

**TRANSPORTATION IMPACT STUDY**

**665 ELIZA STREET**

**ARTHUR  
TOWNSHIP OF WELLINGTON NORTH**

**PREPARED FOR:**

**TRIBUTE/SORBARA ARTHUR HOLDINGS INC.**

**PREPARED BY:**

**C.F. CROZIER & ASSOCIATES INC.  
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**FEBRUARY 2025**

**CFCA FILE NO. 1000-7040**

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<b>Revision Number</b>	<b>Date</b>	<b>Comments</b>
Rev.0	February 2025	1 <sup>st</sup> Submission

## Executive Summary

Tribute/Sorbara Arthur Holdings Inc. (client) retained C.F. Crozier & Associates (Crozier) to complete a Transportation Impact Study to support the Site Plan Application for a residential development proposal situated at 665 Eliza Street (east side of Eliza) and property bounded by Wells Street, future Macauley Street and Eliza Street (west side of Eliza) in Arthur with no municipal address, in the Township of Wellington North. The development proposal consists of 504 single-detached units, 113 semi-detached units, and 249 townhouse units. The site is proposed to be serviced by two full-move access along Eliza Street and one full-moves access along Macauley Street

Under existing and future background traffic conditions, all study intersections are operating at an LOS of "B" during the a.m. and p.m. peak periods.

The proposed development is forecast to generate a total of 478 and 646 primary vehicle trips in the weekday a.m. and weekday p.m. peak hours, respectively.

Under the 2035 future total conditions with the addition of site generated traffic, the study intersections are projected to operate at an LOS of "D" or better during the a.m. and p.m. peak period.

The intersection of Eliza Street and Tucker Street experiences some capacity constraints. A LOS of "F" during the p.m. peak hour is noted.

A signal warrant was conducted for the intersection of Eliza Street and Street G/Street A and Eliza Street and Tucker Street. Traffic signals were found to be not warranted at the intersection under 2035 Future Total conditions.

Left-turn lane warrants were conducted at Eliza Street and Macauley Street and Eliza Street and Tucker Street. A 30-meter storage lane was warranted at both intersections.

The County can choose to implement a signal at the intersection of Eliza Street and Tucker Street in the future. Doing so is expected to improve intersection operations to a LOS of "A" and "B" during the a.m. and p.m. peak hour. The County should continue monitoring operations at this intersection.

Further, no issues regarding sight lines, access spacing, or corner clearances were identified at the proposed site access.

To be compliant with the parking requirements, the site is required to provide 866 vehicle parking spaces.

Based on the study findings, the proposed development can be supported from a traffic operations perspective as the development will not materially impact the study road network.

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## 1.0 Introduction

Tribute Communities retained C.F. Crozier & Associates Inc. (Crozier) to complete a Transportation Impact Study to support the proposed residential development located in the Township of Wellington North, County of Wellington. The east side of the proposed development is located at 665 Eliza Street and the west side of the proposed development currently does not have a municipal address.

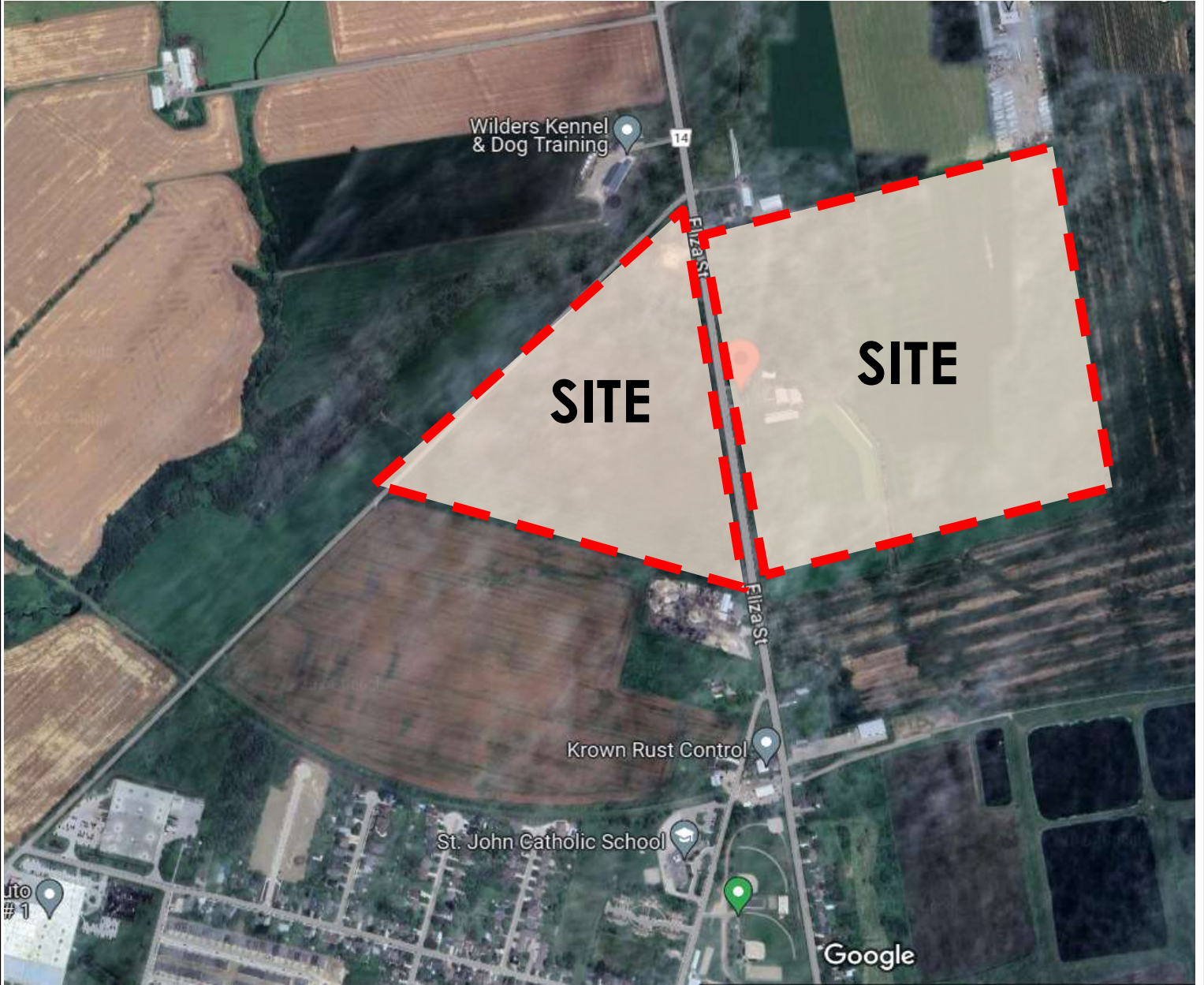
### 1.1 Developments Lands

The east and west side of the proposed development (the site) is separated by Eliza Street. The west side of the site is bound by Eliza Street to the east, Wells Street to the west and farmland to the south. The east side of the development is bound by Eliza Street to the west and farmland to the north, east, and south. **Figure 1** includes the Site Location Plan.

### 1.2 Development Proposal

Per the Concept Plan prepared by Biglieri Group, dated January 14, 2025, the proposed development includes 504 single residential units, 113 semi-detached units, and 249 townhomes, totaling 866 residential units. Access to the west side of the site is proposed through two full-move accesses, one onto Eliza Street and the second onto Macauley Street. Access to the east side of the site is proposed through two full moves accessed onto Eliza Street.

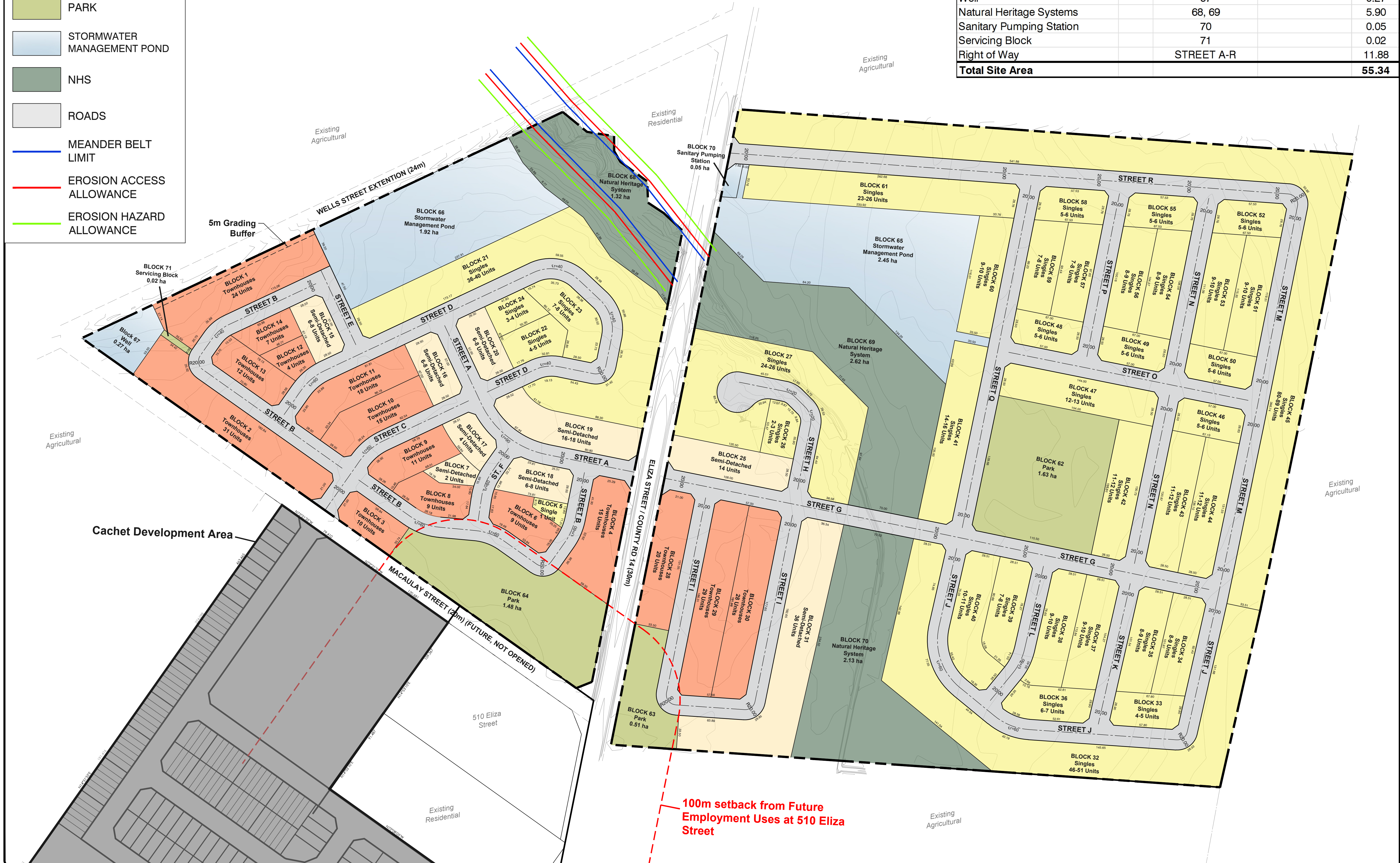
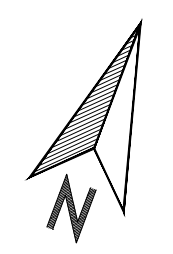
**Figure 2** outlines the current Concept Plan (dated January 14, 2025).



	<b>665 Eliza Street</b>		<b>Figure 1</b> Project No. 1000-7040 Date. February 2025 Analyst. Shaira Ahmed
	<b>Site Location</b>		

**LEGEND**

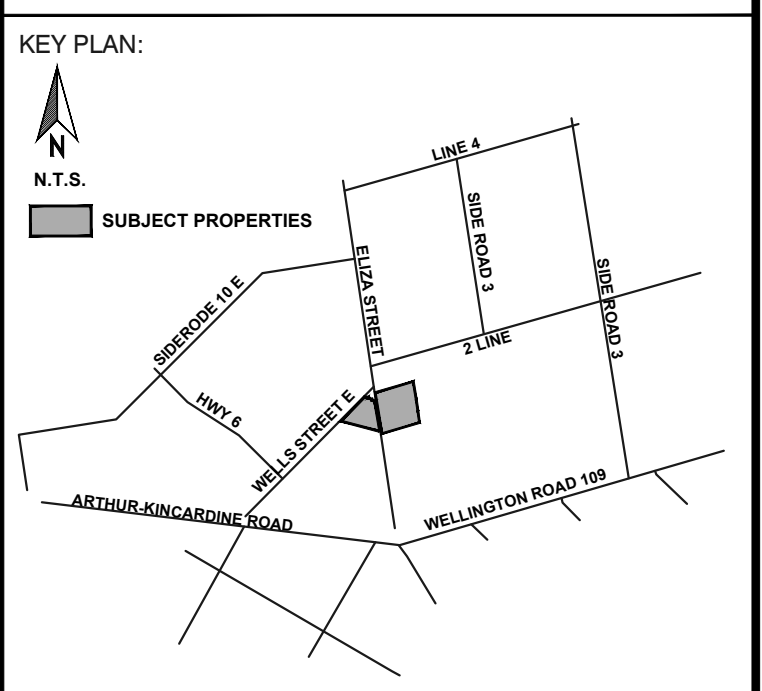
- 36' AND 40' SINGLES
- 20' FREEHOLD TH
- 25' SEMIS
- PARK
- STORMWATER MANAGEMENT POND
- NHS
- ROADS
- MEANDER BELT LIMIT
- EROSION ACCESS ALLOWANCE
- EROSION HAZARD ALLOWANCE



Schedule of Land Use			
Description	Lot / Block No.	Residential Units	Area (ha)
Single Detached Residential	5, 21-24, 26, 27, 32-61	454-504	19.96
Semi-Detached	7, 15-20, 25, 31	112-113	3.21
Street Townhouse	1-4, 6, 8-14, 28-30	249	6.05
<b>Net Developable Total</b>		<b>815-866</b>	<b>29.22</b>
Park	62-64		3.62
Stormwater Management Pond	65, 66		4.38
Well	67		0.27
Natural Heritage Systems	68, 69		5.90
Sanitary Pumping Station	70		0.05
Servicing Block	71		0.02
Right of Way	STREET A-R		11.88
<b>Total Site Area</b>			<b>55.34</b>

**TITLE:**  
**DRAFT PLAN OF SUBDIVISION**

LEGAL DESCRIPTION:  
PART OF PARK LOTS 1 AND 2  
NORTH OF MACAULEY STREET  
CROWN SURVEY  
AND  
PART LOT 1 CONCESSION 2  
WEST LUTHER AS IN R0N74408  
TOWNSHIP OF WELLINGTON NORTH  
COUNTY OF WELLINGTON



REQUIRED INFORMATION:  
AS REQUIRED UNDER SECTION 51(17) OF THE PLANNING ACT R.S.O. 1990.

(a) SEE PLAN (g) SEE PLAN  
(b) SEE PLAN (h) PIPED WATER TO BE PROVIDED  
(c) SEE KEY MAP (i) SILTY CLAY, SILTY SAND, GLACIAL TILL  
(d) SEE SCHEDULE OF LAND USE (j) SEE PLAN  
(e) SEE PLAN (k) SANITARY & STORM SEWERS TO BE PROVIDED  
(f) SEE PLAN (l) NOTE: CONTOURS RELATE TO CANADIAN GEODETIC DATUM

SURVEYOR'S CERTIFICATE:  
I HEREBY CERTIFY THAT THE BOUNDARIES OF THE LANDS TO BE SUBDIVIDED AS SHOWN ON THIS PLAN AND THEIR RELATIONSHIP TO THE ADJACENT LANDS ARE ACCURATE AND CORRECTLY SHOWN IN ACCORDANCE WITH A PLAN OF SURVEY PREPARED BY J.D. BARNES LIMITED

RAYMOND J. SIBTHORP O.L.S.  
DATE

OWNER'S CERTIFICATE:  
I HEREBY AUTHORIZE THE BIGLIERI GROUP LTD. TO PREPARE AND SUBMIT THIS DRAFT PLAN OF SUBDIVISION TO THE COUNTY OF WELLINGTON

TRIBUTE/SORBARA ARTHUR HOLDINGS INC.  
DATE

**ARTHUR, WELLINGTON NORTH DEVELOPMENT**

APPROVAL STAMP:

**TRIBUTE/SORBARA ARTHUR HOLDINGS INC.**

REVISIONS

No.	Description	Date	Int.
3			
2			
1			

PROJECT No.: 22853  
DATE: January 14, 2025  
SCALE: 1:1750  
DRAFTED BY: EC CHECKED BY: MP  
DRAWING No.: **DP-01**

**BIGLIERI GROUP**

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21 King Street W. Suite 1502, Hamilton  
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thebiglierigroup.com

### 1.3 Study Purpose and Scope

The purpose of the study is to evaluate the transportation-related impacts of the proposed development on the study road network and to recommend or confirm any required mitigation measures, if warranted. This TIS is in support of an Official Plan Amendment (OPA), a Zoning By-law Amendment (ZBA), and a Plan of Subdivision Application.

The study reviews the following main aspects of the proposed development from a transportation engineering perspective:

- Impacts of development traffic on the study road network through analyzing existing, future background, and future total traffic operations;
- Need for external roadway improvements to mitigate traffic impacts;
- Adequacy of the development plan to allow for anticipated vehicle servicing internally;
- Safety requirements of the proposed site accesses; and;
- Existing, future, and site-specific Transportation Demand Management opportunities.

The study will be prepared in accordance with the County of Wellington (County) Impact Study Guidelines (October 2021).

**Appendix A** includes the Terms of Reference for the study, which was circulated with Township and County staff through correspondence on July 23, 2024.

At the time of preparing this report, Crozier staff are waiting for confirmation on the Terms of Reference. This Transportation Impact Study considers the following study intersections:

- Frederick Street East and Highway 6
- Fredreick Street East and Eliza Street and Domville Street (roundabout)
- Eliza Street and Tucker Street
- Eliza Street and Wells Street
- Eliza Street and Street R
- Eliza Street and Street A/Street G
- Future Macauley Steet and Street C
- Future Macauley Street and Wells Street
- Future Macauley Street and Eliza Street

For the purposes of this study, it has been assumed that the entirety of the development will be built out by 2030. The County of Wellington guidelines require analysis of the full build-out horizon and five-year horizon from the time of full build-out. Therefore, the 2030 and 2035 horizon years were analyzed.

## 2.0 Existing Conditions

This section outlines the current conditions of the transportation network in the vicinity of the site. Details of the study road network, including traffic controls, lane configurations, speed limits, transit routes and stops, active transportation infrastructure and other relevant transportation elements are identified. The existing traffic operations are also summarized.

### 2.1 Study Road Network

The study road network consists of the existing road network near the site, which includes the study intersections and the adjoining roadway segments. **Table 1** delineates the study roadways. **Figure 3** illustrates the study road network, including the lane configurations and intersection control at the study intersections.

**Table 1: Study Roadways**

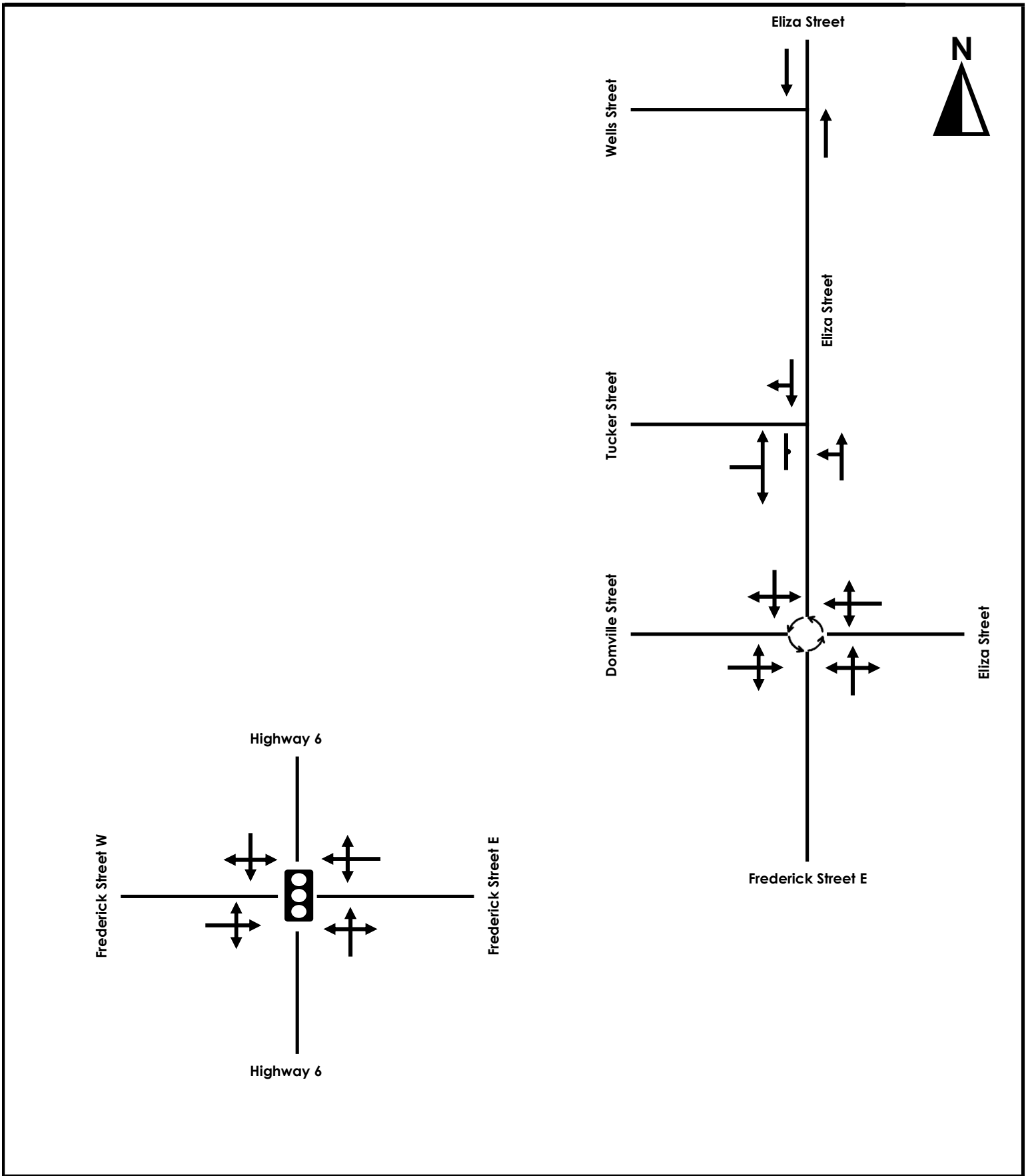
Feature	Roadways					
	Eliza Street	Wells Street	Frederick Street East	Highway 6	Tucker Street	Domville Street
<b>Direction</b>	North-south	East-west	East-west	North-south	North-South	East-West
<b>Span</b>	Highway 6 to 2 Line	Eliza Street to Wells Street Terminus (dead-end)	Eliza Street to Francis Street	Highway 109 to Side Road 19 <sup>1</sup>	Eliza Street to Frederick Street East	Eliza Street to Wells Street East
<b>Classification</b>	County Road	Local Road	Local Road	Highway	Local Road	Local Road
<b>Jurisdiction</b>	County of Wellington	Township of Wellington North	Township of Wellington North	MTO	Township of Wellington North	Township of Wellington North
<b>Speed Limit</b>	80 km/h (posted)	50 km/h (assumed)	50 km/h (posted)	80 km/h (posted)	50 km/h (posted)	50 km/h (posted)
<b>Number of travel lanes</b>	Two	Two <sup>2</sup>	Two	Two	Two	Two
<b>Median type</b>	None	None	None	None	None	None
<b>Active Transportation<sup>3</sup></b>	1.5m Sidewalks (both sides) <sup>4</sup>	None	1.5m Sidewalks (both sides)	1.5m Sidewalks (both sides)	1.5m Sidewalks (both sides)	1.5 m Sidewalks (south side)

Note 1: The table highlights the span of Highway 6 within Wellington North County.



Note 2: One unpaved travel lane between Highway 6 and Eliza Street.

Note 3: Active transportation features within the study area.

Note 4: Sidewalk located on the west side of the roadway south of Domville Street and located on the east side of the roadway north of Domville Street.



**Legend**

-  Stop Bar
-  Roundabout

**665 Eliza Street**

**Existing Study Road Network**



**Figure 3**

Project No. 1000-7040  
 Date. February 2025  
 Analyst. Shaira Ahmed

## 2.2 Transportation Data

Transportation data was obtained and used to support the analysis in this study. **Table 2** summarizes the study intersections, date of data collection and signal timing plans, and the source of the information. Traffic data was collected during the hours 7:00 a.m. to 9:00 a.m. and 4:00 p.m. to 7:00 p.m.

**Table 2: Traffic Data**

Intersection	TMC Date	Source
Highway 6 and Frederick Street	Wednesday August 14, 2024	Spectrum
Frederick Street and Domville Street and Eliza Street		
Eliza Street and Wells Street		
Eliza Street and Tucker Street	Tuesday April 18, 2023	Spectrum

**Appendix B** contains all transportation data used in support of this study. The transportation data collected in 2023 and 2024 was grown to 2025 at a growth rate of 2%.

## 2.3 Traffic Modelling and Assumptions

For modelling purposes, the directions of each leg of the roundabout intersection of Frederick Street at Domville Street have been assigned directions as follows:

- Eliza Street North – North Leg
- Eliza Street South – East Leg
- Domville Street – West Leg
- Frederick Street – South Leg

Unless otherwise noted, the existing traffic conditions on the study road network were modelled in Synchro 11 based on “Highway Capacity Manual (HCM)” methodology and using the default Synchro parameters. The roundabout assessment was conducted using Arcady 8. The Level of Service (LOS) metric provides a general performance measure of the quality of the service from a driver’s perspective and ranges a letter from “A” to “F”; “A” representing best performance and “F” representing worst performance. **Appendix C** contains the Level of Service definitions.

Control delay is the additional time added per vehicle as a result of the intersection and its associated control (ie. Traffic Light / Stop Control) compared to the average speed on the adjoining roadway segments. Finally, volume-to-capacity ratio indicates the fraction of the capacity for a particular movement used by traffic volumes at an intersection. Roadway geometrics were modelled based on the existing study road network description outlined in **Section 2.1**.

The traffic volumes applied to the existing conditions model are the volumes established in **Section 0**, based on the turning movement count survey data. This survey data was also applied to the model for the heavy vehicle percentages and peak hour factors as calculated for each intersection during

each time period. **Table 3** outlines the calculated peak hour factors at each intersection during each peak hour.

**Table 3: Peak Hour Factors**

Intersection	Peak Hour	Peak Hour Factor
Highway 6 and Frederick Street	7:45 a.m. to 8:45 a.m.	0.93
	4:30 p.m. – 5:30 p.m.	0.94
Frederick Street and Domville Street and Eliza Street	8:00 a.m. to 9:00 a.m.	0.80
	4:30 p.m. – 5:30 p.m.	0.89
Eliza Street and Wells Street	8:00 a.m. to 9:00 a.m.	0.86
	4:45 p.m. – 5:45 p.m.	0.89
Eliza Street and Tucker Street	8:15 a.m. – 9:15 a.m.	0.84
	4:30 p.m. – 5:30 p.m.	0.84

## 2.4 Intersection Operations

**Table 4** outlines the existing conditions traffic operations at study intersections. Synchro 11 was used to determine intersection operations at the study intersections and ARCADY 8 was used to determine intersection operations at the roundabout. **Figure 4** illustrates the existing conditions for 2025 traffic volumes used in the operational analysis. **Appendix D** contains detailed capacity analysis worksheets.

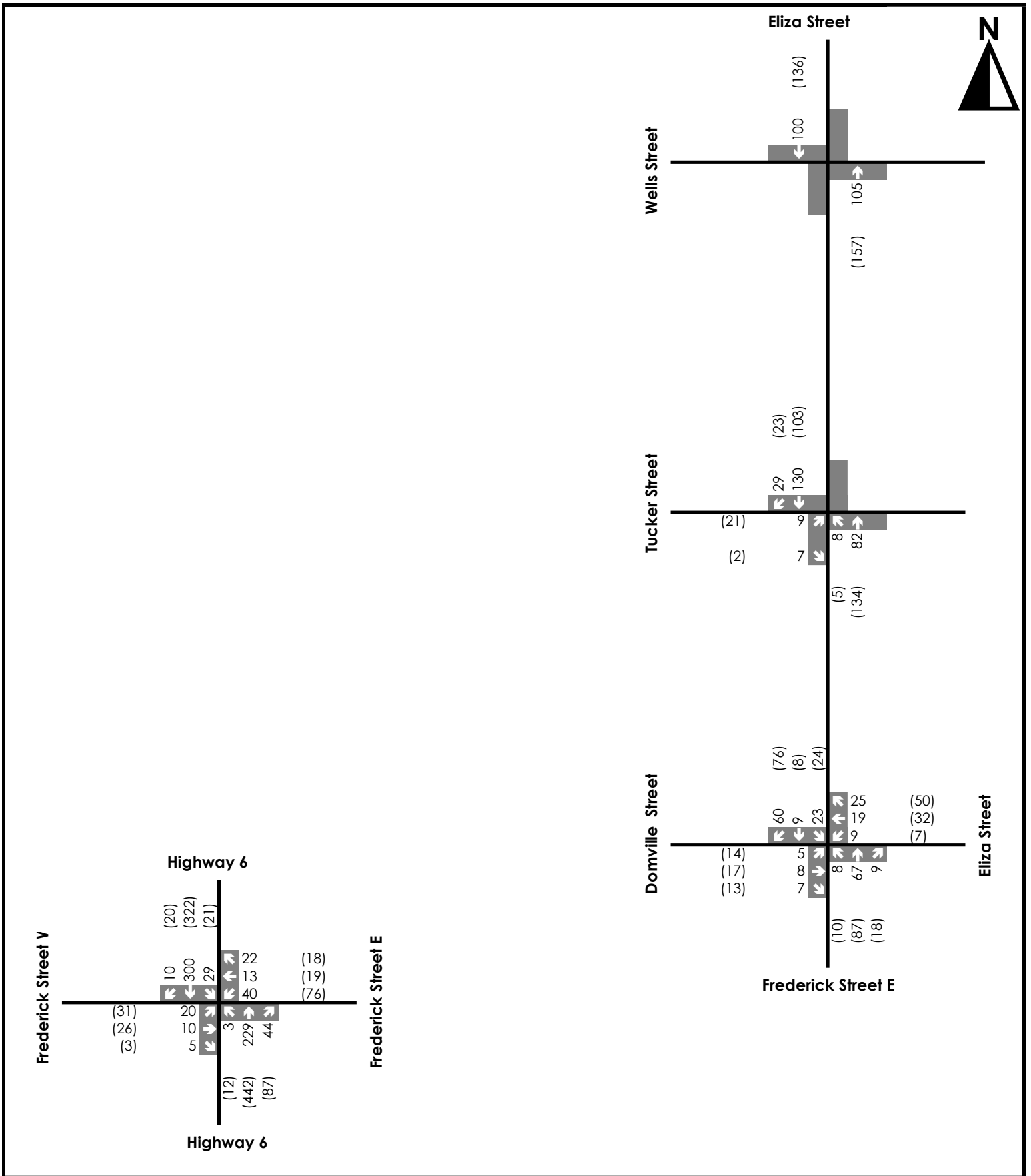
**Table 4: 2025 Existing Conditions Traffic Operations**

Intersection (Control)	Performance Metrics						
	Movement	LOS <sup>1</sup>		Control Delay (s)		v/c ratio <sup>2</sup>	
		AM	PM	AM	PM	AM	PM
<b>Highway 6 and Frederick Street (Signalized)</b>	<b>Overall</b>	<b>A</b>	<b>A</b>	<b>5.1</b>	<b>8.5</b>	<b>0.27</b>	<b>0.49</b>
	EB	B	B	11.2	14.7	0.13	0.21
	WB	B	B	11.1	18.2	0.26	0.45
	NB	A	A	3.8	7.3	0.23	0.49
	SB	A	A	4.1	6.1	0.27	0.34
<b>Frederick Street &amp; Domville Street &amp; Eliza Street (Roundabout)</b>	<b>Overall</b>	<b>A</b>	<b>A</b>	<b>2.94</b>	<b>2.82</b>	<b>0.09</b>	<b>0.09</b>
	East Leg	A	A	2.72	2.88	0.05	0.07
	North Leg	A	A	2.93	2.96	0.09	0.09
	South Leg	A	A	3.13	2.73	0.08	0.09
	West Leg	A	A	2.55	2.59	0.02	0.03
<b>Eliza Street &amp; Wells Street (Stop Controlled)</b>	<b>Overall</b>	<b>A</b>	<b>A</b>	<b>0.0</b>	<b>0.0</b>	<b>0.07</b>	<b>0.09</b>
	NB	A	A	0.0	0.0	0.00	0.00
	SB	A	A	0.0	0.0	0.07	0.09
<b>Eliza Street and Tucker Street (Stop- Controlled)</b>	<b>Overall</b>	<b>B</b>	<b>B</b>	<b>10.1</b>	<b>10.5</b>	<b>0.03</b>	<b>0.04</b>
	EBLR	B	B	10.1	10.5	0.03	0.04
	NBTL	A	A	0.8	0.3	0.01	0.00
	SBTR	-	-	0.0	0.0	0.11	0.09

Note 1: The Level of Service of a signalized intersection is based on the average control delay per vehicle (Synchro). Critical LOS is deemed to be 'E' or 'F' per Wellington County TIS guidelines.

Note 2: All v/c ratios above critical thresholds are bolded, all v/c ratios greater than 1.00 are bolded with red text. The critical v/c threshold for intersections with the County of Wellington is 0.85 for all shared/through movements and 0.90 for dedicated left or right turn movements per Wellington County TIS guidelines.

The metrics summarized above indicate that the study intersections operate at an LOS "B" or better in the weekday a.m. and p.m. peak hours. The maximum volume-to-capacity ratio of 0.49 was observed at Highway 6 and Frederick Street for the northbound movement during the weekday p.m. peak hour.



**Legend**

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

**665 Eliza Street**

**Existing Traffic Volumes**



**Figure 4**

Project No. 1000-7040  
 Date. February 2025  
 Analyst. Shaira Ahmed

### 3.0 Future Background Conditions

This section summarizes the future background conditions of the study road network and provides details relating to growth rates. As established in **Section 1.4**, this study considers the 2030 and 2035 horizon years in the future background traffic analysis, the results of which are summarized herein in **Section 3.4**.

#### 3.1 Growth Rates

For the purpose of a conservative analysis, a growth rate of 2% compounded annually was applied to all movements on the road network to forecast 2030 and 2035 future background traffic volumes.

#### 3.2 Background Developments

Two developments have been identified near the site, which may have forecasted trips travelling past the site on Eliza Street. The development details and respective traffic volume forecasts are discussed in the subsequent sections, and the forecasted volumes have been incorporated into the future background volumes for all horizon years.

**Table 5: Summary of Background Developments**

Development	Land Use & Site Statistics	Background Report/Reference
North Arthur Residential Development	<ul style="list-style-type: none"> <li>198 Detached units</li> <li>57 Attached units</li> <li>62,937 sq. ft Shopping Plaza</li> </ul>	TIS (Crozier, May 2023)
Ready-Mix Concrete Plant	<ul style="list-style-type: none"> <li>12 Employees</li> </ul>	n/a

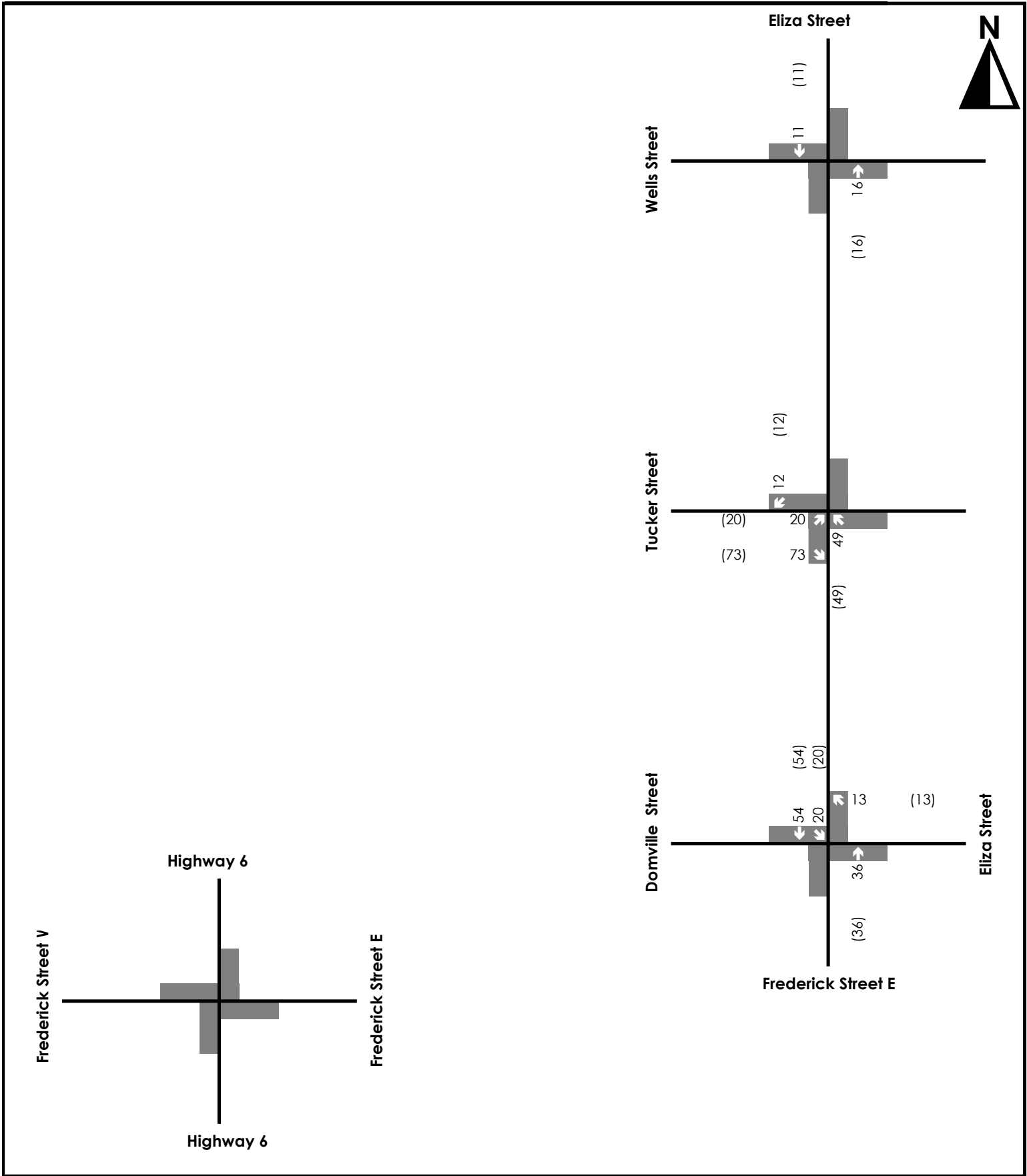
The active development application for the concrete plant was unavailable on the Township's website. The site statistics for the plant were gathered from an article written by Elora Fergus Today. Excerpts from the background developments are found in **Appendix E**. The trip generation for the concrete plant was forecasted by Crozier staff and the trips were distributed using the trip distribution outlined in **Table 10**.

**Table 6: Background Development Outstanding Trip Generation**

Land Use (Units/GFA)	Trip Type	AM			PM		
		Equation	Trips Generated		Equation	Trips Generated	
			Inbound	Outbound		Inbound	Outbound
110 – General Light Industrial (12 Employees)	Primary Trips	$T = 0.55 X - 1.25$	4	1	$T = 0.5 x - 1.12$	1	4

Trips generated by all the background developments were assigned to the boundary road network based on the distributions described in their respective reports unless started otherwise.

**Figure 5** illustrates the total assignment of the background developments.



**Legend**

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

**665 Eliza Street**

**Total Background Development Trip Assignment**



**Figure 5**

Project No. 1000-7040  
 Date. February 2025  
 Analyst. Shaira Ahmed

### 3.3 Future Roadway Improvements

#### 3.3.1 Future Macauley Street

Future Macauley Street has been scheduled to be built by 2029 according to the Town of Wellington North development charges document. This roadway will be required as a part of the proposed development to support the western block.

#### 3.3.2 Wells Street

Currently Wells Street, between Future Macauley Street and Domville Street, is closed. Wells Street will need to be built in order to facilitate access to the west side of the site via Future Macauley Street. This portion of Wells was set to be built in 2023 according to the Town of Wellington North development charges document. An updated timeline on the construction of this roadway is currently unknown.

### 3.4 Intersection Operations

**Table 5** and **Table 8** outline the 2030 and 2035 future background traffic operations, respectively, for the study intersections. Synchro 11 was used to determine intersection operations at the study intersections and ARCADY 8 was used to determine intersection operations at the roundabout **Figure 6** and **Figure 7** illustrate the 2030 and 2035 future background traffic operations, respectively. **Appendix D** contains detailed capacity analysis worksheets.

**Table 7: 2030 Future Background Conditions Traffic Operations**

Intersection (Control)	Performance Metrics						
	Movement	LOS <sup>1</sup>		Control Delay (s)		v/c ratio <sup>2</sup>	
		AM	PM	AM	PM	AM	PM
<b>Highway 6 and Frederick Street (Signalized)</b>	<b>Overall</b>	<b>A</b>	<b>A</b>	<b>6.3</b>	<b>9.3</b>	<b>0.34</b>	<b>0.53</b>
	EB	B	B	12.0	16.8	0.17	0.24
	WB	B	B	12.2	21.6	0.32	0.50
	NB	A	A	5.0	7.9	0.29	0.53
	SB	A	A	5.5	6.4	0.34	0.37
<b>Frederick Street &amp; Domville Street &amp; Eliza Street (Roundabout)</b>	<b>Overall</b>	<b>A</b>	<b>A</b>	<b>2.94</b>	<b>2.82</b>	<b>0.09</b>	<b>0.09</b>
	East Leg	A	A	2.72	2.88	0.05	0.07
	North Leg	A	A	2.93	2.96	0.09	0.09
	South Leg	A	A	3.13	2.73	0.08	0.09
	West Leg	A	A	2.55	2.59	0.02	0.03
<b>Eliza Street &amp; Wells Street (Stop Controlled)</b>	<b>Overall</b>	-	-	<b>0.0</b>	<b>0.0</b>	<b>0.08</b>	<b>0.12</b>
	NB	-	-	0.0	0.0	0.00	0.00
	SB	-	-	0.0	0.0	0.08	0.12
<b>Eliza Street and Tucker Street (Stop-Controlled)</b>	<b>Overall</b>	<b>B</b>	<b>B</b>	<b>11.2</b>	<b>11.3</b>	<b>0.19</b>	<b>0.33</b>
	EBLR	B	B	11.2	11.3	0.19	0.33
	NBTL	A	A	3.5	3.3	0.06	0.12
	SBTR	-	-	0.0	0.0	0.13	0.12

Note 1: The Level of Service of a signalized intersection is based on the average control delay per vehicle (Synchro). Critical LOS is deemed to be 'E' or 'F' per Wellington County TIS guidelines.

Note 2: All v/c ratios above critical thresholds are bolded, all v/c ratios greater than 1.00 are bolded with red text. The critical v/c threshold for intersections with the County of Wellington is 0.85 for all shared/through movements and 0.90 for dedicated left or right turn movements per Wellington County TIS guidelines.

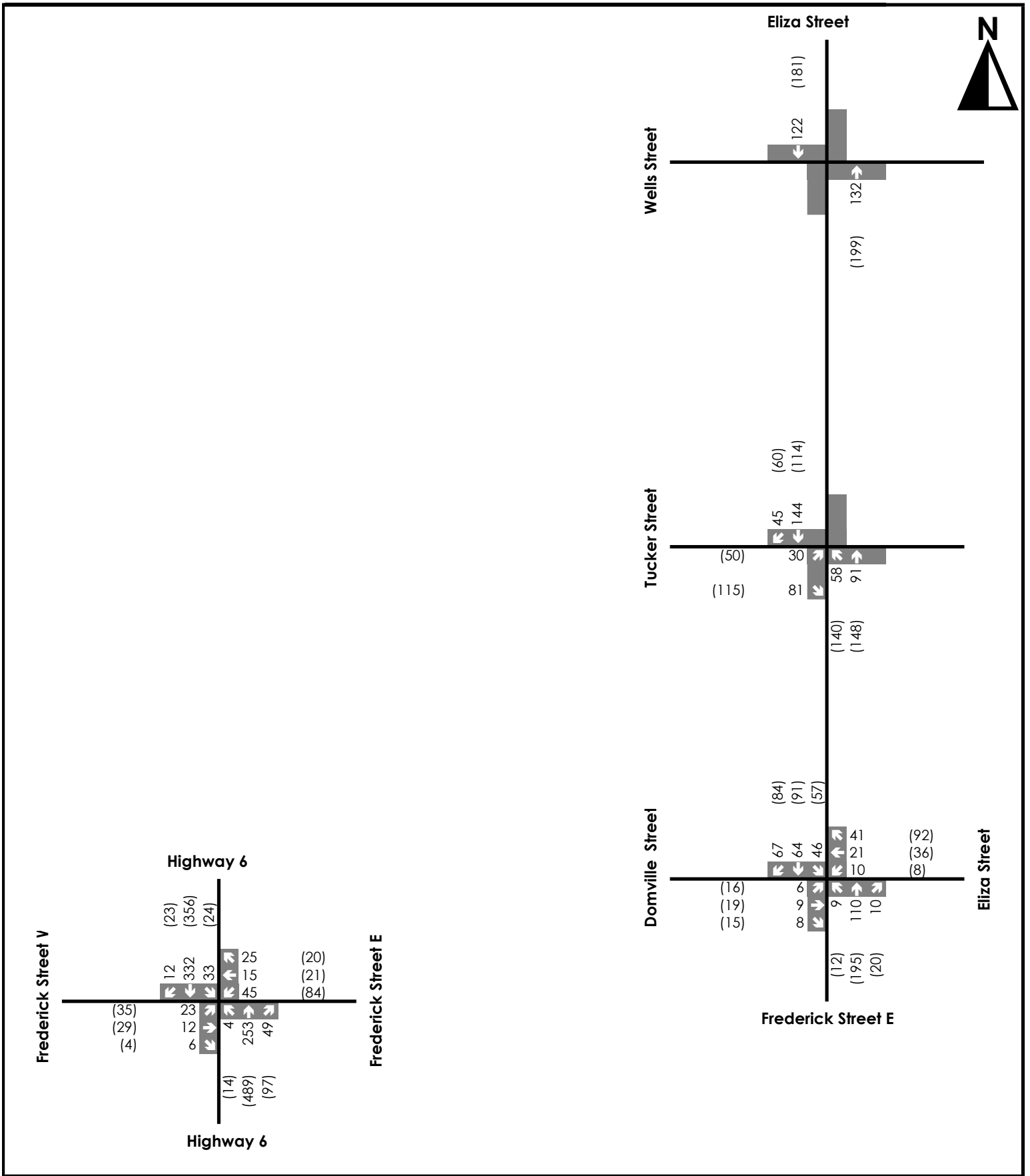
**Table 8: 2035 Future Background Conditions Traffic Operations**

Intersection (Control)	Performance Metrics						
	Movement	LOS <sup>1</sup>		Control Delay (s)		v/c ratio <sup>2</sup>	
		AM	PM	AM	PM	AM	PM
<b>Highway 6 and Frederick Street (Signalized)</b>	<b>Overall</b>	<b>A</b>	<b>A</b>	<b>6.7</b>	<b>10.4</b>	<b>0.37</b>	<b>0.57</b>
	EB	B	B	11.7	18.9	0.19	0.26
	WB	B	B	12.3	24.3	0.34	0.54
	NB	A	A	5.3	8.8	0.32	0.57
	SB	A	A	5.9	6.9	0.37	0.41
<b>Frederick Street &amp; Domville Street &amp; Eliza Street (Roundabout)</b>	<b>Overall</b>	<b>A</b>	<b>A</b>	<b>3.24</b>	<b>3.24</b>	<b>0.18</b>	<b>0.21</b>
	East Leg	A	A	2.92	3.27	0.07	0.13
	North Leg	A	A	3.28	3.43	0.18	0.21
	South Leg	A	A	3.44	3.15	0.14	0.19
	West Leg	A	A	2.62	2.67	0.03	0.04
<b>Eliza Street &amp; Wells Street (Stop Controlled)</b>	<b>Overall</b>	-	-	<b>0.0</b>	<b>0.0</b>	<b>0.09</b>	<b>0.12</b>
	NB	-	-	0.0	0.0	0.00	0.00
	SB	-	-	0.0	0.0	0.09	0.12
<b>Eliza Street and Tucker Street (Stop- Controlled)</b>	<b>Overall</b>	<b>B</b>	<b>B</b>	<b>11.5</b>	<b>14.4</b>	<b>0.20</b>	<b>0.34</b>
	EBLR	B	B	11.5	14.4	0.20	0.34
	NBTL	A	A	3.4	4.3	0.06	0.12
	SBTR	-	-	0.0	0.0	0.14	0.13

Note 1: The Level of Service of a signalized intersection is based on the average control delay per vehicle (Synchro). Critical LOS is deemed to be 'E' or 'F' per Wellington County TIS guidelines.

Note 2: All v/c ratios above critical thresholds are bolded, all v/c ratios greater than 1.00 are bolded with red text. The critical v/c threshold for intersections with the County of Wellington is 0.85 for all shared/through movements and 0.90 for dedicated left or right turn movements per Wellington County TIS guidelines.

The metrics summarized above indicate that the study intersections are expected to operate at a LOS of "B" or better during the weekday a.m. and p.m. peak hours, similar to existing conditions. The maximum volume-to-capacity ratio of 0.57 was noted at Highway 6 and Frederick Street for the northbound movement in the weekday p.m. peak hour.



