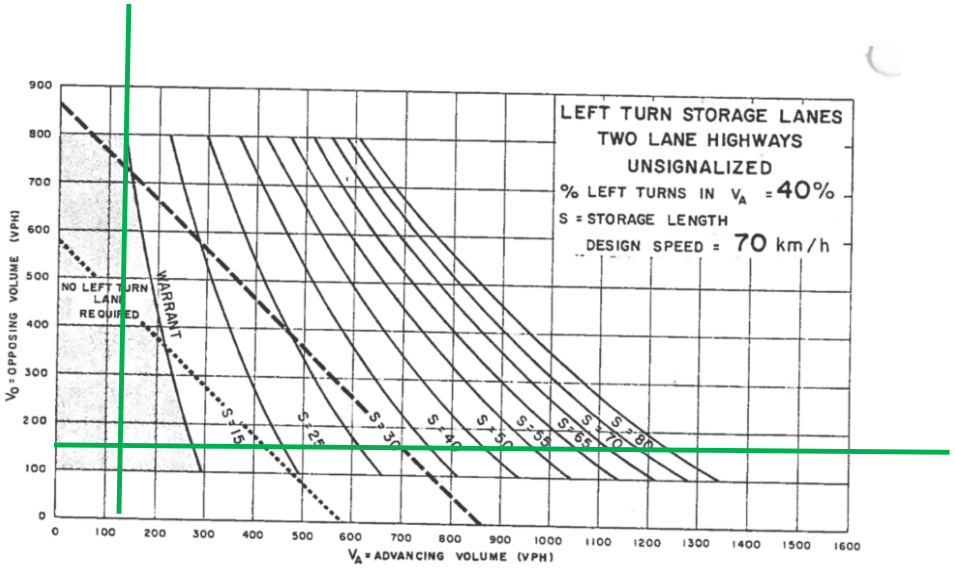
UNSIGNALIZED LEFT TURN LANE WARRANT (2-Lane)