**Legend**

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

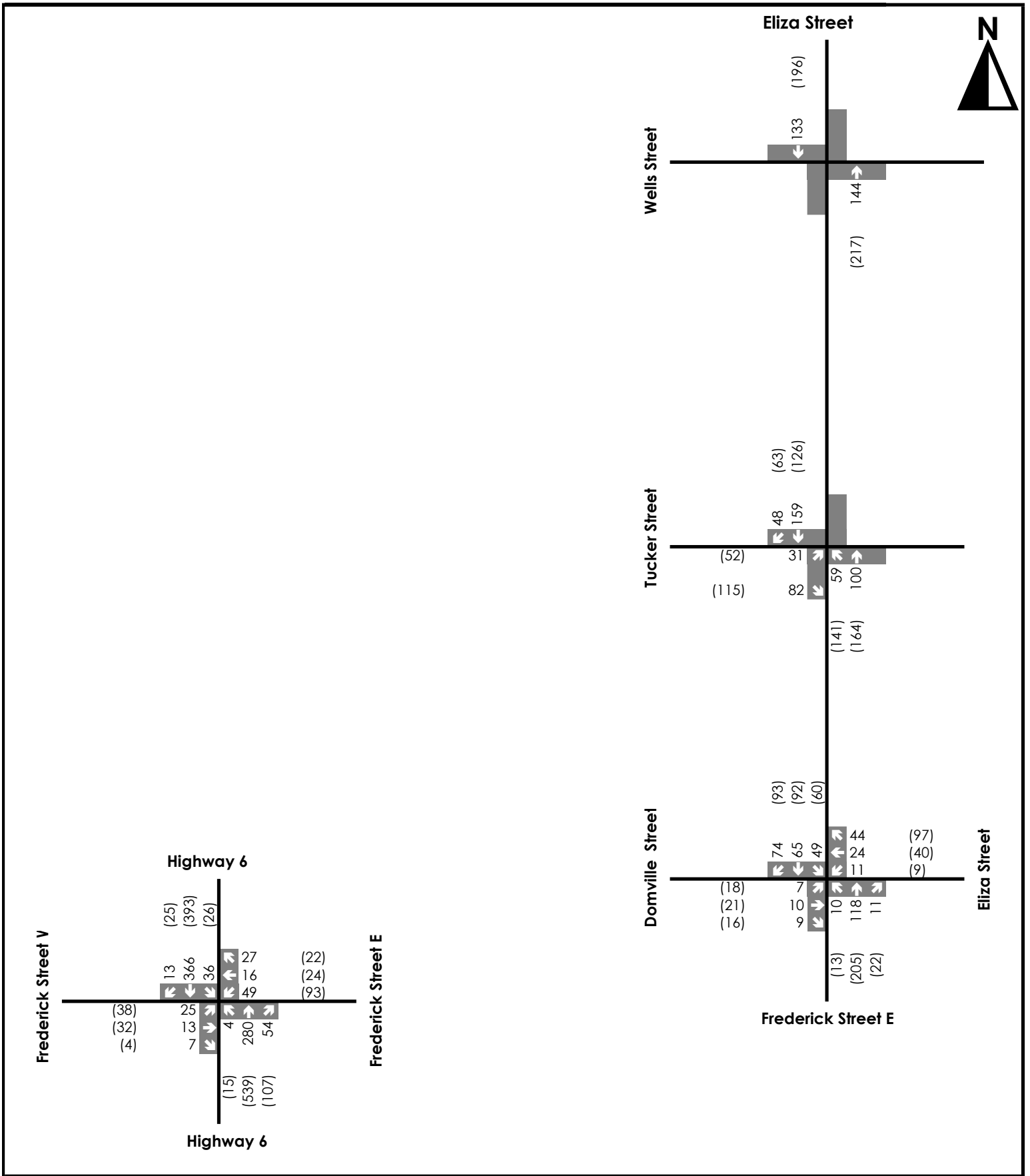
**665 Eliza Street**

**2030 Future Background Traffic Volumes**

**Figure 6**

Project No. 1000-7040  
Date: February 2025  
Analyst: Shaira Ahmed





<b>Legend</b> xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes	<b>665 Eliza Street</b>		<b>Figure 7</b>
	<b>2035 Future Background Traffic Volumes</b>		Project No. 1000-7040 Date: February 2025 Analyst: Shaira Ahmed

## 4.0 Site Generated Traffic

The proposed development will result in additional turning movements at the study intersections. Therefore, this section describes the trip forecasting methodology and results of this forecast for the development proposal.

The site generated traffic forecasting methodology for this study consists of two steps. The first step, Trip Generation, projects the number of trips that originate or are destined for the proposed development, while the second step, Trip Distribution and Assignment, assigns trips to the study road network based on the expected distribution of trips to catchment areas and expected shortest paths for trips destined for particular locations.

### 4.1 Trip Generation

As noted, the development is proposed to consist of the following:

- 504 Single-detached Units
- 113 Semi-detached Units
- 249 Townhouse Units

The trip generation of the proposed residential dwelling was forecasted using published data from the Institute of Transportation Engineers (ITE) Trip Generation Manual, 11<sup>th</sup> Edition.

The applicable fitted curve equations for Land Use Category (LUC) 210 "Single Family Detached Housing", LUC 220 "Multifamily Housing (Low-Rise)", and LUC 215 "Single Family Attached Housing" were applied to the proposed residential dwelling units.

Relevant excerpts from the ITE Trip Generation Manual, 11<sup>th</sup> Edition have been included in **Appendix F**. The forecasted trip generation of the proposed residential development is summarized in **Table 9**.

**Table 9: Trip Generation**

Land Use (Units/GFA)	Trip Type	AM			PM		
		Equation	Trips Generated		Equation	Trips Generated	
			Inbound	Outbound		Inbound	Outbound
210: Single Family Detached Housing (504 Units)	Raw Trip Generation	$\ln(T) = 0.91 \ln(X) + 0.12$	81	243	$\ln(T) = 0.95 \ln(X) + 0.27$	286	168
220: Multifamily Housing (Low-Rise) (249 Units)	Raw Trip Generation	$T = 0.31X + 22.85$	24	76	$T = 0.43X + 20.55$	80	47
215: Single Family Attached Housing (113 Units)	Raw Trip Generation	$T = 0.52X - 5.70$	13	40	$T = 0.60X - 3.93$	38	26
<b>Net Total Trips</b>			<b>118</b>	<b>359</b>		<b>404</b>	<b>242</b>

Therefore, the full buildout of the proposed development is expected to generate a total of 478 and 646 two-way trips during the weekday a.m. and p.m. peak hours, respectively.

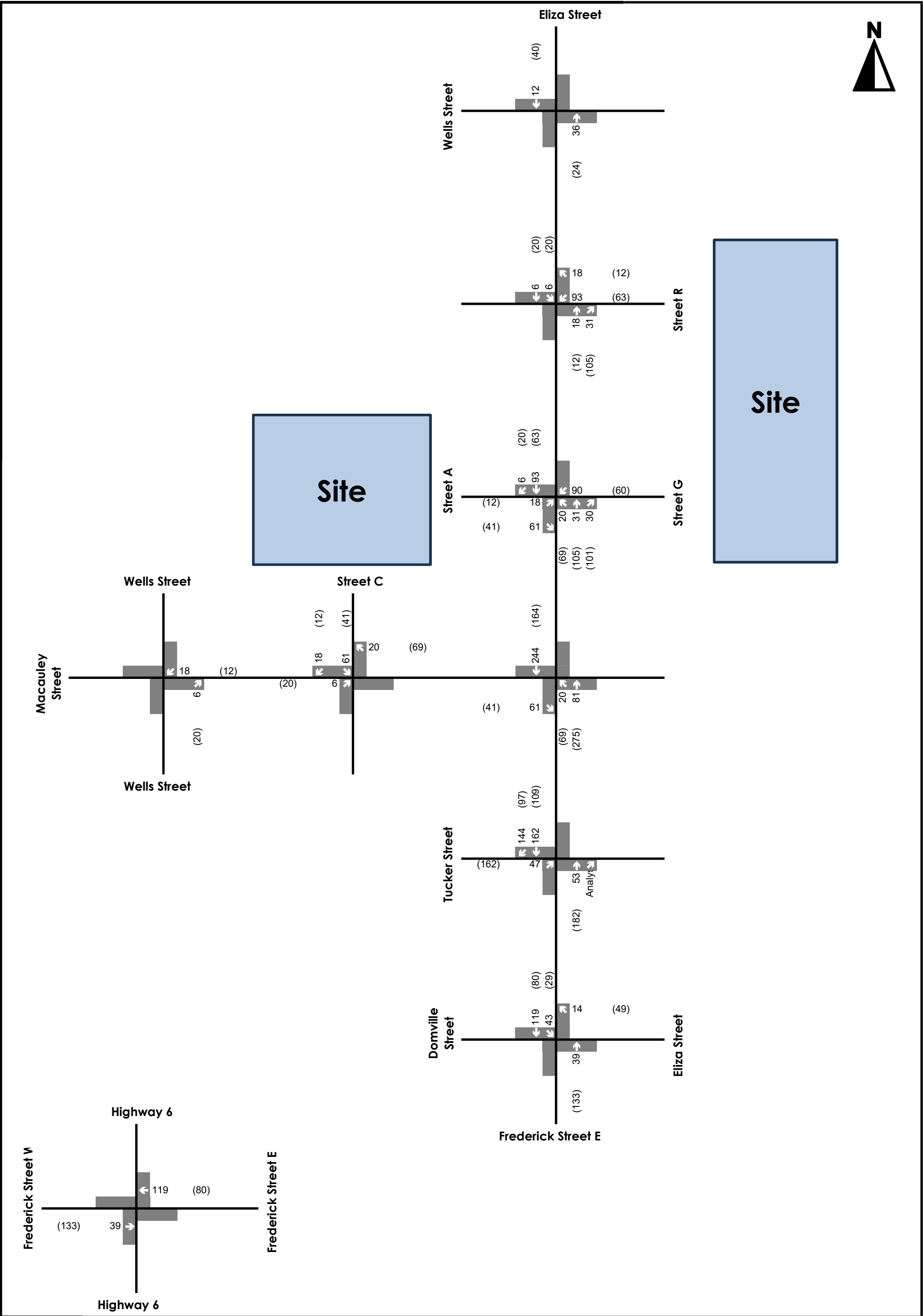
#### 4.2 Trip Distribution and Assignment

The trip distribution was determined by utilizing the trip distribution used for the Cachet development. The trips generated by the proposed development were distributed to the boundary road network based on observed travel patterns at the roundabout, and traffic data along Highway 6 and Frederick Street. A near-even split in the west and south-east traffic volumes was observed on Highway 6. Accordingly, 40% of trips generated by the proposed development were assumed to arrive and depart to the southwest via Tucker Street while 45% travel southeast via Eliza Street. The remaining 10% are expected to travel north via Eliza Street. Of the 45% travelling south on Eliza Street into the roundabout, 33% were distributed southwest on Frederick Street and 12% were distributed to the south on Eliza Street. The remaining 5% will travel to the southwest using Wells Street.

**Table 10: Trip Distribution**

Gateway	Distribution
North via Eliza Street	10%
South via Eliza Street	12%
South via Wells Street	5%
Southwest via Tucker	40%
Southeast via Frederick Street	33%

**Figure 8** outlines the trip distribution for the development. The associated primary trip assignment is illustrated in **Figure 9**.

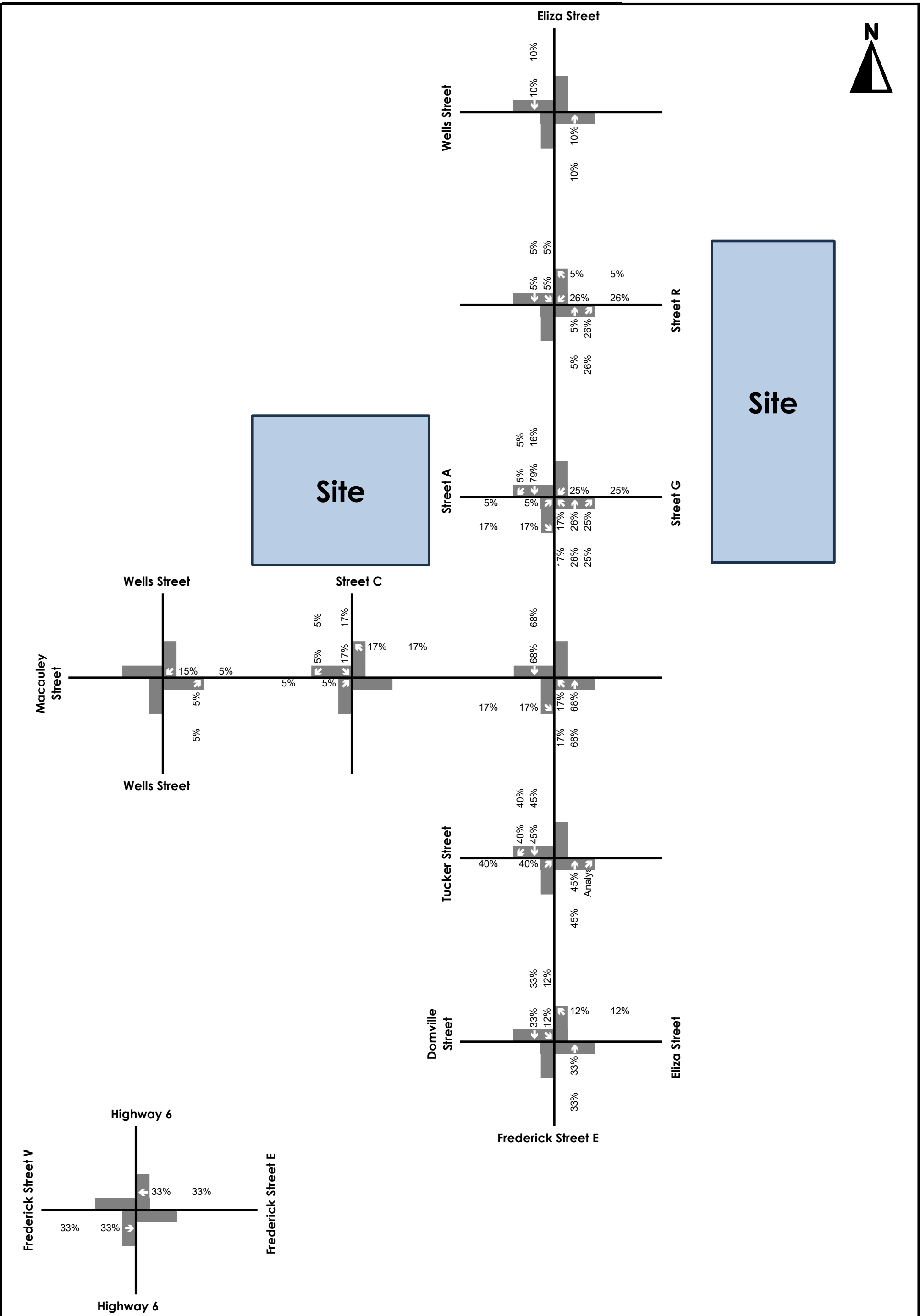


**Legend**  
 xx A.M. Peak Hour Traffic Volumes  
 (xx) P.M. Peak Hour Traffic Volumes

**665 Eliza Street**  
**Trip Distribution**



**Figure 8**  
 Project No. 1000-7040  
 Date: February 2025  
 Analyst: Shaira Ahmed



**Legend**  
 xx A.M. Peak Hour Traffic Volumes  
 (xx) P.M. Peak Hour Traffic Volumes

**665 Eliza Street**  
**Trip Assignment**



**Figure 9**  
 Project No. 1000-7040  
 Date: February 2025  
 Analyst: Shaira Ahmed

## 5.0 Future Total Conditions

This section will summarize the future total conditions of the study road network. The future total traffic volumes for the horizon years consist of the following components:

- Future background traffic volumes from the corresponding horizon year.
- Background development traffic volumes.
- Proposed development site generated traffic volumes.
- Traffic operations on future roadways.

The resulting total volumes in the horizon years 2030 and 2035 are presented in **Figure 10** and **Figure 11** respectively.

### 5.1 Intersection Operations

**Table 11** and **Table 12** outlines the 2030 and 2035 Future Total traffic operations for the study intersections, respectively. Synchro 11 was used to determine intersection operations at the study intersections and Arcady 8 was used for the roundabout.

**Appendix D** contains detailed capacity analysis worksheets.

**Table 11: 2030 Future Total Traffic Operations**

Intersection (Control)	Performance Metrics						
	Movement	LOS <sup>1</sup>		Delay (s)		v/c ratio <sup>2</sup>	
		AM	PM	AM	PM	AM	PM
Highway 6 and Frederick Street (Signalized)	<b>Overall</b>	<b>B</b>	<b>B</b>	<b>10.2</b>	<b>14.7</b>	<b>0.54</b>	<b>0.71</b>
	EB	B	C	13.5	23.3	0.24	0.53
	WB	B	C	18.2	37.8	0.54	0.71
	NB	A	B	7.0	10.8	0.34	0.59
	SB	A	A	7.8	8.2	0.39	0.42
Frederick Street & Domville Street & Eliza Street (Roundabout)	<b>Overall</b>	<b>A</b>	<b>A</b>	<b>3.57</b>	<b>3.66</b>	<b>0.28</b>	<b>0.32</b>
	East Leg	A	A	3.03	3.70	0.08	0.15
	North Leg	A	A	3.68	3.65	0.28	0.27
	South Leg	A	A	3.70	3.75	0.19	0.32
	West Leg	A	A	2.83	2.79	0.03	0.04
Eliza Street & Wells Street (Stop Controlled)	<b>Overall</b>	-	<b>A</b>	<b>0.0</b>	<b>0.0</b>	<b>0.11</b>	<b>0.15</b>
	NBLT	-	A	0.0	0.0	0.11	0.15
	SBTR	-	-	0.0	0.0	0.09	0.15
Eliza Street & Street R (Stop-Controlled)	<b>Overall</b>	<b>B</b>	<b>B</b>	<b>11.2</b>	<b>13.3</b>	<b>0.17</b>	<b>0.20</b>
	WBLR	B	B	11.2	13.3	0.17	0.16
	NBTR	-	-	0.0	0.0	0.11	0.20
	SBLT	A	A	0.4	0.9	0.01	0.02
Eliza Street & Street A/Street G (TWSC)	<b>Overall</b>	<b>C</b>	<b>C</b>	<b>16.3</b>	<b>24.6</b>	<b>0.24</b>	<b>0.27</b>
	EBLTR	B	B	10.8	12.4	0.12	0.11
	WBLTR	C	C	16.3	24.6	0.24	0.27
	NBLTR	A	A	1.0	1.7	0.02	0.06
	SBLTR	-	-	0.0	0.0	0.00	0.00
Future Macauley Street and Street C (Stop-Controlled)	<b>Overall</b>	<b>A</b>	<b>A</b>	<b>8.9</b>	<b>9.1</b>	<b>0.09</b>	<b>0.06</b>
	EBTR	A	A	7.3	7.4	0.00	0.02
	WBTL	-	-	0.0	0.0	0.01	0.04
	SBLR	A	A	8.9	9.1	0.09	0.06
Wells Street and Future Macauley Street (Stop-Controlled)	<b>Overall</b>	<b>A</b>	<b>A</b>	<b>8.6</b>	<b>8.7</b>	<b>0.02</b>	<b>0.01</b>
	WBLR	A	A	8.6	8.7	0.02	0.01
	NBTR	-	-	0.0	0.0	0.00	0.0
Eliza Street and Future Macauley Street (Stop-Controlled)	<b>Overall</b>	<b>B</b>	<b>B</b>	<b>11.2</b>	<b>10.8</b>	<b>0.10</b>	0.22
	EBLR	B	B	11.2	10.8	0.10	0.07
	NBTL	A	A	1.0	1.7	0.02	0.06
	SBTR	-	-	0.0	0.0	0.23	0.22
Eliza Street and Tucker Street	<b>Overall</b>	<b>C</b>	<b>F</b>	<b>17.2</b>	<b>133.7</b>	<b>0.37</b>	<b>1.15</b>
	EBLR	C	<b>F</b>	17.2	133.7	0.37	<b>1.15</b>
	NBTL	A	A	2.9	3.6	0.06	0.13
	SBTR	-	-	0.0	0.0	0.32	0.24

Note 1: The Level of Service of a signalized intersection is based on the average control delay per vehicle (Synchro). Critical LOS is deemed to be 'E' or 'F' per Wellington County TIS guidelines.

Note 2: All v/c ratios above critical thresholds are bolded, all v/c ratios greater than 1.00 are bolded with red text. The critical v/c threshold for intersections with the County of Wellington is 0.85 for all shared/through movements and 0.90 for dedicated left or right turn movements per Wellington County TIS guidelines.

**Table 12: 2035 Future Total Traffic Operations**

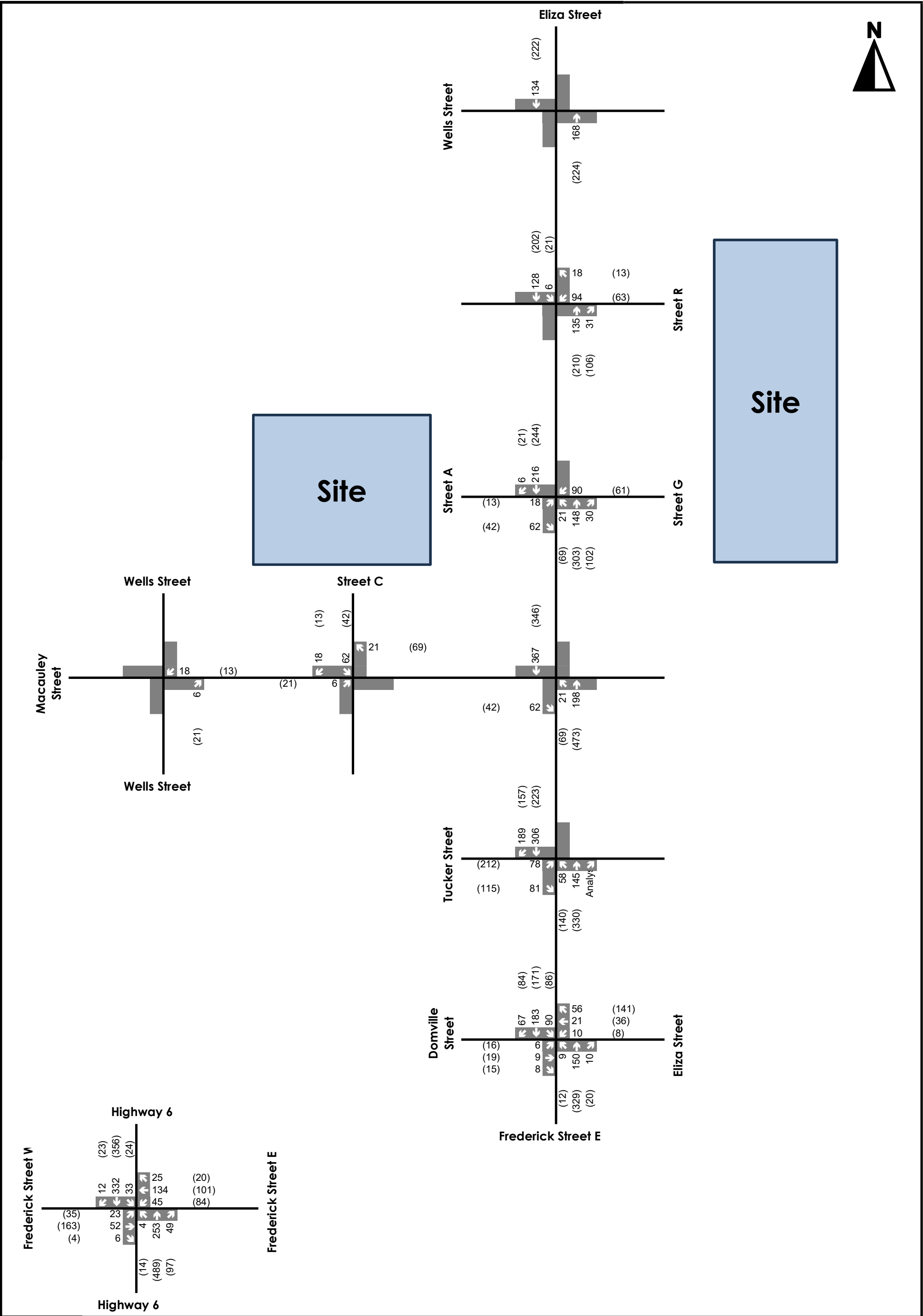
Intersection (Control)	Performance Metrics						
	Movement	LOS <sup>1</sup>		Delay (s)		v/c ratio <sup>2</sup>	
		AM	PM	AM	PM	AM	PM
Highway 6 and Frederick Street (Signalized)	<b>Overall</b>	<b>B</b>	<b>B</b>	<b>11.6</b>	<b>18.1</b>	<b>0.60</b>	<b>0.83</b>
	EB	B	C	15.5	29.0	0.26	0.57
	WB	C	D	22.5	49.6	0.60	0.83
	NB	A	B	7.5	10.8	0.39	0.62
	SB	A	A	8.5	8.3	0.45	0.44
Frederick Street & Domville Street & Eliza Street (Roundabout)	<b>Overall</b>	<b>A</b>	<b>A</b>	<b>4.51</b>	<b>3.73</b>	<b>0.43</b>	<b>0.33</b>
	East Leg	A	A	3.46	3.79	0.09	0.16
	North Leg	A	A	4.48	3.72	0.43	0.28
	South Leg	A	A	4.80	3.83	0.40	0.33
	West Leg	A	A	3.47	2.81	0.03	0.05
Eliza Street & Wells Street (Stop Controlled)	<b>Overall</b>	-	<b>A</b>	<b>0.0</b>	<b>0.0</b>	<b>0.12</b>	<b>0.16</b>
	NBLT	-	A	0.0	0.0	0.12	0.16
	SBTR	-	-	0.0	0.0	0.10	0.16
Eliza Street & Street R (Stop-Controlled)	<b>Overall</b>	<b>B</b>	<b>B</b>	<b>11.4</b>	<b>13.7</b>	<b>0.18</b>	<b>0.17</b>
	WBLR	B	B	11.4	13.7	0.18	0.17
	NBTR	-	-	0.0	0.0	0.11	0.21
	SBLT	A	A	0.4	0.9	0.01	0.02
Eliza Street & Street A/Street G (TWSC)	<b>Overall</b>	<b>C</b>	<b>D</b>	<b>16.3</b>	<b>26.2</b>	<b>0.24</b>	<b>0.28</b>
	EBLTR	B	B	11.0	12.7	0.13	0.11
	WBLTR	C	D	16.9	26.2	0.24	0.28
	NBLTR	A	A	0.9	1.7	0.02	0.06
	SBLTR	-	-	0.0	0.0	0.00	0.00
Future Macauley Street and Street C (Stop-Controlled)	<b>Overall</b>	<b>A</b>	<b>A</b>	<b>8.9</b>	<b>9.1</b>	<b>0.09</b>	<b>0.06</b>
	EBTR	A	A	7.3	7.4	0.00	0.02
	WBTL	-	-	0.0	0.0	0.01	0.04
	SBLR	A	A	8.9	9.1	0.09	0.06
Wells Street and Future Macauley Street (Stop-Controlled)	<b>Overall</b>	<b>A</b>	<b>A</b>	<b>8.6</b>	<b>8.7</b>	<b>0.02</b>	<b>0.01</b>
	WBLR	A	A	8.6	8.7	0.02	0.01
	NBTR	-	-	0.0	0.0	0.00	0.0
Eliza Street and Future Macauley Street (Stop-Controlled)	<b>Overall</b>	<b>B</b>	<b>B</b>	<b>11.3</b>	<b>10.9</b>	<b>0.10</b>	<b>0.23</b>
	EBLR	B	B	11.3	10.9	0.10	0.07
	NBTL	A	A	0.9	1.7	0.02	0.06
	SBTR	-	-	0.0	0.0	0.24	0.23
Eliza Street and Tucker Street	<b>Overall</b>	<b>C</b>	<b>F</b>	<b>18.0</b>	<b>159.3</b>	<b>0.39</b>	<b>1.21</b>
	EBLR	C	<b>F</b>	18.0	159.3	0.39	<b>1.21</b>
	NBTL	A	A	2.9	3.6	0.06	0.14
	SBTR	-	-	0.0	0.0	0.33	0.25

Note 1: The Level of Service of a signalized intersection is based on the average control delay per vehicle (Synchro). Critical LOS is deemed to be 'E' or 'F' per Wellington County TIS guidelines.

Note 2: All v/c ratios above critical thresholds are bolded, all v/c ratios greater than 1.00 are bolded with red text. The critical v/c threshold for intersections with the County of Wellington is 0.85 for all shared/through movements and 0.90 for dedicated left or right turn movements per Wellington County TIS guidelines.

All of the study intersections are anticipated to continue operating with acceptable levels of service under 2035 future total traffic volume conditions. The study intersections are expected to operate at an LOS "C" or better in the weekday a.m. and "D" or better during the p.m. peak hours.

The Eliza Street and Tucker Street intersection experience capacity constraints during the p.m. peak period in the eastbound movement. This is attributed to the large number of vehicles attempting to make a left turn onto Eliza Street. Since this intersection is stop controlled along the minor approach (Tucker Street), eastbound vehicles have to wait longer to proceed through the intersection. Traffic signals and left turn lane warrants have been conducted to assess alternative mitigation measures.

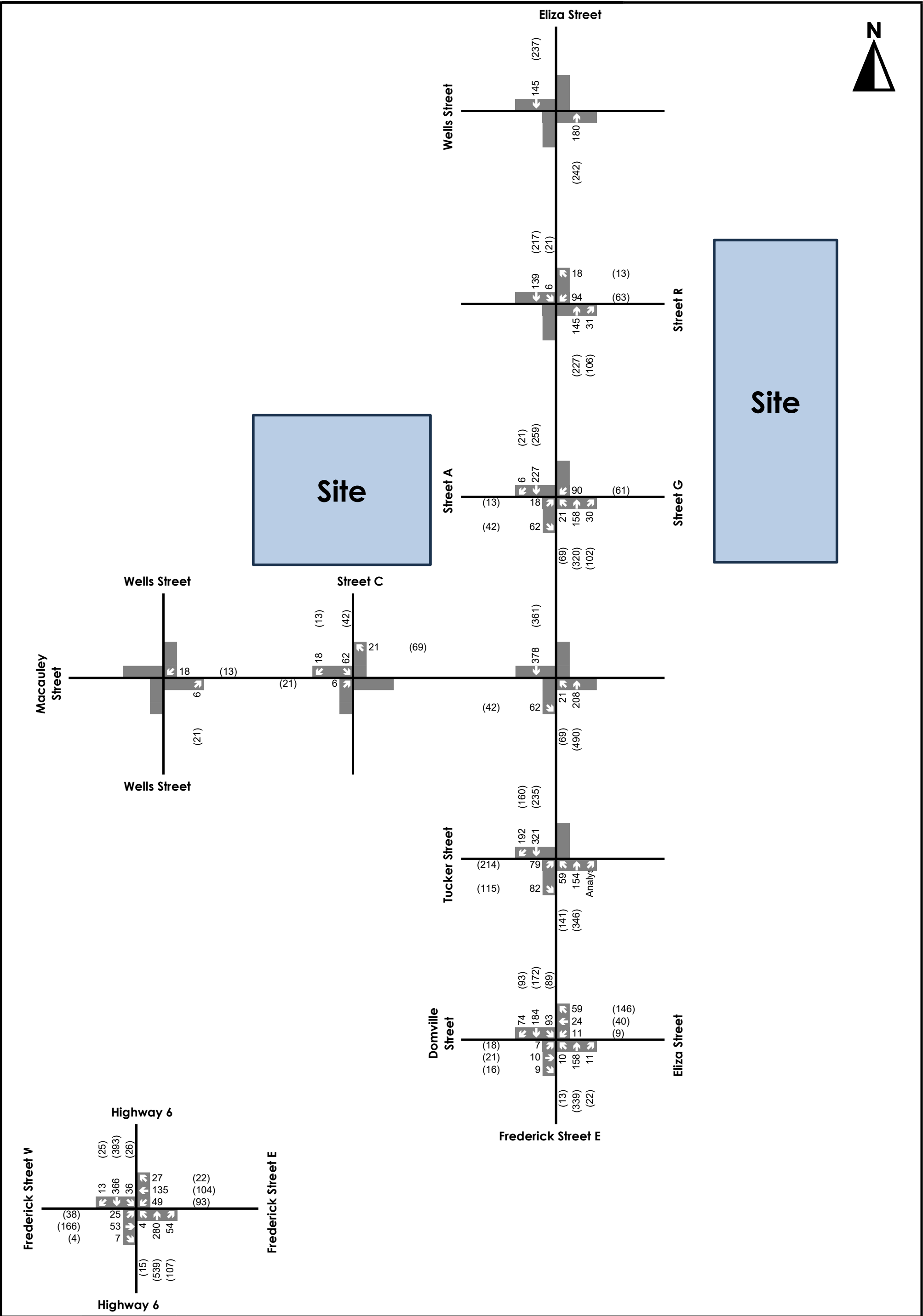


**Legend**  
 xx A.M. Peak Hour Traffic Volumes  
 (xx) P.M. Peak Hour Traffic Volumes

**665 Eliza Street**  
**2030 Future Total Volumes**



**Figure 10**  
 Project No. 1000-7040  
 Date: February 2025  
 Analyst: Shaira Ahmed



**Legend**

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

**665 Eliza Street**

**2035 Future Total Volumes**



**Figure 11**

Project No. 1000-7040  
Date: February 2025  
Analyst: Shaira Ahmed

## 5.2 Signal Warrant

Signal warrants were conducted for the intersection of Eliza Street and Street A/Street G and Eliza Street and Tucker Street. The analysis followed the procedures specified in Chapter 4 of the "Ontario Traffic Manual – Book 12", March 2012. Justifications 1 (Minimum Vehicular Volume), 2 (Delay to Cross Traffic), 3 (Combination of Justifications 1 and 2), 4 (4-Hour Volume), and 7 (Projected Volumes) were selected as the most appropriate methods to assess the study intersections.

The average hour volume was determined using the following formula from OTM Book 12:

$$AHV = (amPHV + pmPHV) / 4$$

Where;

*AHV* = average hour volume

*PHV* = peak hour volume

An "rural" operating environment was applied to the signal warrant analysis to reflect the rural corridor.

From the signal warrant analysis, traffic signals are not warranted at the study intersection of Eliza Street and Street A/Street G or Eliza Street and Tucker Street under 2035 Future Total conditions.

**Appendix J** contains the signal warrant sheets.

## 5.3 Left Turn Lane Warrant Analysis

Auxiliary left-turn lane warrant analysis was conducted at the following intersections:

- Eliza Street and Future Macauley Street
- Eliza Street and Tucker Street

The analysis was conducted using the MTO's Design Supplement for TAC GDGCR. The results of the left-turn lane warrant analysis are found in **Table 13**, which summarize the approach for which a left turn lane warrant was conducted, the corresponding horizon year, and the length of the storage lane.

**Table 13: Left-Turn Lane Warrant Results**

Intersection	Approach	Horizon Year Warranted	Warranted Storage Lane Length (m)
Eliza Street and Tucker Street	Northbound	2035	30
	Eastbound	2035	30
Eliza Street and Macauley Street	Northbound	2035	30

A left-turn lane was only warranted for Eliza Street and Wells Street. While a left-turn lane is warranted, it isn't necessary as the intersection is projected to operate efficiently without it. **Appendix J** contains the left turn lane warrant analysis.

## 6.0 Signalizing Eliza Street and Tucker Street

Although a traffic signal was not warranted, implementing one at the intersection of Eliza Street and Tucker Street improves intersection operations. The following table summarizes the traffic operations after implementing a traffic signal.

**Table 14: 2035 Future Total Traffic Operations – Eliza Street and Tucker Street**

Intersection (Control)	Performance Metrics						
	Movement	LOS		Delay (s)		v/c ratio	
		AM	PM	AM	PM	AM	PM
Eliza Street and Tucker Street (Signalized)	Overall	A	B	6.9	14.9	0.46	0.75
	EBLR	B	C	12.1	26.9	0.46	0.75
	NBTL	A	B	5.3	13.1	0.23	0.63
	SBTR	A	A	6.0	7.7	0.46	0.40

After signalization of this intersection, the intersection is projected to operate at a LOS “A” and “B” during the a.m. and p.m. peak periods. Additionally, a max v/c ratio of 0.75 is observed. The County can warrant the implementation of a signal in the future and should continue monitoring this intersection.

## 7.0 Site Access Safety Review

The development proposal includes multiple site accesses at Eliza Street and Wells Street that will provide transportation servicing to and from the site. This section evaluates the suitability of the site accesses from a transportation safety perspective and recommends mitigation measures, if warranted. The safety review of the accesses includes an assessment of whether turning maneuvers can be made safely at the site accesses without issues related to sight lines, intersection spacing, access spacing, or clear throat length.

### 7.1 Intersection Sight Distance

Section 9.9 of the Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads (GDGCR) (June 2017) provides intersection sight distance for different intersection control types. The calculated and design sight distances are further summarized in TAC GDGCR Tables 9.9.4, 9.9.6 and 9.9.12 for vehicles turning left from stop, turning right from stop, or turning left from the major road, respectively.

Case B1 (Left Turn from the Minor Road) and Case B2 (Right Turn) were used to evaluate sight line adequacy for the site accesses. The passenger design vehicle was used for the assessment.

**Table 15** outlines the sight distance requirements and compares them to the available sight distance, which was measured using Google Maps. **Appendix G** contains relevant TAC GDGCR excerpts.

**Table 15: Intersection Sight Distance Assessment**

Eliza Street and Street R Site Access Posted Speed = 80 km/h Design Speed = 100 km/h		
Formula	ISD = 0.278 * V <sub>major</sub> * t <sub>g</sub>	
Feature	Case B1 – Left Turn	Case B2 – Right Turn
Time Gap <sup>1</sup>	Left Turn: 7.5s + 0.5s = <b>8.0s</b>	Right Turn: 6.5s + 0.0s = <b>6.5s</b>
Required Sight Distance	210m (looking north)	185m (looking south)
Available Sight Distance	>210m (looking north)	>185m (looking south)
Eliza Street and Street A/Street G Posted Speed = 80 km/h Design Speed = 100 km/h		
Formula (TAC)	ISD = 0.278 * V <sub>major</sub> * t <sub>g</sub>	
Feature	Case B1 – Left Turn	Case B2 – Right Turn
Time Gap <sup>1</sup>	Left Turn: 7.5s + 0.5s = <b>8.0s</b>	Right Turn: 6.5s + 0.0s = <b>6.5s</b>
Required Sight Distance	210m (looking south)	185m (looking north)
Available Sight Distance	>210m (looking south)	>185m (looking north)
Future Macauley Street and Street C Assumed Speed = 50 km/h Design Speed = 70 km/h		
Formula	ISD = 0.278 * V <sub>major</sub> * t <sub>g</sub>	
Feature	Case B1 – Left Turn	Case B2 – Right Turn
Time Gap <sup>1</sup>	Left Turn: 7.5s + 0.5s = <b>8.0s</b>	Right Turn: 6.5s + 0.0s = <b>6.5s</b>
Required Sight Distance	150m (looking east)	130m (looking west)
Available Sight Distance	n/a	n/a

Note 1: To calculate Time Gap, base time gap is required. This default parameter is based on particular turning cases (such as Case B1 and Case B2) and particular design vehicles. Roadways with more than one lane per direction require additions of 0.5s and 0.7s per addition lane for passenger car and truck design vehicles, respectively. Refer to Section 9.9 of TAC-GDGCR for additional details.

The available sight distance of the site accesses exceeds the minimum sight distance requirements. Accordingly, the proposed site accesses can be supported from an intersection sight distance perspective. The available sight distance for the access along Future Macauley Street has not been assessed as the construction of Future Macauley Street is ongoing.

## 7.2 Stopping Sight Distance

Eliza Street has a posted speed limit of 80 km/h. Accordingly, a design speed of 100 km/h was selected, reflecting the convention of a 20 km/h increase to the posted speed limit for higher speed roads. Eliza Street is straight and relatively flat adjacent to the site.

Future Macauley Street has an assumed speed limit of 50 km/h. Accordingly, a design speed of 70 km/h was selected, reflecting the convention of a 20 km/h increase to the posted speed limit due to the location and low occupancy of the roadway.

For level roadways, the stopping sight distance requirements are tabulated in TAC GDGCR Table 2.5.2. The requirements are calculated based on the information in **Table 16**.

**Table 16: Stopping Sight Distance Assessment**

Intersection	Eliza Street and Street R Posted Speed = 80 km/h Design Speed = 100 km/h	Eliza Street and Street A/Street G Posted Speed = 80 km/h Design Speed = 100 km/h	Future Macauley Street and Street C Assumed Speed = 50 km/h Design Speed = 70 km/h
<b>Formula (TAC GDGCR 2.5.2)</b>	<b>SSD = 0.278 * V * t + 0.039 * (V<sup>2</sup>/a)</b>		<b>SSD = 0.278 * V * t +</b>
Design Speed (V)	100 km/h		70 km/h
Brake Reaction Time (t)	2.5 s		2.5 s
Deceleration Rate (a)	3.4 m/s <sup>2</sup>		3.4 m/s <sup>2</sup>
Required Stopping Sight	185 m		105 m
Available Sight Distance	300+ m	300+ m	n/a

Clear visibility in excess of 300 metres is available to the north and south of the proposed site access along Eliza Street. There is sufficient stopping sight distance for vehicles approaching the site access. **Appendix G** contains relevant TAC GDGCR excerpts.

### 7.3 Access Spacing and Corner Clearance

Access spacing is the distance between existing or possible future accesses. The required provided spacing per Figure 8.9.2 in TAC GDGCR is 3.0 metres. The distance between the accesses for the development along Eliza Street and Future Macauley Street is greater than 3.0 metres, satisfying the minimum spacing requirement.

Corner clearance is the distance between the site accesses and nearby intersections. The required spacing per Figure 8.8.2 in TAC GDGCR are summarized in **Table 13**.

**Table 17: Corner Clearance**

Feature	Eliza Street and Street R to Wells Street	Eliza Street and Street A/Street G to Tucker Street	Future Macauley Street to Eliza Street	Eliza Street and Street R to Eliza Street and Street A/Street G
Minimum Spacing Requirement	15 m	15 m	15 m	15 m
Available Spacing	100 m	435 m	324 m	327 m
<b>Minimum Spacing Satisfied?</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>

The spacing between the accesses and the crossroads satisfies the requirements outlined in TAC.

## 8.0 Vehicle Parking Requirements

The following section reviews the parking requirements for the proposed development using the Township of Wellington North Zoning By-Law No. 66-01.

**Appendix H** contains relevant Zoning By-Law No. 001-2021 excerpts.

**Table 18: Township of Welling County North Zoning By-Law Requirements**

Land Use	Units	Parking Rate	Total Parking Required
Single-detached	504	1 space per unit	504
Semi-detached	113		113
Townhouse	249		249

The development is required to provide a total of 866 parking spaces to follow the zoning By-Law.

## 9.0 Conclusion

This study has assessed the transportation impacts of the proposed development at 665 Eliza Street in the Township of Wellington North. The existing conditions, the future conditions, and the potential net impacts of the development proposal on the study road network have been evaluated.

The analysis contained within this study has resulted in the following key findings:

- Under the 2025 existing conditions scenario:
  - All study intersections are operating as an LOS of “B” or better during the a.m. and p.m. peak periods.
- Under the 2030 and 2035 future background conditions:
  - The study intersections are expected to continue to operate at an LOS of “B” or better during the a.m. and p.m. peak periods.
- The proposed residential development is projected to generate a total of 478 and 646 two-way auto trips during the weekday a.m. and p.m. peak hours, respectively.
- Under the ultimate horizon 2035 future total conditions, under buildout of the proposed development:
  - Traffic signals were found to be not warranted at the intersection of Eliza Street and Street A/Street G or Eliza Street and Tucker Street.
  - A 30-meter left turn lane was warranted at the intersections Eliza Street and Tucker Street and Eliza Street and Future Macauley Street under the 2035 Future Total Conditions.
  - Compared to future background conditions, The study intersections are expected to

operate at an LOS "C" in the weekday a.m. and "D" or better in the p.m. peak hour. The intersection of Eliza Street and Tucker Street operates at an LOS of "F" in the p.m. peak hour. This is attributed to the large volume of eastbound left-turning vehicles. After implanting a traffic signal at this intersection, it operates acceptably at an LOS of "A" and "B" in the a.m. and p.m. peak hours. The county can warrant the implantation of this signal in the future.

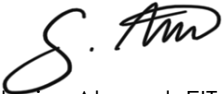
- Analysis of site access safety components associated with the proposed development indicate the following:
  - The available sight distance at the proposed site connections exceeds the minimum sight distance requirements set out in the TAC GDGCR.
  - The proposed site access spacing exceeds recommended minimum intersection spacing guidelines set out in the Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads (GDGCR), June 2017.
- The Site will be required to provide 866 vehicle parking spaces to be in compliance with the zoning By-Law.

The analysis undertaken herein was prepared using the most recent Concept Plan. Any minor changes to the Plan will not materially affect the conclusions contained within this report.

In conclusion, the proposed residential development can be supported from a traffic operations and safety perspective.

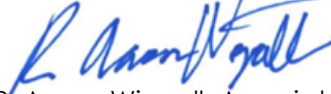
Respectfully submitted by,

**C.F. CROZIER & ASSOCIATES INC.**



Shaira Ahmed, EIT  
Engineering Intern, Transportation

**C.F. CROZIER & ASSOCIATES INC.**



R. Aaron Wignall, Associate  
Senior Project Manager, Transportation

**C.F. CROZIER & ASSOCIATES INC.**



Ian Lindley, P.Eng. M.A.Sc.  
Project Engineer, Transportation

SA.IL/

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# APPENDIX A

## Terms of Reference Correspondence



**WELLINGTON NORTH**  
SEMPER PORRO

August 23, 2024

The Biglieri Group Inc.  
21 King St, Suite 1502  
Hamilton, ON L8P 4W7

Attention: Rachelle Larocque

RE: Pre Consultation Meeting June 26, 2024  
Tribute/Sorbara Arthur Holdings Inc.  
Vacant lands on Eliza Street and 665 Eliza Street, Arthur

---

Ms. Larocque,

Thank you for meeting with Township and County Staff on June 26, 2024, as we outlined at that time, the filing of any development application is premature until it can be determined if municipal services can be reasonably provided for the lands. Furthermore, as identified through the County of Wellington's Official Plan Review and the Township's Growth Management Strategy there is presently more land within the urban areas of Arthur and Mount Forest than is needed for residential development, based on projected growth that was recently approved by the Province (OPA 120).

The further development of any designated future development lands should be directed by a comprehensive planning exercise which considers community design, transportation, parks and trails, servicing, stormwater management, housing types, commercial needs, and other matters. It is anticipated that the Township will undertake a secondary planning exercise to guide the development of the future development lands once servicing has been rationalized and the Township and County are satisfied that there is a need for additional residential lands.

The Township has considered next steps related to this development area. A significant concern/constraint will be sewage treatment capacity at the existing Arthur Wastewater Treatment Plant (WWTP). Phase 2 of WWTP expansion is design and tender ready however the Township currently does not have the funds to initiate this next phase of construction. The additional capacity resulting from this is not significant (i.e. ~400 ERU) when compared to the developments being proposed. As such, a further expansion of the wastewater treatment system within Arthur will be required to support this and other future developments. To this end, the Township is proposing a Class EA project to

investigate a further expansion of the wastewater treatment system. This will be a Township project that will be included in the next development charge background study and by-law. Updates regarding this project will be provided as available. We are open to meeting again in the future once more information is available about our future servicing strategy.

Sincerely;

A handwritten signature in blue ink that reads "Brooke Lambert". The signature is fluid and cursive, with the first name "Brooke" and last name "Lambert" clearly legible.

Brooke Lambert, MAES, MCIP, RPP  
Chief Administrative Officer

cc. Wellington County Planning and Development Department  
Triton Engineering Services Limited



Building a safe, sustainable, welcoming community.



September 6, 2024

The Biglieri Group Inc.  
21 King St, Suite 1502  
Hamilton, ON L8P 4W7

Attention: Rachelle Larocque

RE: Tribute/Sorbara Arthur Holdings Inc.,  
Vacant lands on Eliza Street and 665 Eliza Street, Arthur

---

A request to review and comment on Terms of Reference for a Transportation Impact Study was submitted to the Township by Sharia Ahmed from Crozier. As stated in the recent Township letter dated August 23, 2024, filing of this development application is premature. Furthermore, the Township will not be commenting on Terms of Reference until a conceptual design including street layout has been developed, consulted and approved by the Township and County.

All future communication and request is to be directed to our Development Clerk at [tpringle@wellington-north.com](mailto:tpringle@wellington-north.com) to ensure correct departments are circulated for review and comments.

For further information or comments please do not hesitate to contact us.