First Line NBL @ Street B

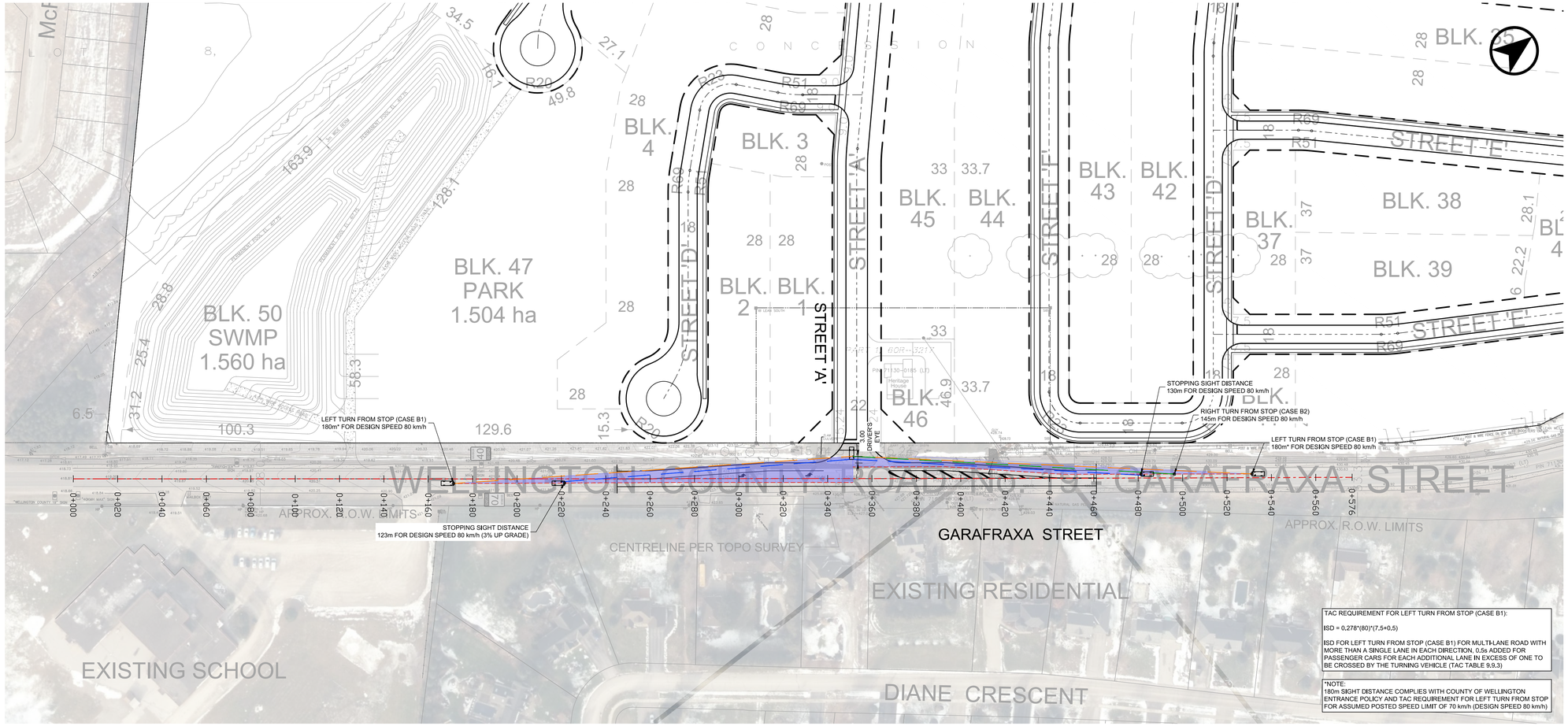
INPUTS

	FT 10	
	AM Peak	**PM Peak**
Advancing Volume (V_A)	145	115
Opposing Volume (V_O)	45	145
Left Turn Volume	15	50
Percentage Left Turns in V_A	10%	43%
Design Speed (km/h)	70	70





Appendix H:
Sight Distance Assessment



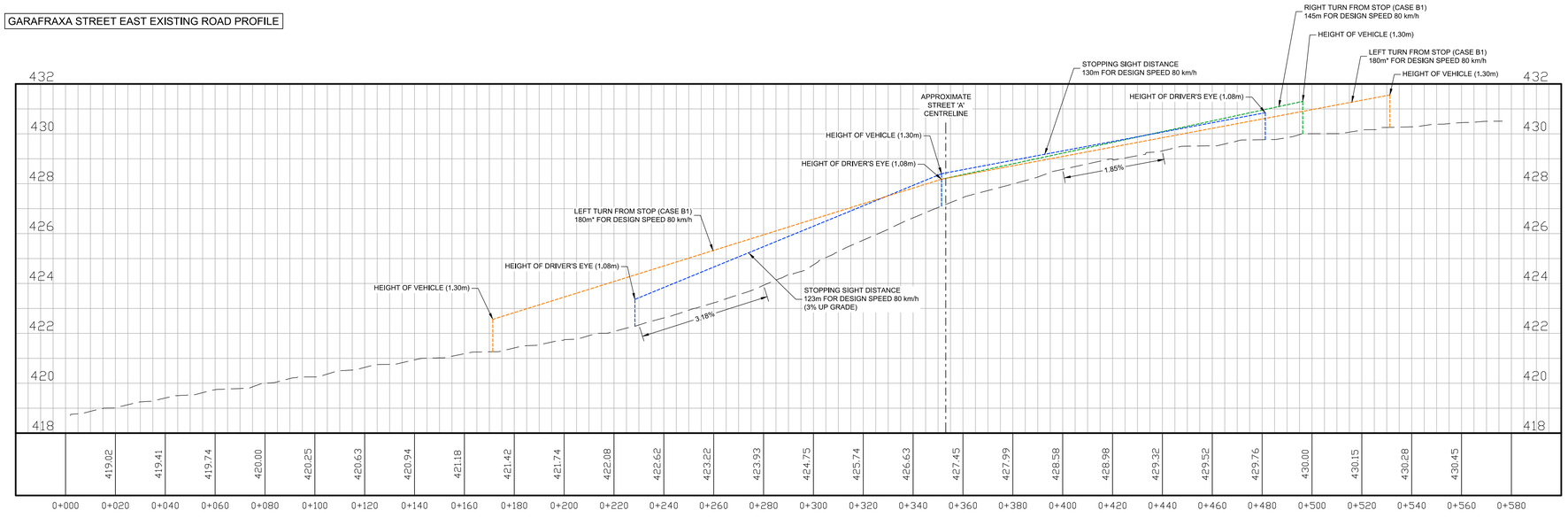
TAC REQUIREMENT FOR LEFT TURN FROM STOP (CASE B1):