Sincerely,

Tammy Stevenson, C.E.T.  
Senior Project Manager

cc. Darren Jones, C.B.O., Township of Wellington North  
Pasquale Costanzo, Technical Services Supervisor, County of Wellington  
Shaira Ahmed, Crozier

Stronger together since 1999



7490 Sideroad 7 W, PO Box 125, Kenilworth, ON N0G 2E0

[www.wellington-north.com](http://www.wellington-north.com)



519-848-3620

# APPENDIX B

## Transportation Data



Turning Movement Count (1 . ELIZA STREET & WELLS STREET)

Start Time	N Approach ELIZA STREET						E Approach WELLS STREET						S Approach ELIZA STREET						W Approach WELLS STREET						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	18	0	0	0	18	0	0	0	0	0	0	0	15	0	0	0	15	0	0	0	0	0	0	33	
07:15:00	0	22	0	0	0	22	0	0	0	0	0	0	0	17	0	0	0	17	0	0	0	0	0	0	39	
07:30:00	0	25	0	0	0	25	0	0	0	0	0	0	0	10	0	0	0	10	0	0	0	0	0	0	35	
07:45:00	0	26	0	0	0	26	0	0	0	0	0	0	0	26	0	0	0	26	0	0	0	0	0	0	52	159
08:00:00	0	14	0	0	0	14	0	0	0	0	0	0	0	22	0	0	0	22	0	0	0	0	0	0	36	162
08:15:00	0	27	0	0	0	27	0	0	0	0	0	0	0	31	0	0	0	31	0	0	0	0	0	0	58	181
08:30:00	0	25	0	0	0	25	0	0	0	0	0	0	0	28	0	0	0	28	0	0	0	0	0	0	53	199
08:45:00	0	32	0	0	0	32	0	0	0	0	0	0	0	21	0	0	0	21	0	0	0	0	0	0	53	200
***BREAK***																										
16:00:00	0	29	0	0	0	29	0	0	0	0	0	0	0	30	0	0	0	30	0	0	0	0	0	0	59	
16:15:00	0	22	0	0	0	22	0	0	0	0	0	0	0	39	0	0	0	39	0	0	0	0	0	0	61	
16:30:00	0	27	0	0	0	27	0	0	0	0	0	0	0	43	0	0	0	43	0	0	0	0	0	0	70	
16:45:00	0	35	0	0	0	35	0	0	0	0	0	0	0	34	0	0	0	34	0	0	0	0	0	0	69	259
17:00:00	0	29	0	0	0	29	0	0	0	0	0	0	0	42	0	0	0	42	0	0	0	0	0	0	71	271
17:15:00	0	36	0	0	0	36	0	0	0	0	0	0	0	30	0	0	0	30	0	0	0	0	0	0	66	276
17:30:00	0	33	0	0	0	33	0	0	0	0	0	0	0	47	0	0	0	47	0	0	0	0	0	0	80	286
17:45:00	0	32	0	0	0	32	0	0	0	0	0	0	0	32	0	0	0	32	0	0	0	0	0	0	64	281
<b>Grand Total</b>	0	432	0	0	0	432	0	0	0	0	0	0	0	467	0	0	0	467	0	0	0	0	0	0	899	-
<b>Approach%</b>	0%	100%	0%	0%		-	0%	0%	0%	0%		-	0%	100%	0%	0%		-	0%	0%	0%	0%		-	-	-
<b>Totals %</b>	0%	48.1%	0%	0%		48.1%	0%	0%	0%	0%		0%	0%	51.9%	0%	0%		51.9%	0%	0%	0%	0%		0%	-	-
<b>Heavy</b>	0	30	0	0		-	0	0	0	0		-	0	37	0	0		-	0	0	0	0		-	-	-
<b>Heavy %</b>	0%	6.9%	0%	0%		-	0%	0%	0%	0%		-	0%	7.9%	0%	0%		-	0%	0%	0%	0%		-	-	-
<b>Bicycles</b>	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-
<b>Bicycle %</b>	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-



Peak Hour: 08:00 AM - 09:00 AM Weather: Scattered Clouds (12.99 °C)

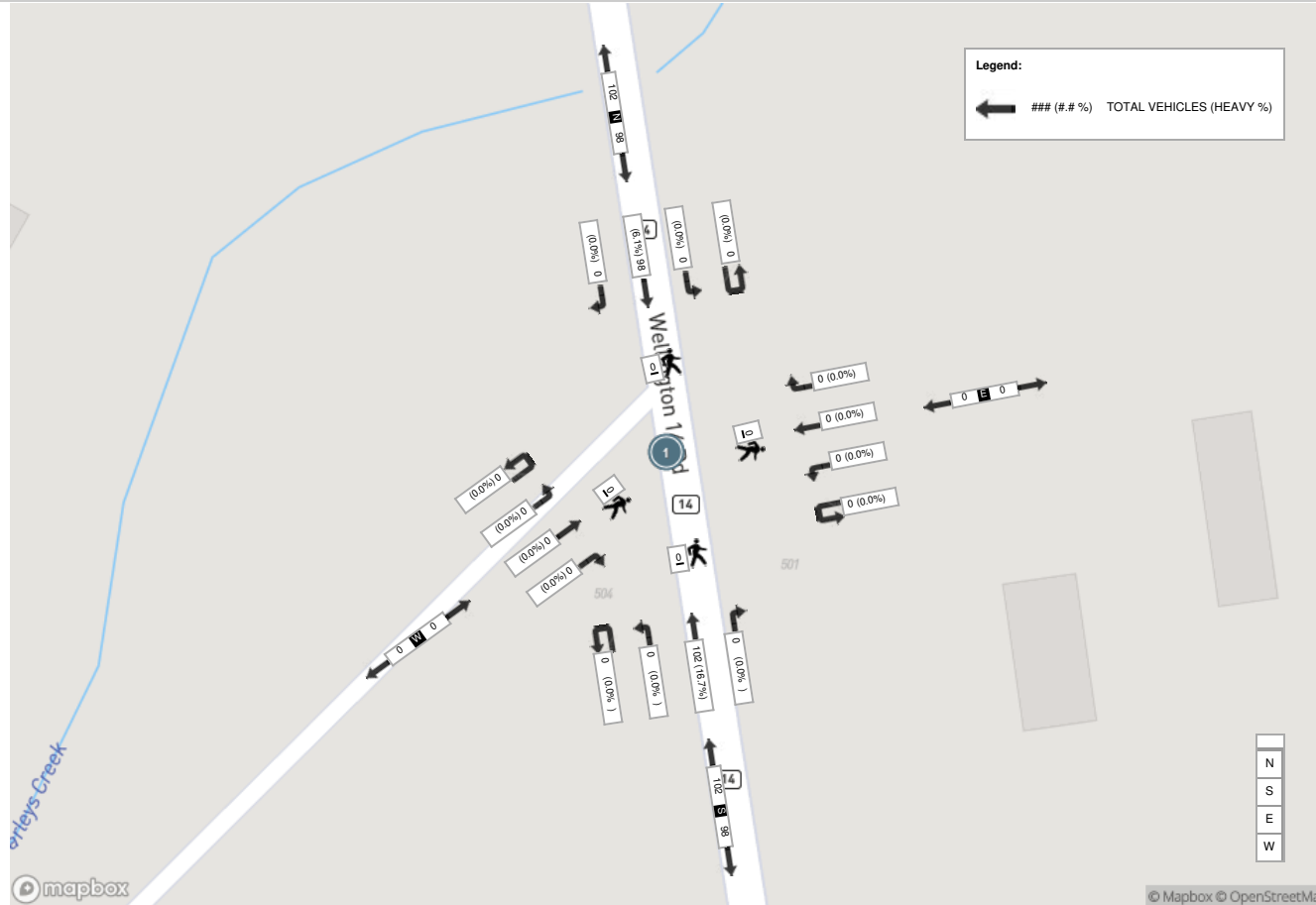
Start Time	N Approach ELIZA STREET						E Approach WELLS STREET						S Approach ELIZA STREET						W Approach WELLS STREET						Int. Total (15 min)	
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total		
08:00:00	0	14	0	0	0	14	0	0	0	0	0	0	0	22	0	0	0	22	0	0	0	0	0	0	0	36
08:15:00	0	27	0	0	0	27	0	0	0	0	0	0	0	31	0	0	0	31	0	0	0	0	0	0	0	58
08:30:00	0	25	0	0	0	25	0	0	0	0	0	0	0	28	0	0	0	28	0	0	0	0	0	0	0	53
08:45:00	0	32	0	0	0	32	0	0	0	0	0	0	0	21	0	0	0	21	0	0	0	0	0	0	0	53
<b>Grand Total</b>	0	98	0	0	0	98	0	0	0	0	0	0	0	102	0	0	0	102	0	0	0	0	0	0	0	<b>200</b>
<b>Approach%</b>	0%	100%	0%	0%		-	0%	0%	0%	0%		-	0%	100%	0%	0%		-	0%	0%	0%	0%		-	-	-
<b>Totals %</b>	0%	49%	0%	0%		49%	0%	0%	0%	0%		0%	0%	51%	0%	0%		51%	0%	0%	0%	0%		0%	0%	-
<b>PHF</b>	0	0.77	0	0		0.77	0	0	0	0		0	0	0.82	0	0		0.82	0	0	0	0		0	0	-
<b>Heavy</b>	0	6	0	0		6	0	0	0	0		0	0	17	0	0		17	0	0	0	0		0	0	-
<b>Heavy %</b>	0%	6.1%	0%	0%		6.1%	0%	0%	0%	0%		0%	0%	16.7%	0%	0%		16.7%	0%	0%	0%	0%		0%	0%	-
<b>Lights</b>	0	92	0	0		92	0	0	0	0		0	0	85	0	0		85	0	0	0	0		0	0	-
<b>Lights %</b>	0%	93.9%	0%	0%		93.9%	0%	0%	0%	0%		0%	0%	83.3%	0%	0%		83.3%	0%	0%	0%	0%		0%	0%	-
<b>Single-Unit Trucks</b>	0	1	0	0		1	0	0	0	0		0	0	7	0	0		7	0	0	0	0		0	0	-
<b>Single-Unit Trucks %</b>	0%	1%	0%	0%		1%	0%	0%	0%	0%		0%	0%	6.9%	0%	0%		6.9%	0%	0%	0%	0%		0%	0%	-
<b>Buses</b>	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	-
<b>Buses %</b>	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	-
<b>Articulated Trucks</b>	0	5	0	0		5	0	0	0	0		0	0	10	0	0		10	0	0	0	0		0	0	-
<b>Articulated Trucks %</b>	0%	5.1%	0%	0%		5.1%	0%	0%	0%	0%		0%	0%	9.8%	0%	0%		9.8%	0%	0%	0%	0%		0%	0%	-
<b>Bicycles on Road</b>	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	-
<b>Bicycles on Road %</b>	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	-



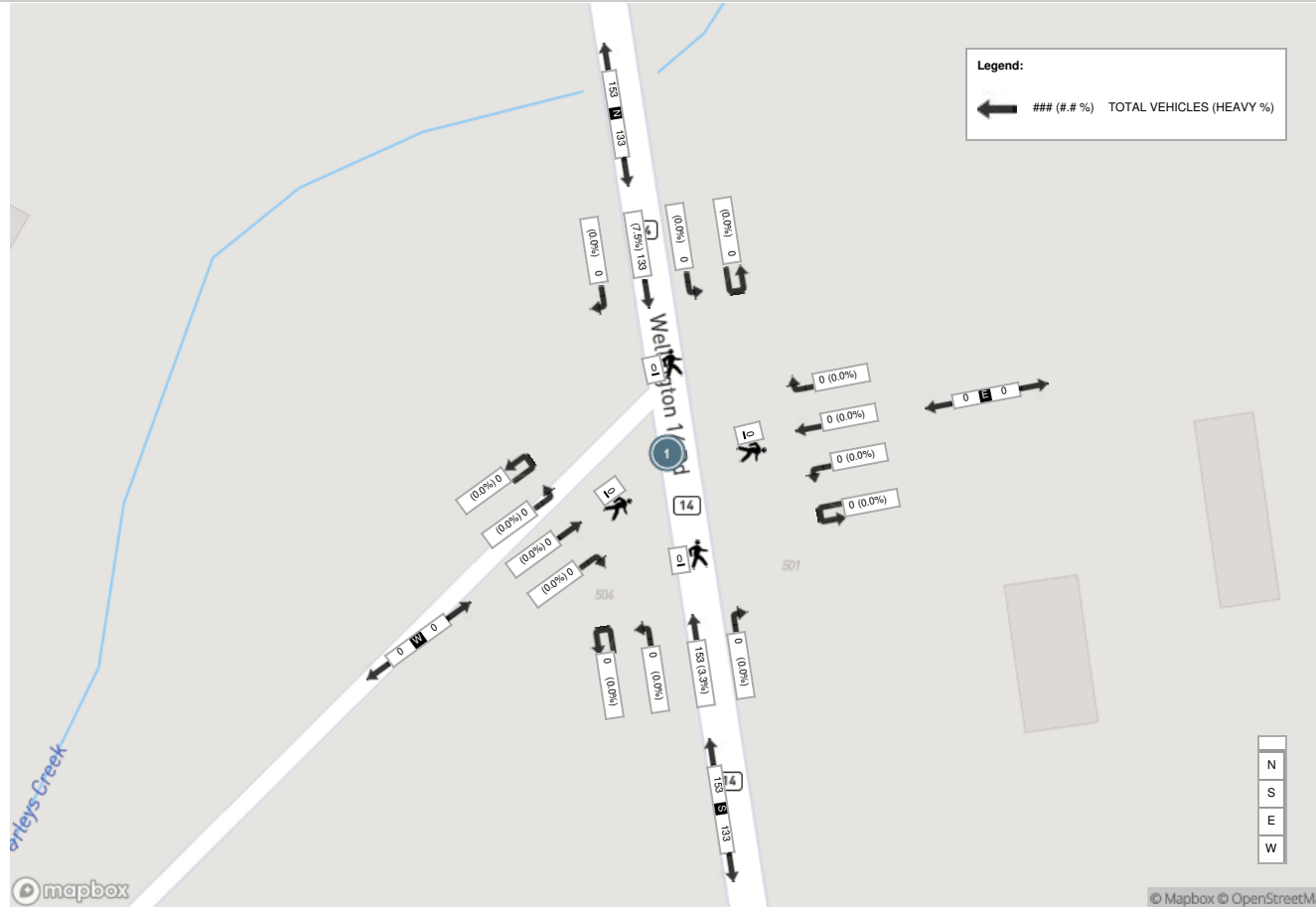
Peak Hour: 04:45 PM - 05:45 PM Weather: Clear Sky (24.94 °C)

Start Time	N Approach ELIZA STREET						E Approach WELLS STREET						S Approach ELIZA STREET						W Approach WELLS STREET						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		
16:45:00	0	35	0	0	0	35	0	0	0	0	0	0	0	34	0	0	0	34	0	0	0	0	0	0	0	69
17:00:00	0	29	0	0	0	29	0	0	0	0	0	0	0	42	0	0	0	42	0	0	0	0	0	0	0	71
17:15:00	0	36	0	0	0	36	0	0	0	0	0	0	0	30	0	0	0	30	0	0	0	0	0	0	0	66
17:30:00	0	33	0	0	0	33	0	0	0	0	0	0	0	47	0	0	0	47	0	0	0	0	0	0	0	80
<b>Grand Total</b>	0	133	0	0	0	133	0	0	0	0	0	0	0	153	0	0	0	153	0	0	0	0	0	0	0	<b>286</b>
<b>Approach%</b>	0%	100%	0%	0%		-	0%	0%	0%	0%		-	0%	100%	0%	0%		-	0%	0%	0%	0%			-	-
<b>Totals %</b>	0%	46.5%	0%	0%		46.5%	0%	0%	0%	0%		0%	0%	53.5%	0%	0%		53.5%	0%	0%	0%	0%			0%	-
<b>PHF</b>	0	0.92	0	0		0.92	0	0	0	0		0	0	0.81	0	0		0.81	0	0	0	0			0	-
<b>Heavy</b>	0	10	0	0		10	0	0	0	0		0	0	5	0	0		5	0	0	0	0			0	-
<b>Heavy %</b>	0%	7.5%	0%	0%		7.5%	0%	0%	0%	0%		0%	0%	3.3%	0%	0%		3.3%	0%	0%	0%	0%			0%	-
<b>Lights</b>	0	123	0	0		123	0	0	0	0		0	0	147	0	0		147	0	0	0	0			0	-
<b>Lights %</b>	0%	92.5%	0%	0%		92.5%	0%	0%	0%	0%		0%	0%	96.1%	0%	0%		96.1%	0%	0%	0%	0%			0%	-
<b>Single-Unit Trucks</b>	0	4	0	0		4	0	0	0	0		0	0	1	0	0		1	0	0	0	0			0	-
<b>Single-Unit Trucks %</b>	0%	3%	0%	0%		3%	0%	0%	0%	0%		0%	0%	0.7%	0%	0%		0.7%	0%	0%	0%	0%			0%	-
<b>Buses</b>	0	1	0	0		1	0	0	0	0		0	0	0	0	0		0	0	0	0	0			0	-
<b>Buses %</b>	0%	0.8%	0%	0%		0.8%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%			0%	-
<b>Articulated Trucks</b>	0	5	0	0		5	0	0	0	0		0	0	4	0	0		4	0	0	0	0			0	-
<b>Articulated Trucks %</b>	0%	3.8%	0%	0%		3.8%	0%	0%	0%	0%		0%	0%	2.6%	0%	0%		2.6%	0%	0%	0%	0%			0%	-
<b>Bicycles on Road</b>	0	0	0	0		0	0	0	0	0		0	0	1	0	0		1	0	0	0	0			0	-
<b>Bicycles on Road %</b>	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0.7%	0%	0%		0.7%	0%	0%	0%	0%			0%	-

Peak Hour: 08:00 AM - 09:00 AM Weather: Scattered Clouds (12.99 °C)



Peak Hour: 04:45 PM - 05:45 PM Weather: Clear Sky (24.94 °C)





Turning Movement Count (2 - FREDERICK STREET EAST & HIGHWAY 6)

Start Time	N Approach HWY 6						E Approach FREDERICK ST (WELLINGTON RD 14)						S Approach HWY 6						W Approach FREDERICK ST (WELLINGTON RD 14)						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	1	92	1	0	0	94	4	1	14	0	0	19	7	44	1	0	1	52	0	0	5	0	0	5	170	
07:15:00	6	101	6	0	1	113	4	3	15	0	0	22	6	46	1	0	0	53	1	2	3	0	1	6	194	
07:30:00	2	64	5	0	0	71	3	4	20	0	0	27	6	54	0	0	0	60	0	2	2	0	0	4	162	
07:45:00	2	77	6	0	1	85	5	3	11	0	0	19	11	52	0	0	0	63	1	3	3	0	2	7	174	700
08:00:00	3	66	5	0	0	74	5	1	7	0	2	13	5	52	1	0	3	58	0	1	6	0	2	7	152	682
08:15:00	1	81	10	0	1	92	8	2	10	0	2	20	13	51	1	0	0	65	2	4	7	0	0	13	190	678
08:30:00	3	70	7	0	2	80	3	6	11	0	0	20	14	69	0	0	1	83	1	1	3	0	1	5	188	704
08:45:00	2	66	10	0	0	78	5	3	13	0	3	21	10	46	2	0	1	58	1	1	3	0	0	5	162	692
***BREAK***																										
16:00:00	4	74	2	0	1	80	6	4	30	0	4	40	17	86	5	0	0	108	1	2	13	0	5	16	244	
16:15:00	6	76	3	0	2	85	3	4	16	0	2	23	20	88	3	0	0	111	4	3	6	0	0	13	232	
16:30:00	4	77	6	0	1	87	2	3	12	0	3	17	22	121	2	0	4	145	1	7	5	0	3	13	262	
16:45:00	5	77	4	0	1	86	10	3	12	0	2	25	24	96	0	0	0	120	0	6	10	0	0	16	247	985
17:00:00	4	73	5	0	0	82	0	7	27	0	2	34	17	107	5	0	1	129	0	6	9	0	0	15	260	1001
17:15:00	6	88	5	0	0	99	5	5	23	0	0	33	22	109	4	0	2	135	1	6	6	0	1	13	280	1049
17:30:00	7	72	3	0	0	82	1	5	14	0	0	20	24	103	1	0	1	128	1	4	4	0	2	9	239	1026
17:45:00	2	72	6	0	0	80	4	2	21	0	1	27	21	80	2	0	0	103	0	7	8	0	2	15	225	1004
<b>Grand Total</b>	<b>58</b>	<b>1226</b>	<b>84</b>	<b>0</b>	<b>10</b>	<b>1368</b>	<b>68</b>	<b>56</b>	<b>256</b>	<b>0</b>	<b>21</b>	<b>380</b>	<b>239</b>	<b>1204</b>	<b>28</b>	<b>0</b>	<b>14</b>	<b>1471</b>	<b>14</b>	<b>55</b>	<b>93</b>	<b>0</b>	<b>19</b>	<b>162</b>	<b>3381</b>	<b>-</b>
<b>Approach%</b>	4.2%	89.6%	6.1%	0%	-	-	17.9%	14.7%	67.4%	0%	-	-	16.2%	81.8%	1.9%	0%	-	-	8.6%	34%	57.4%	0%	-	-	-	-
<b>Totals %</b>	1.7%	36.3%	2.5%	0%	-	40.5%	2%	1.7%	7.6%	0%	-	11.2%	7.1%	35.6%	0.8%	0%	-	43.5%	0.4%	1.6%	2.8%	0%	-	4.8%	-	-
<b>Heavy</b>	0	78	4	0	-	-	4	1	22	0	-	-	37	84	2	0	-	-	1	1	4	0	-	-	-	-
<b>Heavy %</b>	0%	6.4%	4.8%	0%	-	-	5.9%	1.8%	8.6%	0%	-	-	15.5%	7%	7.1%	0%	-	-	7.1%	1.8%	4.3%	0%	-	-	-	-
<b>Bicycles</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Bicycle %</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Peak Hour: 07:45 AM - 08:45 AM Weather: Scattered Clouds (12.99 °C)**

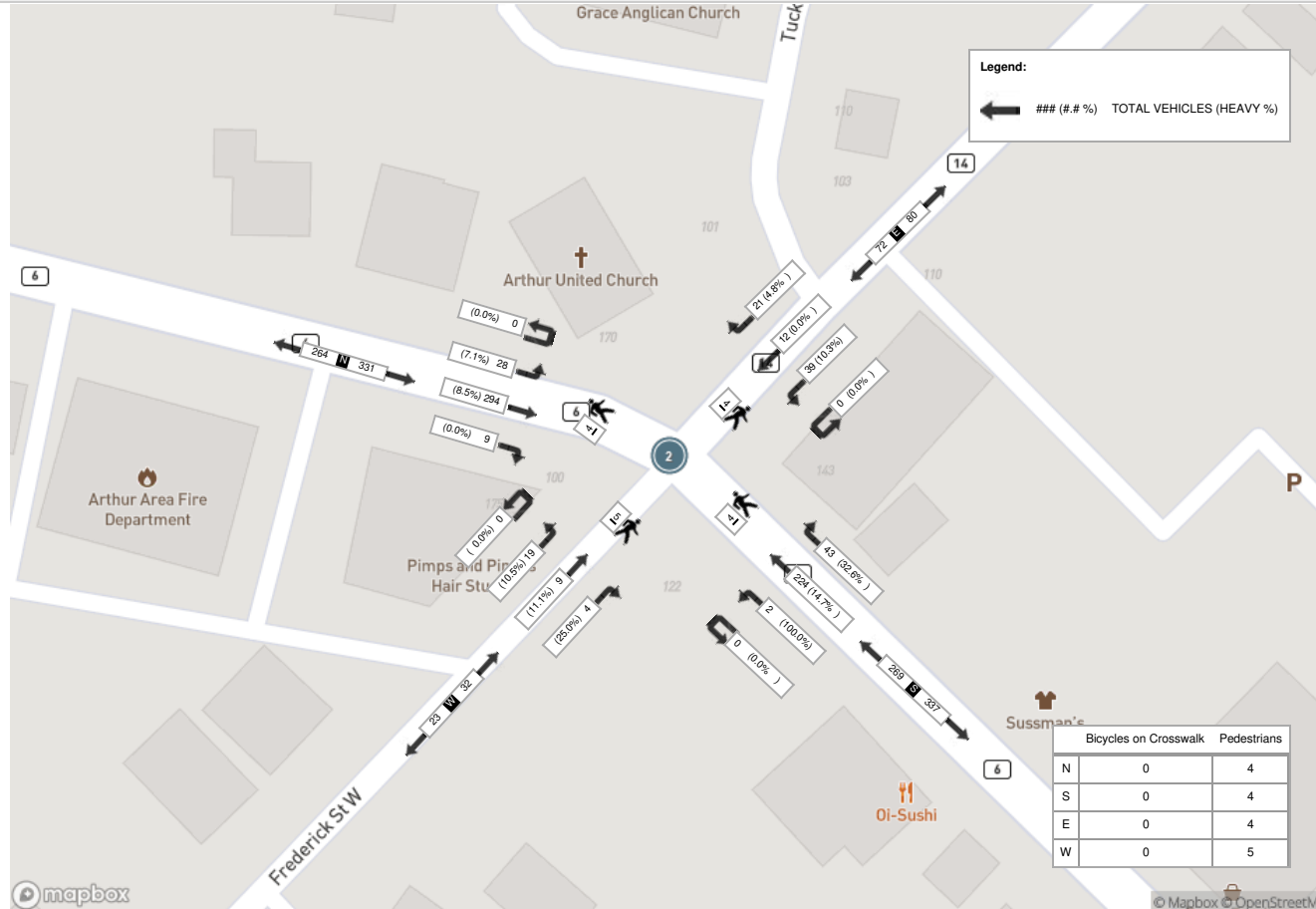
Start Time	N Approach HWY 6						E Approach FREDERICK ST (WELLINGTON RD 14)						S Approach HWY 6						W Approach FREDERICK ST (WELLINGTON RD 14)						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
07:45:00	2	77	6	0	1	85	5	3	11	0	0	19	11	52	0	0	0	63	1	3	3	0	2	7	174
08:00:00	3	66	5	0	0	74	5	1	7	0	2	13	5	52	1	0	3	58	0	1	6	0	2	7	152
08:15:00	1	81	10	0	1	92	8	2	10	0	2	20	13	51	1	0	0	65	2	4	7	0	0	13	190
08:30:00	3	70	7	0	2	80	3	6	11	0	0	20	14	69	0	0	1	83	1	1	3	0	1	5	188
<b>Grand Total</b>	<b>9</b>	<b>294</b>	<b>28</b>	<b>0</b>	<b>4</b>	<b>331</b>	<b>21</b>	<b>12</b>	<b>39</b>	<b>0</b>	<b>4</b>	<b>72</b>	<b>43</b>	<b>224</b>	<b>2</b>	<b>0</b>	<b>4</b>	<b>269</b>	<b>4</b>	<b>9</b>	<b>19</b>	<b>0</b>	<b>5</b>	<b>32</b>	<b>704</b>
<b>Approach%</b>	2.7%	88.8%	8.5%	0%	-	-	29.2%	16.7%	54.2%	0%	-	-	16%	83.3%	0.7%	0%	-	-	12.5%	28.1%	59.4%	0%	-	-	-
<b>Totals %</b>	1.3%	41.8%	4%	0%	47%	10.2%	3%	1.7%	5.5%	0%	10.2%	10.2%	6.1%	31.8%	0.3%	0%	38.2%	38.2%	0.6%	1.3%	2.7%	0%	4.5%	4.5%	-
<b>PHF</b>	0.75	0.91	0.7	0	0.9	0.9	0.66	0.5	0.89	0	0.9	0.9	0.77	0.81	0.5	0	0.81	0.81	0.5	0.56	0.68	0	0.62	0.62	-
<b>Heavy</b>	0	25	2	0	27	27	1	0	4	0	5	5	14	33	2	0	49	49	1	1	2	0	4	4	-
<b>Heavy %</b>	0%	8.5%	7.1%	0%	8.2%	8.2%	4.8%	0%	10.3%	0%	6.9%	6.9%	32.6%	14.7%	100%	0%	18.2%	18.2%	25%	11.1%	10.5%	0%	12.5%	12.5%	-
<b>Lights</b>	9	269	26	0	304	304	20	12	35	0	67	67	29	191	0	0	220	220	3	8	17	0	28	28	-
<b>Lights %</b>	100%	91.5%	92.9%	0%	91.8%	91.8%	95.2%	100%	89.7%	0%	93.1%	93.1%	67.4%	85.3%	0%	0%	81.8%	81.8%	75%	88.9%	89.5%	0%	87.5%	87.5%	-
<b>Single-Unit Trucks</b>	0	16	1	0	17	17	1	0	1	0	2	2	4	13	2	0	19	19	1	1	1	0	3	3	-
<b>Single-Unit Trucks %</b>	0%	5.4%	3.6%	0%	5.1%	5.1%	4.8%	0%	2.6%	0%	2.8%	2.8%	9.3%	5.8%	100%	0%	7.1%	7.1%	25%	11.1%	5.3%	0%	9.4%	9.4%	-
<b>Buses</b>	0	1	0	0	1	1	0	0	1	0	1	1	0	1	0	0	1	1	0	0	0	0	0	0	-
<b>Buses %</b>	0%	0.3%	0%	0%	0.3%	0.3%	0%	0%	2.6%	0%	1.4%	1.4%	0%	0.4%	0%	0%	0.4%	0.4%	0%	0%	0%	0%	0%	0%	-
<b>Articulated Trucks</b>	0	8	1	0	9	9	0	0	2	0	2	2	10	19	0	0	29	29	0	0	1	0	1	1	-
<b>Articulated Trucks %</b>	0%	2.7%	3.6%	0%	2.7%	2.7%	0%	0%	5.1%	0%	2.8%	2.8%	23.3%	8.5%	0%	0%	10.8%	10.8%	0%	0%	5.3%	0%	3.1%	3.1%	-
<b>Bicycles on Road</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-
<b>Bicycles on Road %</b>	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-
<b>Pedestrians</b>	-	-	-	-	4	4	-	-	-	-	4	4	-	-	-	-	4	4	-	-	-	-	5	5	-
<b>Pedestrians %</b>	-	-	-	-	23.5%	23.5%	-	-	-	-	23.5%	23.5%	-	-	-	-	23.5%	23.5%	-	-	-	-	29.4%	29.4%	-
<b>Bicycles on Crosswalk</b>	-	-	-	-	0	0	-	-	-	-	0	0	-	-	-	-	0	0	-	-	-	-	0	0	-
<b>Bicycles on Crosswalk %</b>	-	-	-	-	0%	0%	-	-	-	-	0%	0%	-	-	-	-	0%	0%	-	-	-	-	0%	0%	-



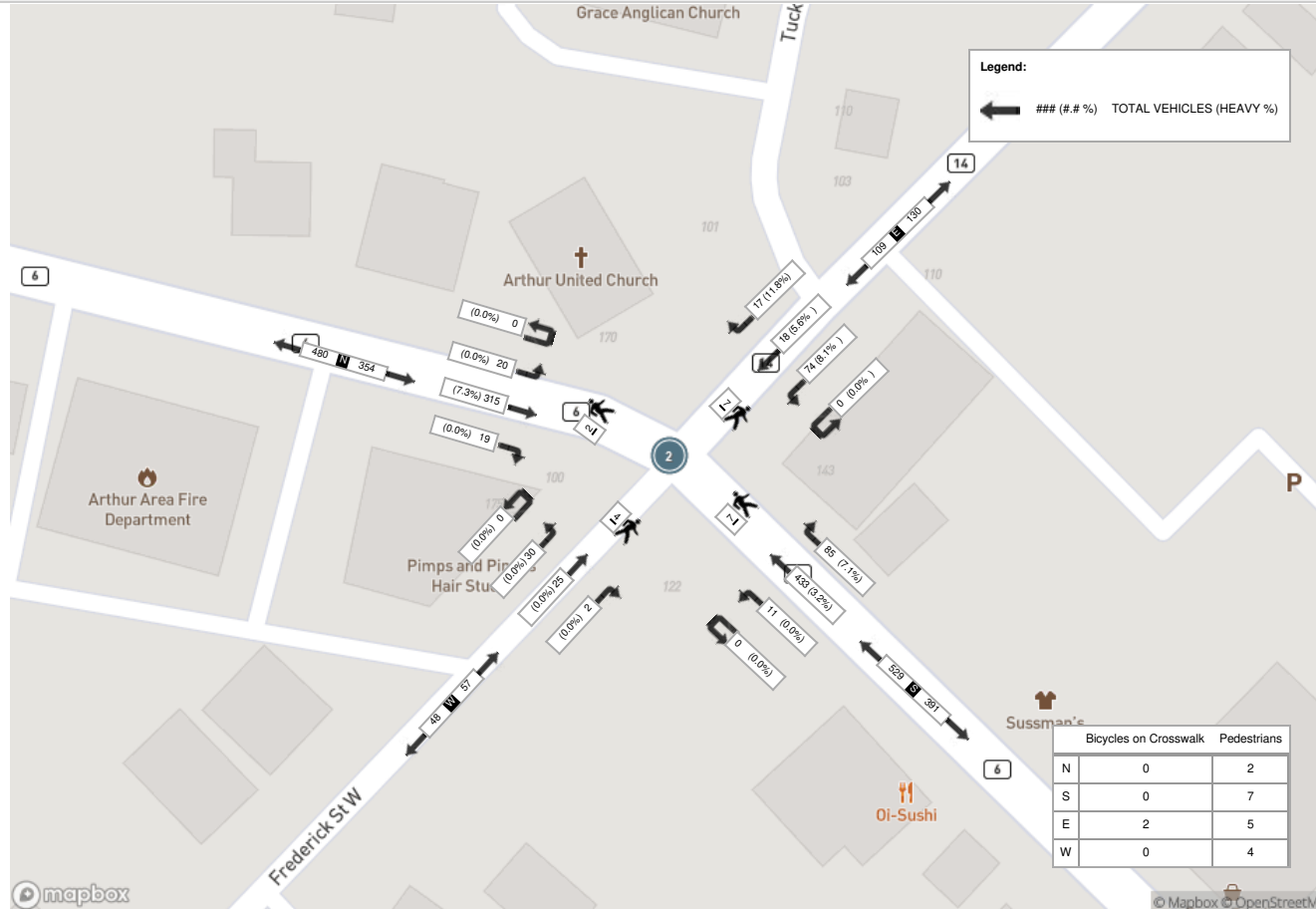
Peak Hour: 04:30 PM - 05:30 PM Weather: Clear Sky (24.94 °C)

Start Time	N Approach HWY 6						E Approach FREDERICK ST (WELLINGTON RD 14)						S Approach HWY 6						W Approach FREDERICK ST (WELLINGTON RD 14)						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	77	6	0	1	87	2	3	12	0	3	17	22	121	2	0	4	145	1	7	5	0	3	13	262
16:45:00	5	77	4	0	1	86	10	3	12	0	2	25	24	96	0	0	0	120	0	6	10	0	0	16	247
17:00:00	4	73	5	0	0	82	0	7	27	0	2	34	17	107	5	0	1	129	0	6	9	0	0	15	260
17:15:00	6	88	5	0	0	99	5	5	23	0	0	33	22	109	4	0	2	135	1	6	6	0	1	13	280
<b>Grand Total</b>	<b>19</b>	<b>315</b>	<b>20</b>	<b>0</b>	<b>2</b>	<b>354</b>	<b>17</b>	<b>18</b>	<b>74</b>	<b>0</b>	<b>7</b>	<b>109</b>	<b>85</b>	<b>433</b>	<b>11</b>	<b>0</b>	<b>7</b>	<b>529</b>	<b>2</b>	<b>25</b>	<b>30</b>	<b>0</b>	<b>4</b>	<b>57</b>	<b>1049</b>
<b>Approach%</b>	5.4%	89%	5.6%	0%		-	15.6%	16.5%	67.9%	0%		-	16.1%	81.9%	2.1%	0%		-	3.5%	43.9%	52.6%	0%		-	
<b>Totals %</b>	1.8%	30%	1.9%	0%		33.7%	1.6%	1.7%	7.1%	0%		10.4%	8.1%	41.3%	1%	0%		50.4%	0.2%	2.4%	2.9%	0%		5.4%	
<b>PHF</b>	0.79	0.89	0.83	0		0.89	0.43	0.64	0.69	0		0.8	0.89	0.89	0.55	0		0.91	0.5	0.89	0.75	0		0.89	
<b>Heavy</b>	0	23	0	0		23	2	1	6	0		9	6	14	0	0		20	0	0	0	0		0	
<b>Heavy %</b>	0%	7.3%	0%	0%		6.5%	11.8%	5.6%	8.1%	0%		8.3%	7.1%	3.2%	0%	0%		3.8%	0%	0%	0%	0%		0%	
<b>Lights</b>	19	292	20	0		331	15	17	68	0		100	78	419	11	0		508	2	25	30	0		57	
<b>Lights %</b>	100%	92.7%	100%	0%		93.5%	88.2%	94.4%	91.9%	0%		91.7%	91.8%	96.8%	100%	0%		96%	100%	100%	100%	0%		100%	
<b>Single-Unit Trucks</b>	0	9	0	0		9	0	1	2	0		3	0	8	0	0		8	0	0	0	0		0	
<b>Single-Unit Trucks %</b>	0%	2.9%	0%	0%		2.5%	0%	5.6%	2.7%	0%		2.8%	0%	1.8%	0%	0%		1.5%	0%	0%	0%	0%		0%	
<b>Buses</b>	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	
<b>Buses %</b>	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	
<b>Articulated Trucks</b>	0	14	0	0		14	2	0	4	0		6	6	6	0	0		12	0	0	0	0		0	
<b>Articulated Trucks %</b>	0%	4.4%	0%	0%		4%	11.8%	0%	5.4%	0%		5.5%	7.1%	1.4%	0%	0%		2.3%	0%	0%	0%	0%		0%	
<b>Bicycles on Road</b>	0	0	0	0		0	0	0	0	0		0	1	0	0	0		1	0	0	0	0		0	
<b>Bicycles on Road %</b>	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	1.2%	0%	0%	0%		0.2%	0%	0%	0%	0%		0%	
<b>Pedestrians</b>	-	-	-	-	2	-	-	-	-	-	5	-	-	-	-	-	7	-	-	-	-	-	4	-	
<b>Pedestrians %</b>	-	-	-	-	10%	-	-	-	-	-	25%	-	-	-	-	-	35%	-	-	-	-	-	20%	-	
<b>Bicycles on Crosswalk</b>	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	-	0	-	
<b>Bicycles on Crosswalk %</b>	-	-	-	-	0%	-	-	-	-	-	10%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	

Peak Hour: 07:45 AM - 08:45 AM Weather: Scattered Clouds (12.99 °C)



Peak Hour: 04:30 PM - 05:30 PM Weather: Clear Sky (24.94 °C)





Turning Movement Count (3 . FREDREICK STREET EAST & ELIZA STREET)

Start Time	N Approach ELIZA ST						S Approach ELIZA ST					W Approach DOMVILLE ST					SW Approach FREDERICK ST					Int. Total (15 min)	Int. Total (1 hr)			
	Right N:W	Bear Right N:SW	Thru N:S	UTurn N:N	Peds N:	Approach Total	Thru S:N	Left S:W	Hard Left S:SW	UTurn S:S	Peds S:	Approach Total	Hard Right W:SW	Right W:S	Left W:N	UTurn W:W	Peds W:	Approach Total	Hard Right SW:S	Bear Left SW:N	Hard Left SW:W			UTurn SW:SW	Peds SW:	Approach Total
07:00:00	1	16	2	0	0	19	3	3	0	0	0	6	0	6	0	0	1	6	0	7	0	0	1	7	38	
07:15:00	0	16	2	0	0	18	3	2	2	0	0	7	1	0	0	0	0	1	4	8	1	0	1	13	39	
07:30:00	0	21	4	0	1	25	3	2	2	0	0	7	3	2	0	0	0	5	1	9	1	0	0	11	48	
07:45:00	1	15	5	0	1	21	5	1	1	1	0	8	1	1	0	0	0	2	1	21	1	0	3	23	54	179
08:00:00	0	13	0	0	0	13	4	5	1	0	0	10	2	2	1	0	0	5	0	12	0	0	6	12	40	181
08:15:00	4	16	8	0	0	28	9	6	4	0	0	19	1	0	2	0	0	3	0	22	1	0	3	23	73	215
08:30:00	2	13	5	0	1	20	7	4	2	0	0	13	1	3	1	0	0	5	4	19	5	0	0	28	66	233
08:45:00	2	16	9	0	0	27	4	3	1	0	0	8	2	2	0	0	0	4	4	12	1	0	4	17	56	235
***BREAK***																										
16:00:00	3	27	3	0	2	33	9	8	1	0	0	18	2	6	0	0	0	8	1	22	2	0	4	25	84	
16:15:00	4	10	6	0	1	20	10	7	1	0	0	18	3	3	3	0	0	9	2	18	2	0	0	22	69	
16:30:00	4	13	8	0	0	25	15	8	2	0	4	25	3	6	6	0	3	15	3	26	2	0	8	31	96	
16:45:00	1	15	3	0	2	19	10	10	4	1	1	25	4	4	2	0	1	10	5	17	2	0	1	24	78	327
17:00:00	0	20	7	0	1	27	12	8	0	0	0	20	4	4	3	0	1	11	6	18	3	0	2	27	85	328
17:15:00	2	26	5	0	3	33	12	5	0	0	0	17	1	2	2	0	3	5	3	24	2	0	2	29	84	343
17:30:00	0	20	8	0	0	28	17	5	1	0	0	23	1	1	1	0	0	3	2	23	0	0	0	25	79	326
17:45:00	1	23	8	0	2	32	11	7	1	0	3	19	0	4	4	0	5	8	6	20	2	0	5	28	87	335
<b>Grand Total</b>	<b>25</b>	<b>280</b>	<b>83</b>	<b>0</b>	<b>14</b>	<b>388</b>	<b>134</b>	<b>84</b>	<b>23</b>	<b>2</b>	<b>8</b>	<b>243</b>	<b>29</b>	<b>46</b>	<b>25</b>	<b>0</b>	<b>14</b>	<b>100</b>	<b>42</b>	<b>278</b>	<b>25</b>	<b>0</b>	<b>40</b>	<b>345</b>	<b>1076</b>	<b>-</b>
<b>Approach%</b>	6.4%	72.2%	21.4%	0%	-	-	55.1%	34.6%	9.5%	0.8%	-	-	29%	46%	25%	0%	-	-	12.2%	80.6%	7.2%	0%	-	-	-	-
<b>Totals %</b>	2.3%	26%	7.7%	0%	-	36.1%	12.5%	7.8%	2.1%	0.2%	-	22.6%	2.7%	4.3%	2.3%	0%	-	9.3%	3.9%	25.8%	2.3%	0%	-	32.1%	-	-
<b>Heavy</b>	1	22	5	0	-	-	1	0	4	0	-	-	0	0	1	0	-	-	0	39	1	0	-	-	-	-
<b>Heavy %</b>	4%	7.9%	6%	0%	-	-	0.7%	0%	17.4%	0%	-	-	0%	0%	4%	0%	-	-	0%	14%	4%	0%	-	-	-	-
<b>Bicycles</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Bicycle %</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Peak Hour: 08:00 AM - 09:00 AM Weather: Scattered Clouds (12.99 °C)

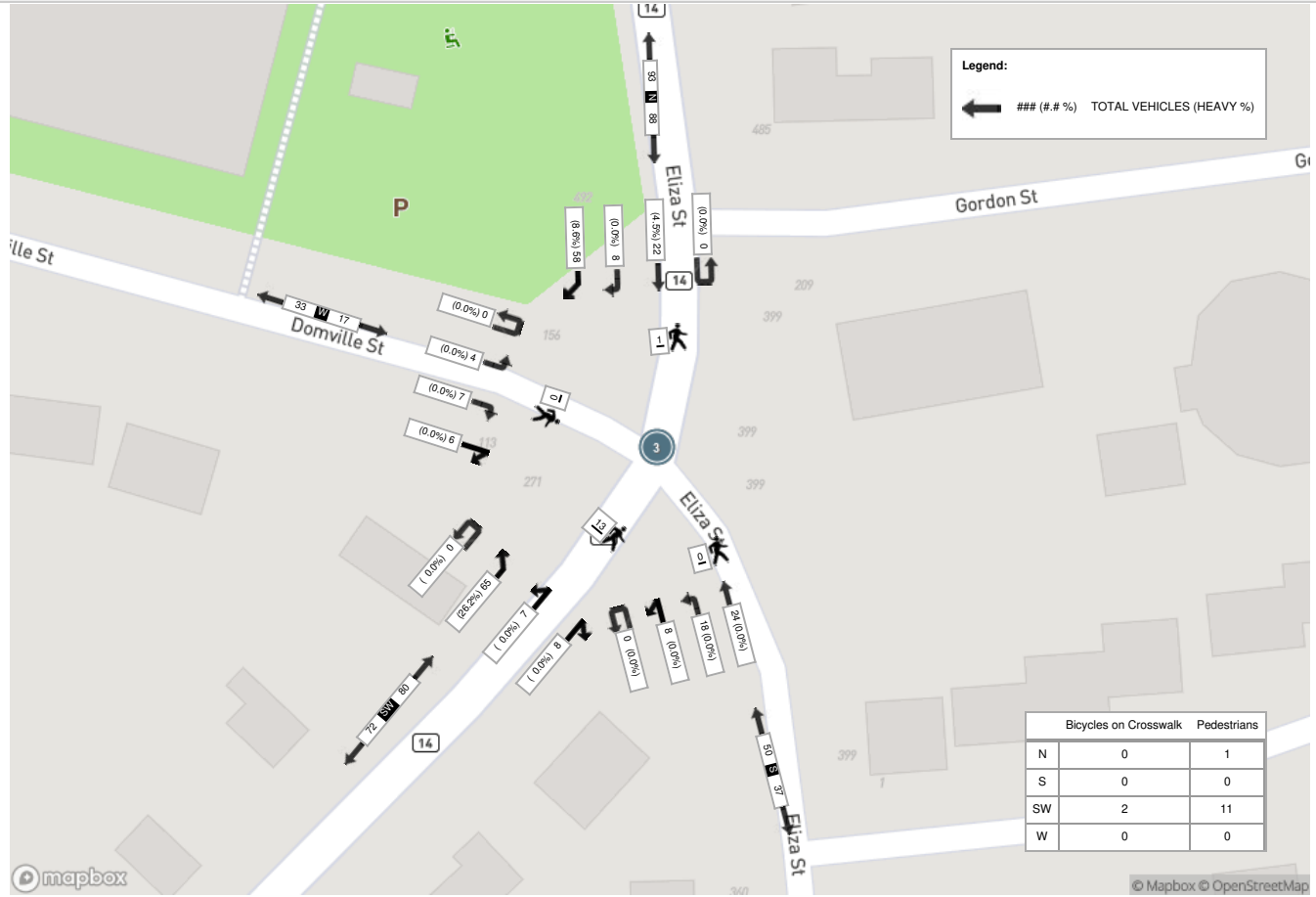
Start Time	N Approach ELIZA ST						S Approach ELIZA ST						W Approach DOMVILLE ST						SW Approach FREDERICK ST						Int. Total (15 min)
	Right	Bear Right	Thru	UTurn	Peds	Approach Total	Thru	Left	Hard Left	UTurn	Peds	Approach Total	Hard Right	Right	Left	UTurn	Peds	Approach Total	Hard Right	Bear Left	Hard Left	UTurn	Peds	Approach Total	
08:00:00	0	13	0	0	0	13	4	5	1	0	0	10	2	2	1	0	0	5	0	12	0	0	6	12	40
08:15:00	4	16	8	0	0	28	9	6	4	0	0	19	1	0	2	0	0	3	0	22	1	0	3	23	73
08:30:00	2	13	5	0	1	20	7	4	2	0	0	13	1	3	1	0	0	5	4	19	5	0	0	28	66
08:45:00	2	16	9	0	0	27	4	3	1	0	0	8	2	2	0	0	0	4	4	12	1	0	4	17	56
<b>Grand Total</b>	<b>8</b>	<b>58</b>	<b>22</b>	<b>0</b>	<b>1</b>	<b>88</b>	<b>24</b>	<b>18</b>	<b>8</b>	<b>0</b>	<b>0</b>	<b>50</b>	<b>6</b>	<b>7</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>17</b>	<b>8</b>	<b>65</b>	<b>7</b>	<b>0</b>	<b>13</b>	<b>80</b>	<b>235</b>
<b>Approach%</b>	9.1%	65.9%	25%	0%	-	-	48%	36%	16%	0%	-	-	35.3%	41.2%	23.5%	0%	-	-	10%	81.3%	8.8%	0%	-	-	-
<b>Totals %</b>	3.4%	24.7%	9.4%	0%	37.4%	10.2%	7.7%	3.4%	0%	21.3%	2.6%	3%	1.7%	0%	7.2%	3.4%	27.7%	3%	0%	34%	-	-	-	-	
<b>PHF</b>	0.5	0.91	0.61	0	0.79	0.67	0.75	0.5	0	0.66	0.75	0.58	0.5	0	0.85	0.5	0.74	0.35	0	0.71	-	-	-	-	
<b>Heavy</b>	0	5	1	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17	0	0	17	-	
<b>Heavy %</b>	0%	8.6%	4.5%	0%	6.8%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	26.2%	0%	0%	21.3%	-	
<b>Lights</b>	8	53	21	0	82	24	18	8	0	50	6	7	4	0	17	8	48	7	0	63	-	-	-		
<b>Lights %</b>	100%	91.4%	95.5%	0%	93.2%	100%	100%	100%	0%	100%	100%	100%	100%	0%	100%	100%	73.8%	100%	0%	78.8%	-	-	-		
<b>Single-Unit Trucks</b>	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0	0	7	-		
<b>Single-Unit Trucks %</b>	0%	0%	4.5%	0%	1.1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	10.8%	0%	0%	8.8%	-		
<b>Buses</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	
<b>Buses %</b>	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-	
<b>Articulated Trucks</b>	0	5	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	10	0	0	10	-		
<b>Articulated Trucks %</b>	0%	8.6%	0%	0%	5.7%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	15.4%	0%	0%	12.5%	-		
<b>Bicycles on Road</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	
<b>Bicycles on Road %</b>	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-	
<b>Pedestrians</b>	-	-	-	-	1	-	-	-	-	0	-	-	-	-	0	-	-	-	-	-	-	11	-	-	
<b>Pedestrians %</b>	-	-	-	-	7.1%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	-	-	78.6%	-	-	
<b>Bicycles on Crosswalk</b>	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-	-	-	-	-	2	-	-	
<b>Bicycles on Crosswalk %</b>	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	-	-	14.3%	-	-	



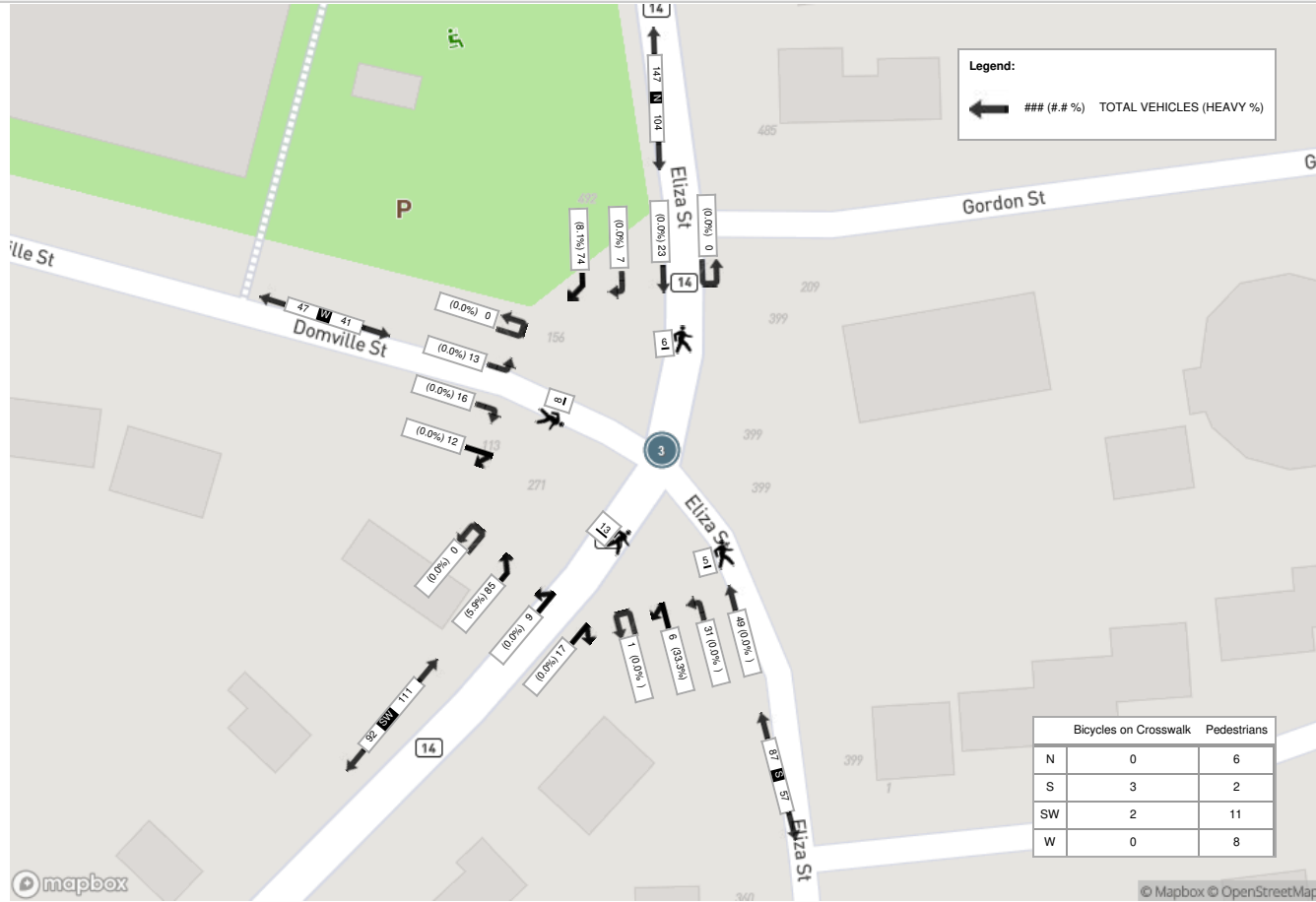
Peak Hour: 04:30 PM - 05:30 PM Weather: Clear Sky (24.94 °C)

Start Time	N Approach ELIZA ST						S Approach ELIZA ST						W Approach DOMVILLE ST						SW Approach FREDERICK ST						Int. Total (15 min)
	Right	Bear Right	Thru	UTurn	Peds	Approach Total	Thru	Left	Hard Left	UTurn	Peds	Approach Total	Hard Right	Right	Left	UTurn	Peds	Approach Total	Hard Right	Bear Left	Hard Left	UTurn	Peds	Approach Total	
16:30:00	4	13	8	0	0	25	15	8	2	0	4	25	3	6	6	0	3	15	3	26	2	0	8	31	96
16:45:00	1	15	3	0	2	19	10	10	4	1	1	25	4	4	2	0	1	10	5	17	2	0	1	24	78
17:00:00	0	20	7	0	1	27	12	8	0	0	0	20	4	4	3	0	1	11	6	18	3	0	2	27	85
17:15:00	2	26	5	0	3	33	12	5	0	0	0	17	1	2	2	0	3	5	3	24	2	0	2	29	84
<b>Grand Total</b>	<b>7</b>	<b>74</b>	<b>23</b>	<b>0</b>	<b>6</b>	<b>104</b>	<b>49</b>	<b>31</b>	<b>6</b>	<b>1</b>	<b>5</b>	<b>87</b>	<b>12</b>	<b>16</b>	<b>13</b>	<b>0</b>	<b>8</b>	<b>41</b>	<b>17</b>	<b>85</b>	<b>9</b>	<b>0</b>	<b>13</b>	<b>111</b>	<b>343</b>
<b>Approach%</b>	6.7%	71.2%	22.1%	0%	-	-	56.3%	35.6%	6.9%	1.1%	-	-	29.3%	39%	31.7%	0%	-	-	15.3%	76.6%	8.1%	0%	-	-	-
<b>Totals %</b>	2%	21.6%	6.7%	0%	30.3%	14.3%	9%	1.7%	0.3%	25.4%	3.5%	4.7%	3.8%	0%	12%	5%	24.8%	2.6%	0%	32.4%	-	-	-		
<b>PHF</b>	0.44	0.71	0.72	0	0.79	0.82	0.78	0.38	0.25	0.87	0.75	0.67	0.54	0	0.68	0.71	0.82	0.75	0	0.9	-	-	-		
<b>Heavy</b>	0	6	0	0	6	0	0	2	0	2	0	0	0	0	0	5	0	0	0	5	-	-	-		
<b>Heavy %</b>	0%	8.1%	0%	0%	5.8%	0%	0%	33.3%	0%	2.3%	0%	0%	0%	0%	0%	5.9%	0%	0%	0%	4.5%	-	-	-		
<b>Lights</b>	7	68	23	0	98	49	31	4	1	85	12	15	13	0	40	16	79	9	0	104	-	-	-		
<b>Lights %</b>	100%	91.9%	100%	0%	94.2%	100%	100%	66.7%	100%	97.7%	100%	93.8%	100%	0%	97.6%	94.1%	92.9%	100%	0%	93.7%	-	-	-		
<b>Single-Unit Trucks</b>	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-		
<b>Single-Unit Trucks %</b>	0%	2.7%	0%	0%	1.9%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-	-	-		
<b>Buses</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-		
<b>Buses %</b>	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-	-	-		
<b>Articulated Trucks</b>	0	4	0	0	4	0	0	2	0	2	0	0	0	0	0	5	0	0	0	5	-	-	-		
<b>Articulated Trucks %</b>	0%	5.4%	0%	0%	3.8%	0%	0%	33.3%	0%	2.3%	0%	0%	0%	0%	0%	5.9%	0%	0%	0%	4.5%	-	-	-		
<b>Bicycles on Road</b>	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	0	2	-	-	-		
<b>Bicycles on Road %</b>	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	6.3%	0%	0%	2.4%	5.9%	1.2%	0%	1.8%	-	-	-		
<b>Pedestrians</b>	-	-	-	-	6	-	-	-	-	2	-	-	-	-	8	-	-	-	-	11	-	-	-		
<b>Pedestrians %</b>	-	-	-	-	18.8%	-	-	-	-	6.3%	-	-	-	-	25%	-	-	-	-	34.4%	-	-	-		
<b>Bicycles on Crosswalk</b>	-	-	-	-	0	-	-	-	-	3	-	-	-	-	0	-	-	-	-	2	-	-	-		
<b>Bicycles on Crosswalk %</b>	-	-	-	-	0%	-	-	-	-	9.4%	-	-	-	-	0%	-	-	-	-	6.3%	-	-	-		

Peak Hour: 08:00 AM - 09:00 AM Weather: Scattered Clouds (12.99 °C)



Peak Hour: 04:30 PM - 05:30 PM Weather: Clear Sky (24.94 °C)





**Turning Movement Count (1 . TUCKER ST & ELIZA ST)**

Start Time	N Approach ELIZA ST					S Approach ELIZA ST					W Approach TUCKER 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		
06:00:00	5	10	0	0	15	7	0	0	0	7	0	1	0	0	1	23	
06:15:00	10	17	0	0	27	9	0	0	0	9	1	1	0	0	2	38	
06:30:00	8	22	0	0	30	10	0	0	0	10	0	0	0	0	0	40	
06:45:00	8	22	0	0	30	10	1	0	0	11	1	3	0	0	4	45	146
07:00:00	0	11	0	0	11	7	1	0	0	8	1	2	0	0	3	22	145
07:15:00	5	17	0	0	22	12	2	0	0	14	0	1	0	0	1	37	144
07:30:00	2	27	0	0	29	22	0	0	0	22	1	1	0	0	2	53	157
07:45:00	5	18	0	0	23	15	1	0	0	16	0	1	0	0	1	40	152
08:00:00	1	18	0	0	19	14	0	0	0	14	0	4	0	0	4	37	167
08:15:00	8	31	0	0	39	13	1	0	0	14	0	2	0	0	2	55	185
08:30:00	8	33	0	0	41	24	4	0	0	28	2	0	0	0	2	71	203
08:45:00	7	32	0	0	39	25	1	0	0	26	4	5	0	0	9	74	237
09:00:00	4	28	0	0	32	16	1	0	0	17	0	1	0	0	1	50	250
09:15:00	0	17	0	0	17	13	1	0	0	14	0	1	0	0	1	32	227
09:30:00	3	23	0	0	26	10	2	0	0	12	0	4	0	0	4	42	198
09:45:00	1	18	0	0	19	15	1	0	0	16	0	4	0	0	4	39	163
***BREAK***																	
15:00:00	4	16	0	0	20	18	2	0	0	20	1	7	0	0	8	48	
15:15:00	1	28	0	0	29	24	1	0	0	25	2	10	0	0	12	66	
15:30:00	1	29	0	0	30	26	0	0	0	26	0	4	0	0	4	60	
15:45:00	4	19	0	0	23	29	3	0	0	32	1	3	0	0	4	59	233
16:00:00	2	23	0	0	25	20	1	0	0	21	0	6	0	0	6	52	237
16:15:00	2	20	0	0	22	32	0	0	0	32	1	3	0	0	4	58	229
16:30:00	3	18	0	0	21	34	3	0	0	37	0	8	0	0	8	66	235
16:45:00	5	13	0	0	18	28	0	0	0	28	0	4	0	0	4	50	226
17:00:00	7	21	0	0	28	26	1	0	0	27	1	2	0	0	3	58	232
17:15:00	5	37	0	0	42	28	0	0	0	28	0	4	0	0	4	74	248
17:30:00	8	23	0	0	31	23	0	0	0	23	0	5	0	0	5	59	241
17:45:00	1	19	0	0	20	26	1	0	0	27	0	5	0	0	5	52	243
18:00:00	1	18	0	0	19	20	1	0	0	21	0	5	0	0	5	45	230
18:15:00	2	15	0	0	17	15	0	0	0	15	0	5	0	0	5	37	193
18:30:00	4	11	0	0	15	18	1	0	0	19	0	3	0	0	3	37	171
18:45:00	4	15	0	0	19	12	0	0	0	12	0	0	0	0	0	31	150



Grand Total	129	669	0	0	798	601	30	0	0	631	16	105	0	0	121	1550	-
<b>Approach%</b>	16.2%	83.8%	0%		-	95.2%	4.8%	0%		-	13.2%	86.8%	0%		-	-	-
<b>Totals %</b>	8.3%	43.2%	0%		51.5%	38.8%	1.9%	0%		40.7%	1%	6.8%	0%		7.8%	-	-
<b>Heavy</b>	6	90	0		-	74	4	0		-	1	10	0		-	-	-
<b>Heavy %</b>	4.7%	13.5%	0%		-	12.3%	13.3%	0%		-	6.3%	9.5%	0%		-	-	-
<b>Bicycles</b>	-	-	-		-	-	-	-		-	-	-	-		-	-	-
<b>Bicycle %</b>	-	-	-		-	-	-	-		-	-	-	-		-	-	-



**Peak Hour: 08:15 AM - 09:15 AM Weather: Light Snow (-0.11 °C)**

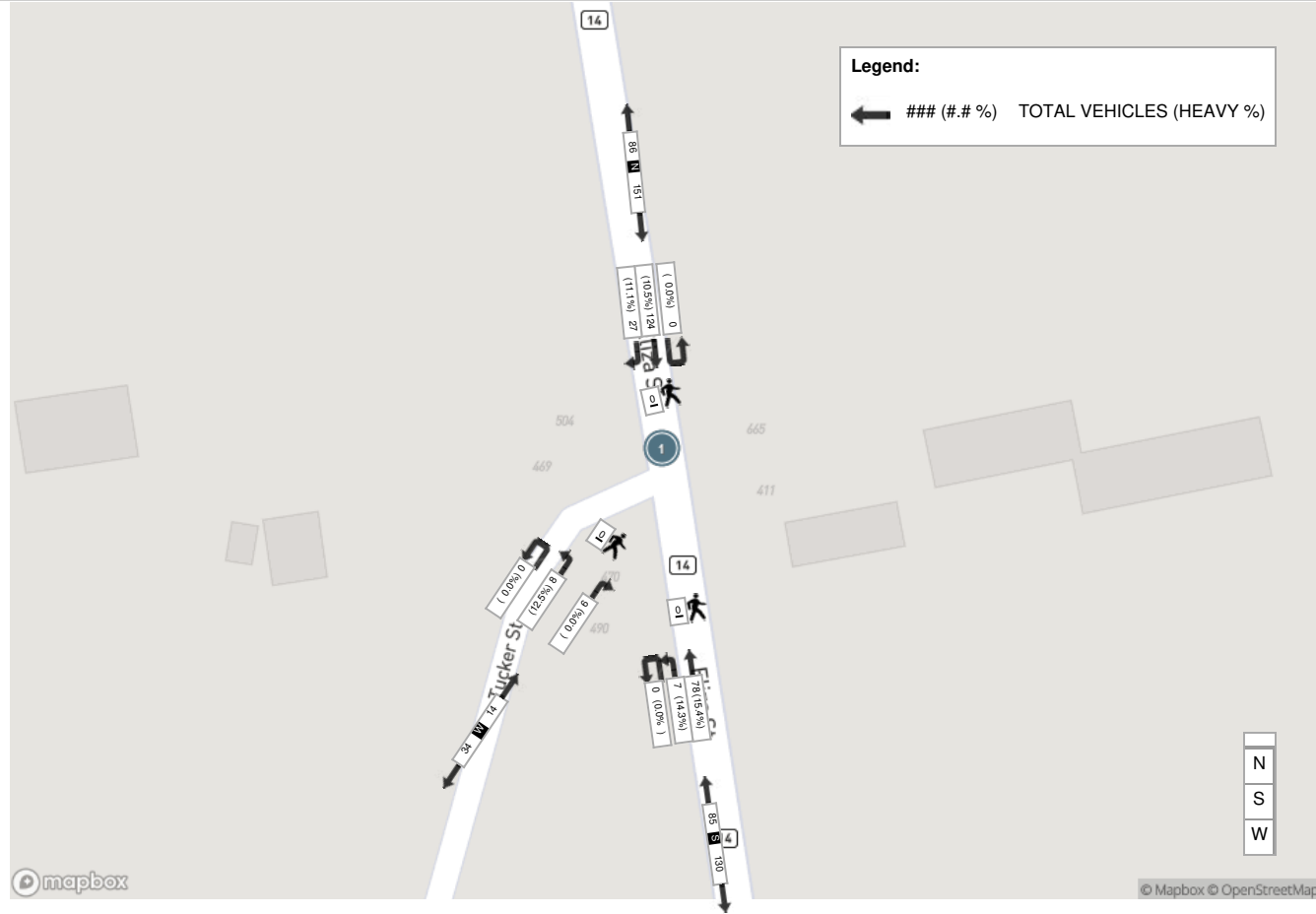
Start Time	N Approach ELIZA ST					S Approach ELIZA ST					W Approach TUCKER ST					Int. Total (15 min)
	Right	Thru	UTurn	Peds	Approach Total	Thru	Left	UTurn	Peds	Approach Total	Right	Left	UTurn	Peds	Approach Total	
08:15:00	8	31	0	0	39	13	1	0	0	14	0	2	0	0	2	55
08:30:00	8	33	0	0	41	24	4	0	0	28	2	0	0	0	2	71
08:45:00	7	32	0	0	39	25	1	0	0	26	4	5	0	0	9	74
09:00:00	4	28	0	0	32	16	1	0	0	17	0	1	0	0	1	50
<b>Grand Total</b>	<b>27</b>	<b>124</b>	<b>0</b>	<b>0</b>	<b>151</b>	<b>78</b>	<b>7</b>	<b>0</b>	<b>0</b>	<b>85</b>	<b>6</b>	<b>8</b>	<b>0</b>	<b>0</b>	<b>14</b>	<b>250</b>
<b>Approach%</b>	17.9%	82.1%	0%		-	91.8%	8.2%	0%		-	42.9%	57.1%	0%		-	-
<b>Totals %</b>	10.8%	49.6%	0%		60.4%	31.2%	2.8%	0%		34%	2.4%	3.2%	0%		5.6%	-
<b>PHF</b>	0.84	0.94	0		0.92	0.78	0.44	0		0.76	0.38	0.4	0		0.39	-
<b>Heavy</b>	3	13	0		16	12	1	0		13	0	1	0		1	-
<b>Heavy %</b>	11.1%	10.5%	0%		10.6%	15.4%	14.3%	0%		15.3%	0%	12.5%	0%		7.1%	-
<b>Lights</b>	24	111	0		135	66	6	0		72	6	7	0		13	-
<b>Lights %</b>	88.9%	89.5%	0%		89.4%	84.6%	85.7%	0%		84.7%	100%	87.5%	0%		92.9%	-
<b>Single-Unit Trucks</b>	0	5	0		5	4	0	0		4	0	0	0		0	-
<b>Single-Unit Trucks %</b>	0%	4%	0%		3.3%	5.1%	0%	0%		4.7%	0%	0%	0%		0%	-
<b>Buses</b>	3	0	0		3	3	1	0		4	0	1	0		1	-
<b>Buses %</b>	11.1%	0%	0%		2%	3.8%	14.3%	0%		4.7%	0%	12.5%	0%		7.1%	-
<b>Articulated Trucks</b>	0	8	0		8	5	0	0		5	0	0	0		0	-
<b>Articulated Trucks %</b>	0%	6.5%	0%		5.3%	6.4%	0%	0%		5.9%	0%	0%	0%		0%	-
<b>Bicycles on Road</b>	0	0	0		0	0	0	0		0	0	0	0		0	-
<b>Bicycles on Road %</b>	0%	0%	0%		0%	0%	0%	0%		0%	0%	0%	0%		0%	-



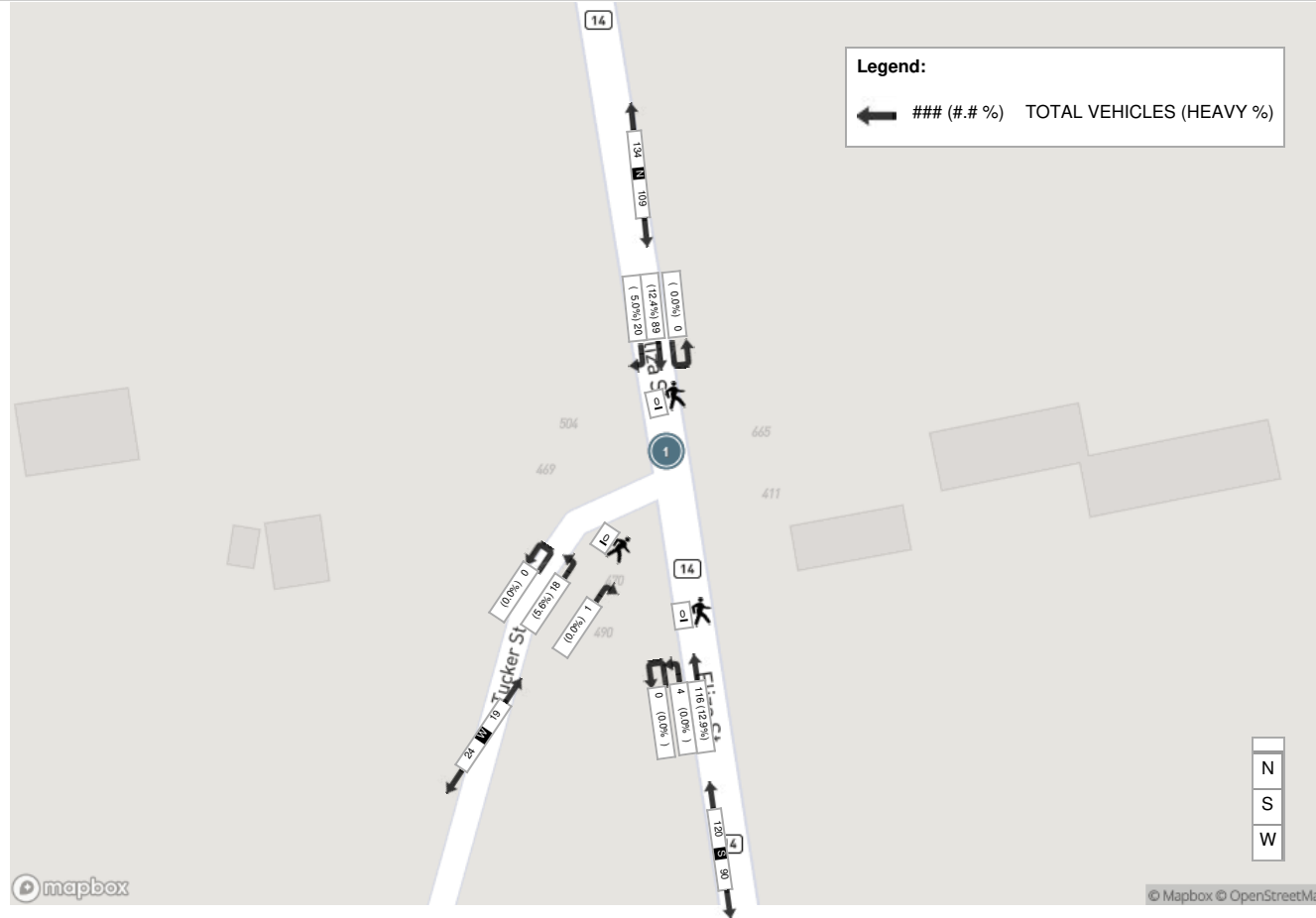
**Peak Hour: 04:30 PM - 05:30 PM Weather: Light Snow (-0.48 °C)**

Start Time	N Approach ELIZA ST					S Approach ELIZA ST					W Approach TUCKER ST					Int. Total (15 min)
	Right	Thru	UTurn	Peds	Approach Total	Thru	Left	UTurn	Peds	Approach Total	Right	Left	UTurn	Peds	Approach Total	
16:30:00	3	18	0	0	21	34	3	0	0	37	0	8	0	0	8	66
16:45:00	5	13	0	0	18	28	0	0	0	28	0	4	0	0	4	50
17:00:00	7	21	0	0	28	26	1	0	0	27	1	2	0	0	3	58
17:15:00	5	37	0	0	42	28	0	0	0	28	0	4	0	0	4	74
<b>Grand Total</b>	<b>20</b>	<b>89</b>	<b>0</b>	<b>0</b>	<b>109</b>	<b>116</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>120</b>	<b>1</b>	<b>18</b>	<b>0</b>	<b>0</b>	<b>19</b>	<b>248</b>
<b>Approach%</b>	18.3%	81.7%	0%		-	96.7%	3.3%	0%		-	5.3%	94.7%	0%		-	-
<b>Totals %</b>	8.1%	35.9%	0%		44%	46.8%	1.6%	0%		48.4%	0.4%	7.3%	0%		7.7%	-
<b>PHF</b>	0.71	0.6	0		0.65	0.85	0.33	0		0.81	0.25	0.56	0		0.59	-
<b>Heavy</b>	1	11	0		12	15	0	0		15	0	1	0		1	-
<b>Heavy %</b>	5%	12.4%	0%		11%	12.9%	0%	0%		12.5%	0%	5.6%	0%		5.3%	-
<b>Lights</b>	19	78	0		97	101	4	0		105	1	16	0		17	-
<b>Lights %</b>	95%	87.6%	0%		89%	87.1%	100%	0%		87.5%	100%	88.9%	0%		89.5%	-
<b>Single-Unit Trucks</b>	0	8	0		8	6	0	0		6	0	0	0		0	-
<b>Single-Unit Trucks %</b>	0%	9%	0%		7.3%	5.2%	0%	0%		5%	0%	0%	0%		0%	-
<b>Buses</b>	0	0	0		0	2	0	0		2	0	1	0		1	-
<b>Buses %</b>	0%	0%	0%		0%	1.7%	0%	0%		1.7%	0%	5.6%	0%		5.3%	-
<b>Articulated Trucks</b>	1	3	0		4	7	0	0		7	0	0	0		0	-
<b>Articulated Trucks %</b>	5%	3.4%	0%		3.7%	6%	0%	0%		5.8%	0%	0%	0%		0%	-
<b>Bicycles on Road</b>	0	0	0		0	0	0	0		0	0	1	0		1	-
<b>Bicycles on Road %</b>	0%	0%	0%		0%	0%	0%	0%		0%	0%	5.6%	0%		5.3%	-

Peak Hour: 08:15 AM - 09:15 AM Weather: Light Snow (-0.11 °C)



Peak Hour: 04:30 PM - 05:30 PM Weather: Light Snow (-0.48 °C)



# APPENDIX C

## Level of Service Definitions

## Level of Service Definitions

### Two-Way Stop Controlled Intersections

<b>Level of Service</b>	<b>Control Delay per Vehicle (seconds)</b>	<b>Interpretation</b>
A	$\leq 10$	EXCELLENT. Large and frequent gaps in traffic on the main roadway. Queuing on the minor street is rare.
B	$> 10$ and $\leq 15$	VERY GOOD. Many gaps exist in traffic on the main roadway. Queuing on the minor street is minimal.
C	$> 15$ and $\leq 25$	GOOD. Fewer gaps exist in traffic on the main roadway. Delay on minor approach becomes more noticeable.
D	$> 25$ and $\leq 35$	FAIR. Infrequent and shorter gaps in traffic on the main roadway. Queue lengths develop on the minor street.
E	$> 35$ and $\leq 50$	POOR. Very infrequent gaps in traffic on the main roadway. Queue lengths become noticeable.
F	$> 50$	UNSATISFACTORY. Very few gaps in traffic on the main roadway. Excessive delay with significant queue lengths on the minor street.

Adapted from Highway Capacity Manual 2000, Transportation Research Board

## Signalized Intersections

<b>Level of Service</b>	<b>Control Delay per Vehicle (seconds)</b>	<b>Interpretation</b>
A	$\leq 10$	EXCELLENT. Extremely favourable progression with most vehicles arriving during the green phase. Most vehicles do not stop and short cycle lengths may contribute to low delay.
B	$> 10$ and $\leq 20$	VERY GOOD. Very good progression and/or short cycle lengths with slightly more vehicles stopping than LOS "A" causing slightly higher levels of average delay.
C	$> 20$ and $\leq 35$	GOOD. Fair progression and longer cycle lengths lead to a greater number of vehicles stopping than LOS "B".
D	$> 35$ and $\leq 55$	FAIR. Congestion becomes noticeable with higher average delays resulting from a combination of long cycle lengths, high volume-to-capacity ratios and unfavourable progression.
E	$> 55$ and $\leq 80$	POOR. Lengthy delays values are indicative of poor progression, long cycle lengths and high volume-to-capacity ratios. Individual cycle failures are common with individual movement failures also common.
F	$> 80$	UNSATISFACTORY. Indicative of oversaturated conditions with vehicular demand greater than the capacity of the intersection.

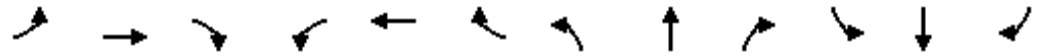
Adapted from Highway Capacity Manual 2000, Transportation Research Board

# APPENDIX D

## Detailed Capacity Analysis Reports

Lanes, Volumes, Timings  
 1: Highway 6 & Frederick Street West/Frederick Street East

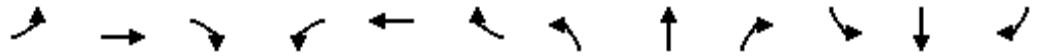
2025 Existing AM  
 02-10-2025



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	20	10	5	40	13	22	3	229	44	29	300	10
Future Volume (vph)	20	10	5	40	13	22	3	229	44	29	300	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.982			0.960			0.979			0.996	
Flt Protected		0.972			0.974			0.999			0.996	
Satd. Flow (prot)	0	1629	0	0	1658	0	0	1572	0	0	1736	0
Flt Permitted		0.929			0.901			0.997			0.964	
Satd. Flow (perm)	0	1557	0	0	1534	0	0	1569	0	0	1680	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			24			25			4	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		211.1			553.1			635.0			436.1	
Travel Time (s)		15.2			39.8			45.7			31.4	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	10%	10%	20%	10%	2%	5%	67%	15%	32%	7%	9%	0%
Adj. Flow (vph)	22	11	5	43	14	24	3	246	47	31	323	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	38	0	0	81	0	0	296	0	0	365	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (%)	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%		50.0%	50.0%	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.5			4.5			4.5			4.5	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Act Effct Green (s)		6.8			7.0			29.3			29.3	
Actuated g/C Ratio		0.19			0.19			0.80			0.80	
v/c Ratio		0.13			0.26			0.23			0.27	
Control Delay		11.2			11.1			3.8			4.1	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		11.2			11.1			3.8			4.1	
LOS		B			B			A			A	
Approach Delay		11.2			11.1			3.8			4.1	
Approach LOS		B			B			A			A	
Queue Length 50th (m)		1.8			3.0			0.0			0.0	
Queue Length 95th (m)		5.9			9.2			18.8			24.7	
Internal Link Dist (m)		187.1			529.1			611.0			412.1	
Turn Bay Length (m)												

Lanes, Volumes, Timings  
 1: Highway 6 & Frederick Street West/Frederick Street East

2025 Existing AM  
 02-10-2025



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)		771			770			1269				1354
Starvation Cap Reductn		0			0			0				0
Spillback Cap Reductn		0			0			0				0
Storage Cap Reductn		0			0			0				0
Reduced v/c Ratio		0.05			0.11			0.23				0.27

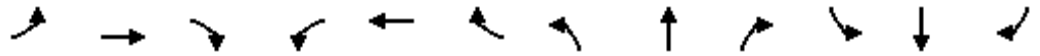
Intersection Summary	
Area Type:	Other
Cycle Length:	45
Actuated Cycle Length:	36.4
Natural Cycle:	45
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.27
Intersection Signal Delay:	5.1
Intersection LOS:	A
Intersection Capacity Utilization	47.5%
ICU Level of Service	A
Analysis Period (min)	15

Splits and Phases: 1: Highway 6 & Frederick Street West/Frederick Street East



HCM Signalized Intersection Capacity Analysis  
 1: Highway 6 & Frederick Street West/Frederick Street East

2025 Existing AM  
 02-10-2025



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	20	10	5	40	13	22	3	229	44	29	300	10
Future Volume (vph)	20	10	5	40	13	22	3	229	44	29	300	10
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5			4.5			4.5	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.98			0.96			0.98			1.00	
Flt Protected		0.97			0.97			1.00			1.00	
Satd. Flow (prot)		1629			1658			1572			1736	
Flt Permitted		0.93			0.90			1.00			0.96	
Satd. Flow (perm)		1557			1533			1568			1680	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	22	11	5	43	14	24	3	246	47	31	323	11
RTOR Reduction (vph)	0	5	0	0	22	0	0	8	0	0	1	0
Lane Group Flow (vph)	0	33	0	0	59	0	0	288	0	0	364	0
Heavy Vehicles (%)	10%	10%	20%	10%	2%	5%	67%	15%	32%	7%	9%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		3.4			3.4			26.7			26.7	
Effective Green, g (s)		3.4			3.4			26.7			26.7	
Actuated g/C Ratio		0.09			0.09			0.68			0.68	
Clearance Time (s)		4.5			4.5			4.5			4.5	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		135			133			1070			1147	
v/s Ratio Prot												
v/s Ratio Perm		0.02			0.04			0.18			0.22	
v/c Ratio		0.25			0.44			0.27			0.32	
Uniform Delay, d1		16.7			17.0			2.4			2.5	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		1.0			2.4			0.6			0.7	
Delay (s)		17.6			19.3			3.0			3.2	
Level of Service		B			B			A			A	
Approach Delay (s)		17.6			19.3			3.0			3.2	
Approach LOS		B			B			A			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			5.5									A
HCM 2000 Volume to Capacity ratio			0.33									
Actuated Cycle Length (s)			39.1								9.0	
Intersection Capacity Utilization			47.5%									A
Analysis Period (min)			15									
c Critical Lane Group												

Lanes, Volumes, Timings  
 2: Frederick Street East & Domville Street & Eliza Street

2025 Existing AM  
 02-10-2025



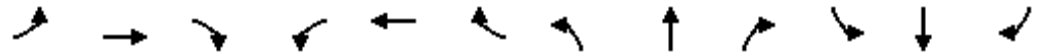
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	5	8	7	9	19	25	8	67	9	23	9	60
Future Volume (vph)	5	8	7	9	19	25	8	67	9	23	9	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.951			0.937			0.986			0.912	
Flt Protected		0.988			0.992			0.995			0.988	
Satd. Flow (prot)	0	1750	0	0	1731	0	0	1528	0	0	1595	0
Flt Permitted		0.988			0.992			0.995			0.988	
Satd. Flow (perm)	0	1750	0	0	1731	0	0	1528	0	0	1595	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		391.0			606.0			553.1			642.0	
Travel Time (s)		28.2			43.6			39.8			46.2	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	27%	2%	5%	2%	9%
Adj. Flow (vph)	6	10	9	11	24	31	10	84	11	29	11	75
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	25	0	0	66	0	0	105	0	0	115	0
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary

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

HCM Unsignalized Intersection Capacity Analysis  
 2: Frederick Street East & Domville Street & Eliza Street

2025 Existing AM  
 02-10-2025



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Traffic Volume (veh/h)	5	8	7	9	19	25	8	67	9	23	9	60
Future Volume (veh/h)	5	8	7	9	19	25	8	67	9	23	9	60
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	6	10	9	11	24	31	10	84	11	29	11	75
Approach Volume (veh/h)	25				66		105				115	
Crossing Volume (veh/h)	51				100		45				45	
High Capacity (veh/h)	1331				1281		1337				1337	
High v/c (veh/h)	0.02				0.05		0.08				0.09	
Low Capacity (veh/h)	1112				1067		1118				1118	
Low v/c (veh/h)	0.02				0.06		0.09				0.10	
<b>Intersection Summary</b>												
Maximum v/c High			0.09									
Maximum v/c Low			0.10									
Intersection Capacity Utilization			21.1%		ICU Level of Service						A	

Lanes, Volumes, Timings  
3: Eliza Street & Wells Street East

2025 Existing AM  
02-10-2025



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	105	100	0
Future Volume (vph)	0	0	0	105	100	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1863	0	0	1624	1776	0
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1624	1776	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	405.2			865.0	439.1	
Travel Time (s)	29.2			62.3	31.6	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles (%)	2%	2%	2%	17%	7%	2%
Adj. Flow (vph)	0	0	0	122	116	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	122	116	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	8.9%
ICU Level of Service	A
Analysis Period (min)	15

# HCM Unsignalized Intersection Capacity Analysis

## 3: Eliza Street & Wells Street East

2025 Existing AM  
02-10-2025



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	105	100	0
Future Volume (Veh/h)	0	0	0	105	100	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	0	0	0	122	116	0
<b>Pedestrians</b>						
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	238	116	116			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	238	116	116			
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	100	100			
cM capacity (veh/h)	750	936	1473			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	0	122	116			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1473	1700			
Volume to Capacity	0.00	0.00	0.07			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay	0.0					
Intersection Capacity Utilization	8.9%			ICU Level of Service	A	
Analysis Period (min)	15					



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	9	7	8	82	130	29
Future Volume (vph)	9	7	8	82	130	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.943				0.975	
Flt Protected	0.972			0.995		
Satd. Flow (prot)	1526	0	0	1618	1661	0
Flt Permitted	0.972			0.995		
Satd. Flow (perm)	1526	0	0	1618	1661	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	338.0			642.0	865.0	
Travel Time (s)	24.3			46.2	62.3	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	23%	2%	25%	16%	11%	14%
Adj. Flow (vph)	11	8	10	98	155	35
Shared Lane Traffic (%)						
Lane Group Flow (vph)	19	0	0	108	190	0
Sign Control	Stop			Free	Free	

**Intersection Summary**

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	21.0%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis  
 9: Eliza Street & Tucker Street

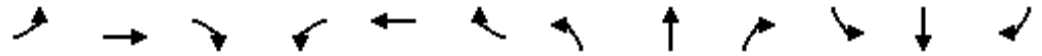
2025 Existing AM  
 02-10-2025



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	9	7	8	82	130	29
Future Volume (Veh/h)	9	7	8	82	130	29
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	11	8	10	98	155	35
<b>Pedestrians</b>						
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	290	172	190			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	290	172	190			
tC, single (s)	6.6	6.2	4.3			
tC, 2 stage (s)						
tF (s)	3.7	3.3	2.4			
p0 queue free %	98	99	99			
cM capacity (veh/h)	653	871	1257			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	19	108	190			
Volume Left	11	10	0			
Volume Right	8	0	35			
cSH	730	1257	1700			
Volume to Capacity	0.03	0.01	0.11			
Queue Length 95th (m)	0.6	0.2	0.0			
Control Delay (s)	10.1	0.8	0.0			
Lane LOS	B	A				
Approach Delay (s)	10.1	0.8	0.0			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay	0.9					
Intersection Capacity Utilization	21.0%			ICU Level of Service	A	
Analysis Period (min)	15					

Lanes, Volumes, Timings  
 1: Highway 6 & Frederick Street West/Frederick Street East

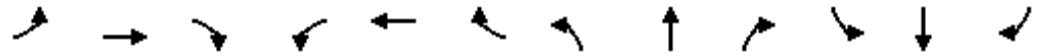
2025 Existing PM  
 02-10-2025



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	31	26	3	76	19	18	12	442	87	21	322	20
Future Volume (vph)	31	26	3	76	19	18	12	442	87	21	322	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr <sub>t</sub>		0.994			0.979			0.978			0.993	
Fl <sub>t</sub> Protected		0.975			0.967			0.999			0.997	
Satd. Flow (prot)	0	1805	0	0	1651	0	0	1775	0	0	1753	0
Fl <sub>t</sub> Permitted		0.838			0.758			0.991			0.963	
Satd. Flow (perm)	0	1552	0	0	1294	0	0	1760	0	0	1693	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			19			26			8	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		211.1			553.1			635.0			436.1	
Travel Time (s)		15.2			39.8			45.7			31.4	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	2%	2%	9%	6%	12%	2%	4%	8%	2%	8%	2%
Adj. Flow (vph)	33	28	3	81	20	19	13	470	93	22	343	21
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	64	0	0	120	0	0	576	0	0	386	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	22.5	22.5		22.5	22.5		27.5	27.5		27.5	27.5	
Total Split (%)	45.0%	45.0%		45.0%	45.0%		55.0%	55.0%		55.0%	55.0%	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.5			4.5			4.5			4.5	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Act Effct Green (s)		8.7			8.7			29.7			29.7	
Actuated g/C Ratio		0.20			0.20			0.67			0.67	
v/c Ratio		0.21			0.45			0.49			0.34	
Control Delay		14.7			18.2			7.3			6.1	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		14.7			18.2			7.3			6.1	
LOS		B			B			A			A	
Approach Delay		14.7			18.2			7.3			6.1	
Approach LOS		B			B			A			A	
Queue Length 50th (m)		3.9			6.7			20.4			12.4	
Queue Length 95th (m)		10.5			16.6			52.2			31.9	
Internal Link Dist (m)		187.1			529.1			611.0			412.1	
Turn Bay Length (m)												

Lanes, Volumes, Timings  
 1: Highway 6 & Frederick Street West/Frederick Street East

2025 Existing PM  
 02-10-2025

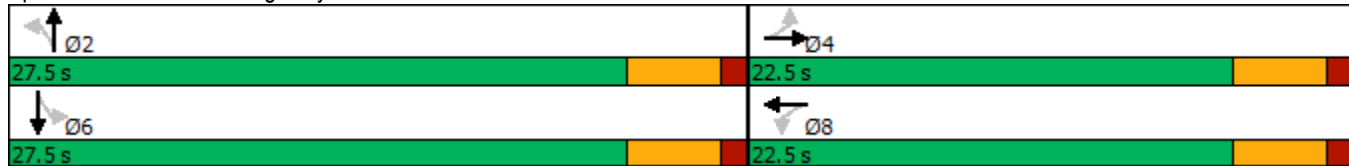


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)		635			539			1185			1134	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.10			0.22			0.49			0.34	

Intersection Summary

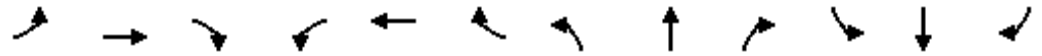
Area Type:	Other
Cycle Length:	50
Actuated Cycle Length:	44.4
Natural Cycle:	55
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.49
Intersection Signal Delay:	8.5
Intersection LOS:	A
Intersection Capacity Utilization	48.5%
ICU Level of Service	A
Analysis Period (min)	15

Splits and Phases: 1: Highway 6 & Frederick Street West/Frederick Street East



HCM Signalized Intersection Capacity Analysis  
 1: Highway 6 & Frederick Street West/Frederick Street East

2025 Existing PM  
 02-10-2025



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↕			↕			↕			↕		
Traffic Volume (vph)	31	26	3	76	19	18	12	442	87	21	322	20	
Future Volume (vph)	31	26	3	76	19	18	12	442	87	21	322	20	
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.5			4.5			4.5			4.5		
Lane Util. Factor		1.00			1.00			1.00			1.00		
Frt		0.99			0.98			0.98			0.99		
Flt Protected		0.97			0.97			1.00			1.00		
Satd. Flow (prot)		1804			1651			1775			1752		
Flt Permitted		0.84			0.76			0.99			0.96		
Satd. Flow (perm)		1551			1294			1760			1692		
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)	33	28	3	81	20	19	13	470	93	22	343	21	
RTOR Reduction (vph)	0	3	0	0	16	0	0	9	0	0	3	0	
Lane Group Flow (vph)	0	61	0	0	104	0	0	567	0	0	383	0	
Heavy Vehicles (%)	2%	2%	2%	9%	6%	12%	2%	4%	8%	2%	8%	2%	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA		
Protected Phases		4			8			2			6		
Permitted Phases	4			8			2			6			
Actuated Green, G (s)		7.5			7.5			28.8			28.8		
Effective Green, g (s)		7.5			7.5			28.8			28.8		
Actuated g/C Ratio		0.17			0.17			0.64			0.64		
Clearance Time (s)		4.5			4.5			4.5			4.5		
Vehicle Extension (s)		3.0			3.0			3.0			3.0		
Lane Grp Cap (vph)		256			214			1118			1075		
v/s Ratio Prot													
v/s Ratio Perm		0.04			0.08			0.32			0.23		
v/c Ratio		0.24			0.49			0.51			0.36		
Uniform Delay, d1		16.4			17.2			4.4			3.9		
Progression Factor		1.00			1.00			1.00			1.00		
Incremental Delay, d2		0.5			1.7			1.6			0.9		
Delay (s)		16.9			18.9			6.1			4.8		
Level of Service		B			B			A			A		
Approach Delay (s)		16.9			18.9			6.1			4.8		
Approach LOS		B			B			A			A		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			7.6									HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.50										
Actuated Cycle Length (s)			45.3									Sum of lost time (s)	9.0
Intersection Capacity Utilization			48.5%									ICU Level of Service	A
Analysis Period (min)			15										
c Critical Lane Group													

Lanes, Volumes, Timings  
 2: Frederick Street East & Domville Street & Eliza Street

2025 Existing PM  
 02-10-2025



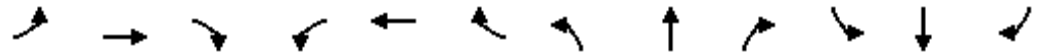
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	14	17	13	7	32	50	10	87	18	24	8	76
Future Volume (vph)	14	17	13	7	32	50	10	87	18	24	8	76
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.959			0.924			0.979			0.905	
Flt Protected		0.984			0.996			0.996			0.989	
Satd. Flow (prot)	0	1758	0	0	1672	0	0	1764	0	0	1591	0
Flt Permitted		0.984			0.996			0.996			0.989	
Satd. Flow (perm)	0	1758	0	0	1672	0	0	1764	0	0	1591	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		391.0			606.0			553.1			642.0	
Travel Time (s)		28.2			43.6			39.8			46.2	
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
Heavy Vehicles (%)	2%	2%	2%	34%	2%	2%	2%	6%	2%	2%	2%	9%
Adj. Flow (vph)	16	19	15	8	36	56	11	98	20	27	9	85
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	50	0	0	100	0	0	129	0	0	121	0
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary

Area Type:	Other
Control Type:	Roundabout
Intersection Capacity Utilization	25.4%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis  
 2: Frederick Street East & Domville Street & Eliza Street

2025 Existing PM  
 02-10-2025



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Traffic Volume (veh/h)	14	17	13	7	32	50	10	87	18	24	8	76
Future Volume (veh/h)	14	17	13	7	32	50	10	87	18	24	8	76
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)	16	19	15	8	36	56	11	98	20	27	9	85
Approach Volume (veh/h)	50		100				129			121		
Crossing Volume (veh/h)	44		125				62			55		
High Capacity (veh/h)	1338		1256				1319			1327		
High v/c (veh/h)	0.04		0.08				0.10			0.09		
Low Capacity (veh/h)	1119		1044				1102			1108		
Low v/c (veh/h)	0.04		0.10				0.12			0.11		
<b>Intersection Summary</b>												
Maximum v/c High			0.10									
Maximum v/c Low			0.12									
Intersection Capacity Utilization			25.4%				ICU Level of Service					A

Lanes, Volumes, Timings  
3: Eliza Street & Wells Street East

2025 Existing PM  
02-10-2025



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	157	136	0
Future Volume (vph)	0	0	0	157	136	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1863	0	0	1827	1759	0
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1827	1759	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	405.2			865.0	439.1	
Travel Time (s)	29.2			62.3	31.6	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	2%	2%	2%	4%	8%	2%
Adj. Flow (vph)	0	0	0	176	153	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	176	153	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	11.6%
ICU Level of Service	A
Analysis Period (min)	15

# HCM Unsignalized Intersection Capacity Analysis

## 3: Eliza Street & Wells Street East

2025 Existing PM  
02-10-2025



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	157	136	0
Future Volume (Veh/h)	0	0	0	157	136	0
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)	0	0	0	176	153	0
<b>Pedestrians</b>						
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	329	153	153			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	329	153	153			
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	100	100			
cM capacity (veh/h)	665	893	1428			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	0	176	153			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1428	1700			
Volume to Capacity	0.00	0.00	0.09			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay	0.0					
Intersection Capacity Utilization	11.6%			ICU Level of Service	A	
Analysis Period (min)	15					



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	21	2	5	134	103	23
Future Volume (vph)	21	2	5	134	103	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.990				0.976	
Flt Protected	0.956			0.998		
Satd. Flow (prot)	1646	0	0	1700	1664	0
Flt Permitted	0.956			0.998		
Satd. Flow (perm)	1646	0	0	1700	1664	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	338.0			642.0	865.0	
Travel Time (s)	24.3			46.2	62.3	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	10%	0%	0%	12%	12%	9%
Adj. Flow (vph)	25	2	6	160	123	27
Shared Lane Traffic (%)						
Lane Group Flow (vph)	27	0	0	166	150	0
Sign Control	Stop			Free	Free	

**Intersection Summary**

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

HCM Unsignalized Intersection Capacity Analysis  
 9: Eliza Street & Tucker Street

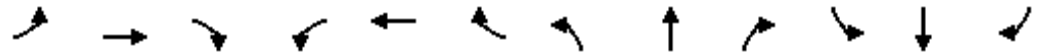
2025 Existing PM  
 02-10-2025



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	21	2	5	134	103	23
Future Volume (Veh/h)	21	2	5	134	103	23
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	25	2	6	160	123	27
<b>Pedestrians</b>						
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	308	136	150			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	308	136	150			
tC, single (s)	6.5	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.6	3.3	2.2			
p0 queue free %	96	100	100			
cM capacity (veh/h)	665	917	1444			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	27	166	150			
Volume Left	25	6	0			
Volume Right	2	0	27			
cSH	678	1444	1700			
Volume to Capacity	0.04	0.00	0.09			
Queue Length 95th (m)	1.0	0.1	0.0			
Control Delay (s)	10.5	0.3	0.0			
Lane LOS	B	A				
Approach Delay (s)	10.5	0.3	0.0			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			1.0			
Intersection Capacity Utilization			21.1%	ICU Level of Service	A	
Analysis Period (min)			15			

Lanes, Volumes, Timings  
 1: Highway 6 & Frederick Street West/Frederick Street East