ISD = 0,278*(80)*(7,5+0,5)

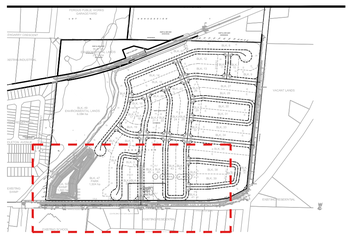
ISD FOR LEFT TURN FROM STOP (CASE B1) FOR MULTI-LANE ROAD WITH MORE THAN A SINGLE LANE IN EACH DIRECTION, 0,5s ADDED FOR PASSENGER CARS FOR EACH ADDITIONAL LANE IN EXCESS OF ONE TO BE CROSSED BY THE TURNING VEHICLE (TAC TABLE 9.9.3)

*NOTE:
180m SIGHT DISTANCE COMPLIES WITH COUNTY OF WELLINGTON ENTRANCE POLICY AND TAC REQUIREMENT FOR LEFT TURN FROM STOP FOR ASSUMED POSTED SPEED LIMIT OF 70 km/h (DESIGN SPEED 80 km/h)

GARAFRAXA STREET EAST EXISTING ROAD PROFILE



H: 1:1000
V: 1:100



GENERAL NOTES

1. CONCEPT PLAN DATED JUNE 23, 2026, PREPARED BY WESTON CONSULTING.
2. SURVEY PLAN DATED NOVEMBER 11, 2011, PREPARED BY J.D. BARNES LIMITED.
3. THIS PLAN IS ILLUSTRATIVE FOR THE PURPOSE OF SHOWING FUNCTIONAL PLAN AND SHALL NOT BE RELIED UPON FOR DETAILED DESIGN OR CONSTRUCTION.

00	07-06-26	TC	ISSUED FOR DRAFT PLAN OF SUBDIVISION
00	MM-DD-YR	INT	REVISION NOTE

BA Group
BA Consulting Group Ltd.
1000 - 95 St. Clair Ave, W,
Toronto ON M4V 1N6
TEL 416 961 7110
EMAIL bagroup@bagroup.com
MOVEMENT IN URBAN ENVIRONMENTS
BAGROUP.COM

6490 FIRST LINE
FERGUS

SIGHT DISTANCE REVIEW

GARAFRAXA STREET E / STREET 'A'