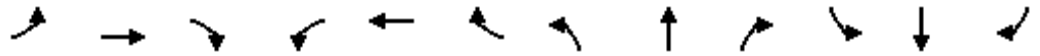
2030 Future Background AM  
 02-10-2025



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	23	12	6	45	15	25	4	253	49	33	332	12
Future Volume (vph)	23	12	6	45	15	25	4	253	49	33	332	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.982			0.960			0.978			0.996	
Flt Protected		0.972			0.974			0.999			0.996	
Satd. Flow (prot)	0	1629	0	0	1659	0	0	1568	0	0	1737	0
Flt Permitted		0.774			0.811			0.996			0.959	
Satd. Flow (perm)	0	1297	0	0	1381	0	0	1564	0	0	1672	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			27			26			4	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		211.1			553.1			635.0			436.1	
Travel Time (s)		15.2			39.8			45.7			31.4	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	10%	10%	20%	10%	2%	5%	67%	15%	32%	7%	9%	0%
Adj. Flow (vph)	25	13	6	48	16	27	4	272	53	35	357	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	44	0	0	91	0	0	329	0	0	405	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (%)	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%		50.0%	50.0%	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.5			4.5			4.5			4.5	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Act Effct Green (s)		7.2			7.2			26.9			26.9	
Actuated g/C Ratio		0.19			0.19			0.72			0.72	
v/c Ratio		0.17			0.32			0.29			0.34	
Control Delay		12.0			12.2			5.0			5.5	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		12.0			12.2			5.0			5.5	
LOS		B			B			A			A	
Approach Delay		12.0			12.2			5.0			5.5	
Approach LOS		B			B			A			A	
Queue Length 50th (m)		2.4			4.1			8.5			11.8	
Queue Length 95th (m)		6.6			10.2			22.0			29.2	
Internal Link Dist (m)		187.1			529.1			611.0			412.1	
Turn Bay Length (m)												

Lanes, Volumes, Timings  
 1: Highway 6 & Frederick Street West/Frederick Street East

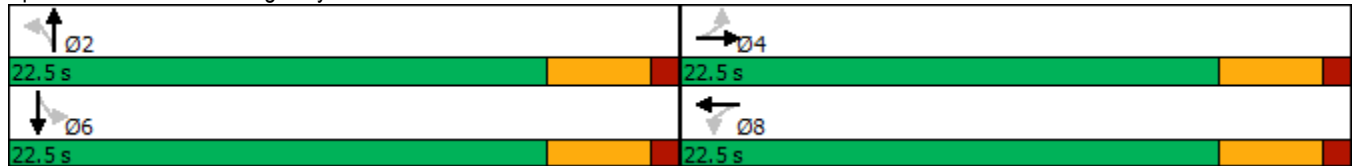
2030 Future Background AM  
 02-10-2025



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)		629			680			1136			1208	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.07			0.13			0.29			0.34	

Intersection Summary	
Area Type:	Other
Cycle Length:	45
Actuated Cycle Length:	37.3
Natural Cycle:	45
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.34
Intersection Signal Delay:	6.3
Intersection LOS:	A
Intersection Capacity Utilization	51.7%
ICU Level of Service	A
Analysis Period (min)	15

Splits and Phases: 1: Highway 6 & Frederick Street West/Frederick Street East



HCM Signalized Intersection Capacity Analysis  
 1: Highway 6 & Frederick Street West/Frederick Street East

2030 Future Background AM  
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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↕			↕			↕			↕		
Traffic Volume (vph)	23	12	6	45	15	25	4	253	49	33	332	12	
Future Volume (vph)	23	12	6	45	15	25	4	253	49	33	332	12	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.5			4.5			4.5			4.5		
Lane Util. Factor		1.00			1.00			1.00			1.00		
Frt		0.98			0.96			0.98			1.00		
Flt Protected		0.97			0.97			1.00			1.00		
Satd. Flow (prot)		1628			1659			1569			1735		
Flt Permitted		0.77			0.81			1.00			0.96		
Satd. Flow (perm)		1295			1381			1564			1671		
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	
Adj. Flow (vph)	25	13	6	48	16	27	4	272	53	35	357	13	
RTOR Reduction (vph)	0	5	0	0	24	0	0	9	0	0	1	0	
Lane Group Flow (vph)	0	39	0	0	67	0	0	320	0	0	404	0	
Heavy Vehicles (%)	10%	10%	20%	10%	2%	5%	67%	15%	32%	7%	9%	0%	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA		
Protected Phases		4			8			2			6		
Permitted Phases	4			8			2			6			
Actuated Green, G (s)		4.9			4.9			25.2			25.2		
Effective Green, g (s)		4.9			4.9			25.2			25.2		
Actuated g/C Ratio		0.13			0.13			0.64			0.64		
Clearance Time (s)		4.5			4.5			4.5			4.5		
Vehicle Extension (s)		3.0			3.0			3.0			3.0		
Lane Grp Cap (vph)		162			173			1008			1076		
v/s Ratio Prot													
v/s Ratio Perm		0.03			0.05			0.20			0.24		
v/c Ratio		0.24			0.39			0.32			0.38		
Uniform Delay, d1		15.4			15.7			3.1			3.3		
Progression Factor		1.00			1.00			1.00			1.00		
Incremental Delay, d2		0.8			1.5			0.8			1.0		
Delay (s)		16.2			17.2			3.9			4.3		
Level of Service		B			B			A			A		
Approach Delay (s)		16.2			17.2			3.9			4.3		
Approach LOS		B			B			A			A		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			6.1									HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.38										
Actuated Cycle Length (s)			39.1									Sum of lost time (s)	9.0
Intersection Capacity Utilization			51.7%									ICU Level of Service	A
Analysis Period (min)			15										
c Critical Lane Group													

Lanes, Volumes, Timings  
 2: Frederick Street East & Domville Street & Eliza Street

2030 Future Background AM  
 02-10-2025



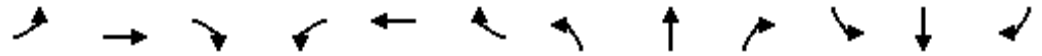
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	6	9	8	10	21	41	9	110	10	46	64	67
Future Volume (vph)	6	9	8	10	21	41	9	110	10	46	64	67
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.953			0.923			0.989			0.949	
Flt Protected		0.986			0.993			0.997			0.987	
Satd. Flow (prot)	0	1750	0	0	1707	0	0	1519	0	0	1688	0
Flt Permitted		0.986			0.993			0.997			0.987	
Satd. Flow (perm)	0	1750	0	0	1707	0	0	1519	0	0	1688	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		391.0			606.0			553.1			642.0	
Travel Time (s)		28.2			43.6			39.8			46.2	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	27%	2%	5%	2%	9%
Adj. Flow (vph)	8	11	10	13	26	51	11	138	13	58	80	84
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	29	0	0	90	0	0	162	0	0	222	0
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary

Area Type:	Other
Control Type:	Roundabout
Intersection Capacity Utilization	28.1%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis  
 2: Frederick Street East & Domville Street & Eliza Street

2030 Future Background AM  
 02-10-2025



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Traffic Volume (veh/h)	6	9	8	10	21	41	9	110	10	46	64	67
Future Volume (veh/h)	6	9	8	10	21	41	9	110	10	46	64	67
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	8	11	10	12	26	51	11	138	12	58	80	84
Approach Volume (veh/h)	29		89				161			222		
Crossing Volume (veh/h)	150				157			77			49	
High Capacity (veh/h)	1232				1225			1304			1333	
High v/c (veh/h)	0.02				0.07			0.12			0.17	
Low Capacity (veh/h)	1022				1016			1088			1114	
Low v/c (veh/h)	0.03				0.09			0.15			0.20	
<b>Intersection Summary</b>												
Maximum v/c High	0.17											
Maximum v/c Low	0.20											
Intersection Capacity Utilization	28.1%				ICU Level of Service				A			

Lanes, Volumes, Timings  
3: Eliza Street & Wells Street East

2030 Future Background AM  
02-10-2025



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	132	122	0
Future Volume (vph)	0	0	0	132	122	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1863	0	0	1624	1776	0
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1624	1776	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	405.2			865.0	439.1	
Travel Time (s)	29.2			62.3	31.6	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles (%)	2%	2%	2%	17%	7%	2%
Adj. Flow (vph)	0	0	0	153	142	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	153	142	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	10.3%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis  
3: Eliza Street & Wells Street East

2030 Future Background AM  
02-10-2025



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	132	122	0
Future Volume (Veh/h)	0	0	0	132	122	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	0	0	0	153	142	0
<b>Pedestrians</b>						
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	295	142	142			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	295	142	142			
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	100	100			
cM capacity (veh/h)	696	906	1441			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	0	153	142			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1441	1700			
Volume to Capacity	0.00	0.00	0.08			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay	0.0					
Intersection Capacity Utilization	10.3%			ICU Level of Service	A	
Analysis Period (min)	15					



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	30	81	58	91	144	45
Future Volume (vph)	30	81	58	91	144	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.902			0.968		
Flt Protected	0.987			0.981		
Satd. Flow (prot)	1570	0	0	1560	1646	0
Flt Permitted	0.987			0.981		
Satd. Flow (perm)	1570	0	0	1560	1646	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	338.0			642.0	865.0	
Travel Time (s)	24.3			46.2	62.3	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	23%	2%	25%	16%	11%	14%
Adj. Flow (vph)	36	96	69	108	171	54
Shared Lane Traffic (%)						
Lane Group Flow (vph)	132	0	0	177	225	0
Sign Control	Stop			Free	Free	

**Intersection Summary**

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	35.0% ICU Level of Service A
Analysis Period (min)	15



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	30	81	58	91	144	45
Future Volume (Veh/h)	30	81	58	91	144	45
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	36	96	69	108	171	54
<b>Pedestrians</b>						
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	444	198	225			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	444	198	225			
tC, single (s)	6.6	6.2	4.3			
tC, 2 stage (s)						
tF (s)	3.7	3.3	2.4			
p0 queue free %	93	89	94			
cM capacity (veh/h)	504	843	1219			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	132	177	225			
Volume Left	36	69	0			
Volume Right	96	0	54			
cSH	712	1219	1700			
Volume to Capacity	0.19	0.06	0.13			
Queue Length 95th (m)	5.4	1.4	0.0			
Control Delay (s)	11.2	3.5	0.0			
Lane LOS	B	A				
Approach Delay (s)	11.2	3.5	0.0			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			3.9			
Intersection Capacity Utilization			35.0%	ICU Level of Service	A	
Analysis Period (min)			15			

Lanes, Volumes, Timings  
 1: Highway 6 & Frederick Street West/Frederick Street East

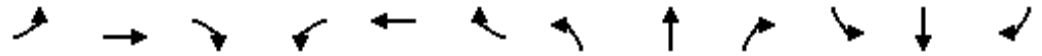
2030 Future Background PM  
 02-10-2025



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	35	29	4	84	21	20	14	489	97	24	356	23
Future Volume (vph)	35	29	4	84	21	20	14	489	97	24	356	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.992			0.979			0.978			0.992	
Flt Protected		0.975			0.967			0.999			0.997	
Satd. Flow (prot)	0	1802	0	0	1651	0	0	1775	0	0	1751	0
Flt Permitted		0.833			0.754			0.989			0.955	
Satd. Flow (perm)	0	1539	0	0	1287	0	0	1757	0	0	1678	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			18			26			8	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		211.1			553.1			635.0			436.1	
Travel Time (s)		15.2			39.8			45.7			31.4	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	2%	2%	9%	6%	12%	2%	4%	8%	2%	8%	2%
Adj. Flow (vph)	37	31	4	89	22	21	15	520	103	26	379	24
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	72	0	0	132	0	0	638	0	0	429	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	22.5	22.5		22.5	22.5		32.5	32.5		32.5	32.5	
Total Split (%)	40.9%	40.9%		40.9%	40.9%		59.1%	59.1%		59.1%	59.1%	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.5			4.5			4.5			4.5	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Act Effct Green (s)		9.6			9.6			33.7			33.7	
Actuated g/C Ratio		0.19			0.19			0.68			0.68	
v/c Ratio		0.24			0.50			0.53			0.37	
Control Delay		16.8			21.6			7.9			6.4	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		16.8			21.6			7.9			6.4	
LOS		B			C			A			A	
Approach Delay		16.8			21.6			7.9			6.4	
Approach LOS		B			C			A			A	
Queue Length 50th (m)		4.9			8.6			25.5			15.3	
Queue Length 95th (m)		12.8			20.9			65.3			38.9	
Internal Link Dist (m)		187.1			529.1			611.0			412.1	
Turn Bay Length (m)												

Lanes, Volumes, Timings  
 1: Highway 6 & Frederick Street West/Frederick Street East

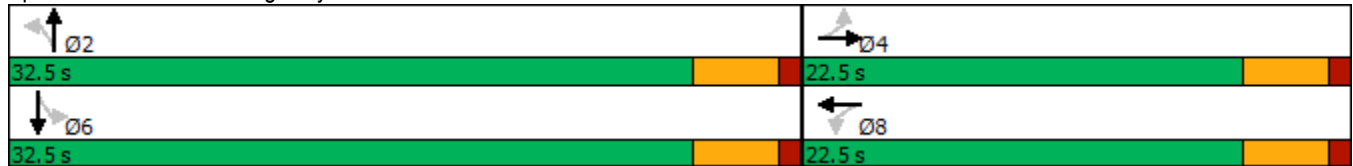
2030 Future Background PM  
 02-10-2025



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)		566			482			1210			1150	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.13			0.27			0.53			0.37	

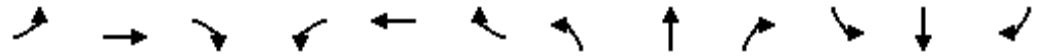
Intersection Summary	
Area Type:	Other
Cycle Length:	55
Actuated Cycle Length:	49.3
Natural Cycle:	60
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.53
Intersection Signal Delay:	9.3
Intersection LOS:	A
Intersection Capacity Utilization	53.0%
ICU Level of Service	A
Analysis Period (min)	15

Splits and Phases: 1: Highway 6 & Frederick Street West/Frederick Street East



HCM Signalized Intersection Capacity Analysis  
 1: Highway 6 & Frederick Street West/Frederick Street East

2030 Future Background PM  
 02-10-2025



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	35	29	4	84	21	20	14	489	97	24	356	23
Future Volume (vph)	35	29	4	84	21	20	14	489	97	24	356	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5			4.5			4.5	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.99			0.98			0.98			0.99	
Flt Protected		0.97			0.97			1.00			1.00	
Satd. Flow (prot)		1802			1650			1775			1752	
Flt Permitted		0.83			0.75			0.99			0.95	
Satd. Flow (perm)		1540			1286			1758			1678	
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)	37	31	4	89	22	21	15	520	103	26	379	24
RTOR Reduction (vph)	0	3	0	0	15	0	0	9	0	0	3	0
Lane Group Flow (vph)	0	69	0	0	117	0	0	629	0	0	426	0
Heavy Vehicles (%)	2%	2%	2%	9%	6%	12%	2%	4%	8%	2%	8%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		8.4			8.4			32.8			32.8	
Effective Green, g (s)		8.4			8.4			32.8			32.8	
Actuated g/C Ratio		0.17			0.17			0.65			0.65	
Clearance Time (s)		4.5			4.5			4.5			4.5	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		257			215			1148			1096	
v/s Ratio Prot												
v/s Ratio Perm		0.04			0.09			0.36			0.25	
v/c Ratio		0.27			0.54			0.55			0.39	
Uniform Delay, d1		18.2			19.1			4.7			4.0	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.6			2.8			1.9			1.0	
Delay (s)		18.8			21.9			6.6			5.1	
Level of Service		B			C			A			A	
Approach Delay (s)		18.8			21.9			6.6			5.1	
Approach LOS		B			C			A			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			8.4									A
HCM 2000 Volume to Capacity ratio			0.55									
Actuated Cycle Length (s)			50.2							9.0		
Intersection Capacity Utilization			53.0%									A
Analysis Period (min)			15									
c Critical Lane Group												

Lanes, Volumes, Timings  
2: Frederick Street East & Domville Street & Eliza Street

2030 Future Background PM  
02-10-2025



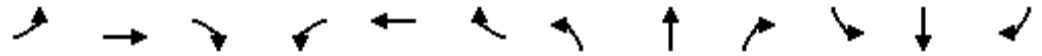
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	16	19	15	8	36	92	12	195	20	57	91	84
Future Volume (vph)	16	19	15	8	36	92	12	195	20	57	91	84
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.959			0.909			0.988			0.951	
Flt Protected		0.984			0.997			0.997			0.988	
Satd. Flow (prot)	0	1758	0	0	1657	0	0	1775	0	0	1708	0
Flt Permitted		0.984			0.997			0.997			0.988	
Satd. Flow (perm)	0	1758	0	0	1657	0	0	1775	0	0	1708	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		391.0			606.0			553.1			642.0	
Travel Time (s)		28.2			43.6			39.8			46.2	
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
Heavy Vehicles (%)	2%	2%	2%	34%	2%	2%	2%	6%	2%	2%	2%	9%
Adj. Flow (vph)	18	21	17	9	40	103	13	219	22	64	102	94
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	56	0	0	152	0	0	254	0	0	260	0
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary

Area Type:	Other
Control Type:	Roundabout
Intersection Capacity Utilization	43.5%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis  
 2: Frederick Street East & Domville Street & Eliza Street

2030 Future Background PM  
 02-10-2025



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Traffic Volume (veh/h)	16	19	15	8	36	92	12	195	20	57	91	84
Future Volume (veh/h)	16	19	15	8	36	92	12	195	20	57	91	84
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)	18	21	17	9	40	103	13	219	22	64	102	94
Approach Volume (veh/h)	56				152		254				260	
Crossing Volume (veh/h)	175				250		103				62	
High Capacity (veh/h)	1208				1138		1278				1319	
High v/c (veh/h)	0.05				0.13		0.20				0.20	
Low Capacity (veh/h)	1000				938		1064				1102	
Low v/c (veh/h)	0.06				0.16		0.24				0.24	
<b>Intersection Summary</b>												
Maximum v/c High											0.20	
Maximum v/c Low											0.24	
Intersection Capacity Utilization			43.5%		ICU Level of Service						A	

Lanes, Volumes, Timings  
3: Eliza Street & Wells Street East

2030 Future Background PM  
02-10-2025



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	199	181	0
Future Volume (vph)	0	0	0	199	181	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
<b>Frt</b>						
Flt Protected						
Satd. Flow (prot)	1863	0	0	1827	1759	0
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1827	1759	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	405.2			865.0	439.1	
Travel Time (s)	29.2			62.3	31.6	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	2%	2%	2%	4%	8%	2%
Adj. Flow (vph)	0	0	0	224	203	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	224	203	0
Sign Control	Stop			Free	Free	

**Intersection Summary**

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	13.8%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis  
3: Eliza Street & Wells Street East

2030 Future Background PM  
02-10-2025



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	199	181	0
Future Volume (Veh/h)	0	0	0	199	181	0
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)	0	0	0	224	203	0
<b>Pedestrians</b>						
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	427	203	203			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	427	203	203			
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	100	100			
cM capacity (veh/h)	584	838	1369			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	0	224	203			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1369	1700			
Volume to Capacity	0.00	0.00	0.12			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay	0.0					
Intersection Capacity Utilization	13.8%			ICU Level of Service	A	
Analysis Period (min)	15					



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	50	115	140	148	114	60
Future Volume (vph)	50	115	140	148	114	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.906				0.954	
Flt Protected	0.985			0.976		
Satd. Flow (prot)	1645	0	0	1747	1633	0
Flt Permitted	0.985			0.976		
Satd. Flow (perm)	1645	0	0	1747	1633	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	338.0			642.0	865.0	
Travel Time (s)	24.3			46.2	62.3	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	10%	0%	0%	12%	12%	9%
Adj. Flow (vph)	60	137	167	176	136	71
Shared Lane Traffic (%)						
Lane Group Flow (vph)	197	0	0	343	207	0
Sign Control	Stop			Free	Free	

**Intersection Summary**

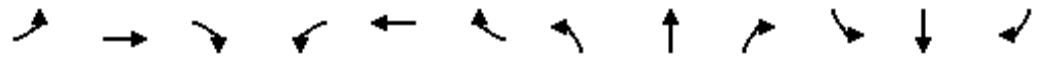
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	45.0%
ICU Level of Service	A
Analysis Period (min)	15



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	50	115	140	148	114	60
Future Volume (Veh/h)	50	115	140	148	114	60
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	60	137	167	176	136	71
<b>Pedestrians</b>						
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	682	172	207			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	682	172	207			
tC, single (s)	6.5	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.6	3.3	2.2			
p0 queue free %	83	84	88			
cM capacity (veh/h)	355	877	1376			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	197	343	207			
Volume Left	60	167	0			
Volume Right	137	0	71			
cSH	606	1376	1700			
Volume to Capacity	0.33	0.12	0.12			
Queue Length 95th (m)	11.3	3.3	0.0			
Control Delay (s)	13.8	4.4	0.0			
Lane LOS	B	A				
Approach Delay (s)	13.8	4.4	0.0			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			5.7			
Intersection Capacity Utilization			45.0%	ICU Level of Service	A	
Analysis Period (min)			15			

Lanes, Volumes, Timings  
 1: Highway 6 & Frederick Street West/Frederick Street East

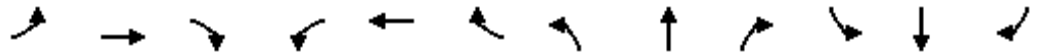
2030 Future Total AM  
 02-10-2025



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	23	52	6	45	134	25	4	253	49	33	332	12
Future Volume (vph)	23	52	6	45	134	25	4	253	49	33	332	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.991			0.983			0.978			0.996	
Flt Protected		0.986			0.989			0.999			0.996	
Satd. Flow (prot)	0	1649	0	0	1770	0	0	1561	0	0	1735	0
Flt Permitted		0.893			0.905			0.996			0.957	
Satd. Flow (perm)	0	1493	0	0	1620	0	0	1556	0	0	1667	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			16			26			4	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		211.1			553.1			635.0			436.1	
Travel Time (s)		15.2			39.8			45.7			31.4	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	11%	12%	25%	11%	2%	5%	100%	15%	33%	8%	9%	0%
Adj. Flow (vph)	25	56	6	48	144	27	4	272	53	35	357	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	87	0	0	219	0	0	329	0	0	405	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	22.5	22.5		22.5	22.5		27.5	27.5		27.5	27.5	
Total Split (%)	45.0%	45.0%		45.0%	45.0%		55.0%	55.0%		55.0%	55.0%	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.5			4.5			4.5			4.5	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Act Effct Green (s)		10.3			10.5			27.1			27.1	
Actuated g/C Ratio		0.24			0.24			0.62			0.62	
v/c Ratio		0.24			0.54			0.34			0.39	
Control Delay		13.5			18.2			7.0			7.8	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		13.5			18.2			7.0			7.8	
LOS		B			B			A			A	
Approach Delay		13.5			18.2			7.0			7.8	
Approach LOS		B			B			A			A	
Queue Length 50th (m)		5.0			13.4			11.2			15.6	
Queue Length 95th (m)		12.8			28.1			30.7			40.3	
Internal Link Dist (m)		187.1			529.1			611.0			412.1	
Turn Bay Length (m)												

Lanes, Volumes, Timings  
 1: Highway 6 & Frederick Street West/Frederick Street East

2030 Future Total AM  
 02-10-2025

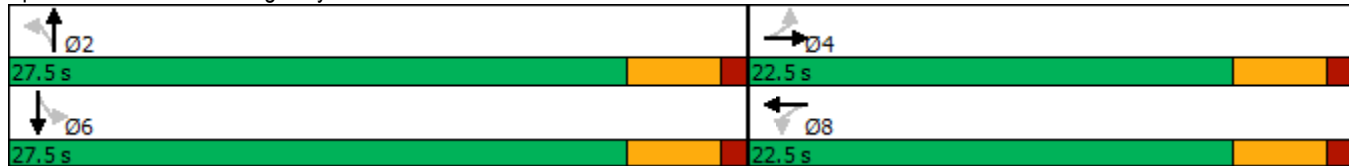


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)		623			682			980			1041	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.14			0.32			0.34			0.39	

Intersection Summary

Area Type:	Other
Cycle Length:	50
Actuated Cycle Length:	43.4
Natural Cycle:	45
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.54
Intersection Signal Delay:	10.2
Intersection LOS:	B
Intersection Capacity Utilization	59.5%
ICU Level of Service	B
Analysis Period (min)	15

Splits and Phases: 1: Highway 6 & Frederick Street West/Frederick Street East



HCM Signalized Intersection Capacity Analysis  
 1: Highway 6 & Frederick Street West/Frederick Street East

















2030 Future Total AM  
 02-10-2025



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↕			↕			↕			↕		
Traffic Volume (vph)	23	52	6	45	134	25	4	253	49	33	332	12	
Future Volume (vph)	23	52	6	45	134	25	4	253	49	33	332	12	
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.5			4.5			4.5			4.5		
Lane Util. Factor		1.00			1.00			1.00			1.00		
Frt		0.99			0.98			0.98			1.00		
Flt Protected		0.99			0.99			1.00			1.00		
Satd. Flow (prot)		1648			1771			1562			1734		
Flt Permitted		0.89			0.90			1.00			0.96		
Satd. Flow (perm)		1493			1620			1557			1667		
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	
Adj. Flow (vph)	25	56	6	48	144	27	4	272	53	35	357	13	
RTOR Reduction (vph)	0	5	0	0	13	0	0	11	0	0	2	0	
Lane Group Flow (vph)	0	82	0	0	206	0	0	318	0	0	403	0	
Heavy Vehicles (%)	11%	12%	25%	11%	2%	5%	100%	15%	33%	8%	9%	0%	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA		
Protected Phases		4			8			2			6		
Permitted Phases	4			8			2			6			
Actuated Green, G (s)		9.2			9.2			26.2			26.2		
Effective Green, g (s)		9.2			9.2			26.2			26.2		
Actuated g/C Ratio		0.21			0.21			0.59			0.59		
Clearance Time (s)		4.5			4.5			4.5			4.5		
Vehicle Extension (s)		3.0			3.0			3.0			3.0		
Lane Grp Cap (vph)		309			335			918			983		
v/s Ratio Prot													
v/s Ratio Perm		0.06			0.13			0.20			0.24		
v/c Ratio		0.27			0.62			0.35			0.41		
Uniform Delay, d1		14.8			16.0			4.7			4.9		
Progression Factor		1.00			1.00			1.00			1.00		
Incremental Delay, d2		0.5			3.3			1.0			1.3		
Delay (s)		15.2			19.3			5.7			6.2		
Level of Service		B			B			A			A		
Approach Delay (s)		15.2			19.3			5.7			6.2		
Approach LOS		B			B			A			A		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			9.6									HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.46										
Actuated Cycle Length (s)			44.4									Sum of lost time (s)	9.0
Intersection Capacity Utilization			59.5%									ICU Level of Service	B
Analysis Period (min)			15										
c Critical Lane Group													

Lanes, Volumes, Timings  
2: Frederick Street East & Domville Street & Eliza Street

2030 Future Total AM  
02-10-2025

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	9	8	10	21	56	9	150	10	90	183	67
Future Volume (vph)	6	9	8	10	21	56	9	150	10	90	183	67
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.953			0.913			0.992			0.973	
Flt Protected		0.986			0.994			0.997			0.987	
Satd. Flow (prot)	0	1750	0	0	1690	0	0	1513	0	0	1752	0
Flt Permitted		0.986			0.994			0.997			0.987	
Satd. Flow (perm)	0	1750	0	0	1690	0	0	1513	0	0	1752	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		391.0			606.0			553.1			638.1	
Travel Time (s)		28.2			43.6			39.8			45.9	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	27%	2%	5%	2%	9%
Adj. Flow (vph)	8	11	10	13	26	70	11	188	13	113	229	84
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	29	0	0	109	0	0	212	0	0	426	0
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary

Area Type: Other

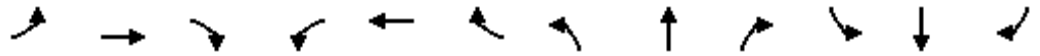
Control Type: Roundabout

Intersection Capacity Utilization 43.4% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis  
 2: Frederick Street East & Domville Street & Eliza Street

2030 Future Total AM  
 02-10-2025



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Traffic Volume (veh/h)	6	9	8	10	21	56	9	150	10	90	183	67
Future Volume (veh/h)	6	9	8	10	21	56	9	150	10	90	183	67
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	8	11	10	12	26	70	11	188	12	112	229	84
Approach Volume (veh/h)	29		108				211			425		
Crossing Volume (veh/h)	353				207			131			49	
High Capacity (veh/h)	1049				1178			1250			1333	
High v/c (veh/h)	0.03				0.09			0.17			0.32	
Low Capacity (veh/h)	858				973			1039			1114	
Low v/c (veh/h)	0.03				0.11			0.20			0.38	
<b>Intersection Summary</b>												
Maximum v/c High	0.32											
Maximum v/c Low	0.38											
Intersection Capacity Utilization	43.4%				ICU Level of Service				A			

Lanes, Volumes, Timings  
 3: Eliza Street & Wells Street East

2030 Future Total AM  
 02-10-2025



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	168	134	0
Future Volume (vph)	0	0	0	168	134	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1863	0	0	1624	1776	0
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1624	1776	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	359.5			130.1	439.1	
Travel Time (s)	25.9			9.4	31.6	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles (%)	2%	2%	2%	17%	7%	2%
Adj. Flow (vph)	0	0	0	195	156	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	195	156	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	12.2%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis  
 3: Eliza Street & Wells Street East

2030 Future Total AM  
 02-10-2025



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔			↑	↑	
Traffic Volume (veh/h)	0	0	0	168	134	0
Future Volume (Veh/h)	0	0	0	168	134	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	0	0	0	195	156	0
<b>Pedestrians</b>						
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	351	156	156			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	351	156	156			
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	100	100			
cM capacity (veh/h)	646	890	1424			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	0	195	156			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1700	1700			
Volume to Capacity	0.02	0.11	0.09			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay	0.0					
Intersection Capacity Utilization	12.2%			ICU Level of Service	A	
Analysis Period (min)	15					












Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	94	18	135	31	6	128
Future Volume (vph)	94	18	135	31	6	128
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.978		0.975			
Flt Protected	0.960					0.998
Satd. Flow (prot)	1749	0	1816	0	0	1859
Flt Permitted	0.960					0.998
Satd. Flow (perm)	1749	0	1816	0	0	1859
Link Speed (k/h)	50		50			50
Link Distance (m)	189.1		344.1			130.1
Travel Time (s)	13.6		24.8			9.4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	102	20	147	34	7	139
Shared Lane Traffic (%)						
Lane Group Flow (vph)	122	0	181	0	0	146
Sign Control	Stop		Free			Free

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	24.6% ICU Level of Service A
Analysis Period (min)	15

















HCM Unsignalized Intersection Capacity Analysis  
4: Eliza Street & Street R

2030 Future Total AM  
02-10-2025

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	94	18	135	31	6	128
Future Volume (Veh/h)	94	18	135	31	6	128
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	102	20	147	34	7	139
<b>Pedestrians</b>						
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	317	164			181	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	317	164			181	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	85	98			99	
cM capacity (veh/h)	673	881			1394	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	122	181	146			
Volume Left	102	0	7			
Volume Right	20	34	0			
cSH	700	1700	1394			
Volume to Capacity	0.17	0.11	0.01			
Queue Length 95th (m)	5.0	0.0	0.1			
Control Delay (s)	11.2	0.0	0.4			
Lane LOS	B		A			
Approach Delay (s)	11.2	0.0	0.4			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			3.2			
Intersection Capacity Utilization			24.6%	ICU Level of Service	A	
Analysis Period (min)			15			

Lanes, Volumes, Timings  
5: Eliza Street & Street A/Street G

2030 Future Total AM  
02-10-2025

















												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	0	62	90	0	0	21	148	30	0	216	6
Future Volume (vph)	18	0	62	90	0	0	21	148	30	0	216	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.896						0.979			0.996	
Flt Protected		0.989			0.950			0.995				
Satd. Flow (prot)	0	1651	0	0	1770	0	0	1815	0	0	1855	0
Flt Permitted		0.989			0.950			0.995				
Satd. Flow (perm)	0	1651	0	0	1770	0	0	1815	0	0	1855	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		131.4			261.3			213.4			344.1	
Travel Time (s)		9.5			18.8			15.4			24.8	
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
Adj. Flow (vph)	20	0	67	98	0	0	23	161	33	0	235	7
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	87	0	0	98	0	0	217	0	0	242	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	44.2%
Analysis Period (min)	15
	ICU Level of Service A

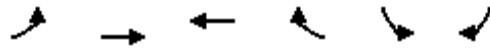
HCM Unsignalized Intersection Capacity Analysis  
5: Eliza Street & Street A/Street G

2030 Future Total AM  
02-10-2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	0	62	90	0	0	21	148	30	0	216	6
Future Volume (Veh/h)	18	0	62	90	0	0	21	148	30	0	216	6
Sign Control		Stop			Stop			Free			Free	
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)	20	0	67	98	0	0	23	161	33	0	235	7
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type												
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	462	478	238	529	466	178	242			194		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	462	478	238	529	466	178	242			194		
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 %	96	100	92	76	100	100	98			100		
cM capacity (veh/h)	503	478	800	416	486	866	1324			1379		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	87	98	217	242								
Volume Left	20	98	23	0								
Volume Right	67	0	33	7								
cSH	705	416	1324	1379								
Volume to Capacity	0.12	0.24	0.02	0.00								
Queue Length 95th (m)	3.4	7.2	0.4	0.0								
Control Delay (s)	10.8	16.3	1.0	0.0								
Lane LOS	B	C	A									
Approach Delay (s)	10.8	16.3	1.0	0.0								
Approach LOS	B	C										
Intersection Summary												
Average Delay			4.3									
Intersection Capacity Utilization			44.2%		ICU Level of Service				A			
Analysis Period (min)			15									

Lanes, Volumes, Timings  
6: Macauley Street & Street C

2030 Future Total AM  
02-10-2025

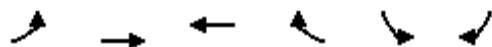


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↔		↙	↘
Traffic Volume (vph)	6	0	0	21	62	18
Future Volume (vph)	6	0	0	21	62	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.865		0.969	
Flt Protected		0.950			0.963	
Satd. Flow (prot)	0	1770	1611	0	1738	0
Flt Permitted		0.950			0.963	
Satd. Flow (perm)	0	1770	1611	0	1738	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		353.7	290.2		128.2	
Travel Time (s)		25.5	20.9		9.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	7	0	0	23	67	20
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	7	23	0	87	0
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	16.2% ICU Level of Service A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis  
6: Macauley Street & Street C










2030 Future Total AM  
02-10-2025



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	←		↘	↙
Traffic Volume (veh/h)	6	0	0	21	62	18
Future Volume (Veh/h)	6	0	0	21	62	18
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	0	0	23	67	20
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (m)		354				
pX, platoon unblocked						
vC, conflicting volume	23				26	12
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	23				26	12
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				93	98
cM capacity (veh/h)	1592				986	1069
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>SB 1</b>			
Volume Total	7	23	87			
Volume Left	7	0	67			
Volume Right	0	23	20			
cSH	1592	1700	1004			
Volume to Capacity	0.00	0.01	0.09			
Queue Length 95th (m)	0.1	0.0	2.3			
Control Delay (s)	7.3	0.0	8.9			
Lane LOS	A		A			
Approach Delay (s)	7.3	0.0	8.9			
Approach LOS			A			
<b>Intersection Summary</b>						
Average Delay			7.1			
Intersection Capacity Utilization			16.2%	ICU Level of Service	A	
Analysis Period (min)			15			

Lanes, Volumes, Timings  
7: Wells Street & Macauley Street

2030 Future Total AM  
02-10-2025










						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	18	0	6	0	0	0
Future Volume (vph)	18	0	6	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
<b>Frt</b>						
Flt Protected	0.950					
Satd. Flow (prot)	1770	0	1863	0	0	1863
Flt Permitted	0.950					
Satd. Flow (perm)	1770	0	1863	0	0	1863
Link Speed (k/h)	50		50			50
Link Distance (m)	353.7		844.4			89.5
Travel Time (s)	25.5		60.8			6.4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	20	0	7	0	0	0
<b>Shared Lane Traffic (%)</b>						
Lane Group Flow (vph)	20	0	7	0	0	0
Sign Control	Stop		Free			Free

**Intersection Summary**

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	13.3%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis  
7: Wells Street & Macauley Street

2030 Future Total AM  
02-10-2025

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	18	0	6	0	0	0
Future Volume (Veh/h)	18	0	6	0	0	0
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	20	0	7	0	0	0
<b>Pedestrians</b>						
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	7	7			7	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	7	7			7	
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	100			100	
cM capacity (veh/h)	1014	1075			1614	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	20	7	0			
Volume Left	20	0	0			
Volume Right	0	0	0			
cSH	1014	1700	1700			
Volume to Capacity	0.02	0.00	0.00			
Queue Length 95th (m)	0.5	0.0	0.0			
Control Delay (s)	8.6	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	8.6	0.0	0.0			
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay			6.4			
Intersection Capacity Utilization			13.3%	ICU Level of Service	A	
Analysis Period (min)			15			

Lanes, Volumes, Timings  
8: Eliza Street & Macauley Street

2030 Future Total AM  
02-10-2025



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	62	21	198	367	0
Future Volume (vph)	0	62	21	198	367	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865					
Flt Protected				0.995		
Satd. Flow (prot)	1611	0	0	1853	1863	0
Flt Permitted				0.995		
Satd. Flow (perm)	1611	0	0	1853	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	290.2			181.3	213.4	
Travel Time (s)	20.9			13.1	15.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	67	23	215	399	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	67	0	0	238	399	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	38.4%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis  
 8: Eliza Street & Macauley Street

2030 Future Total AM  
 02-10-2025



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	62	21	198	367	0
Future Volume (Veh/h)	0	62	21	198	367	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	67	23	215	399	0
<b>Pedestrians</b>						
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	660	399	399			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	660	399	399			
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	90	98			
cM capacity (veh/h)	419	651	1160			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	67	238	399			
Volume Left	0	23	0			
Volume Right	67	0	0			
cSH	651	1160	1700			
Volume to Capacity	0.10	0.02	0.23			
Queue Length 95th (m)	2.7	0.5	0.0			
Control Delay (s)	11.2	1.0	0.0			
Lane LOS	B	A				
Approach Delay (s)	11.2	1.0	0.0			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			1.4			
Intersection Capacity Utilization			38.4%	ICU Level of Service	A	
Analysis Period (min)			15			

Lanes, Volumes, Timings  
 9: Eliza Street & Tucker Street

2030 Future Total AM  
 02-10-2025



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	78	81	58	145	306	189
Future Volume (vph)	78	81	58	145	306	189
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.931			0.949		
Flt Protected	0.976			0.986		
Satd. Flow (prot)	1693	0	0	1837	1768	0
Flt Permitted	0.976			0.986		
Satd. Flow (perm)	1693	0	0	1837	1768	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	353.9			638.1	181.3	
Travel Time (s)	25.5			45.9	13.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	85	88	63	158	333	205
Shared Lane Traffic (%)						
Lane Group Flow (vph)	173	0	0	221	538	0
Sign Control	Stop			Free	Free	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	57.8% ICU Level of Service B
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis  
 9: Eliza Street & Tucker Street

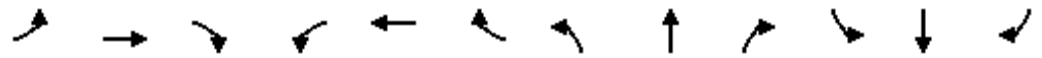
2030 Future Total AM  
 02-10-2025



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	78	81	58	145	306	189
Future Volume (Veh/h)	78	81	58	145	306	189
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	85	88	63	158	333	205
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)						181
pX, platoon unblocked						
vC, conflicting volume	720	436	538			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	720	436	538			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	77	86	94			
cM capacity (veh/h)	371	621	1030			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	173	221	538			
Volume Left	85	63	0			
Volume Right	88	0	205			
cSH	466	1030	1700			
Volume to Capacity	0.37	0.06	0.32			
Queue Length 95th (m)	13.5	1.6	0.0			
Control Delay (s)	17.2	2.9	0.0			
Lane LOS	C	A				
Approach Delay (s)	17.2	2.9	0.0			
Approach LOS	C					
<b>Intersection Summary</b>						
Average Delay			3.9			
Intersection Capacity Utilization			57.8%	ICU Level of Service	B	
Analysis Period (min)			15			

Lanes, Volumes, Timings  
 1: Highway 6 & Frederick Street West/Frederick Street East

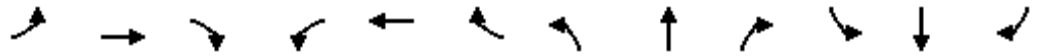
2030 Future Total PM  
 02-10-2025



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	35	163	4	84	101	20	14	489	97	24	356	23
Future Volume (vph)	35	163	4	84	101	20	14	489	97	24	356	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr <sub>t</sub>		0.997			0.987			0.978			0.992	
Fl <sub>t</sub> Protected		0.991			0.980			0.999			0.997	
Satd. Flow (prot)	0	1840	0	0	1705	0	0	1775	0	0	1751	0
Fl <sub>t</sub> Permitted		0.927			0.740			0.989			0.953	
Satd. Flow (perm)	0	1722	0	0	1287	0	0	1757	0	0	1674	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			9			26			8	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		211.1			553.1			635.0			436.1	
Travel Time (s)		15.2			39.8			45.7			31.4	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	2%	2%	9%	6%	12%	2%	4%	8%	2%	8%	2%
Adj. Flow (vph)	37	173	4	89	107	21	15	520	103	26	379	24
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	214	0	0	217	0	0	638	0	0	429	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	22.5	22.5		22.5	22.5		37.5	37.5		37.5	37.5	
Total Split (%)	37.5%	37.5%		37.5%	37.5%		62.5%	62.5%		62.5%	62.5%	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.5			4.5			4.5			4.5	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Act Effct Green (s)		13.1			13.1			34.2			34.2	
Actuated g/C Ratio		0.23			0.23			0.61			0.61	
v/c Ratio		0.53			0.71			0.59			0.42	
Control Delay		23.3			31.8			10.3			8.2	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		23.3			31.8			10.3			8.2	
LOS		C			C			B			A	
Approach Delay		23.3			31.8			10.3			8.2	
Approach LOS		C			C			B			A	
Queue Length 50th (m)		19.4			19.9			34.2			20.5	
Queue Length 95th (m)		36.2			39.7			76.5			45.8	
Internal Link Dist (m)		187.1			529.1			611.0			412.1	
Turn Bay Length (m)												

Lanes, Volumes, Timings  
 1: Highway 6 & Frederick Street West/Frederick Street East

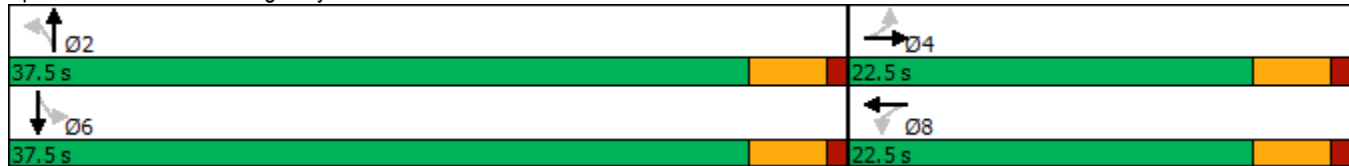
2030 Future Total PM  
 02-10-2025



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)		552			418			1077			1019	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.39			0.52			0.59			0.42	

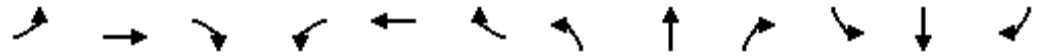
Intersection Summary	
Area Type:	Other
Cycle Length:	60
Actuated Cycle Length:	56.3
Natural Cycle:	60
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.71
Intersection Signal Delay:	14.7
Intersection LOS:	B
Intersection Capacity Utilization	66.1%
ICU Level of Service	C
Analysis Period (min)	15

Splits and Phases: 1: Highway 6 & Frederick Street West/Frederick Street East



HCM Signalized Intersection Capacity Analysis  
 1: Highway 6 & Frederick Street West/Frederick Street East

2030 Future Total PM  
 02-10-2025



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	35	163	4	84	101	20	14	489	97	24	356	23
Future Volume (vph)	35	163	4	84	101	20	14	489	97	24	356	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5			4.5			4.5	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		1.00			0.99			0.98			0.99	
Flt Protected		0.99			0.98			1.00			1.00	
Satd. Flow (prot)		1842			1704			1775			1752	
Flt Permitted		0.93			0.74			0.99			0.95	
Satd. Flow (perm)		1722			1287			1757			1675	
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)	37	173	4	89	107	21	15	520	103	26	379	24
RTOR Reduction (vph)	0	2	0	0	7	0	0	10	0	0	3	0
Lane Group Flow (vph)	0	212	0	0	210	0	0	628	0	0	426	0
Heavy Vehicles (%)	2%	2%	2%	9%	6%	12%	2%	4%	8%	2%	8%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		13.1			13.1			34.2			34.2	
Effective Green, g (s)		13.1			13.1			34.2			34.2	
Actuated g/C Ratio		0.23			0.23			0.61			0.61	
Clearance Time (s)		4.5			4.5			4.5			4.5	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		400			299			1067			1017	
v/s Ratio Prot												
v/s Ratio Perm		0.12			0.16			0.36			0.25	
v/c Ratio		0.53			0.70			0.59			0.42	
Uniform Delay, d1		18.9			19.8			6.8			5.8	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		1.4			7.3			2.4			1.3	
Delay (s)		20.3			27.1			9.1			7.1	
Level of Service		C			C			A			A	
Approach Delay (s)		20.3			27.1			9.1			7.1	
Approach LOS		C			C			A			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			12.7									B
HCM 2000 Volume to Capacity ratio			0.62									
Actuated Cycle Length (s)			56.3								9.0	
Intersection Capacity Utilization			66.1%									C
Analysis Period (min)			15									
c Critical Lane Group												

Lanes, Volumes, Timings  
 2: Frederick Street East & Domville Street & Eliza Street

2030 Future Total PM  
 02-10-2025















Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	16	19	15	8	36	141	12	329	20	86	171	84
Future Volume (vph)	16	19	15	8	36	141	12	329	20	86	171	84
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.959			0.897			0.993			0.967	
Flt Protected		0.984			0.998			0.998			0.987	
Satd. Flow (prot)	0	1758	0	0	1645	0	0	1782	0	0	1748	0
Flt Permitted		0.984			0.998			0.998			0.987	
Satd. Flow (perm)	0	1758	0	0	1645	0	0	1782	0	0	1748	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		391.0			606.0			553.1			638.1	
Travel Time (s)		28.2			43.6			39.8			45.9	
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
Heavy Vehicles (%)	2%	2%	2%	34%	2%	2%	2%	6%	2%	2%	2%	9%
Adj. Flow (vph)	18	21	17	9	40	158	13	370	22	97	192	94
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	56	0	0	207	0	0	405	0	0	383	0
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary

Area Type:	Other
Control Type:	Roundabout
Intersection Capacity Utilization	59.3%
ICU Level of Service	B
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis  
 2: Frederick Street East & Domville Street & Eliza Street

2030 Future Total PM  
 02-10-2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Traffic Volume (veh/h)	16	19	15	8	36	141	12	329	20	86	171	84
Future Volume (veh/h)	16	19	15	8	36	141	12	329	20	86	171	84
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)	18	21	17	9	40	158	13	370	22	97	192	94
Approach Volume (veh/h)		56			207			405			383	
Crossing Volume (veh/h)		298			401			136			62	
High Capacity (veh/h)		1096			1010			1245			1319	
High v/c (veh/h)		0.05			0.20			0.33			0.29	
Low Capacity (veh/h)		900			823			1034			1102	
Low v/c (veh/h)		0.06			0.25			0.39			0.35	
<b>Intersection Summary</b>												
Maximum v/c High											0.33	
Maximum v/c Low											0.39	
Intersection Capacity Utilization			59.3%			ICU Level of Service					B	

Lanes, Volumes, Timings  
 3: Eliza Street & Wells Street East

2030 Future Total PM  
 02-10-2025



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	224	222	0
Future Volume (vph)	0	0	0	224	222	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1863	0	0	1827	1759	0
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1827	1759	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	359.5			130.1	439.1	
Travel Time (s)	25.9			9.4	31.6	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	2%	2%	2%	4%	8%	2%
Adj. Flow (vph)	0	0	0	252	249	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	252	249	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	15.1%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis  
 3: Eliza Street & Wells Street East










2030 Future Total PM  
 02-10-2025



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	224	222	0
Future Volume (Veh/h)	0	0	0	224	222	0
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)	0	0	0	252	249	0
<b>Pedestrians</b>						
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	501	249	249			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	501	249	249			
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	100	100			
cM capacity (veh/h)	530	790	1317			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	0	252	249			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1700	1700			
Volume to Capacity	0.02	0.15	0.15			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay	0.0					
Intersection Capacity Utilization	15.1%			ICU Level of Service	A	
Analysis Period (min)	15					

Lanes, Volumes, Timings  
4: Eliza Street & Street R

2030 Future Total PM  
02-10-2025










						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	63	13	210	106	21	202
Future Volume (vph)	63	13	210	106	21	202
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.977		0.955			
Flt Protected	0.960					0.995
Satd. Flow (prot)	1747	0	1779	0	0	1853
Flt Permitted	0.960					0.995
Satd. Flow (perm)	1747	0	1779	0	0	1853
Link Speed (k/h)	50		50			50
Link Distance (m)	189.1		344.1			130.1
Travel Time (s)	13.6		24.8			9.4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	68	14	228	115	23	220
Shared Lane Traffic (%)						
Lane Group Flow (vph)	82	0	343	0	0	243
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	39.1% ICU Level of Service A
Analysis Period (min)	15

















HCM Unsignalized Intersection Capacity Analysis  
4: Eliza Street & Street R

2030 Future Total PM  
02-10-2025

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	63	13	210	106	21	202
Future Volume (Veh/h)	63	13	210	106	21	202
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	68	14	228	115	23	220
<b>Pedestrians</b>						
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	552	286			343	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	552	286			343	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	86	98			98	
cM capacity (veh/h)	486	754			1216	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	82	343	243			
Volume Left	68	0	23			
Volume Right	14	115	0			
cSH	517	1700	1216			
Volume to Capacity	0.16	0.20	0.02			
Queue Length 95th (m)	4.5	0.0	0.5			
Control Delay (s)	13.3	0.0	0.9			
Lane LOS	B		A			
Approach Delay (s)	13.3	0.0	0.9			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			2.0			
Intersection Capacity Utilization			39.1%	ICU Level of Service	A	
Analysis Period (min)			15			

Lanes, Volumes, Timings  
5: Eliza Street & Street A/Street G

2030 Future Total PM  
02-10-2025

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	0	42	61	0	0	69	303	102	0	244	21
Future Volume (vph)	13	0	42	61	0	0	69	303	102	0	244	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.896						0.971			0.989	
Flt Protected		0.988			0.950			0.993				
Satd. Flow (prot)	0	1649	0	0	1770	0	0	1796	0	0	1842	0
Flt Permitted		0.988			0.950			0.993				
Satd. Flow (perm)	0	1649	0	0	1770	0	0	1796	0	0	1842	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		131.4			261.3			213.4			344.1	
Travel Time (s)		9.5			18.8			15.4			24.8	
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
Adj. Flow (vph)	14	0	46	66	0	0	75	329	111	0	265	23
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	60	0	0	66	0	0	515	0	0	288	0
Sign Control		Stop			Stop			Free			Free	

**Intersection Summary**

Area Type: Other

















Control Type: Unsignalized

Intersection Capacity Utilization 60.1%      ICU Level of Service B

Analysis Period (min) 15

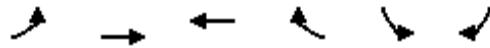
HCM Unsignalized Intersection Capacity Analysis  
5: Eliza Street & Street A/Street G

2030 Future Total PM  
02-10-2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	0	42	61	0	0	69	303	102	0	244	21
Future Volume (Veh/h)	13	0	42	61	0	0	69	303	102	0	244	21
Sign Control		Stop			Stop			Free			Free	
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)	14	0	46	66	0	0	75	329	111	0	265	23
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type												
								None			None	
Median storage veh												
Upstream signal (m)												
								213				
pX, platoon unblocked												
vC, conflicting volume	811	866	276	857	822	384	288			440		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	811	866	276	857	822	384	288			440		
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 %	95	100	94	73	100	100	94			100		
cM capacity (veh/h)	285	274	762	249	291	663	1274			1120		
Direction, Lane #												
	EB 1	WB 1	NB 1	SB 1								
Volume Total	60	66	515	288								
Volume Left	14	66	75	0								
Volume Right	46	0	111	23								
cSH	548	249	1274	1120								
Volume to Capacity	0.11	0.27	0.06	0.00								
Queue Length 95th (m)	2.9	8.3	1.5	0.0								
Control Delay (s)	12.4	24.6	1.7	0.0								
Lane LOS	B	C	A									
Approach Delay (s)	12.4	24.6	1.7	0.0								
Approach LOS	B	C										
Intersection Summary												
Average Delay			3.5									
Intersection Capacity Utilization			60.1%	ICU Level of Service		B						
Analysis Period (min)			15									

Lanes, Volumes, Timings  
6: Macauley Street & Street C

2030 Future Total PM  
02-10-2025

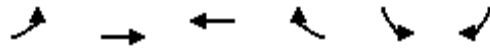


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↔		↕	
Traffic Volume (vph)	21	0	0	69	42	13
Future Volume (vph)	21	0	0	69	42	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.865		0.968	
Flt Protected		0.950			0.963	
Satd. Flow (prot)	0	1770	1611	0	1736	0
Flt Permitted		0.950			0.963	
Satd. Flow (perm)	0	1770	1611	0	1736	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		353.7	290.2		128.2	
Travel Time (s)		25.5	20.9		9.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	23	0	0	75	46	14
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	23	75	0	60	0
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	17.8% ICU Level of Service A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis  
6: Macauley Street & Street C










2030 Future Total PM  
02-10-2025



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Traffic Volume (veh/h)	21	0	0	69	42	13
Future Volume (Veh/h)	21	0	0	69	42	13
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	23	0	0	75	46	14
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (m)		354				
pX, platoon unblocked						
vC, conflicting volume	75			84	38	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	75			84	38	
tC, single (s)	4.1			6.4	6.2	
tC, 2 stage (s)						
tF (s)	2.2			3.5	3.3	
p0 queue free %	98			95	99	
cM capacity (veh/h)	1524			904	1035	
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>SB 1</b>			
Volume Total	23	75	60			
Volume Left	23	0	46			
Volume Right	0	75	14			
cSH	1524	1700	932			
Volume to Capacity	0.02	0.04	0.06			
Queue Length 95th (m)	0.4	0.0	1.6			
Control Delay (s)	7.4	0.0	9.1			
Lane LOS	A		A			
Approach Delay (s)	7.4	0.0	9.1			
Approach LOS			A			
<b>Intersection Summary</b>						
Average Delay			4.5			
Intersection Capacity Utilization			17.8%	ICU Level of Service	A	
Analysis Period (min)			15			










Lanes, Volumes, Timings  
7: Wells Street & Macauley Street

2030 Future Total PM  
02-10-2025

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	13	0	21	0	0	0
Future Volume (vph)	13	0	21	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
<b>Frt</b>						
Flt Protected	0.950					
Satd. Flow (prot)	1770	0	1863	0	0	1863
Flt Permitted	0.950					
Satd. Flow (perm)	1770	0	1863	0	0	1863
Link Speed (k/h)	50		50			50
Link Distance (m)	353.7		844.4			89.5
Travel Time (s)	25.5		60.8			6.4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	14	0	23	0	0	0
<b>Shared Lane Traffic (%)</b>						
Lane Group Flow (vph)	14	0	23	0	0	0
Sign Control	Stop		Free			Free
<b>Intersection Summary</b>						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	13.3%		ICU Level of Service A			
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis  
 7: Wells Street & Macauley Street

2030 Future Total PM  
 02-10-2025

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	13	0	21	0	0	0
Future Volume (Veh/h)	13	0	21	0	0	0
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	14	0	23	0	0	0
<b>Pedestrians</b>						
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	23	23			23	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	23	23			23	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	100			100	
cM capacity (veh/h)	993	1054			1592	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	14	23	0			
Volume Left	14	0	0			
Volume Right	0	0	0			
cSH	993	1700	1700			
Volume to Capacity	0.01	0.01	0.00			
Queue Length 95th (m)	0.3	0.0	0.0			
Control Delay (s)	8.7	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	8.7	0.0	0.0			
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay			3.3			
Intersection Capacity Utilization		13.3%		ICU Level of Service		A
Analysis Period (min)			15			

Lanes, Volumes, Timings  
 8: Eliza Street & Macauley Street

2030 Future Total PM  
 02-10-2025



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	42	69	473	346	0
Future Volume (vph)	0	42	69	473	346	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865					
Flt Protected				0.994		
Satd. Flow (prot)	1611	0	0	1852	1863	0
Flt Permitted				0.994		
Satd. Flow (perm)	1611	0	0	1852	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	290.2			181.3	213.4	
Travel Time (s)	20.9			13.1	15.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	46	75	514	376	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	46	0	0	589	376	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	60.3%
Analysis Period (min)	15
	ICU Level of Service B

HCM Unsignalized Intersection Capacity Analysis  
8: Eliza Street & Macauley Street

2030 Future Total PM  
02-10-2025



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	42	69	473	346	0
Future Volume (Veh/h)	0	42	69	473	346	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	46	75	514	376	0
<b>Pedestrians</b>						
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	1040	376	376			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1040	376	376			
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	93	94			
cM capacity (veh/h)	239	670	1182			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	46	589	376			
Volume Left	0	75	0			
Volume Right	46	0	0			
cSH	670	1182	1700			
Volume to Capacity	0.07	0.06	0.22			
Queue Length 95th (m)	1.8	1.6	0.0			
Control Delay (s)	10.8	1.7	0.0			
Lane LOS	B	A				
Approach Delay (s)	10.8	1.7	0.0			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			1.5			
Intersection Capacity Utilization			60.3%	ICU Level of Service	B	
Analysis Period (min)			15			

Lanes, Volumes, Timings  
 9: Eliza Street & Tucker Street

2030 Future Total PM  
 02-10-2025



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	212	115	140	330	223	157
Future Volume (vph)	212	115	140	330	223	157
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.952			0.944		
Flt Protected	0.969			0.985		
Satd. Flow (prot)	1718	0	0	1835	1758	0
Flt Permitted	0.969			0.985		
Satd. Flow (perm)	1718	0	0	1835	1758	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	353.9			638.1	181.3	
Travel Time (s)	25.5			45.9	13.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	230	125	152	359	242	171
Shared Lane Traffic (%)						
Lane Group Flow (vph)	355	0	0	511	413	0
Sign Control	Stop			Free	Free	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	75.2% ICU Level of Service D
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis  
 9: Eliza Street & Tucker Street

2030 Future Total PM  
 02-10-2025

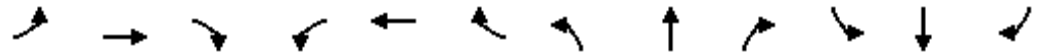


Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	212	115	140	330	223	157
Future Volume (Veh/h)	212	115	140	330	223	157
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	230	125	152	359	242	171
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)				181		
pX, platoon unblocked						
vC, conflicting volume	990	328	413			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	990	328	413			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	3	82	87			
cM capacity (veh/h)	237	714	1146			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	355	511	413			
Volume Left	230	152	0			
Volume Right	125	0	171			
cSH	310	1146	1700			
Volume to Capacity	1.15	0.13	0.24			
Queue Length 95th (m)	117.7	3.7	0.0			
Control Delay (s)	133.7	3.6	0.0			
Lane LOS	F	A				
Approach Delay (s)	133.7	3.6	0.0			
Approach LOS	F					
<b>Intersection Summary</b>						
Average Delay			38.5			
Intersection Capacity Utilization			75.2%	ICU Level of Service	D	
Analysis Period (min)			15			

Lanes, Volumes, Timings  
 1: Highway 6 & Frederick Street West/Frederick Street East

2035 Future Background AM

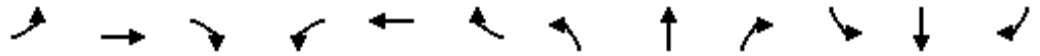
02-10-2025



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	25	13	7	49	16	27	4	280	54	36	366	13
Future Volume (vph)	25	13	7	49	16	27	4	280	54	36	366	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.978			0.960			0.978			0.996	
Flt Protected		0.973			0.974			0.999			0.996	
Satd. Flow (prot)	0	1620	0	0	1658	0	0	1569	0	0	1736	0
Flt Permitted		0.775			0.806			0.996			0.954	
Satd. Flow (perm)	0	1290	0	0	1372	0	0	1565	0	0	1663	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8			29			25			4	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		211.1			553.1			635.0			436.1	
Travel Time (s)		15.2			39.8			45.7			31.4	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	10%	10%	20%	10%	2%	5%	67%	15%	32%	7%	9%	0%
Adj. Flow (vph)	27	14	8	53	17	29	4	301	58	39	394	14
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	49	0	0	99	0	0	363	0	0	447	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (%)	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%		50.0%	50.0%	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.5			4.5			4.5			4.5	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Act Effct Green (s)		7.3			7.3			26.6			26.6	
Actuated g/C Ratio		0.20			0.20			0.72			0.72	
v/c Ratio		0.19			0.34			0.32			0.37	
Control Delay		11.7			12.3			5.3			5.9	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		11.7			12.3			5.3			5.9	
LOS		B			B			A			A	
Approach Delay		11.7			12.3			5.3			5.9	
Approach LOS		B			B			A			A	
Queue Length 50th (m)		2.4			4.2			9.8			13.7	
Queue Length 95th (m)		7.0			11.0			25.7			34.1	
Internal Link Dist (m)		187.1			529.1			611.0			412.1	
Turn Bay Length (m)												

Lanes, Volumes, Timings  
 1: Highway 6 & Frederick Street West/Frederick Street East

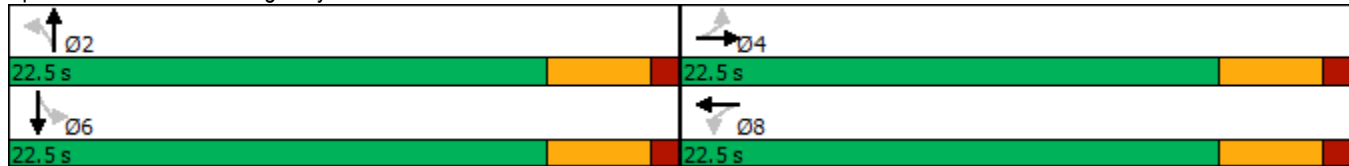
2035 Future Background AM  
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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)		630			680			1128			1193	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.08			0.15			0.32			0.37	

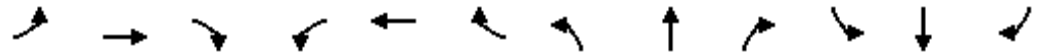
Intersection Summary	
Area Type:	Other
Cycle Length:	45
Actuated Cycle Length:	37.1
Natural Cycle:	45
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.37
Intersection Signal Delay:	6.7
Intersection Capacity Utilization	56.5%
Analysis Period (min)	15
	Intersection LOS: A
	ICU Level of Service B

Splits and Phases: 1: Highway 6 & Frederick Street West/Frederick Street East



HCM Signalized Intersection Capacity Analysis  
 1: Highway 6 & Frederick Street West/Frederick Street East

2035 Future Background AM  
 02-10-2025



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↕			↕			↕			↕		
Traffic Volume (vph)	25	13	7	49	16	27	4	280	54	36	366	13	
Future Volume (vph)	25	13	7	49	16	27	4	280	54	36	366	13	
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.5			4.5			4.5			4.5		
Lane Util. Factor		1.00			1.00			1.00			1.00		
Frt		0.98			0.96			0.98			1.00		
Flt Protected		0.97			0.97			1.00			1.00		
Satd. Flow (prot)		1620			1659			1571			1735		
Flt Permitted		0.77			0.81			1.00			0.95		
Satd. Flow (perm)		1289			1373			1566			1662		
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	
Adj. Flow (vph)	27	14	8	53	17	29	4	301	58	39	394	14	
RTOR Reduction (vph)	0	7	0	0	25	0	0	9	0	0	1	0	
Lane Group Flow (vph)	0	42	0	0	74	0	0	354	0	0	446	0	
Heavy Vehicles (%)	10%	10%	20%	10%	2%	5%	67%	15%	32%	7%	9%	0%	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA		
Protected Phases		4			8			2			6		
Permitted Phases	4			8			2			6			
Actuated Green, G (s)		5.1			5.1			24.8			24.8		
Effective Green, g (s)		5.1			5.1			24.8			24.8		
Actuated g/C Ratio		0.13			0.13			0.64			0.64		
Clearance Time (s)		4.5			4.5			4.5			4.5		
Vehicle Extension (s)		3.0			3.0			3.0			3.0		
Lane Grp Cap (vph)		168			180			998			1059		
v/s Ratio Prot													
v/s Ratio Perm		0.03			0.05			0.23			0.27		
v/c Ratio		0.25			0.41			0.35			0.42		
Uniform Delay, d1		15.2			15.5			3.3			3.5		
Progression Factor		1.00			1.00			1.00			1.00		
Incremental Delay, d2		0.8			1.5			1.0			1.2		
Delay (s)		16.0			17.0			4.3			4.7		
Level of Service		B			B			A			A		
Approach Delay (s)		16.0			17.0			4.3			4.7		
Approach LOS		B			B			A			A		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			6.4									HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.42										
Actuated Cycle Length (s)			38.9									Sum of lost time (s)	9.0
Intersection Capacity Utilization			56.5%									ICU Level of Service	B
Analysis Period (min)			15										
c Critical Lane Group													

Lanes, Volumes, Timings  
 2: Frederick Street East & Domville Street & Eliza Street

2035 Future Background AM  
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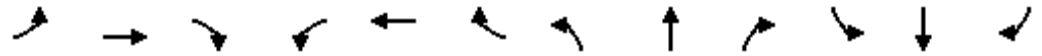
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	7	10	9	11	24	44	10	118	11	49	65	74
Future Volume (vph)	7	10	9	11	24	44	10	118	11	49	65	74
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.955			0.925			0.989			0.947	
Flt Protected		0.987			0.993			0.996			0.987	
Satd. Flow (prot)	0	1756	0	0	1711	0	0	1520	0	0	1683	0
Flt Permitted		0.987			0.993			0.996			0.987	
Satd. Flow (perm)	0	1756	0	0	1711	0	0	1520	0	0	1683	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		391.0			606.0			553.1			642.0	
Travel Time (s)		28.2			43.6			39.8			46.2	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	27%	2%	5%	2%	9%
Adj. Flow (vph)	9	13	11	14	30	55	13	148	14	61	81	93
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	33	0	0	99	0	0	175	0	0	235	0
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary

Area Type:	Other
Control Type:	Roundabout
Intersection Capacity Utilization	33.3%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis  
 2: Frederick Street East & Domville Street & Eliza Street

2035 Future Background AM  
 02-10-2025



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Traffic Volume (veh/h)	7	10	9	11	24	44	10	118	11	49	65	74
Future Volume (veh/h)	7	10	9	11	24	44	10	118	11	49	65	74
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	9	12	11	14	30	55	12	148	14	61	81	92
Approach Volume (veh/h)	32		99				174			234		
Crossing Volume (veh/h)	156				169			82			56	
High Capacity (veh/h)	1226				1213			1299			1326	
High v/c (veh/h)	0.03				0.08			0.13			0.18	
Low Capacity (veh/h)	1017				1005			1083			1107	
Low v/c (veh/h)	0.03				0.10			0.16			0.21	
<b>Intersection Summary</b>												
Maximum v/c High			0.18									
Maximum v/c Low			0.21									
Intersection Capacity Utilization			33.3%		ICU Level of Service				A			

Lanes, Volumes, Timings  
3: Eliza Street & Wells Street East

2035 Future Background AM  
02-10-2025



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	144	133	0
Future Volume (vph)	0	0	0	144	133	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1863	0	0	1624	1776	0
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1624	1776	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	405.2			865.0	439.1	
Travel Time (s)	29.2			62.3	31.6	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles (%)	2%	2%	2%	17%	7%	2%
Adj. Flow (vph)	0	0	0	167	155	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	167	155	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	10.9%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis  
 3: Eliza Street & Wells Street East

2035 Future Background AM  
 02-10-2025



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	144	133	0
Future Volume (Veh/h)	0	0	0	144	133	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	0	0	0	167	155	0
<b>Pedestrians</b>						
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	322	155	155			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	322	155	155			
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	100	100			
cM capacity (veh/h)	672	891	1425			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	0	167	155			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1425	1700			
Volume to Capacity	0.00	0.00	0.09			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay	0.0					
Intersection Capacity Utilization	10.9%			ICU Level of Service	A	
Analysis Period (min)	15					



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	31	82	59	100	159	48
Future Volume (vph)	31	82	59	100	159	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.902			0.969		
Flt Protected	0.986			0.982		
Satd. Flow (prot)	1568	0	0	1564	1648	0
Flt Permitted	0.986			0.982		
Satd. Flow (perm)	1568	0	0	1564	1648	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	338.0			642.0	865.0	
Travel Time (s)	24.3			46.2	62.3	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	23%	2%	25%	16%	11%	14%
Adj. Flow (vph)	37	98	70	119	189	57
Shared Lane Traffic (%)						
Lane Group Flow (vph)	135	0	0	189	246	0
Sign Control	Stop			Free	Free	

**Intersection Summary**

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	36.6%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis  
 9: Eliza Street & Tucker Street

2035 Future Background AM  
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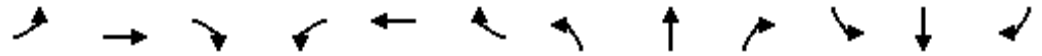


Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	31	82	59	100	159	48
Future Volume (Veh/h)	31	82	59	100	159	48
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	37	98	70	119	189	57
<b>Pedestrians</b>						
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	476	218	246			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	476	218	246			
tC, single (s)	6.6	6.2	4.3			
tC, 2 stage (s)						
tF (s)	3.7	3.3	2.4			
p0 queue free %	92	88	94			
cM capacity (veh/h)	481	822	1197			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	135	189	246			
Volume Left	37	70	0			
Volume Right	98	0	57			
cSH	688	1197	1700			
Volume to Capacity	0.20	0.06	0.14			
Queue Length 95th (m)	5.8	1.5	0.0			
Control Delay (s)	11.5	3.4	0.0			
Lane LOS	B	A				
Approach Delay (s)	11.5	3.4	0.0			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			3.8			
Intersection Capacity Utilization			36.6%	ICU Level of Service	A	
Analysis Period (min)			15			

Lanes, Volumes, Timings  
 1: Highway 6 & Frederick Street West/Frederick Street East

2035 Future Background PM

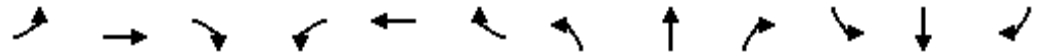
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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	38	32	4	93	24	22	15	539	107	26	393	25
Future Volume (vph)	38	32	4	93	24	22	15	539	107	26	393	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.993			0.979			0.978			0.992	
Flt Protected		0.975			0.968			0.999			0.997	
Satd. Flow (prot)	0	1803	0	0	1653	0	0	1775	0	0	1751	0
Flt Permitted		0.822			0.783			0.988			0.950	
Satd. Flow (perm)	0	1520	0	0	1337	0	0	1755	0	0	1669	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			16			26			8	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		211.1			553.1			635.0			436.1	
Travel Time (s)		15.2			39.8			45.7			31.4	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	2%	2%	9%	6%	12%	2%	4%	8%	2%	8%	2%
Adj. Flow (vph)	40	34	4	99	26	23	16	573	114	28	418	27
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	78	0	0	148	0	0	703	0	0	473	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	22.5	22.5		22.5	22.5		37.5	37.5		37.5	37.5	
Total Split (%)	37.5%	37.5%		37.5%	37.5%		62.5%	62.5%		62.5%	62.5%	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.5			4.5			4.5			4.5	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Act Effct Green (s)		10.7			10.8			38.2			38.2	
Actuated g/C Ratio		0.19			0.20			0.70			0.70	
v/c Ratio		0.26			0.54			0.57			0.41	
Control Delay		18.9			24.3			8.8			6.9	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		18.9			24.3			8.8			6.9	
LOS		B			C			A			A	
Approach Delay		18.9			24.3			8.8			6.9	
Approach LOS		B			C			A			A	
Queue Length 50th (m)		6.2			11.7			33.3			19.4	
Queue Length 95th (m)		15.2			25.9			84.2			48.4	
Internal Link Dist (m)		187.1			529.1			611.0			412.1	
Turn Bay Length (m)												

Lanes, Volumes, Timings  
 1: Highway 6 & Frederick Street West/Frederick Street East

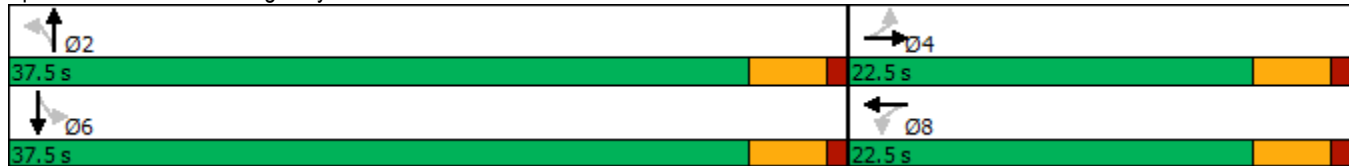
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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)		502			449			1229			1164	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.16			0.33			0.57			0.41	

Intersection Summary	
Area Type:	Other
Cycle Length:	60
Actuated Cycle Length:	54.9
Natural Cycle:	60
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.57
Intersection Signal Delay:	10.4
Intersection LOS:	B
Intersection Capacity Utilization	57.7%
ICU Level of Service	B
Analysis Period (min)	15

Splits and Phases: 1: Highway 6 & Frederick Street West/Frederick Street East



HCM Signalized Intersection Capacity Analysis  
 1: Highway 6 & Frederick Street West/Frederick Street East

2035 Future Background PM

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	38	32	4	93	24	22	15	539	107	26	393	25
Future Volume (vph)	38	32	4	93	24	22	15	539	107	26	393	25
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5			4.5			4.5	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.99			0.98			0.98			0.99	
Flt Protected		0.97			0.97			1.00			1.00	
Satd. Flow (prot)		1804			1652			1775			1752	
Flt Permitted		0.82			0.78			0.99			0.95	
Satd. Flow (perm)		1521			1337			1756			1669	
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)	40	34	4	99	26	23	16	573	114	28	418	27
RTOR Reduction (vph)	0	3	0	0	13	0	0	9	0	0	3	0
Lane Group Flow (vph)	0	75	0	0	135	0	0	694	0	0	470	0
Heavy Vehicles (%)	2%	2%	2%	9%	6%	12%	2%	4%	8%	2%	8%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		9.5			9.5			37.2			37.2	
Effective Green, g (s)		9.5			9.5			37.2			37.2	
Actuated g/C Ratio		0.17			0.17			0.67			0.67	
Clearance Time (s)		4.5			4.5			4.5			4.5	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		259			228			1172			1114	
v/s Ratio Prot												
v/s Ratio Perm		0.05			0.10			0.40			0.28	
v/c Ratio		0.29			0.59			0.59			0.42	
Uniform Delay, d1		20.2			21.3			5.1			4.3	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.6			4.1			2.2			1.2	
Delay (s)		20.8			25.4			7.3			5.5	
Level of Service		C			C			A			A	
Approach Delay (s)		20.8			25.4			7.3			5.5	
Approach LOS		C			C			A			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			9.3									A
HCM 2000 Volume to Capacity ratio			0.59									
Actuated Cycle Length (s)			55.7							9.0		
Intersection Capacity Utilization			57.7%									B
Analysis Period (min)			15									
c Critical Lane Group												

Lanes, Volumes, Timings  
 2: Frederick Street East & Domville Street & Eliza Street

2035 Future Background PM  
 02-10-2025



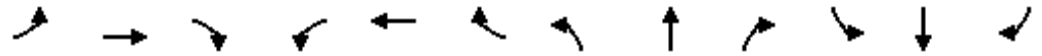
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	18	21	16	9	40	97	13	205	22	60	92	93
Future Volume (vph)	18	21	16	9	40	97	13	205	22	60	92	93
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.961			0.910			0.987			0.949	
Flt Protected		0.984			0.997			0.997			0.988	
Satd. Flow (prot)	0	1761	0	0	1658	0	0	1774	0	0	1702	0
Flt Permitted		0.984			0.997			0.997			0.988	
Satd. Flow (perm)	0	1761	0	0	1658	0	0	1774	0	0	1702	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		391.0			606.0			553.1			642.0	
Travel Time (s)		28.2			43.6			39.8			46.2	
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
Heavy Vehicles (%)	2%	2%	2%	34%	2%	2%	2%	6%	2%	2%	2%	9%
Adj. Flow (vph)	20	24	18	10	45	109	15	230	25	67	103	104
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	62	0	0	164	0	0	270	0	0	274	0
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary

Area Type:	Other
Control Type:	Roundabout
Intersection Capacity Utilization	45.7%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis  
 2: Frederick Street East & Domville Street & Eliza Street

2035 Future Background PM  
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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Traffic Volume (veh/h)	18	21	16	9	40	97	13	205	22	60	92	93
Future Volume (veh/h)	18	21	16	9	40	97	13	205	22	60	92	93
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)	20	24	18	10	45	109	15	230	25	67	103	104
Approach Volume (veh/h)	62				164		270				274	
Crossing Volume (veh/h)	180				265		111				70	
High Capacity (veh/h)	1203				1125		1270				1311	
High v/c (veh/h)	0.05				0.15		0.21				0.21	
Low Capacity (veh/h)	996				926		1057				1094	
Low v/c (veh/h)	0.06				0.18		0.26				0.25	
<b>Intersection Summary</b>												
Maximum v/c High					0.21							
Maximum v/c Low					0.26							
Intersection Capacity Utilization			45.7%		ICU Level of Service						A	

Lanes, Volumes, Timings  
3: Eliza Street & Wells Street East

2035 Future Background PM  
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Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	217	196	0
Future Volume (vph)	0	0	0	217	196	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1863	0	0	1827	1759	0
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1827	1759	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	405.2			865.0	439.1	
Travel Time (s)	29.2			62.3	31.6	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	2%	2%	2%	4%	8%	2%
Adj. Flow (vph)	0	0	0	244	220	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	244	220	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	14.8%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis  
3: Eliza Street & Wells Street East

2035 Future Background PM  
02-10-2025



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	217	196	0
Future Volume (Veh/h)	0	0	0	217	196	0
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)	0	0	0	244	220	0
<b>Pedestrians</b>						
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	464	220	220			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	464	220	220			
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	100	100			
cM capacity (veh/h)	556	820	1349			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	0	244	220			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1349	1700			
Volume to Capacity	0.00	0.00	0.13			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay	0.0					
Intersection Capacity Utilization	14.8%			ICU Level of Service	A	
Analysis Period (min)	15					



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	52	115	141	164	126	63
Future Volume (vph)	52	115	141	164	126	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.907				0.955	
Flt Protected	0.985			0.977		
Satd. Flow (prot)	1646	0	0	1744	1635	0
Flt Permitted	0.985			0.977		
Satd. Flow (perm)	1646	0	0	1744	1635	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	338.0			642.0	865.0	
Travel Time (s)	24.3			46.2	62.3	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	10%	0%	0%	12%	12%	9%
Adj. Flow (vph)	62	137	168	195	150	75
Shared Lane Traffic (%)						
Lane Group Flow (vph)	199	0	0	363	225	0
Sign Control	Stop			Free	Free	

**Intersection Summary**

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	46.9%
	ICU Level of Service A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis  
 9: Eliza Street & Tucker Street

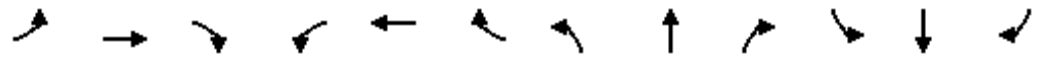
2035 Future Background PM  
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Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	52	115	141	164	126	63
Future Volume (Veh/h)	52	115	141	164	126	63
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	62	137	168	195	150	75
<b>Pedestrians</b>						
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	718	188	225			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	718	188	225			
tC, single (s)	6.5	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.6	3.3	2.2			
p0 queue free %	82	84	88			
cM capacity (veh/h)	336	860	1356			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	199	363	225			
Volume Left	62	168	0			
Volume Right	137	0	75			
cSH	579	1356	1700			
Volume to Capacity	0.34	0.12	0.13			
Queue Length 95th (m)	12.2	3.4	0.0			
Control Delay (s)	14.4	4.3	0.0			
Lane LOS	B	A				
Approach Delay (s)	14.4	4.3	0.0			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			5.6			
Intersection Capacity Utilization			46.9%	ICU Level of Service	A	
Analysis Period (min)			15			

Lanes, Volumes, Timings  
 1: Highway 6 & Frederick Street West/Frederick Street East

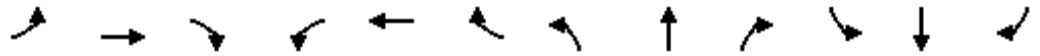
2035 Future Total AM  
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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	25	53	7	49	135	27	4	280	54	36	366	13
Future Volume (vph)	25	53	7	49	135	27	4	280	54	36	366	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.988			0.983			0.978			0.996	
Flt Protected		0.986			0.988			0.999			0.996	
Satd. Flow (prot)	0	1640	0	0	1766	0	0	1562	0	0	1735	0
Flt Permitted		0.895			0.904			0.996			0.952	
Satd. Flow (perm)	0	1489	0	0	1616	0	0	1558	0	0	1658	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8			14			25			4	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		211.1			553.1			635.0			436.1	
Travel Time (s)		15.2			39.8			45.7			31.4	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	11%	12%	25%	11%	2%	5%	100%	15%	33%	8%	9%	0%
Adj. Flow (vph)	27	57	8	53	145	29	4	301	58	39	394	14
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	92	0	0	227	0	0	363	0	0	447	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	22.5	22.5		22.5	22.5		32.5	32.5		32.5	32.5	
Total Split (%)	40.9%	40.9%		40.9%	40.9%		59.1%	59.1%		59.1%	59.1%	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.5			4.5			4.5			4.5	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Act Effct Green (s)		11.9			11.9			30.8			30.8	
Actuated g/C Ratio		0.23			0.23			0.59			0.59	
v/c Ratio		0.26			0.60			0.39			0.45	
Control Delay		15.5			22.5			7.5			8.5	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		15.5			22.5			7.5			8.5	
LOS		B			C			A			A	
Approach Delay		15.5			22.5			7.5			8.5	
Approach LOS		B			C			A			A	
Queue Length 50th (m)		6.1			16.9			13.9			19.4	
Queue Length 95th (m)		15.1			33.5			36.5			48.4	
Internal Link Dist (m)		187.1			529.1			611.0			412.1	
Turn Bay Length (m)												

Lanes, Volumes, Timings  
 1: Highway 6 & Frederick Street West/Frederick Street East

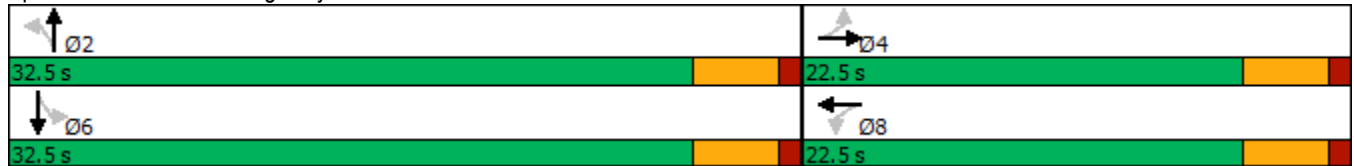
2035 Future Total AM  
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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)		526			575			937			988	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.17			0.39			0.39			0.45	

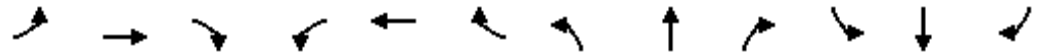
Intersection Summary	
Area Type:	Other
Cycle Length:	55
Actuated Cycle Length:	51.8
Natural Cycle:	45
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.60
Intersection Signal Delay:	11.6
Intersection LOS:	B
Intersection Capacity Utilization	64.3%
ICU Level of Service	C
Analysis Period (min)	15

Splits and Phases: 1: Highway 6 & Frederick Street West/Frederick Street East



HCM Signalized Intersection Capacity Analysis  
 1: Highway 6 & Frederick Street West/Frederick Street East

2035 Future Total AM  
 02-10-2025



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↕			↕			↕			↕		
Traffic Volume (vph)	25	53	7	49	135	27	4	280	54	36	366	13	
Future Volume (vph)	25	53	7	49	135	27	4	280	54	36	366	13	
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		4.5			4.5			4.5			4.5		
Lane Util. Factor		1.00			1.00			1.00			1.00		
Frt		0.99			0.98			0.98			1.00		
Flt Protected		0.99			0.99			1.00			1.00		
Satd. Flow (prot)		1640			1766			1564			1734		
Flt Permitted		0.90			0.90			1.00			0.95		
Satd. Flow (perm)		1490			1615			1559			1658		
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	
Adj. Flow (vph)	27	57	8	53	145	29	4	301	58	39	394	14	
RTOR Reduction (vph)	0	6	0	0	11	0	0	10	0	0	2	0	
Lane Group Flow (vph)	0	86	0	0	216	0	0	353	0	0	445	0	
Heavy Vehicles (%)	11%	12%	25%	11%	2%	5%	100%	15%	33%	8%	9%	0%	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA		
Protected Phases		4			8			2			6		
Permitted Phases	4			8			2			6			
Actuated Green, G (s)		11.9			11.9			30.8			30.8		
Effective Green, g (s)		11.9			11.9			30.8			30.8		
Actuated g/C Ratio		0.23			0.23			0.60			0.60		
Clearance Time (s)		4.5			4.5			4.5			4.5		
Vehicle Extension (s)		3.0			3.0			3.0			3.0		
Lane Grp Cap (vph)		342			371			928			987		
v/s Ratio Prot													
v/s Ratio Perm		0.06			0.13			0.23			0.27		
v/c Ratio		0.25			0.58			0.38			0.45		
Uniform Delay, d1		16.3			17.7			5.5			5.8		
Progression Factor		1.00			1.00			1.00			1.00		
Incremental Delay, d2		0.4			2.3			1.2			1.5		
Delay (s)		16.6			20.0			6.6			7.3		
Level of Service		B			C			A			A		
Approach Delay (s)		16.6			20.0			6.6			7.3		
Approach LOS		B			C			A			A		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			10.4									HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.49										
Actuated Cycle Length (s)			51.7									Sum of lost time (s)	9.0
Intersection Capacity Utilization			64.3%									ICU Level of Service	C
Analysis Period (min)			15										
c Critical Lane Group													

Lanes, Volumes, Timings  
 2: Frederick Street East & Domville Street & Eliza Street

2035 Future Total AM  
 02-10-2025



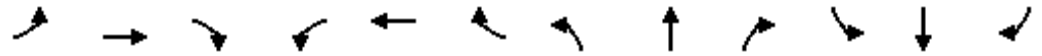
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	7	10	9	11	24	59	10	158	11	93	184	74
Future Volume (vph)	7	10	9	11	24	59	10	158	11	93	184	74
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.955			0.915			0.992			0.971	
Flt Protected		0.987			0.994			0.997			0.987	
Satd. Flow (prot)	0	1756	0	0	1694	0	0	1515	0	0	1746	0
Flt Permitted		0.987			0.994			0.997			0.987	
Satd. Flow (perm)	0	1756	0	0	1694	0	0	1515	0	0	1746	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		391.0			606.0			553.1			638.1	
Travel Time (s)		28.2			43.6			39.8			45.9	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	27%	2%	5%	2%	9%
Adj. Flow (vph)	9	13	11	14	30	74	13	198	14	116	230	93
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	33	0	0	118	0	0	225	0	0	439	0
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary

Area Type:	Other
Control Type:	Roundabout
Intersection Capacity Utilization	45.0%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis  
 2: Frederick Street East & Domville Street & Eliza Street

2035 Future Total AM  
 02-10-2025



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Traffic Volume (veh/h)	7	10	9	11	24	59	10	158	11	93	184	74
Future Volume (veh/h)	7	10	9	11	24	59	10	158	11	93	184	74
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	9	12	11	14	30	74	12	198	14	116	230	92
Approach Volume (veh/h)		32			118			224				438
Crossing Volume (veh/h)		360			219			137				56
High Capacity (veh/h)		1044			1167			1244				1326
High v/c (veh/h)		0.03			0.10			0.18				0.33
Low Capacity (veh/h)		853			963			1033				1107
Low v/c (veh/h)		0.04			0.12			0.22				0.40
<b>Intersection Summary</b>												
Maximum v/c High											0.33	
Maximum v/c Low											0.40	
Intersection Capacity Utilization			45.0%				ICU Level of Service				A	

Lanes, Volumes, Timings  
3: Eliza Street & Wells Street East

2035 Future Total AM  
02-10-2025



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	180	145	0
Future Volume (vph)	0	0	0	180	145	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1863	0	0	1624	1776	0
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1624	1776	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	359.5			130.1	439.1	
Travel Time (s)	25.9			9.4	31.6	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles (%)	2%	2%	2%	17%	7%	2%
Adj. Flow (vph)	0	0	0	209	169	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	209	169	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	12.8%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis  
 3: Eliza Street & Wells Street East

2035 Future Total AM  
 02-10-2025



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	180	145	0
Future Volume (Veh/h)	0	0	0	180	145	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	0	0	0	209	169	0
<b>Pedestrians</b>						
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	378	169	169			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	378	169	169			
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	100	100			
cM capacity (veh/h)	624	875	1409			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	0	209	169			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1700	1700			
Volume to Capacity	0.02	0.12	0.10			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay	0.0					
Intersection Capacity Utilization	12.8%			ICU Level of Service	A	
Analysis Period (min)	15					



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	94	18	145	31	6	139
Future Volume (vph)	94	18	145	31	6	139
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.978		0.976			
Flt Protected	0.960					0.998
Satd. Flow (prot)	1749	0	1818	0	0	1859
Flt Permitted	0.960					0.998
Satd. Flow (perm)	1749	0	1818	0	0	1859
Link Speed (k/h)	50		50			50
Link Distance (m)	189.1		344.1			130.1
Travel Time (s)	13.6		24.8			9.4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	102	20	158	34	7	151
Shared Lane Traffic (%)						
Lane Group Flow (vph)	122	0	192	0	0	158
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	25.2%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis  
4: Eliza Street & Street R

















2035 Future Total AM  
02-10-2025



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	94	18	145	31	6	139
Future Volume (Veh/h)	94	18	145	31	6	139
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	102	20	158	34	7	151
<b>Pedestrians</b>						
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	340	175			192	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	340	175			192	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	84	98			99	
cM capacity (veh/h)	653	868			1381	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	122	192	158			
Volume Left	102	0	7			
Volume Right	20	34	0			
cSH	680	1700	1381			
Volume to Capacity	0.18	0.11	0.01			
Queue Length 95th (m)	5.2	0.0	0.1			
Control Delay (s)	11.4	0.0	0.4			
Lane LOS	B		A			
Approach Delay (s)	11.4	0.0	0.4			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			3.1			
Intersection Capacity Utilization			25.2%	ICU Level of Service	A	
Analysis Period (min)			15			

Lanes, Volumes, Timings  
5: Eliza Street & Street A/Street G

















2035 Future Total AM  
02-10-2025

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	0	62	90	0	0	21	158	30	0	227	6
Future Volume (vph)	18	0	62	90	0	0	21	158	30	0	227	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.896						0.980			0.996	
Flt Protected		0.989			0.950			0.995				
Satd. Flow (prot)	0	1651	0	0	1770	0	0	1816	0	0	1855	0
Flt Permitted		0.989			0.950			0.995				
Satd. Flow (perm)	0	1651	0	0	1770	0	0	1816	0	0	1855	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		131.4			261.3			213.4			344.1	
Travel Time (s)		9.5			18.8			15.4			24.8	
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
Adj. Flow (vph)	20	0	67	98	0	0	23	172	33	0	247	7
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	87	0	0	98	0	0	228	0	0	254	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	45.3%
Analysis Period (min)	15
	ICU Level of Service A

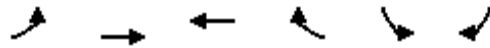
HCM Unsignalized Intersection Capacity Analysis  
5: Eliza Street & Street A/Street G

2035 Future Total AM  
02-10-2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	0	62	90	0	0	21	158	30	0	227	6
Future Volume (Veh/h)	18	0	62	90	0	0	21	158	30	0	227	6
Sign Control		Stop			Stop			Free			Free	
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)	20	0	67	98	0	0	23	172	33	0	247	7
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type												
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	485	502	250	552	488	188	254			205		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	485	502	250	552	488	188	254			205		
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 %	96	100	91	76	100	100	98			100		
cM capacity (veh/h)	486	463	788	401	471	853	1311			1366		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	87	98	228	254								
Volume Left	20	98	23	0								
Volume Right	67	0	33	7								
cSH	690	401	1311	1366								
Volume to Capacity	0.13	0.24	0.02	0.00								
Queue Length 95th (m)	3.4	7.6	0.4	0.0								
Control Delay (s)	11.0	16.9	0.9	0.0								
Lane LOS	B	C	A									
Approach Delay (s)	11.0	16.9	0.9	0.0								
Approach LOS	B	C										
Intersection Summary												
Average Delay			4.2									
Intersection Capacity Utilization			45.3%		ICU Level of Service				A			
Analysis Period (min)			15									

Lanes, Volumes, Timings  
6: Macauley Street & Street C

2035 Future Total AM  
02-10-2025



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	6	0	0	21	62	18
Future Volume (vph)	6	0	0	21	62	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.865		0.969	
Flt Protected		0.950			0.963	
Satd. Flow (prot)	0	1770	1611	0	1738	0
Flt Permitted		0.950			0.963	
Satd. Flow (perm)	0	1770	1611	0	1738	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		353.7	290.2		128.2	
Travel Time (s)		25.5	20.9		9.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	7	0	0	23	67	20
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	7	23	0	87	0
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	16.2% ICU Level of Service A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis  
6: Macauley Street & Street C

2035 Future Total AM  
02-10-2025



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	←		↘	
Traffic Volume (veh/h)	6	0	0	21	62	18
Future Volume (Veh/h)	6	0	0	21	62	18
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	0	0	23	67	20
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (m)		354				
pX, platoon unblocked						
vC, conflicting volume	23			26	12	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	23			26	12	
tC, single (s)	4.1			6.4	6.2	
tC, 2 stage (s)						
tF (s)	2.2			3.5	3.3	
p0 queue free %	100			93	98	
cM capacity (veh/h)	1592			986	1069	
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>SB 1</b>			
Volume Total	7	23	87			
Volume Left	7	0	67			
Volume Right	0	23	20			
cSH	1592	1700	1004			
Volume to Capacity	0.00	0.01	0.09			
Queue Length 95th (m)	0.1	0.0	2.3			
Control Delay (s)	7.3	0.0	8.9			
Lane LOS	A		A			
Approach Delay (s)	7.3	0.0	8.9			
Approach LOS			A			
<b>Intersection Summary</b>						
Average Delay			7.1			
Intersection Capacity Utilization			16.2%	ICU Level of Service	A	
Analysis Period (min)			15			

Lanes, Volumes, Timings  
7: Wells Street & Macauley Street

2035 Future Total AM  
02-10-2025












Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	18	0	6	0	0	0
Future Volume (vph)	18	0	6	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
<b>Fr</b>						
Flt Protected	0.950					
Satd. Flow (prot)	1770	0	1863	0	0	1863
Flt Permitted	0.950					
Satd. Flow (perm)	1770	0	1863	0	0	1863
Link Speed (k/h)	50		50			50
Link Distance (m)	353.7		844.4			89.5
Travel Time (s)	25.5		60.8			6.4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	20	0	7	0	0	0
<b>Shared Lane Traffic (%)</b>						
Lane Group Flow (vph)	20	0	7	0	0	0
Sign Control	Stop		Free			Free

**Intersection Summary**

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	13.3%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis  
 7: Wells Street & Macauley Street

2035 Future Total AM  
 02-10-2025

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	18	0	6	0	0	0
Future Volume (Veh/h)	18	0	6	0	0	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	20	0	7	0	0	0
<b>Pedestrians</b>						
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	7	7			7	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	7	7			7	
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	100			100	
cM capacity (veh/h)	1014	1075			1614	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	20	7	0			
Volume Left	20	0	0			
Volume Right	0	0	0			
cSH	1014	1700	1700			
Volume to Capacity	0.02	0.00	0.00			
Queue Length 95th (m)	0.5	0.0	0.0			
Control Delay (s)	8.6	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	8.6	0.0	0.0			
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay			6.4			
Intersection Capacity Utilization			13.3%	ICU Level of Service	A	
Analysis Period (min)			15			

Lanes, Volumes, Timings  
8: Eliza Street & Macauley Street

2035 Future Total AM  
02-10-2025



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	62	21	208	378	0
Future Volume (vph)	0	62	21	208	378	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865					
Flt Protected				0.995		
Satd. Flow (prot)	1611	0	0	1853	1863	0
Flt Permitted				0.995		
Satd. Flow (perm)	1611	0	0	1853	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	290.2			181.3	213.4	
Travel Time (s)	20.9			13.1	15.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	67	23	226	411	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	67	0	0	249	411	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	38.9%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis  
8: Eliza Street & Macauley Street

2035 Future Total AM  
02-10-2025



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	62	21	208	378	0
Future Volume (Veh/h)	0	62	21	208	378	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	67	23	226	411	0
<b>Pedestrians</b>						
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	683	411	411			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	683	411	411			
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	90	98			
cM capacity (veh/h)	407	641	1148			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	67	249	411			
Volume Left	0	23	0			
Volume Right	67	0	0			
cSH	641	1148	1700			
Volume to Capacity	0.10	0.02	0.24			
Queue Length 95th (m)	2.8	0.5	0.0			
Control Delay (s)	11.3	0.9	0.0			
Lane LOS	B	A				
Approach Delay (s)	11.3	0.9	0.0			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			1.4			
Intersection Capacity Utilization			38.9%	ICU Level of Service	A	
Analysis Period (min)			15			

Lanes, Volumes, Timings  
 9: Eliza Street & Tucker Street

2035 Future Total AM  
 02-10-2025



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	79	82	59	154	321	192
Future Volume (vph)	79	82	59	154	321	192
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.931			0.949		
Flt Protected	0.976			0.986		
Satd. Flow (prot)	1693	0	0	1837	1768	0
Flt Permitted	0.976			0.986		
Satd. Flow (perm)	1693	0	0	1837	1768	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	353.9			638.1	181.3	
Travel Time (s)	25.5			45.9	13.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	86	89	64	167	349	209
Shared Lane Traffic (%)						
Lane Group Flow (vph)	175	0	0	231	558	0
Sign Control	Stop			Free	Free	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	59.4%
	ICU Level of Service B
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis  
 9: Eliza Street & Tucker Street

2035 Future Total AM  
 02-10-2025



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	79	82	59	154	321	192
Future Volume (Veh/h)	79	82	59	154	321	192
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	86	89	64	167	349	209
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)				181		
pX, platoon unblocked						
vC, conflicting volume	748	454	558			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	748	454	558			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	76	85	94			
cM capacity (veh/h)	356	606	1013			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	175	231	558			
Volume Left	86	64	0			
Volume Right	89	0	209			
cSH	450	1013	1700			
Volume to Capacity	0.39	0.06	0.33			
Queue Length 95th (m)	14.5	1.6	0.0			
Control Delay (s)	18.0	2.9	0.0			
Lane LOS	C	A				
Approach Delay (s)	18.0	2.9	0.0			
Approach LOS	C					
<b>Intersection Summary</b>						
Average Delay	4.0					
Intersection Capacity Utilization	59.4%			ICU Level of Service	B	
Analysis Period (min)	15					