Date: July 6, 2026

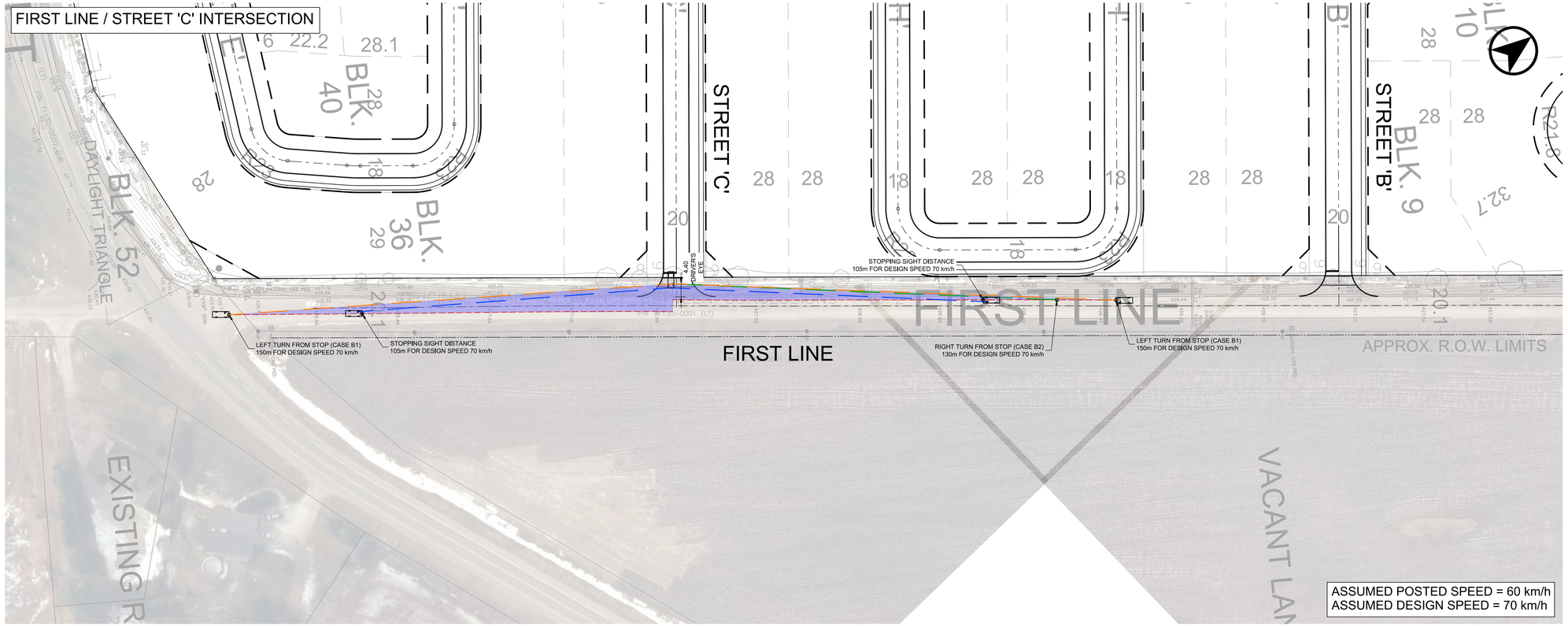
Project No.: 5883-58

Scale: 1:1,000 (0 10 20 30 40 50m)