Lanes, Volumes, Timings  
1: Highway 6 & Frederick Street West/Frederick Street East

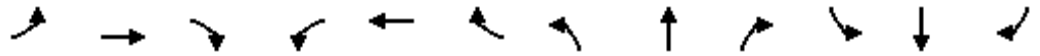
2035 Future Total PM  
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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	38	166	4	93	104	22	15	539	107	26	393	25
Future Volume (vph)	38	166	4	93	104	22	15	539	107	26	393	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998			0.987			0.978			0.992	
Flt Protected		0.991			0.979			0.999			0.997	
Satd. Flow (prot)	0	1842	0	0	1702	0	0	1775	0	0	1751	0
Flt Permitted		0.910			0.687			0.988			0.948	
Satd. Flow (perm)	0	1692	0	0	1194	0	0	1755	0	0	1665	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			8			26			8	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		211.1			553.1			635.0			436.1	
Travel Time (s)		15.2			39.8			45.7			31.4	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	2%	2%	9%	6%	12%	2%	4%	8%	2%	8%	2%
Adj. Flow (vph)	40	177	4	99	111	23	16	573	114	28	418	27
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	221	0	0	233	0	0	703	0	0	473	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	22.5	22.5		22.5	22.5		47.5	47.5		47.5	47.5	
Total Split (%)	32.1%	32.1%		32.1%	32.1%		67.9%	67.9%		67.9%	67.9%	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.5			4.5			4.5			4.5	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Act Effct Green (s)		15.7			15.7			43.4			43.4	
Actuated g/C Ratio		0.23			0.23			0.64			0.64	
v/c Ratio		0.57			0.83			0.62			0.44	
Control Delay		29.0			49.6			10.8			8.3	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		29.0			49.6			10.8			8.3	
LOS		C			D			B			A	
Approach Delay		29.0			49.6			10.8			8.3	
Approach LOS		C			D			B			A	
Queue Length 50th (m)		25.8			28.5			52.3			30.3	
Queue Length 95th (m)		46.0			#62.9			86.1			49.8	
Internal Link Dist (m)		187.1			529.1			611.0			412.1	
Turn Bay Length (m)												

Lanes, Volumes, Timings  
 1: Highway 6 & Frederick Street West/Frederick Street East

2035 Future Total PM  
 02-10-2025



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)		447			321			1127			1063	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.49			0.73			0.62			0.44	

Intersection Summary

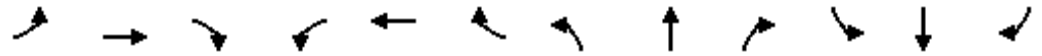
Area Type:	Other
Cycle Length:	70
Actuated Cycle Length:	68.2
Natural Cycle:	60
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.83
Intersection Signal Delay:	18.1
Intersection LOS:	B
Intersection Capacity Utilization	71.1%
ICU Level of Service	C
Analysis Period (min)	15
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

Splits and Phases: 1: Highway 6 & Frederick Street West/Frederick Street East

 47.5 s	 22.5 s
 47.5 s	 22.5 s

HCM Signalized Intersection Capacity Analysis  
 1: Highway 6 & Frederick Street West/Frederick Street East

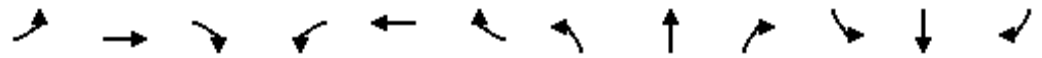
2035 Future Total PM  
 02-10-2025



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	38	166	4	93	104	22	15	539	107	26	393	25
Future Volume (vph)	38	166	4	93	104	22	15	539	107	26	393	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5			4.5			4.5	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		1.00			0.99			0.98			0.99	
Flt Protected		0.99			0.98			1.00			1.00	
Satd. Flow (prot)		1842			1702			1775			1752	
Flt Permitted		0.91			0.69			0.99			0.95	
Satd. Flow (perm)		1692			1194			1755			1665	
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)	40	177	4	99	111	23	16	573	114	28	418	27
RTOR Reduction (vph)	0	1	0	0	6	0	0	9	0	0	3	0
Lane Group Flow (vph)	0	220	0	0	227	0	0	694	0	0	470	0
Heavy Vehicles (%)	2%	2%	2%	9%	6%	12%	2%	4%	8%	2%	8%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		15.7			15.7			43.4			43.4	
Effective Green, g (s)		15.7			15.7			43.4			43.4	
Actuated g/C Ratio		0.23			0.23			0.64			0.64	
Clearance Time (s)		4.5			4.5			4.5			4.5	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		390			275			1118			1061	
v/s Ratio Prot												
v/s Ratio Perm		0.13			0.19			0.40			0.28	
v/c Ratio		0.56			0.82			0.62			0.44	
Uniform Delay, d1		23.2			24.9			7.4			6.2	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		1.9			17.9			2.6			1.3	
Delay (s)		25.1			42.8			10.0			7.6	
Level of Service		C			D			A			A	
Approach Delay (s)		25.1			42.8			10.0			7.6	
Approach LOS		C			D			A			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			16.0									B
HCM 2000 Volume to Capacity ratio			0.67									
Actuated Cycle Length (s)			68.1								9.0	
Intersection Capacity Utilization			71.1%									C
Analysis Period (min)			15									
c Critical Lane Group												

Lanes, Volumes, Timings  
 2: Frederick Street East & Domville Street & Eliza Street

2035 Future Total PM  
 02-10-2025



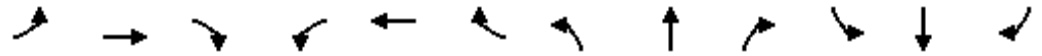
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	18	21	16	9	40	146	13	339	22	89	172	93
Future Volume (vph)	18	21	16	9	40	146	13	339	22	89	172	93
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.961			0.899			0.992			0.965	
Flt Protected		0.984			0.998			0.998			0.988	
Satd. Flow (prot)	0	1761	0	0	1648	0	0	1781	0	0	1745	0
Flt Permitted		0.984			0.998			0.998			0.988	
Satd. Flow (perm)	0	1761	0	0	1648	0	0	1781	0	0	1745	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		391.0			606.0			553.1			638.1	
Travel Time (s)		28.2			43.6			39.8			45.9	
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
Heavy Vehicles (%)	2%	2%	2%	34%	2%	2%	2%	6%	2%	2%	2%	9%
Adj. Flow (vph)	20	24	18	10	45	164	15	381	25	100	193	104
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	62	0	0	219	0	0	421	0	0	397	0
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary

Area Type:	Other
Control Type:	Roundabout
Intersection Capacity Utilization	61.4%
ICU Level of Service	B
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis  
 2: Frederick Street East & Domville Street & Eliza Street

2035 Future Total PM  
 02-10-2025



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Traffic Volume (veh/h)	18	21	16	9	40	146	13	339	22	89	172	93
Future Volume (veh/h)	18	21	16	9	40	146	13	339	22	89	172	93
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)	20	24	18	10	45	164	15	381	25	100	193	104
Approach Volume (veh/h)	62		219				421		397			
Crossing Volume (veh/h)	303				416			144		70		
High Capacity (veh/h)	1092				998			1237		1311		
High v/c (veh/h)	0.06				0.22			0.34		0.30		
Low Capacity (veh/h)	896				812			1027		1094		
Low v/c (veh/h)	0.07				0.27			0.41		0.36		
<b>Intersection Summary</b>												
Maximum v/c High			0.34									
Maximum v/c Low			0.41									
Intersection Capacity Utilization			61.4%			ICU Level of Service			B			

Lanes, Volumes, Timings  
3: Eliza Street & Wells Street East

2035 Future Total PM  
02-10-2025



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	242	237	0
Future Volume (vph)	0	0	0	242	237	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1863	0	0	1827	1759	0
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1827	1759	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	359.5			130.1	439.1	
Travel Time (s)	25.9			9.4	31.6	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	2%	2%	2%	4%	8%	2%
Adj. Flow (vph)	0	0	0	272	266	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	272	266	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	16.1% ICU Level of Service A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis  
 3: Eliza Street & Wells Street East










2035 Future Total PM  
 02-10-2025



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	0	242	237	0
Future Volume (Veh/h)	0	0	0	242	237	0
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)	0	0	0	272	266	0
<b>Pedestrians</b>						
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	538	266	266			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	538	266	266			
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	100	100			
cM capacity (veh/h)	504	773	1298			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	0	272	266			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1700	1700			
Volume to Capacity	0.02	0.16	0.16			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay	0.0					
Intersection Capacity Utilization	16.1%			ICU Level of Service	A	
Analysis Period (min)	15					

Lanes, Volumes, Timings  
4: Eliza Street & Street R

2035 Future Total PM  
02-10-2025

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	63	13	227	106	21	217
Future Volume (vph)	63	13	227	106	21	217
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.977		0.957			
Flt Protected	0.960					0.996
Satd. Flow (prot)	1747	0	1783	0	0	1855
Flt Permitted	0.960					0.996
Satd. Flow (perm)	1747	0	1783	0	0	1855
Link Speed (k/h)	50		50			50
Link Distance (m)	189.1		344.1			130.1
Travel Time (s)	13.6		24.8			9.4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	68	14	247	115	23	236
Shared Lane Traffic (%)						
Lane Group Flow (vph)	82	0	362	0	0	259
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	39.8%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis  
4: Eliza Street & Street R

















2035 Future Total PM  
02-10-2025



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	63	13	227	106	21	217
Future Volume (Veh/h)	63	13	227	106	21	217
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	68	14	247	115	23	236
<b>Pedestrians</b>						
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	586	304			362	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	586	304			362	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	85	98			98	
cM capacity (veh/h)	463	735			1197	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	82	362	259			
Volume Left	68	0	23			
Volume Right	14	115	0			
cSH	495	1700	1197			
Volume to Capacity	0.17	0.21	0.02			
Queue Length 95th (m)	4.7	0.0	0.5			
Control Delay (s)	13.7	0.0	0.9			
Lane LOS	B		A			
Approach Delay (s)	13.7	0.0	0.9			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			1.9			
Intersection Capacity Utilization			39.8%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings  
5: Eliza Street & Street A/Street G

2035 Future Total PM  
02-10-2025

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	0	42	61	0	0	69	320	102	0	259	21
Future Volume (vph)	13	0	42	61	0	0	69	320	102	0	259	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.896						0.972			0.990	
Flt Protected		0.988			0.950			0.993				
Satd. Flow (prot)	0	1649	0	0	1770	0	0	1798	0	0	1844	0
Flt Permitted		0.988			0.950			0.993				
Satd. Flow (perm)	0	1649	0	0	1770	0	0	1798	0	0	1844	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		131.4			261.3			213.4			344.1	
Travel Time (s)		9.5			18.8			15.4			24.8	
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
Adj. Flow (vph)	14	0	46	66	0	0	75	348	111	0	282	23
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	60	0	0	66	0	0	534	0	0	305	0
Sign Control		Stop			Stop			Free			Free	

**Intersection Summary**

Area Type: Other

















Control Type: Unsignalized

Intersection Capacity Utilization 61.8% ICU Level of Service B

Analysis Period (min) 15

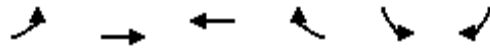
HCM Unsignalized Intersection Capacity Analysis  
5: Eliza Street & Street A/Street G

2035 Future Total PM  
02-10-2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	0	42	61	0	0	69	320	102	0	259	21
Future Volume (Veh/h)	13	0	42	61	0	0	69	320	102	0	259	21
Sign Control		Stop			Stop			Free			Free	
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)	14	0	46	66	0	0	75	348	111	0	282	23
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type												
								None			None	
Median storage veh												
Upstream signal (m)												
								213				
pX, platoon unblocked												
vC, conflicting volume	847	902	294	893	858	404	305			459		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	847	902	294	893	858	404	305			459		
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 %	95	100	94	72	100	100	94			100		
cM capacity (veh/h)	269	261	746	235	277	647	1256			1102		
Direction, Lane #												
	EB 1	WB 1	NB 1	SB 1								
Volume Total	60	66	534	305								
Volume Left	14	66	75	0								
Volume Right	46	0	111	23								
cSH	528	235	1256	1102								
Volume to Capacity	0.11	0.28	0.06	0.00								
Queue Length 95th (m)	3.1	8.9	1.5	0.0								
Control Delay (s)	12.7	26.2	1.7	0.0								
Lane LOS	B	D	A									
Approach Delay (s)	12.7	26.2	1.7	0.0								
Approach LOS	B	D										
Intersection Summary												
Average Delay			3.5									
Intersection Capacity Utilization			61.8%	ICU Level of Service						B		
Analysis Period (min)			15									

Lanes, Volumes, Timings  
6: Macauley Street & Street C

2035 Future Total PM  
02-10-2025



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↔		↙	↙
Traffic Volume (vph)	21	0	0	69	42	13
Future Volume (vph)	21	0	0	69	42	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.865		0.968	
Flt Protected		0.950			0.963	
Satd. Flow (prot)	0	1770	1611	0	1736	0
Flt Permitted		0.950			0.963	
Satd. Flow (perm)	0	1770	1611	0	1736	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		353.7	290.2		128.2	
Travel Time (s)		25.5	20.9		9.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	23	0	0	75	46	14
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	23	75	0	60	0
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	17.8%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis  
6: Macauley Street & Street C










2035 Future Total PM  
02-10-2025



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Traffic Volume (veh/h)	21	0	0	69	42	13
Future Volume (Veh/h)	21	0	0	69	42	13
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	23	0	0	75	46	14
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (m)		354				
pX, platoon unblocked						
vC, conflicting volume	75			84	38	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	75			84	38	
tC, single (s)	4.1			6.4	6.2	
tC, 2 stage (s)						
tF (s)	2.2			3.5	3.3	
p0 queue free %	98			95	99	
cM capacity (veh/h)	1524			904	1035	
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>SB 1</b>			
Volume Total	23	75	60			
Volume Left	23	0	46			
Volume Right	0	75	14			
cSH	1524	1700	932			
Volume to Capacity	0.02	0.04	0.06			
Queue Length 95th (m)	0.4	0.0	1.6			
Control Delay (s)	7.4	0.0	9.1			
Lane LOS	A		A			
Approach Delay (s)	7.4	0.0	9.1			
Approach LOS			A			
<b>Intersection Summary</b>						
Average Delay			4.5			
Intersection Capacity Utilization			17.8%	ICU Level of Service	A	
Analysis Period (min)			15			

Lanes, Volumes, Timings  
 7: Wells Street & Macauley Street

2035 Future Total PM  
 02-10-2025










						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	13	0	21	0	0	0
Future Volume (vph)	13	0	21	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
<b>Frt</b>						
Flt Protected	0.950					
Satd. Flow (prot)	1770	0	1863	0	0	1863
Flt Permitted	0.950					
Satd. Flow (perm)	1770	0	1863	0	0	1863
Link Speed (k/h)	50		50			50
Link Distance (m)	353.7		844.4			89.5
Travel Time (s)	25.5		60.8			6.4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	14	0	23	0	0	0
<b>Shared Lane Traffic (%)</b>						
Lane Group Flow (vph)	14	0	23	0	0	0
Sign Control	Stop		Free			Free

**Intersection Summary**

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	13.3%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis  
7: Wells Street & Macauley Street

2035 Future Total PM  
02-10-2025

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	13	0	21	0	0	0
Future Volume (Veh/h)	13	0	21	0	0	0
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	14	0	23	0	0	0
<b>Pedestrians</b>						
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	23	23			23	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	23	23			23	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	100			100	
cM capacity (veh/h)	993	1054			1592	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	14	23	0			
Volume Left	14	0	0			
Volume Right	0	0	0			
cSH	993	1700	1700			
Volume to Capacity	0.01	0.01	0.00			
Queue Length 95th (m)	0.3	0.0	0.0			
Control Delay (s)	8.7	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	8.7	0.0	0.0			
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay			3.3			
Intersection Capacity Utilization		13.3%		ICU Level of Service		A
Analysis Period (min)			15			

Lanes, Volumes, Timings  
8: Eliza Street & Macauley Street

2035 Future Total PM  
02-10-2025



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	42	69	490	361	0
Future Volume (vph)	0	42	69	490	361	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865					
Flt Protected				0.994		
Satd. Flow (prot)	1611	0	0	1852	1863	0
Flt Permitted				0.994		
Satd. Flow (perm)	1611	0	0	1852	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	290.2			181.3	213.4	
Travel Time (s)	20.9			13.1	15.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	46	75	533	392	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	46	0	0	608	392	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	61.9%
ICU Level of Service	B
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis  
 8: Eliza Street & Macauley Street

2035 Future Total PM  
 02-10-2025



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	42	69	490	361	0
Future Volume (Veh/h)	0	42	69	490	361	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	46	75	533	392	0
<b>Pedestrians</b>						
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	1075	392	392			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1075	392	392			
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	93	94			
cM capacity (veh/h)	227	657	1167			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	46	608	392			
Volume Left	0	75	0			
Volume Right	46	0	0			
cSH	657	1167	1700			
Volume to Capacity	0.07	0.06	0.23			
Queue Length 95th (m)	1.8	1.6	0.0			
Control Delay (s)	10.9	1.7	0.0			
Lane LOS	B	A				
Approach Delay (s)	10.9	1.7	0.0			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			1.5			
Intersection Capacity Utilization			61.9%	ICU Level of Service	B	
Analysis Period (min)			15			

Lanes, Volumes, Timings  
 9: Eliza Street & Tucker Street

2035 Future Total PM  
 02-10-2025



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	214	115	141	346	235	160
Future Volume (vph)	214	115	141	346	235	160
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.953			0.945		
Flt Protected	0.968			0.986		
Satd. Flow (prot)	1718	0	0	1837	1760	0
Flt Permitted	0.968			0.986		
Satd. Flow (perm)	1718	0	0	1837	1760	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	353.9			638.1	181.3	
Travel Time (s)	25.5			45.9	13.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	233	125	153	376	255	174
Shared Lane Traffic (%)						
Lane Group Flow (vph)	358	0	0	529	429	0
Sign Control	Stop			Free	Free	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	77.0% ICU Level of Service D
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis  
 9: Eliza Street & Tucker Street

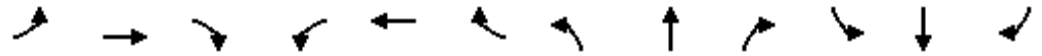
2035 Future Total PM  
 02-10-2025



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	214	115	141	346	235	160
Future Volume (Veh/h)	214	115	141	346	235	160
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	233	125	153	376	255	174
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)						181
pX, platoon unblocked						
vC, conflicting volume	1024	342	429			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1024	342	429			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	0	82	86			
cM capacity (veh/h)	225	701	1130			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	358	529	429			
Volume Left	233	153	0			
Volume Right	125	0	174			
cSH	295	1130	1700			
Volume to Capacity	1.21	0.14	0.25			
Queue Length 95th (m)	129.1	3.7	0.0			
Control Delay (s)	159.3	3.6	0.0			
Lane LOS	F	A				
Approach Delay (s)	159.3	3.6	0.0			
Approach LOS	F					
<b>Intersection Summary</b>						
Average Delay			44.8			
Intersection Capacity Utilization			77.0%	ICU Level of Service	D	
Analysis Period (min)			15			

Lanes, Volumes, Timings  
 1: Highway 6 & Frederick Street West/Frederick Street East

2035 Future Total AM  
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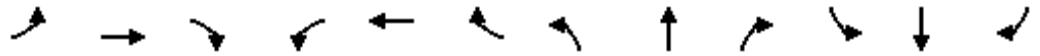


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	25	53	7	49	135	27	4	280	54	36	366	13
Future Volume (vph)	25	53	7	49	135	27	4	280	54	36	366	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.988			0.983			0.978			0.996	
Flt Protected		0.986			0.988			0.999			0.996	
Satd. Flow (prot)	0	1640	0	0	1766	0	0	1562	0	0	1735	0
Flt Permitted		0.895			0.904			0.996			0.952	
Satd. Flow (perm)	0	1489	0	0	1616	0	0	1558	0	0	1658	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8			14			25			4	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		211.1			553.1			635.0			436.1	
Travel Time (s)		15.2			39.8			45.7			31.4	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	11%	12%	25%	11%	2%	5%	100%	15%	33%	8%	9%	0%
Adj. Flow (vph)	27	57	8	53	145	29	4	301	58	39	394	14
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	92	0	0	227	0	0	363	0	0	447	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	22.5	22.5		22.5	22.5		32.5	32.5		32.5	32.5	
Total Split (%)	40.9%	40.9%		40.9%	40.9%		59.1%	59.1%		59.1%	59.1%	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.5			4.5			4.5			4.5	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Act Effct Green (s)		11.9			11.9			30.8			30.8	
Actuated g/C Ratio		0.23			0.23			0.59			0.59	
v/c Ratio		0.26			0.60			0.39			0.45	
Control Delay		15.5			22.5			7.5			8.5	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		15.5			22.5			7.5			8.5	
LOS		B			C			A			A	
Approach Delay		15.5			22.5			7.5			8.5	
Approach LOS		B			C			A			A	
Queue Length 50th (m)		6.1			16.9			13.9			19.4	
Queue Length 95th (m)		15.1			33.5			36.5			48.4	
Internal Link Dist (m)		187.1			529.1			611.0			412.1	
Turn Bay Length (m)												

Recommndations

Lanes, Volumes, Timings  
 1: Highway 6 & Frederick Street West/Frederick Street East

2035 Future Total AM  
 02-10-2025



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)		526			575			937			988	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.17			0.39			0.39			0.45	

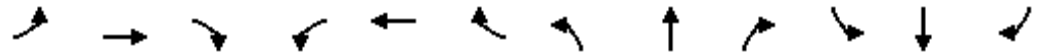
Intersection Summary	
Area Type:	Other
Cycle Length:	55
Actuated Cycle Length:	51.8
Natural Cycle:	45
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.60
Intersection Signal Delay:	11.6
Intersection LOS:	B
Intersection Capacity Utilization	64.3%
ICU Level of Service	C
Analysis Period (min)	15

Splits and Phases: 1: Highway 6 & Frederick Street West/Frederick Street East



HCM Signalized Intersection Capacity Analysis  
 1: Highway 6 & Frederick Street West/Frederick Street East

















2035 Future Total AM  
 02-10-2025



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	25	53	7	49	135	27	4	280	54	36	366	13
Future Volume (vph)	25	53	7	49	135	27	4	280	54	36	366	13
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5			4.5			4.5	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.99			0.98			0.98			1.00	
Flt Protected		0.99			0.99			1.00			1.00	
Satd. Flow (prot)		1640			1766			1564			1734	
Flt Permitted		0.90			0.90			1.00			0.95	
Satd. Flow (perm)		1490			1615			1559			1658	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	27	57	8	53	145	29	4	301	58	39	394	14
RTOR Reduction (vph)	0	6	0	0	11	0	0	10	0	0	2	0
Lane Group Flow (vph)	0	86	0	0	216	0	0	353	0	0	445	0
Heavy Vehicles (%)	11%	12%	25%	11%	2%	5%	100%	15%	33%	8%	9%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		11.9			11.9			30.8			30.8	
Effective Green, g (s)		11.9			11.9			30.8			30.8	
Actuated g/C Ratio		0.23			0.23			0.60			0.60	
Clearance Time (s)		4.5			4.5			4.5			4.5	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		342			371			928			987	
v/s Ratio Prot												
v/s Ratio Perm		0.06			0.13			0.23			0.27	
v/c Ratio		0.25			0.58			0.38			0.45	
Uniform Delay, d1		16.3			17.7			5.5			5.8	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.4			2.3			1.2			1.5	
Delay (s)		16.6			20.0			6.6			7.3	
Level of Service		B			C			A			A	
Approach Delay (s)		16.6			20.0			6.6			7.3	
Approach LOS		B			C			A			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			10.4									B
HCM 2000 Volume to Capacity ratio			0.49									
Actuated Cycle Length (s)			51.7								9.0	
Intersection Capacity Utilization			64.3%									C
Analysis Period (min)			15									
c Critical Lane Group												

Lanes, Volumes, Timings  
 2: Frederick Street East & Domville Street & Eliza Street

2035 Future Total AM  
 02-10-2025

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	10	9	11	24	59	10	158	11	93	184	74
Future Volume (vph)	7	10	9	11	24	59	10	158	11	93	184	74
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.955			0.915			0.992			0.971	
Flt Protected		0.987			0.994			0.997			0.987	
Satd. Flow (prot)	0	1756	0	0	1694	0	0	1515	0	0	1746	0
Flt Permitted		0.987			0.994			0.997			0.987	
Satd. Flow (perm)	0	1756	0	0	1694	0	0	1515	0	0	1746	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		391.0			606.0			553.1			638.1	
Travel Time (s)		28.2			43.6			39.8			45.9	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	27%	2%	5%	2%	9%
Adj. Flow (vph)	9	13	11	14	30	74	13	198	14	116	230	93
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	33	0	0	118	0	0	225	0	0	439	0
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary

Area Type:	Other
Control Type:	Roundabout
Intersection Capacity Utilization	45.0%
ICU Level of Service	A
Analysis Period (min)	15

Lanes, Volumes, Timings  
 3: Eliza Street & Wells Street East

2035 Future Total AM  
 02-10-2025



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	180	145	0
Future Volume (vph)	0	0	0	180	145	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1863	0	0	1624	1776	0
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1624	1776	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	359.5			130.1	439.1	
Travel Time (s)	25.9			9.4	31.6	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles (%)	2%	2%	2%	17%	7%	2%
Adj. Flow (vph)	0	0	0	209	169	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	209	169	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	12.8%
ICU Level of Service	A
Analysis Period (min)	15



















Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	94	18	145	31	6	139
Future Volume (vph)	94	18	145	31	6	139
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.978		0.976			
Flt Protected	0.960					0.998
Satd. Flow (prot)	1749	0	1818	0	0	1859
Flt Permitted	0.960					0.998
Satd. Flow (perm)	1749	0	1818	0	0	1859
Link Speed (k/h)	50		50			50
Link Distance (m)	189.1		344.1			130.1
Travel Time (s)	13.6		24.8			9.4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	102	20	158	34	7	151
Shared Lane Traffic (%)						
Lane Group Flow (vph)	122	0	192	0	0	158
Sign Control	Stop		Free			Free

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	25.2%
Analysis Period (min)	15
	ICU Level of Service A

Lanes, Volumes, Timings  
5: Eliza Street & Street A/Street G

2035 Future Total AM  
02-10-2025

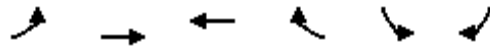
												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	0	62	90	0	0	21	158	30	0	227	6
Future Volume (vph)	18	0	62	90	0	0	21	158	30	0	227	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.896						0.980			0.996	
Flt Protected		0.989			0.950			0.995				
Satd. Flow (prot)	0	1651	0	0	1770	0	0	1816	0	0	1855	0
Flt Permitted		0.989			0.950			0.995				
Satd. Flow (perm)	0	1651	0	0	1770	0	0	1816	0	0	1855	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		131.4			261.3			213.4			344.1	
Travel Time (s)		9.5			18.8			15.4			24.8	
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
Adj. Flow (vph)	20	0	67	98	0	0	23	172	33	0	247	7
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	87	0	0	98	0	0	228	0	0	254	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	45.3%
Analysis Period (min)	15
	ICU Level of Service A

Lanes, Volumes, Timings  
6: Macauley Street & Street C

2035 Future Total AM  
02-10-2025












Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↔		↙	
Traffic Volume (vph)	6	0	0	21	62	18
Future Volume (vph)	6	0	0	21	62	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.865		0.969	
Flt Protected		0.950			0.963	
Satd. Flow (prot)	0	1770	1611	0	1738	0
Flt Permitted		0.950			0.963	
Satd. Flow (perm)	0	1770	1611	0	1738	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		353.7	290.2		128.2	
Travel Time (s)		25.5	20.9		9.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	7	0	0	23	67	20
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	7	23	0	87	0
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	16.2%
Analysis Period (min)	15
	ICU Level of Service A

Lanes, Volumes, Timings  
7: Wells Street & Macauley Street

2035 Future Total AM  
02-10-2025

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	18	0	6	0	0	0
Future Volume (vph)	18	0	6	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
<b>Frt</b>						
Flt Protected	0.950					
Satd. Flow (prot)	1770	0	1863	0	0	1863
Flt Permitted	0.950					
Satd. Flow (perm)	1770	0	1863	0	0	1863
Link Speed (k/h)	50		50			50
Link Distance (m)	353.7		844.4			89.5
Travel Time (s)	25.5		60.8			6.4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	20	0	7	0	0	0
<b>Shared Lane Traffic (%)</b>						
Lane Group Flow (vph)	20	0	7	0	0	0
Sign Control	Stop		Free			Free

**Intersection Summary**

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	13.3%
Analysis Period (min)	15
	ICU Level of Service A

Lanes, Volumes, Timings  
8: Eliza Street & Macauley Street

2035 Future Total AM  
02-10-2025



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	62	21	208	378	0
Future Volume (vph)	0	62	21	208	378	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865					
Flt Protected				0.995		
Satd. Flow (prot)	1611	0	0	1853	1863	0
Flt Permitted				0.995		
Satd. Flow (perm)	1611	0	0	1853	1863	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	290.2			181.3	213.4	
Travel Time (s)	20.9			13.1	15.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	67	23	226	411	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	67	0	0	249	411	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	38.9%
Analysis Period (min)	15
	ICU Level of Service A

Lanes, Volumes, Timings  
9: Eliza Street & Tucker Street

2035 Future Total AM  
02-10-2025



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	79	82	59	154	321	192
Future Volume (vph)	79	82	59	154	321	192
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr <sub>t</sub>	0.931				0.949	
Fl <sub>t</sub> Protected	0.976			0.986		
Satd. Flow (prot)	1693	0	0	1837	1768	0
Fl <sub>t</sub> Permitted	0.976			0.806		
Satd. Flow (perm)	1693	0	0	1501	1768	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	89				80	
Link Speed (k/h)	50			50	50	
Link Distance (m)	353.9			638.1	181.3	
Travel Time (s)	25.5			45.9	13.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	86	89	64	167	349	209
Shared Lane Traffic (%)						
Lane Group Flow (vph)	175	0	0	231	558	0
Turn Type	Prot		Perm	NA	NA	
Protected Phases	4			2	6	
Permitted Phases			2			
Detector Phase	4		2	2	6	
Switch Phase						
Minimum Initial (s)	5.0		5.0	5.0	5.0	
Minimum Split (s)	22.5		22.5	22.5	22.5	
Total Split (s)	22.6		27.4	27.4	27.4	
Total Split (%)	45.2%		54.8%	54.8%	54.8%	
Yellow Time (s)	3.5		3.5	3.5	3.5	
All-Red Time (s)	1.0		1.0	1.0	1.0	
Lost Time Adjust (s)	0.0			0.0	0.0	
Total Lost Time (s)	4.5			4.5	4.5	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None		Max	Max	Max	
Act Effct Green (s)	7.9			29.2	29.2	
Actuated g/C Ratio	0.18			0.68	0.68	
v/c Ratio	0.46			0.23	0.46	
Control Delay	12.1			5.3	6.0	
Queue Delay	0.0			0.0	0.0	
Total Delay	12.1			5.3	6.0	
LOS	B			A	A	
Approach Delay	12.1			5.3	6.0	
Approach LOS	B			A	A	
Queue Length 50th (m)	5.7			6.4	15.4	
Queue Length 95th (m)	16.7			18.0	42.0	
Internal Link Dist (m)	329.9			614.1	157.3	
Turn Bay Length (m)						
Base Capacity (vph)	762			1015	1221	

Reccomendations

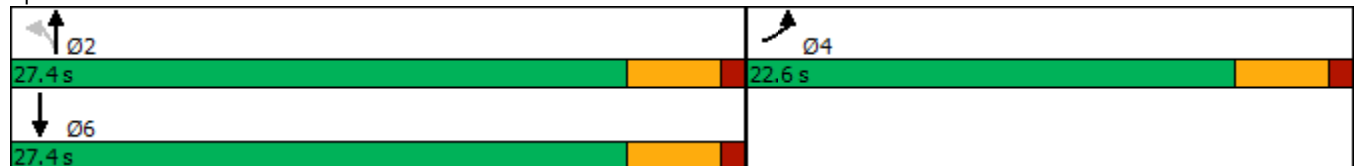


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Starvation Cap Reductn	0			0	0	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.23			0.23	0.46	

**Intersection Summary**

Area Type:	Other
Cycle Length:	50
Actuated Cycle Length:	43.2
Natural Cycle:	50
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.46
Intersection Signal Delay:	6.9
Intersection LOS:	A
Intersection Capacity Utilization	60.6%
ICU Level of Service	B
Analysis Period (min)	15

Splits and Phases: 9: Eliza Street & Tucker Street



HCM Signalized Intersection Capacity Analysis  
 9: Eliza Street & Tucker Street

2035 Future Total AM  
 02-10-2025



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	79	82	59	154	321	192
Future Volume (vph)	79	82	59	154	321	192
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5			4.5	4.5	
Lane Util. Factor	1.00			1.00	1.00	
Frt	0.93			1.00	0.95	
Flt Protected	0.98			0.99	1.00	
Satd. Flow (prot)	1693			1837	1769	
Flt Permitted	0.98			0.81	1.00	
Satd. Flow (perm)	1693			1502	1769	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	86	89	64	167	349	209
RTOR Reduction (vph)	75	0	0	0	29	0
Lane Group Flow (vph)	100	0	0	231	529	0
Turn Type	Prot		Perm	NA	NA	
Protected Phases	4			2	6	
Permitted Phases			2			
Actuated Green, G (s)	6.8			28.3	28.3	
Effective Green, g (s)	6.8			28.3	28.3	
Actuated g/C Ratio	0.15			0.64	0.64	
Clearance Time (s)	4.5			4.5	4.5	
Vehicle Extension (s)	3.0			3.0	3.0	
Lane Grp Cap (vph)	261			963	1135	
v/s Ratio Prot	c0.06				c0.30	
v/s Ratio Perm				0.15		
v/c Ratio	0.38			0.24	0.47	
Uniform Delay, d1	16.8			3.3	4.0	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	0.9			0.6	1.4	
Delay (s)	17.7			3.9	5.4	
Level of Service	B			A	A	
Approach Delay (s)	17.7			3.9	5.4	
Approach LOS	B			A	A	

Intersection Summary

HCM 2000 Control Delay	7.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	44.1	Sum of lost time (s)	9.0
Intersection Capacity Utilization	60.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings  
9: Eliza Street & Tucker Street

2035 Future Total PM  
02-10-2025



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	214	115	141	346	235	160
Future Volume (vph)	214	115	141	346	235	160
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.953				0.945	
Flt Protected	0.968			0.986		
Satd. Flow (prot)	1718	0	0	1837	1760	0
Flt Permitted	0.968			0.773		
Satd. Flow (perm)	1718	0	0	1440	1760	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	47				89	
Link Speed (k/h)	50			50	50	
Link Distance (m)	353.9			638.1	181.3	
Travel Time (s)	25.5			45.9	13.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	233	125	153	376	255	174
Shared Lane Traffic (%)						
Lane Group Flow (vph)	358	0	0	529	429	0
Turn Type	Prot		Perm	NA	NA	
Protected Phases	4			2	6	
Permitted Phases			2			
Detector Phase	4		2	2	6	
Switch Phase						
Minimum Initial (s)	5.0		5.0	5.0	5.0	
Minimum Split (s)	22.5		22.5	22.5	22.5	
Total Split (s)	23.0		37.0	37.0	37.0	
Total Split (%)	38.3%		61.7%	61.7%	61.7%	
Yellow Time (s)	3.5		3.5	3.5	3.5	
All-Red Time (s)	1.0		1.0	1.0	1.0	
Lost Time Adjust (s)	0.0			0.0	0.0	
Total Lost Time (s)	4.5			4.5	4.5	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None		Max	Max	Max	
Act Effct Green (s)	14.7			33.2	33.2	
Actuated g/C Ratio	0.26			0.58	0.58	
v/c Ratio	0.75			0.63	0.40	
Control Delay	26.9			13.1	7.1	
Queue Delay	0.0			0.0	0.0	
Total Delay	26.9			13.1	7.1	
LOS	C			B	A	
Approach Delay	26.9			13.1	7.1	
Approach LOS	C			B	A	
Queue Length 50th (m)	30.2			34.5	17.4	
Queue Length 95th (m)	55.7			72.9	37.8	
Internal Link Dist (m)	329.9			614.1	157.3	
Turn Bay Length (m)						
Base Capacity (vph)	591			839	1063	

Reccomendations



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Starvation Cap Reductn	0			0	0	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.61			0.63	0.40	

Intersection Summary

Area Type:	Other
Cycle Length:	60
Actuated Cycle Length:	57
Natural Cycle:	60
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.75
Intersection Signal Delay:	14.9
Intersection LOS:	B
Intersection Capacity Utilization	78.3%
ICU Level of Service	D
Analysis Period (min)	15

Splits and Phases: 9: Eliza Street & Tucker Street



HCM Signalized Intersection Capacity Analysis  
 9: Eliza Street & Tucker Street

2035 Future Total PM  
 02-10-2025



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	214	115	141	346	235	160
Future Volume (vph)	214	115	141	346	235	160
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5			4.5	4.5	
Lane Util. Factor	1.00			1.00	1.00	
Frt	0.95			1.00	0.95	
Flt Protected	0.97			0.99	1.00	
Satd. Flow (prot)	1719			1836	1761	
Flt Permitted	0.97			0.77	1.00	
Satd. Flow (perm)	1719			1441	1761	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	233	125	153	376	255	174
RTOR Reduction (vph)	35	0	0	0	37	0
Lane Group Flow (vph)	323	0	0	529	392	0
Turn Type	Prot		Perm	NA	NA	
Protected Phases	4			2	6	
Permitted Phases			2			
Actuated Green, G (s)	14.7			33.2	33.2	
Effective Green, g (s)	14.7			33.2	33.2	
Actuated g/C Ratio	0.26			0.58	0.58	
Clearance Time (s)	4.5			4.5	4.5	
Vehicle Extension (s)	3.0			3.0	3.0	
Lane Grp Cap (vph)	444			840	1027	
v/s Ratio Prot	c0.19				0.22	
v/s Ratio Perm				c0.37		
v/c Ratio	0.73			0.63	0.38	
Uniform Delay, d1	19.3			7.8	6.3	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	5.9			3.6	1.1	
Delay (s)	25.1			11.4	7.4	
Level of Service	C			B	A	
Approach Delay (s)	25.1			11.4	7.4	
Approach LOS	C			B	A	

Intersection Summary

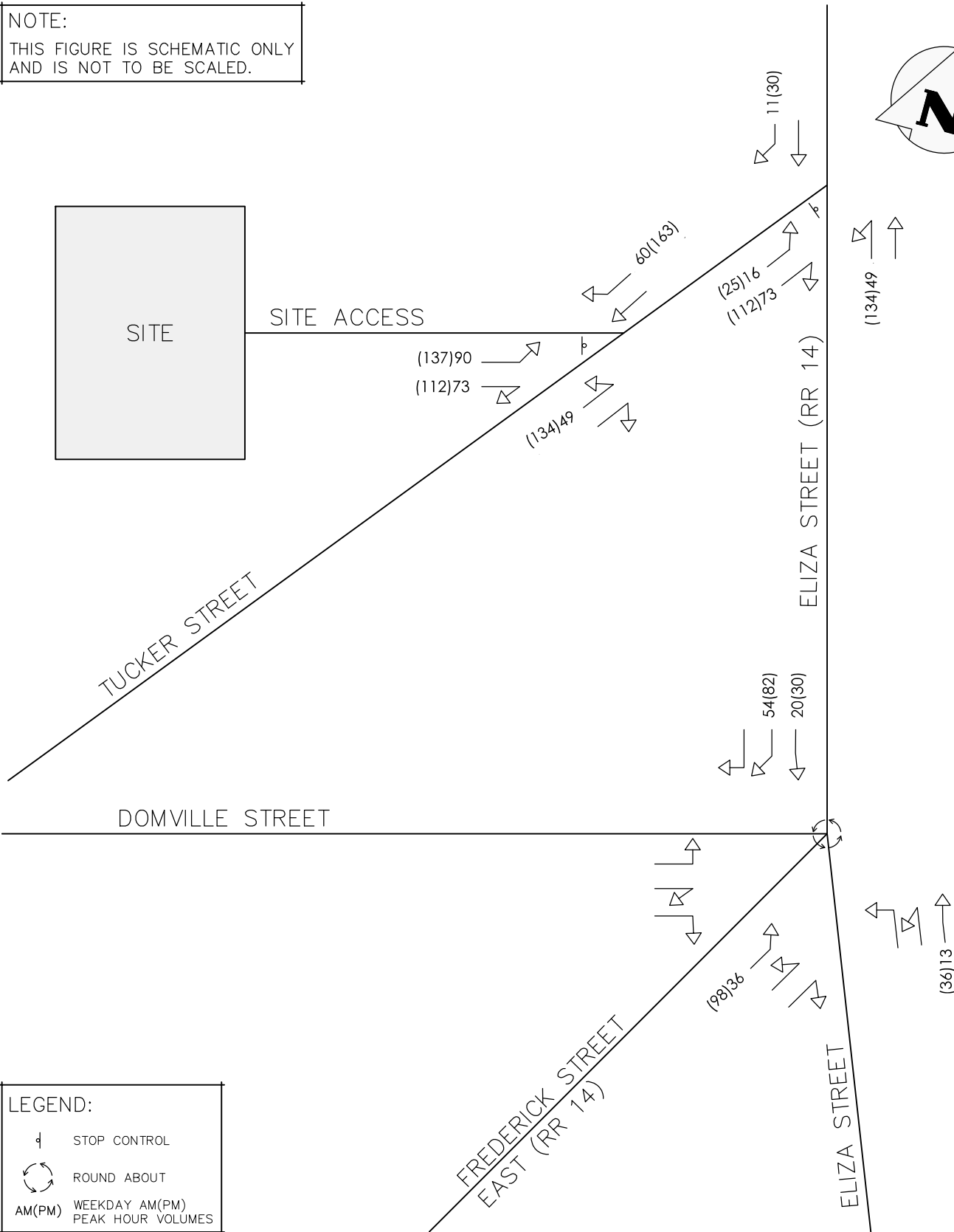
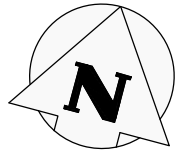
HCM 2000 Control Delay	13.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	56.9	Sum of lost time (s)	9.0
Intersection Capacity Utilization	78.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

# APPENDIX E

## Background Development Excerpts

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



LEGEND:

- STOP CONTROL
- ROUND ABOUT
- AM(PM) WEEKDAY AM(PM)  
PEAK HOUR VOLUMES

NORTH ARTHUR RESIDENTIAL DEVELOPMENT  
TOWNSHIP OF WELLINGTON NORTH



**CROZIER**  
CONSULTING ENGINEERS

THE HARBOUREdge BUILDING,  
40 HURON STREET, SUITE 301,  
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705 446-3510 T  
705 446-3520 F  
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INFO@CFCROZIER.CA

TRIP ASSIGNMENT

Drawn	D.B.	Design	D.B.	Project No.	2024-5844	
Date	2023/04/27	Check	D.B.	Scale	N.T.S.	
					Dwg.	FIG. 07

**Table 9: Development Trip Generation**

Block	Roadway Peak Hour	Weekday Trips		
		Inbound	Outbound	Total
LUC 210: Single Family Detached Housing (198 Units)	Weekday A.M.	35	104	139
	Weekday P.M.	119	70	189
LUC 215: Single-Family Attached Housing (57 Units)	Weekday A.M.	6	18	24
	Weekday P.M.	18	12	30
LUC821: Shopping Plaza (62,937 sq. ft.)	Weekday A.M.	68	41	109
	Weekday P.M.	160	167	327
<b>Total</b>	<b>Weekday A.M.</b>	<b>109</b>	<b>163</b>	<b>272</b>
	<b>Weekday P.M.</b>	<b>297</b>	<b>249</b>	<b>546</b>

The proposed development is expected to generate approximately 272 and 546 total two-way trips during the weekday a.m. and p.m. peak hours, respectively.

## 5.2 Trip Distribution and Assignment

The trips generated by the proposed development were distributed to the boundary road network based on observed travel patterns at the roundabout, and historical traffic data at Smith Street and Frederick Street. A near-even split in the west and south-east traffic volumes was observed on Smith Street. Accordingly, 45% of trips generated by the proposed development were assumed to arrive and depart to the southwest via Tucker Street while 45% travel southeast via Eliza Street, turning left out of the site and then right at the intersection of Tucker Street and Eliza Street. The remaining 10% are expected to travel north via Eliza Street. Of the 45% travelling south on Eliza Street into the roundabout, 33% were distributed southwest on Frederick Street and 12% were distributed to the south on Eliza Street.

The trip distribution is illustrated in **Figure 6** with the corresponding trip assignment is illustrated in **Figure 7**.

## 6.0 Auxiliary Left-Turn Lane Warrant

The development will increase left turns at the Eliza Street and Tucker Street intersection. For this reason, an auxiliary left-turn lane warrant was conducted for the a.m. and p.m. peak hours in the 2033 horizon year. The warrants were completed using the MTO Design Supplement for TAC Geometric Design Guide for Canadian Roads. Eliza Street and Tucker Street have a posted speed limit of 50 km/h. On lower speed roads, it is a standard to apply an additional 10 km/h to obtain a design speed of 60 km/h for the warrant.

While the percentage of left-turning vehicles exceed what is available in the left-turn lane warrant charts, the existing volumes on Tucker Street are quite low and are not expected to be impacted by the high number of left-turning vehicles at the proposed site access. As volume of vehicles on both Eliza Street and Tucker Street are low, they do not trigger left-turn lanes being warranted. The warrants can be referenced in **Appendix H**.

# Developer objects, calls concrete plant proposed in Arthur 'premature'

[Isabel Buckmaster, Local Journalism Initiative Reporter](#)

Jul 9, 2024 2:48 PM



1 / 2 The proposed location for the ready-mix concrete plant. | Supplied

[Listen to this article](#)

00:02:52

ARTHUR – Two companies are at odds over a piece of property on Eliza Street and the township of Wellington North and County of Wellington are stuck in the middle.

Wellington North recently held a public meeting to discuss an application from Clark Brothers Contracting and Teeswater Concrete to [rezone](#) the back end of 510 Eliza St. and construct a ready-mix concrete plant and 77-metre access road.

While no residents or councillors shared concerns about the application during the meeting, North Arthur Developments Inc. submitted an objection letter the morning, calling the proposal "premature" and claiming the plant could negatively impact the area's future development if approved.

Previously [proposing](#) to construct a 200-home subdivision at 510 Eliza St., North Arthur Developments is currently appealing the township and County of Wellington's failure to decide on their zoning application within the statutory time frame at the Ontario Land Tribunal. The next meeting is scheduled for this Thursday.

"Should the concrete plant proposal be approved, the lands zoned future development to the north and north-east of the Clark Lands will be substantially more difficult to develop with sensitive land uses, including residential, from a compatibility and cost perspective," said the company in its objection letter. "Permitting the concrete plant proposal is not only contrary to the township's Growth Management Action Plan, but it is inconsistent with provincial direction to build more homes, faster."

The lands subject to the proposal and OLT case total 34.84 acres and are divided into two parcels with the northern parcel, also known as 510 Eliza St., currently occupied by a two-storey building with a gravel processing operation while the southern parcel is vacant.

According to case information on CanLII, North Arthur Developments owns the lands located north of the former railway right-of-way and west of Eliza and Tucker Street.

A representative from Teeswater Concrete who answered questions about the application during the meeting said the proposed location is intended to "cut down on the amount" of trucks on the road while bringing them closer to the market.

Haul routes will depend on where the concrete is being delivered but staff said the way they want to take will be best for the community. Aggregate being brought to the site will not come through town which staff said "will help cut down on truck traffic as well."

The applicant said between five to eight ready-mix trucks are required on-site and it's anticipated the company will employ upwards of 10-12 employees to start if approved.

A decision will be made at a future council meeting.

*Isabel Buckmaster is the Local Journalism Initiative reporter for GuelphToday. LJI is a federally-funded program.*

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## Comments (0)

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If you would like to apply to become a **Verified Commenter**, please [fill out this form](#).

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## Trending

- 
- |            |  |
|------------|--|
| <b>697</b> | Elora benefactors say they are pausing projects to tackle 'online bullying'          |
| <b>560</b> | Advanced voting locations in Wellington County ridings announced                     |
| <b>315</b> | Tobogganing ban recommended for most Centre Wellington-owned land                    |
| <b>215</b> | Centre Wellington Heritage Award winners announced                                   |
| <b>208</b> | Wellington-Halton Hills candidates make pitch to residents at chamber meet and greet |
- 

**Have a story idea?**

**Letter to the editor**

**Report a mistake**

# APPENDIX F

## Trip Generation Manual 11<sup>th</sup> Edition Excerpts

# Single-Family Detached Housing (210)

Vehicle Trip Ends vs: Dwelling Units

On a: Weekday,  
Peak Hour of Adjacent Street Traffic,  
One Hour Between 7 and 9 a.m.