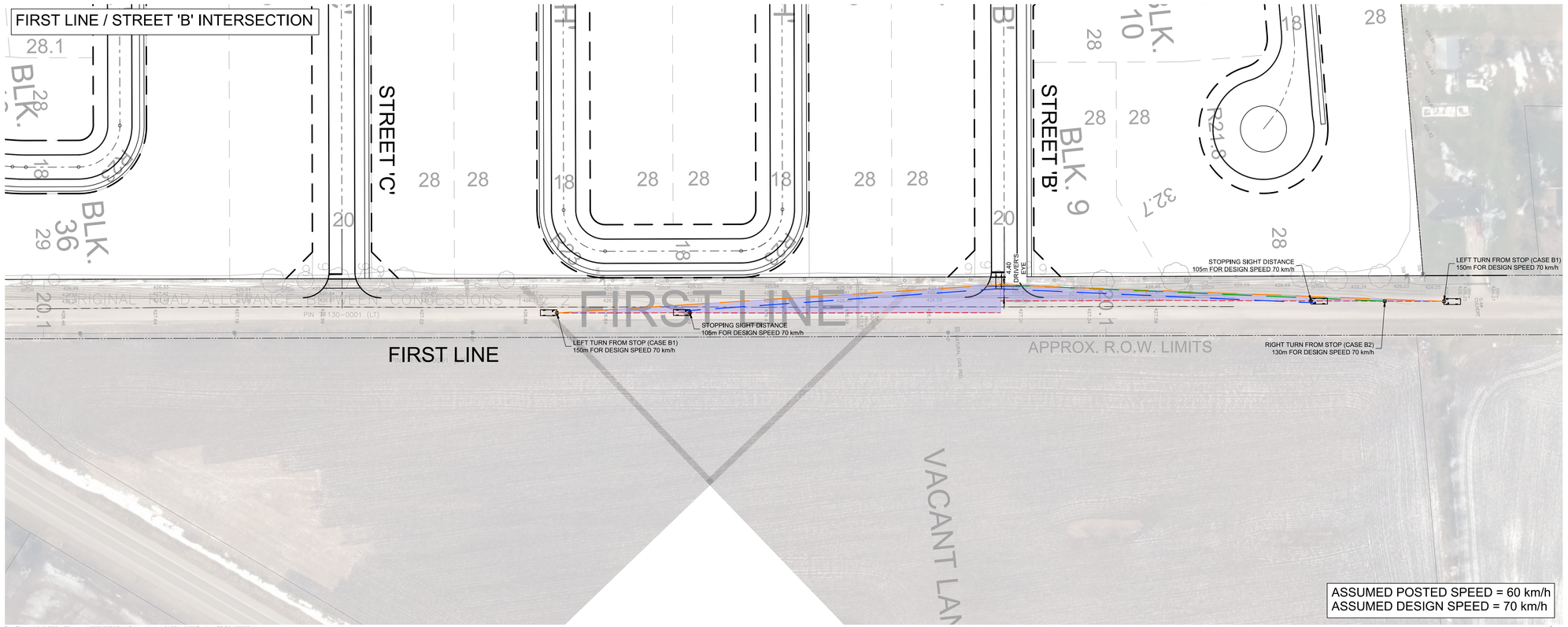
SD-01

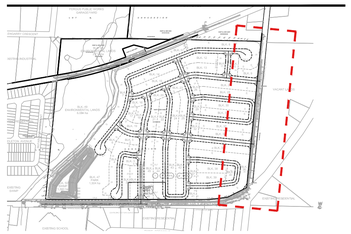
Date Plotted: July 6, 2026 Filename: J:\5883-58\BA\Sight Distance\1. June 24-26\ba-6490 First Line-SD-R01-588358.dwg

FIRST LINE / STREET 'C' INTERSECTION



FIRST LINE / STREET 'B' INTERSECTION





GENERAL NOTES

1. CONCEPT PLAN DATED JUNE 23, 2026, PREPARED BY WESTON CONSULTING.
2. SURVEY PLAN DATED NOVEMBER 11, 2011, PREPARED BY J.D. BARNES LIMITED.
3. THIS PLAN IS ILLUSTRATIVE FOR THE PURPOSE OF SHOWING FUNCTIONAL PLAN AND SHALL NOT BE RELIED UPON FOR DETAILED DESIGN OR CONSTRUCTION.

00	07-06-26	TC	ISSUED FOR DRAFT PLAN OF SUBDIVISION
00	MM-DD-YR	INT	REVISION NOTE

BA Group

BA Consulting Group Ltd.
1000 – 55 St. Clair Ave. W.
Toronto ON M4V 1N6
TEL 416 961 7110
EMAIL bagroup@bagroup.com

MOVEMENT IN URBAN ENVIRONMENTS
BAGROUP.COM

6490 FIRST LINE
FERGUS

SIGHT DISTANCE REVIEW

FIRST LINE ACCESSES

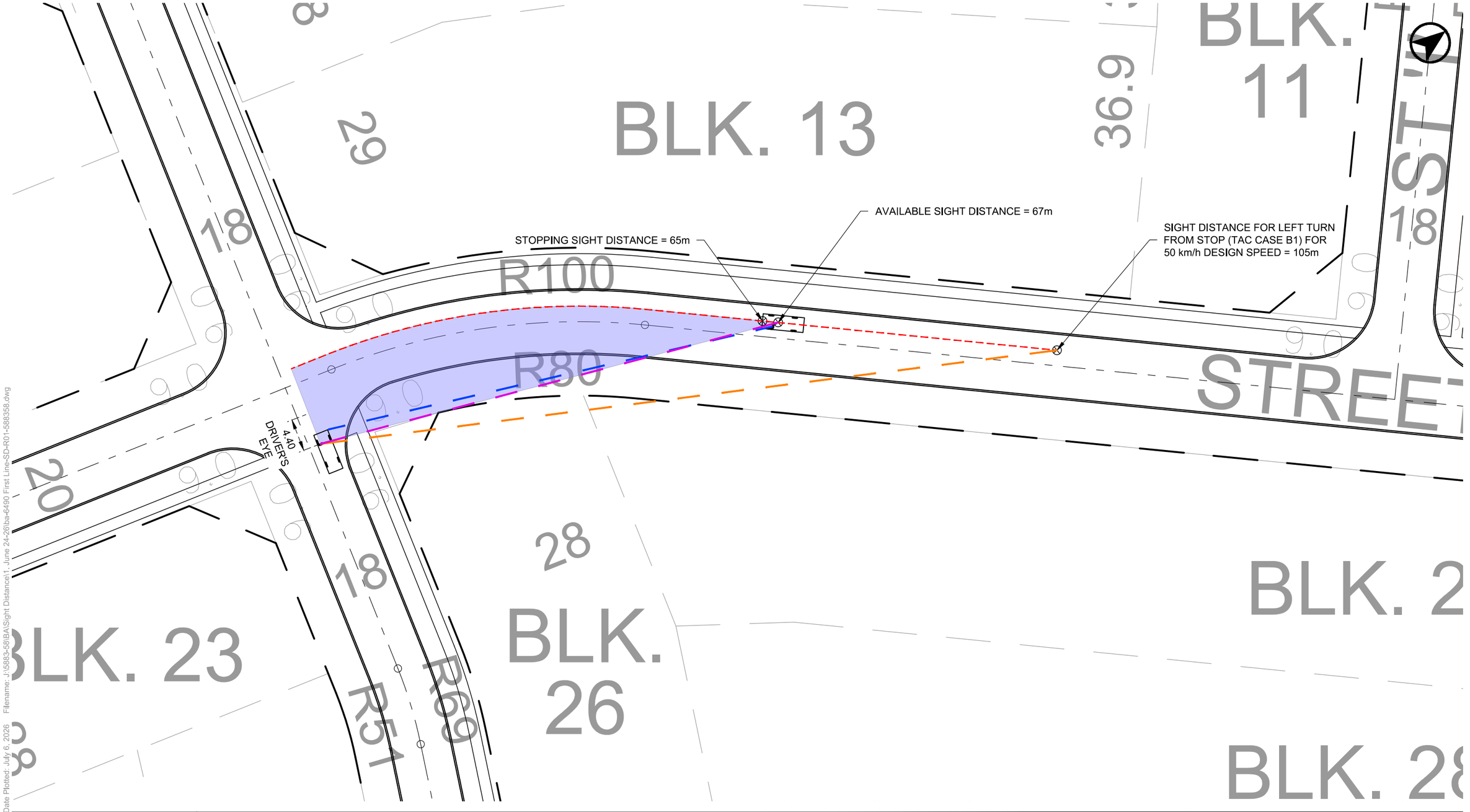
Date: July 6, 2026

Project No.: 5883-58

Scale: 1:750 (0, 15, 30m)

SD-02

Date Plotted: July 6, 2026 Filename: J:\5883-58\BA\Sight Distance\1. June 24-26\ba-6490 First Line-SD-R01-588358.dwg



Date Plotted: July 6, 2026 Filename: J:\5883-58\BA\Sight Distance\1. June 24-26\ba-6490 First Line-SD-R01-588358.dwg

BA Group

6490 FIRST LINE

SIGHT DISTANCE REVIEW
LEFT TURN FROM STOP
STREET B / D

Project:	6490 FIRST LINE
Project No.	5883-58
Date:	July 6, 2026
Revised:	–

Scale 1:500 (0 5 10 15 20m)

Drawing No. SD-03