Setting/Location: General Urban/Suburban

Number of Studies: 192

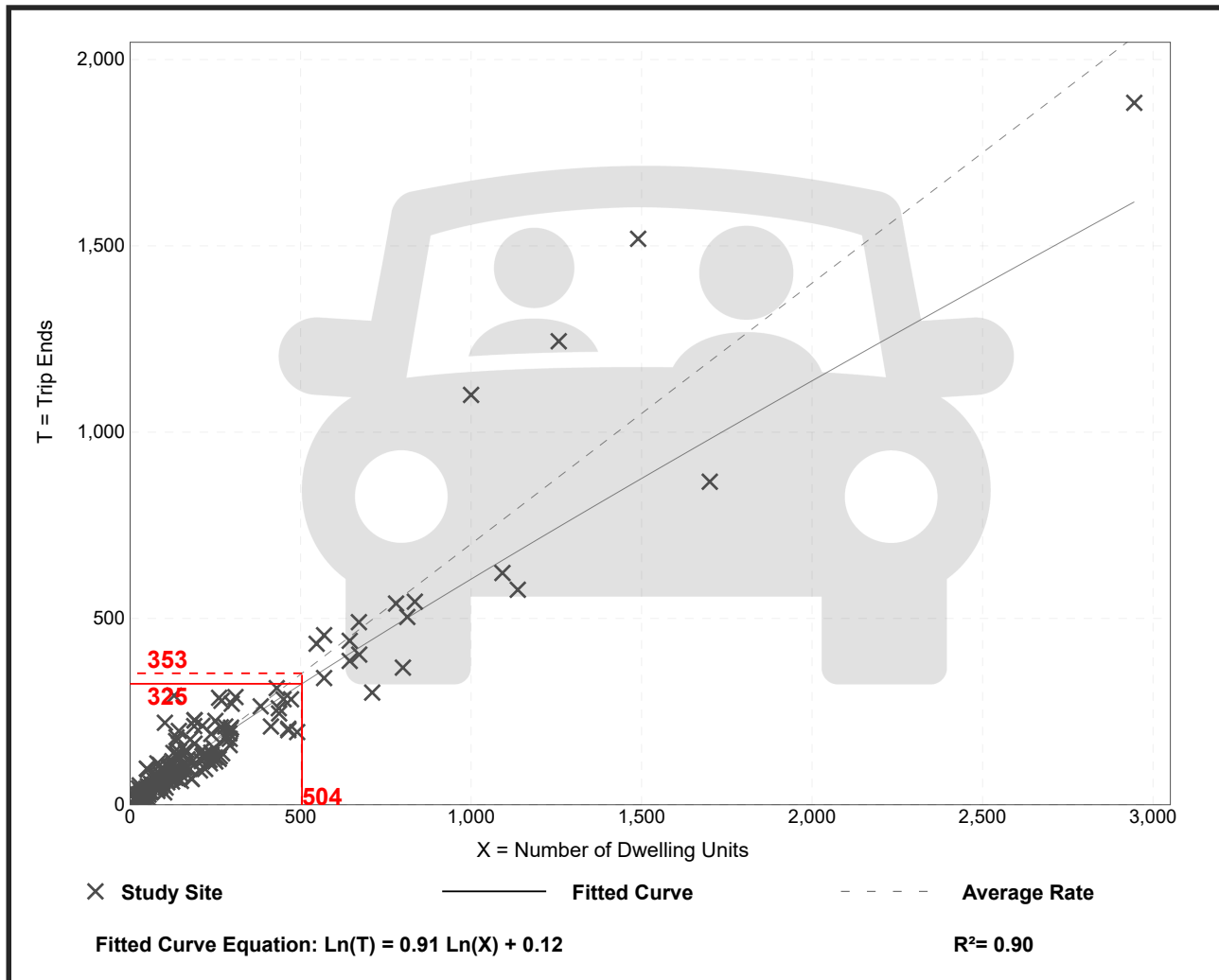
Avg. Num. of Dwelling Units: 226

Directional Distribution: 25% entering, 75% exiting

## Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.70	0.27 - 2.27	0.24

## Data Plot and Equation



# Single-Family Detached Housing (210)

Vehicle Trip Ends vs: Dwelling Units  
 On a: Weekday,  
 Peak Hour of Adjacent Street Traffic,  
 One Hour Between 4 and 6 p.m.

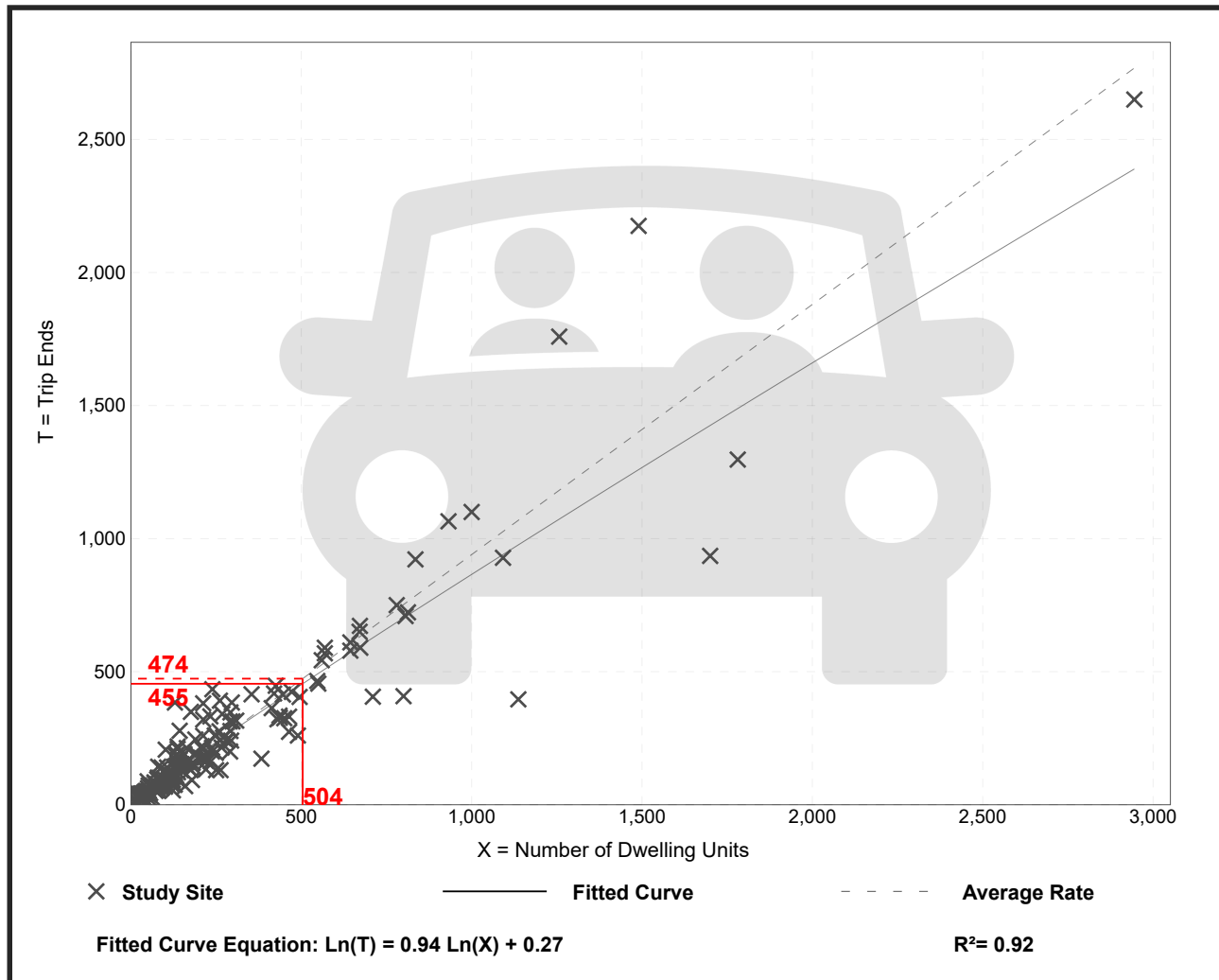
Setting/Location: General Urban/Suburban

Number of Studies: 208  
 Avg. Num. of Dwelling Units: 248  
 Directional Distribution: 63% entering, 37% exiting

## Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.94	0.35 - 2.98	0.31

## Data Plot and Equation



# Single-Family Attached Housing (215)

Vehicle Trip Ends vs: Dwelling Units

On a: Weekday,  
Peak Hour of Adjacent Street Traffic,  
One Hour Between 7 and 9 a.m.

Setting/Location: General Urban/Suburban

Number of Studies: 46

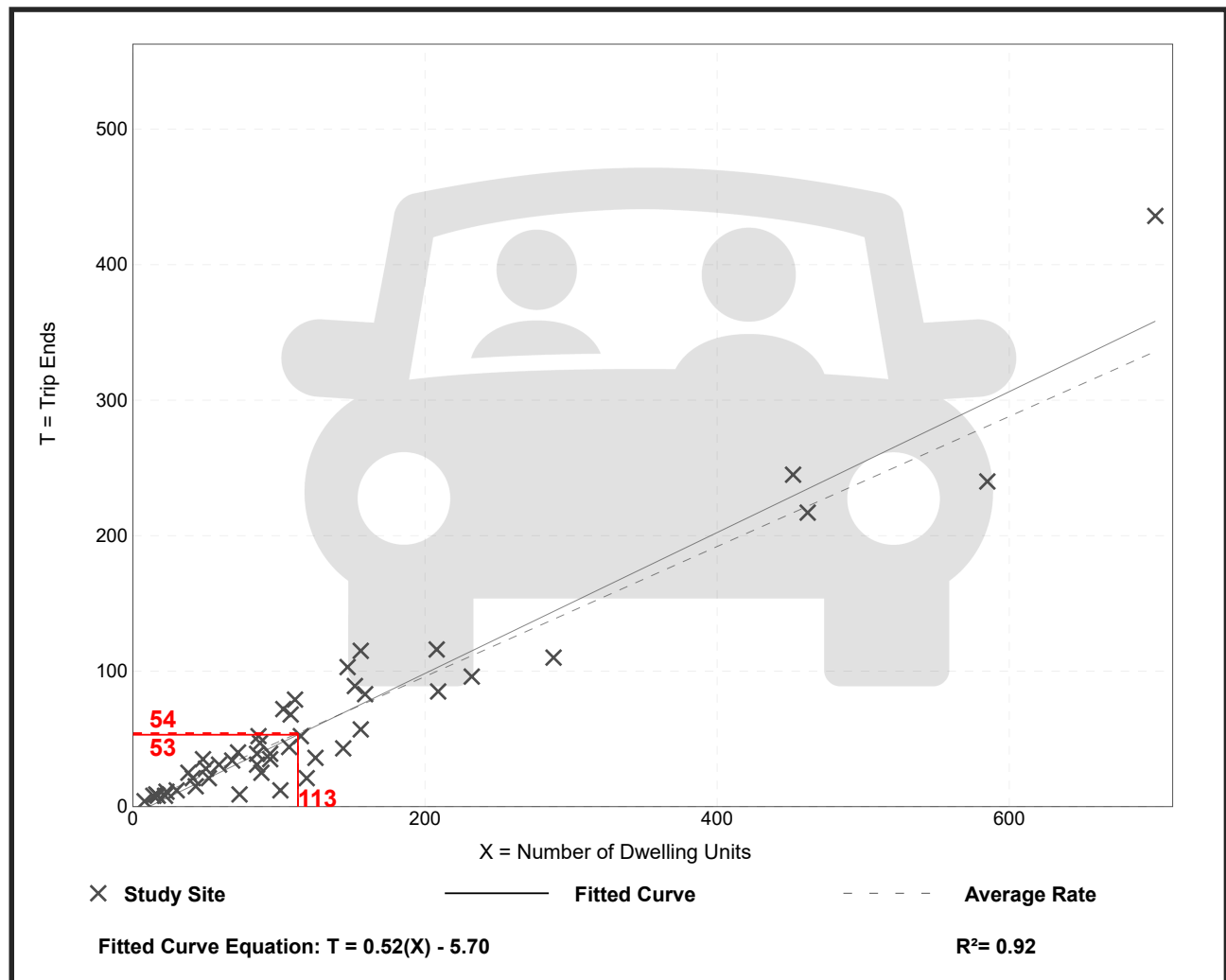
Avg. Num. of Dwelling Units: 135

Directional Distribution: 25% entering, 75% exiting

## Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.48	0.12 - 0.74	0.14

## Data Plot and Equation



# Single-Family Attached Housing (215)

Vehicle Trip Ends vs: Dwelling Units

On a: Weekday,  
Peak Hour of Adjacent Street Traffic,  
One Hour Between 4 and 6 p.m.

Setting/Location: General Urban/Suburban

Number of Studies: 51

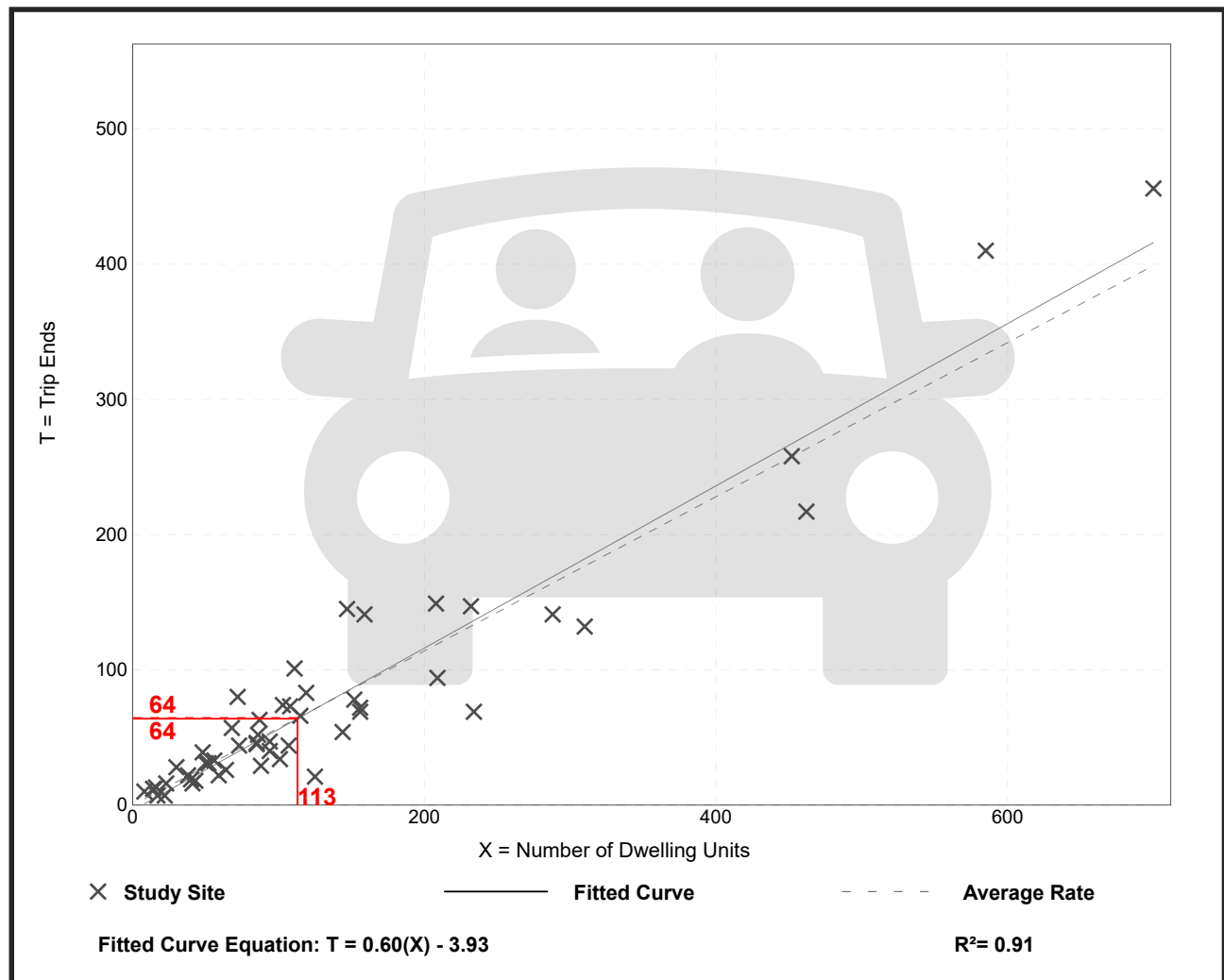
Avg. Num. of Dwelling Units: 136

Directional Distribution: 59% entering, 41% exiting

## Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.57	0.17 - 1.25	0.18

## Data Plot and Equation



# Multifamily Housing (Low-Rise) Not Close to Rail Transit (220)

Vehicle Trip Ends vs: Dwelling Units  
On a: Weekday,  
Peak Hour of Adjacent Street Traffic,  
One Hour Between 7 and 9 a.m.

Setting/Location: General Urban/Suburban

Number of Studies: 49

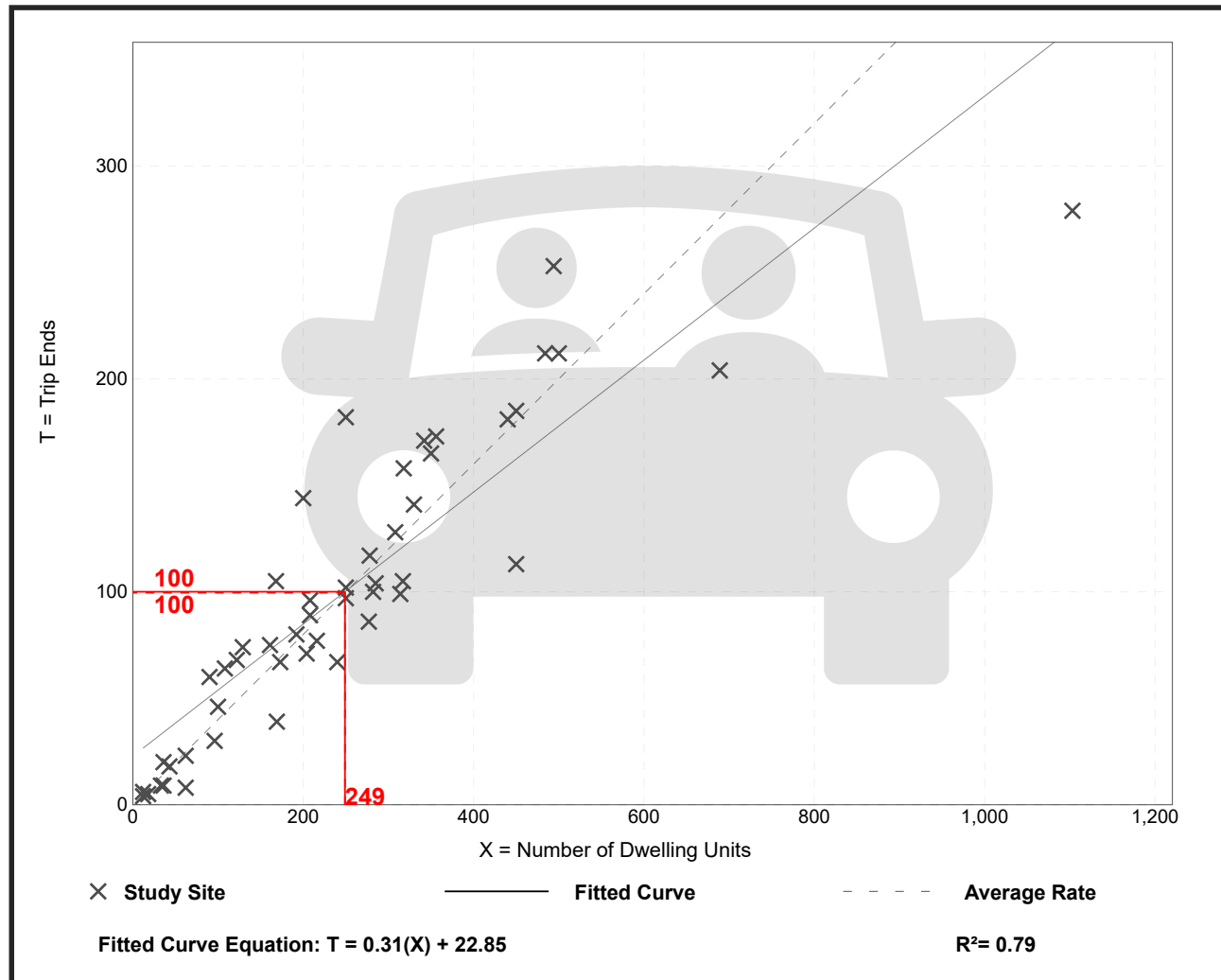
Avg. Num. of Dwelling Units: 249

Directional Distribution: 24% entering, 76% exiting

## Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.40	0.13 - 0.73	0.12

## Data Plot and Equation



# Multifamily Housing (Low-Rise) Not Close to Rail Transit (220)

Vehicle Trip Ends vs: Dwelling Units  
On a: Weekday,  
Peak Hour of Adjacent Street Traffic,  
One Hour Between 4 and 6 p.m.

Setting/Location: General Urban/Suburban

Number of Studies: 59

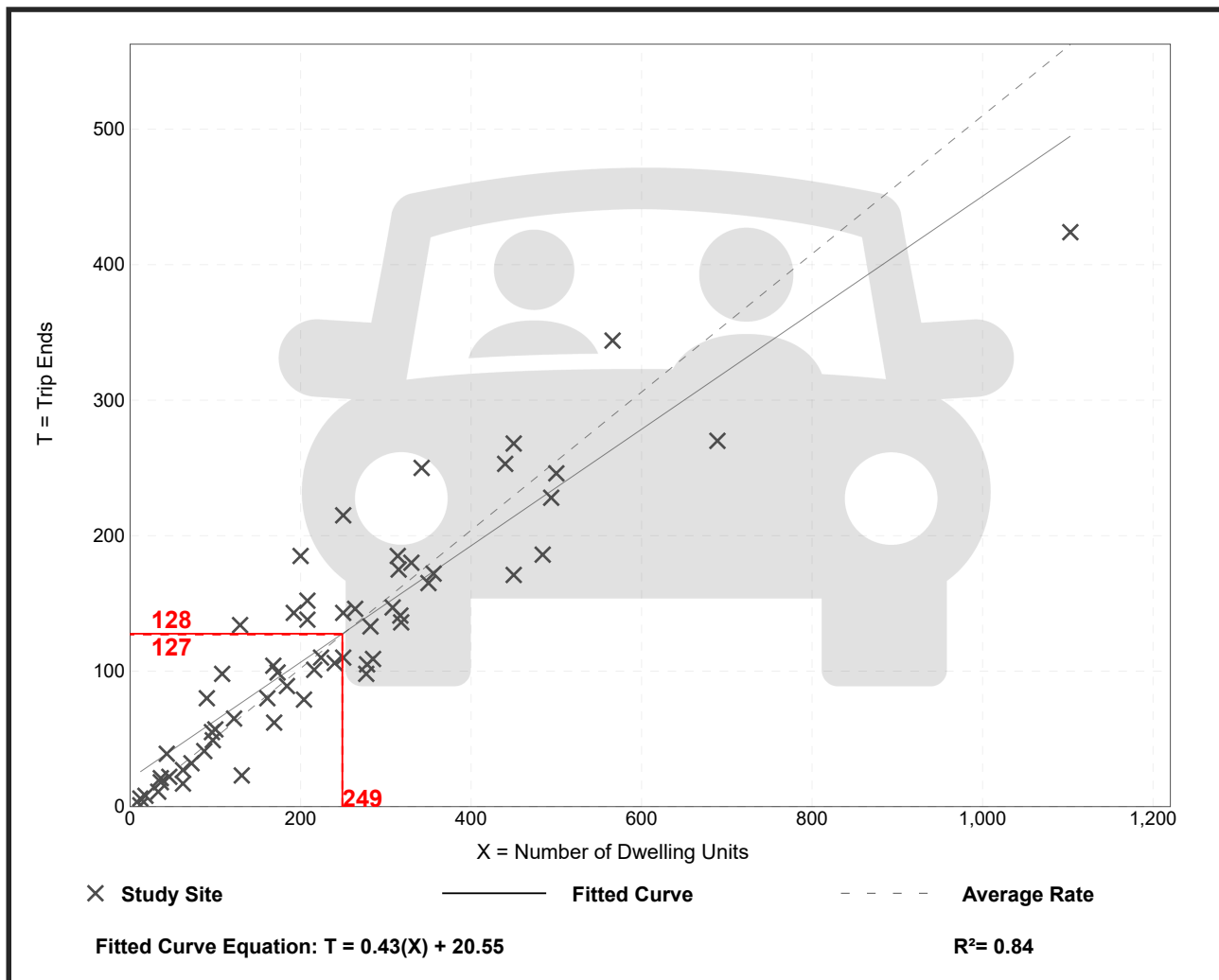
Avg. Num. of Dwelling Units: 241

Directional Distribution: 63% entering, 37% exiting

## Vehicle Trip Generation per Dwelling Unit

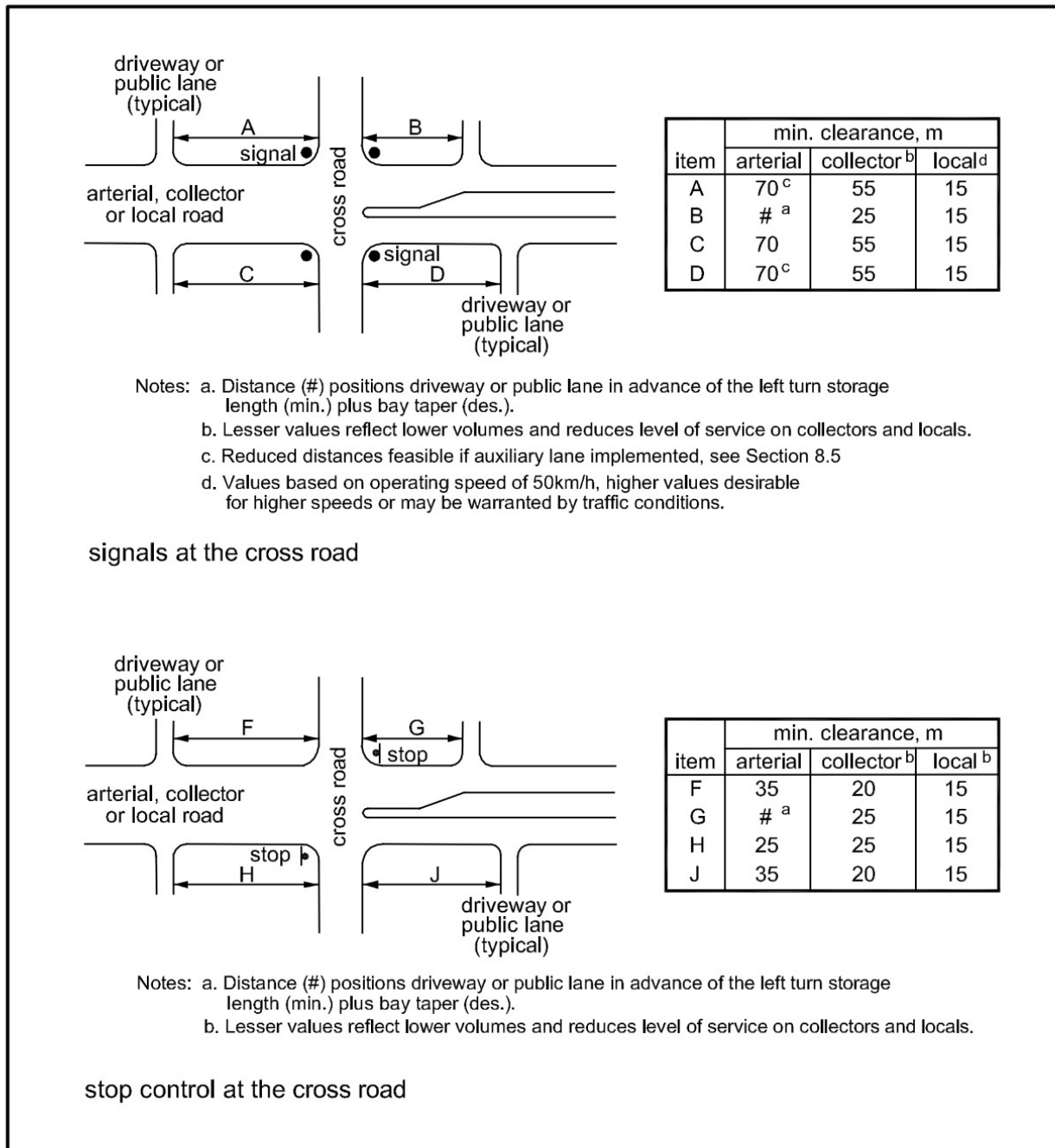
Average Rate	Range of Rates	Standard Deviation
0.51	0.08 - 1.04	0.15

## Data Plot and Equation



# APPENDIX G

## TAC GDGCR Excerpts



**Figure 8.8.2: Suggested Minimum Corner Clearances to Accesses or Public Lanes at Major Intersections**

Inadequate corner clearance between accesses and signalized intersections along a major road, such as a major arterial, can create serious operational problems including:

Stopping sight distance is the sum of the distance travelled during the perception and reaction time and the braking distance.

$$SSD = 0.278Vt + 0.039 \frac{V^2}{a} \quad (2.5.2)$$

Where:

- SSD = Stopping sight distance (m)
- t = Brake reaction time, 2.5 s
- V = Design speed (km/h)
- a = Deceleration rate (m/s<sup>2</sup>)

**Table 2.5.2** gives the minimum stopping sight distances on level grade, on wet pavement, for a range of design speeds. These values are used for vertical curve design, intersection geometry and the placement of traffic control devices. The stopping sight distances quoted in **Table 2.5.2** may need to be increased for a variety of reasons related to grade and vehicle type as noted below.

**Table 2.5.2: Stopping Sight Distance on level roadways for Automobiles<sup>54</sup>**

Design speed (km/h)	Brake reaction distance (m)	Braking distance on level (m)	Stopping sight distance	
			Calculated (m)	Design (m)
20	13.9	4.6	18.5	20
30	20.9	10.3	31.2	35
40	27.8	18.4	46.2	50
50	34.8	28.7	63.5	65
60	41.7	41.3	83.0	85
70	48.7	56.2	104.9	105
80	55.6	73.4	129.0	130
90	62.6	92.9	155.5	160
100	69.5	114.7	184.2	185
110	76.5	138.8	215.3	220
120	83.4	165.2	248.6	250
130	90.4	193.8	284.2	285

Note: Brake reaction distance predicated on a time of 2.5 s; deceleration rate of 3.4 m/s<sup>2</sup> used to determine calculated sight distance.

**Table 9.9.3: Time Gap for Case B1, Left Turn from Stop**

Design Vehicle	Time Gap ( $t_g$ )(s) at Design Speed of Major Road
Passenger car	7.5
Single-unit truck	9.5
Combination truck (WB 19 and WB 20 )	11.5
Longer truck	To be established by road authority

Notes: Time gaps are for a stopped vehicle to turn left onto a two-lane highway with no median and with grades of 3% or less. The table values should be adjusted as follows:

- For multi-lane highways: For left turns onto two-lane highways with more than two lanes, add 0.5 s for passenger cars and 0.7 s for trucks for each additional lane, from the left, in excess of one, to be crossed by the turning vehicle.
- For minor approach grades: If the approach grade is an upgrade that exceeds 3%, add 0.2 s for each percent grade for left turns.
- Some road authorities use higher values for certain specialized vehicles (e.g., Alberta uses 22 s for very long log trucks).

The intersection sight distance along the major road (distance  $b$  in **Figure 9.9.2**) is determined by:

$$ISD = 0.278 V_{\text{major}} t_g \quad (9.9.1)$$

Where:

ISD = intersection sight distance (length of the leg of sight triangle along the major road) (m)

$V_{\text{major}}$  = design speed of the major road (km/h)

$t_g$  = time gap for minor road vehicle to enter the major road (s)

For example, a passenger car turning left onto a two-lane major road should be provided sight distance equivalent to a time gap of 7.5 s in major-road traffic. If the design speed of the major road is 100 km/h, this corresponds to a sight distance of  $0.278(100)(7.5) = 208.5$  or 210 m, rounded for design.

A passenger car turning left onto a four-lane undivided roadway will need to cross two near lanes, rather than one. This increases the recommended gap in major-road traffic from 7.5 to 8.0 s. The corresponding value of sight distance for this example would be 223 m. If the minor-road approach to such an intersection is located on a 4% upgrade, then the time gap selected for intersection sight distance design for left turns should be increased from 8.0 to 8.8 s, equivalent to an increase of 0.2 s for each percent grade.

The design values for intersection sight distance for passenger cars are shown in **Table 9.9.4**. **Figure 9.9.4** includes design values, based on the time gaps for the design vehicles included in **Table 9.9.3**.

No adjustment of the recommended sight distance values for the major-road grade is generally needed because both the major- and minor-road vehicle will be on the same grade when departing from the intersection. However, if the minor-road design vehicle is a heavy truck and the intersection is located near a sag vertical curve with grades over 3%, then an adjustment to extend the recommended sight distance based on the major-road grade should be considered.

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

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

Note: Intersection sight distance shown is for a stopped passenger car to turn left onto a two-lane highway with no median and grades 3% or less. For other conditions, the time gap should be adjusted and the sight distance recalculated.

Sight distance design for left turns at divided-highway intersections should consider multiple design vehicles and median width. If the design vehicle used to determine sight distance for a divided-highway intersection is larger than a passenger car, then sight distance for left turns will need to be checked for that selected design vehicle and for smaller design vehicles as well. If the divided-highway median is wide enough to store the design vehicle with a clearance to the through lanes of approximately 1 m at both ends of the vehicle, no separate analysis for the departure sight triangle for left turns is needed on the minor-road approach for the near roadway to the left. In most cases, the departure sight triangle for right turns (case B2) will provide sufficient sight distance for a passenger car to cross the near roadway to reach the median. Possible exceptions are addressed in the discussion of case B3.

The time gaps in **Table 9.9.3** can be decreased by 1.0 s for right-turn maneuvers without undue interference with major-road traffic. These adjusted time gaps for the right turn from the minor road are shown in **Table 9.9.5**. Design values based on these adjusted time gaps are shown in **Table 9.9.6** for passenger cars. **Figure 9.9.5** includes the design values for the design vehicles for each of the time gaps in **Table 9.9.5**.

**Table 9.9.5: Time Gap for Case B2—Right Turn from Stop and Case B3—Crossing Maneuver**

Design Vehicle	Time Gap ( $t_g$ )(s) at Design Speed of Major Road
Passenger car	6.5
Single-unit truck	8.5
Combination truck (WB 19 and WB 20 )	10.5

Note: Time gaps are for a stopped vehicle to turn left onto a two-lane highway with no median and with grades of 3% or less. The table values should be adjusted as follows:

- For multi-lane highways: For left turns onto two-lane highways with more than two lanes, add 0.5 s for passenger cars and 0.7 s for trucks for each additional lane, from the left, in excess of one, to be crossed by the turning vehicle.
- For minor approach grades: If the approach grade is an upgrade that exceeds 3%, add 0.1 s for each percent grade for left turns.



Table 9.9.6: Design Intersection Sight Distance – Case B2, Right Turn from Stop, and Case B3, Crossing Maneuver

Design Speed (km/h)	Stopping Sight Distance (m)	Intersection Sight Distance for Passenger Cars	
		Calculated (m)	Design (m)
20	20	36.1	40
30	35	54.2	55
40	50	72.3	75
50	65	90.4	95
60	85	108.4	110
70	105	126.5	130
80	130	144.6	145
90	160	162.6	165
100	185	180.7	185
110	220	198.8	200
120	250	216.8	220
130	285	234.9	235

Note: Intersection sight distance shown is for a stopped passenger car to turn right onto or to cross a two-lane highway with no median and with grades of 3% or less. For other conditions, the time gap should be adjusted and the sight distance recalculated.

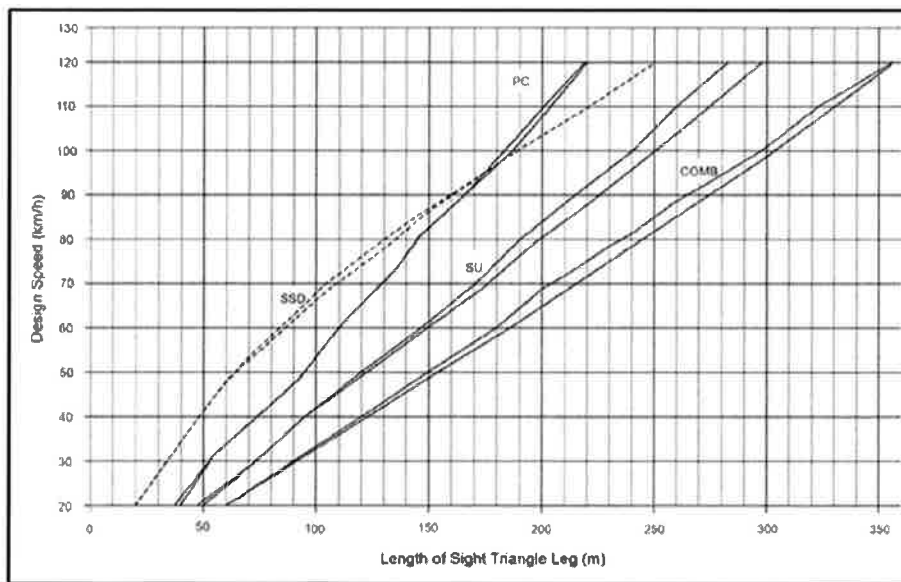


Figure 9.9.5: Intersection Sight Distance – Case B2, Right Turn from Stop, and Case B3, Crossing Maneuver (Calculated and Design Values Plotted)

**Case F – Left Turns from the Major Road**

All locations along a major highway from which vehicles are permitted to turn left across opposing traffic, including intersections and driveways, should have sufficient sight distance to accommodate the left-turn maneuver. Left-turning drivers need sufficient sight distance to decide when to turn left across the lane(s) used by opposing traffic. Sight distance design should be based on a left turn by a stopped vehicle, since a vehicle that turns left without stopping would need less sight distance. The sight distance along the major road to accommodate left turns is the distance traversed at the design speed of the major road in the travel time for the design vehicle given in **Table 9.9.11**.

**Table 9.9.11: Time Gap for Case F, Left Turns from the Major Road**

Design Vehicle	Time Gap ( $t_g$ )(s) at Design Speed of Major Road
Passenger car	5.5
Single-unit truck	6.5
Combination truck (WB 19 and WB 20)	7.5

Note: Adjustment for multi-lane highways: For turning vehicles that cross more than one opposing lane, add 0.5 s for passenger cars and 0.7 s for trucks for each additional lane to be crossed.

The table also contains appropriate adjustment factors for the number of major-road lanes to be crossed by the turning vehicle. The unadjusted time gap in **Table 9.9.11** for passenger cars was used to develop the sight distances in **Table 9.9.12** and is illustrated in **Figure 9.9.8**.

Table 9.9.12: Intersection Sight Distance – Case F, Left Turn from the Major Road

Design Speed (km/h)	Stopping Sight Distance (m)	Intersection Sight Distance	
		Passenger Cars	
		Calculated (m)	Design (m)
20	20	30.6	35
30	35	45.9	50
40	50	61.2	65
50	65	76.5	80
60	85	91.7	95
70	105	107.0	110
80	130	122.3	125
90	160	137.6	140
100	185	152.9	155
110	220	168.2	170
120	250	183.5	185
130	285	198.8	200

Note: Intersection sight distance shown is for a passenger car making a left turn from an undivided highway. For other conditions and design vehicles, the time gap should be adjusted and the sight distance recalculated.

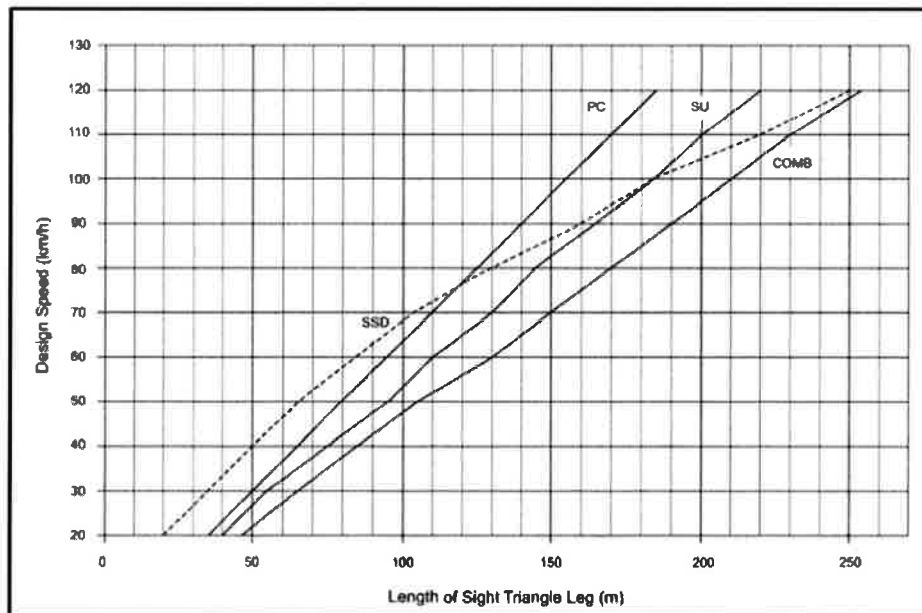


Figure 9.9.8: Intersection Sight Distance – Case F, Left Turn from the Major Road

# APPENDIX H

## Relevant Zoning By-Law No. Excerpts

### 6.27.8 Calculation of Parking Regulations

Where a part of a parking space is required in accordance with this By-Law for a use listed in Table 3, such part shall be considered one parking space for the purpose of calculating the total parking requirements for the said use.

In addition, where the number of parking spaces required in accordance with this By-law is based upon the capacity of a building or structure, such capacity shall be deemed to be the same as the maximum capacity for such building or structure permitted by the Ontario Building Code, the Ontario Fire Code, or where applicable, the Liquor Licensing Board of Ontario, whichever capacity is the lesser.

Where, on the date of passing of this By-law, a use of a lot does not comply with number of parking spaces required by this section, this By-law shall not be interpreted to require that the deficiency be made up prior to the construction of any addition or change of use except that any additional parking spaces required for the addition or change of use are provided in accordance with all provisions of Section 6.27 of this By-law.

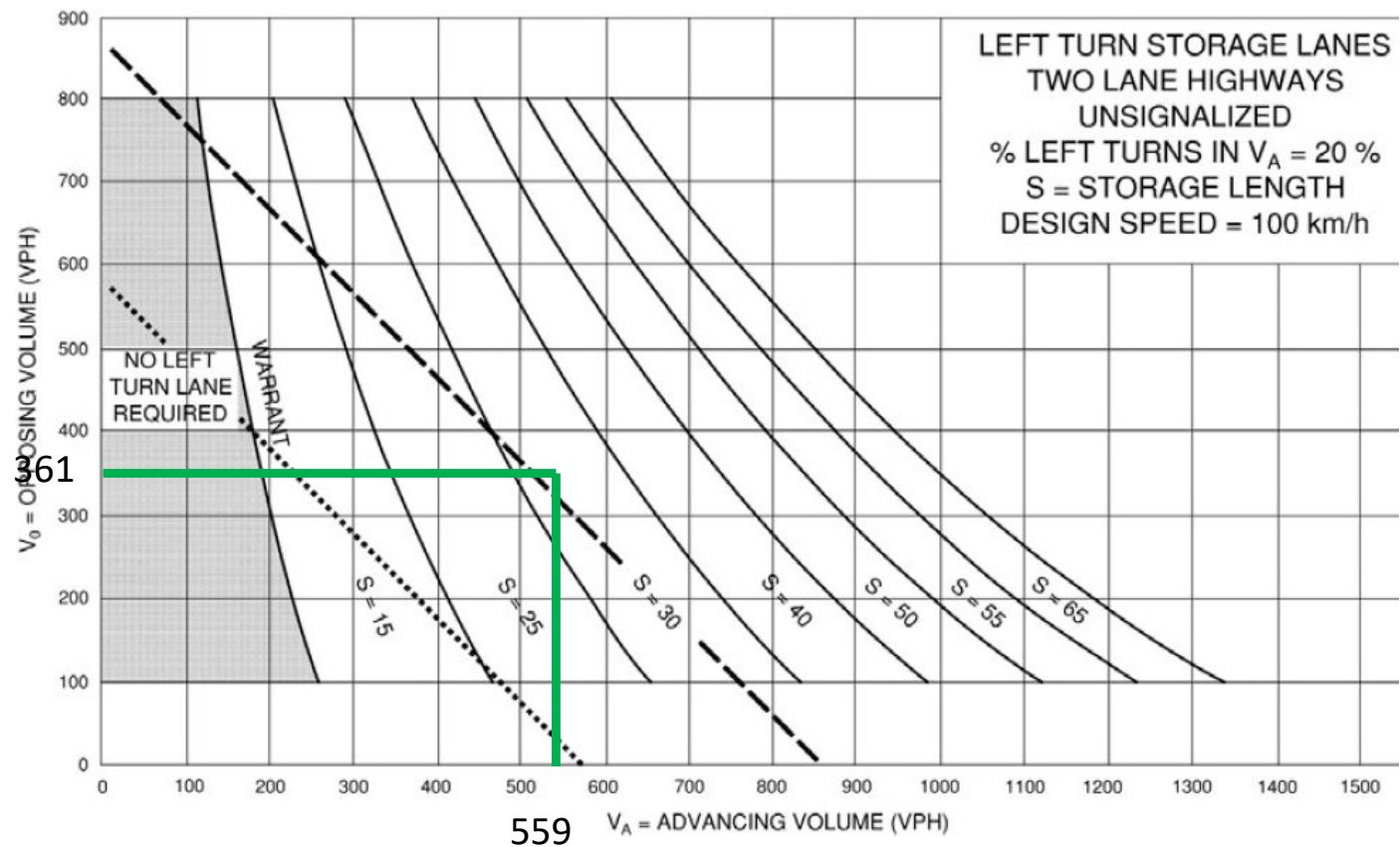
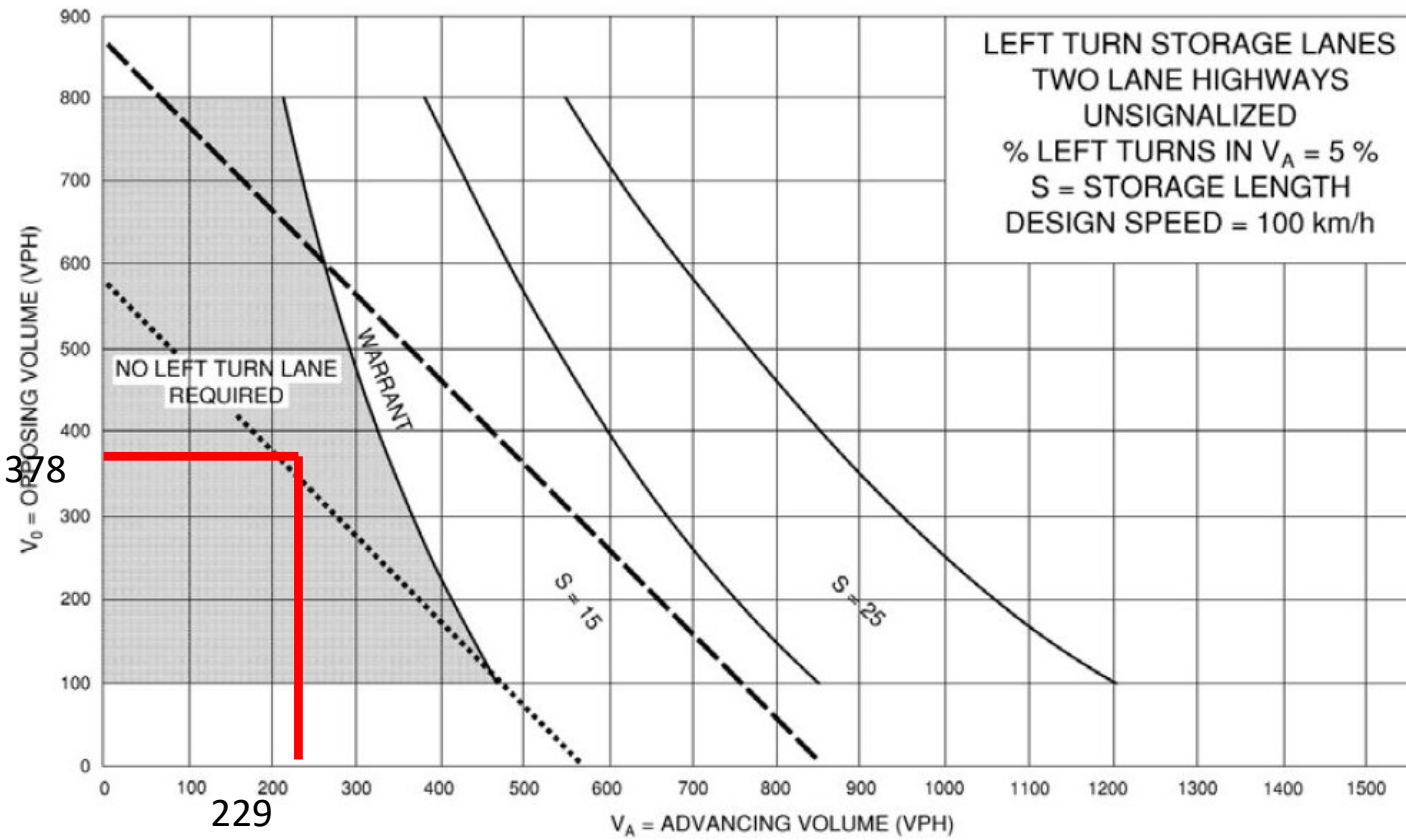
**Table #3 – Number of Parking Spaces Required**

TYPE OF USE	MINIMUM NUMBER OF PARKING SPACES
<b>RESIDENTIAL</b>	
Single detached	1/residential dwelling unit
Semi/Duplex	1/residential dwelling unit
Triplex/Fourplex	1.5/residential dwelling unit
Additional Dwelling Unit	1/parking space per unit and may be tandem
Apartment Dwellings	1.5/unit
Townhouses/ Cluster	1 space per dwelling unit; plus 1 space for each 2 dwelling units for visitors only (also see section 6.27.9 Tandem Parking)
Townhouses/ Street	1/unit
Senior Citizens Apartments	1/ residential dwelling unit
Bed & Breakfast	1/guest room + 1/proprietor
Boarding/Rooming/Lodging Establishments	1/building + 1/guest room
Group Home	1/3 beds

# APPENDIX I

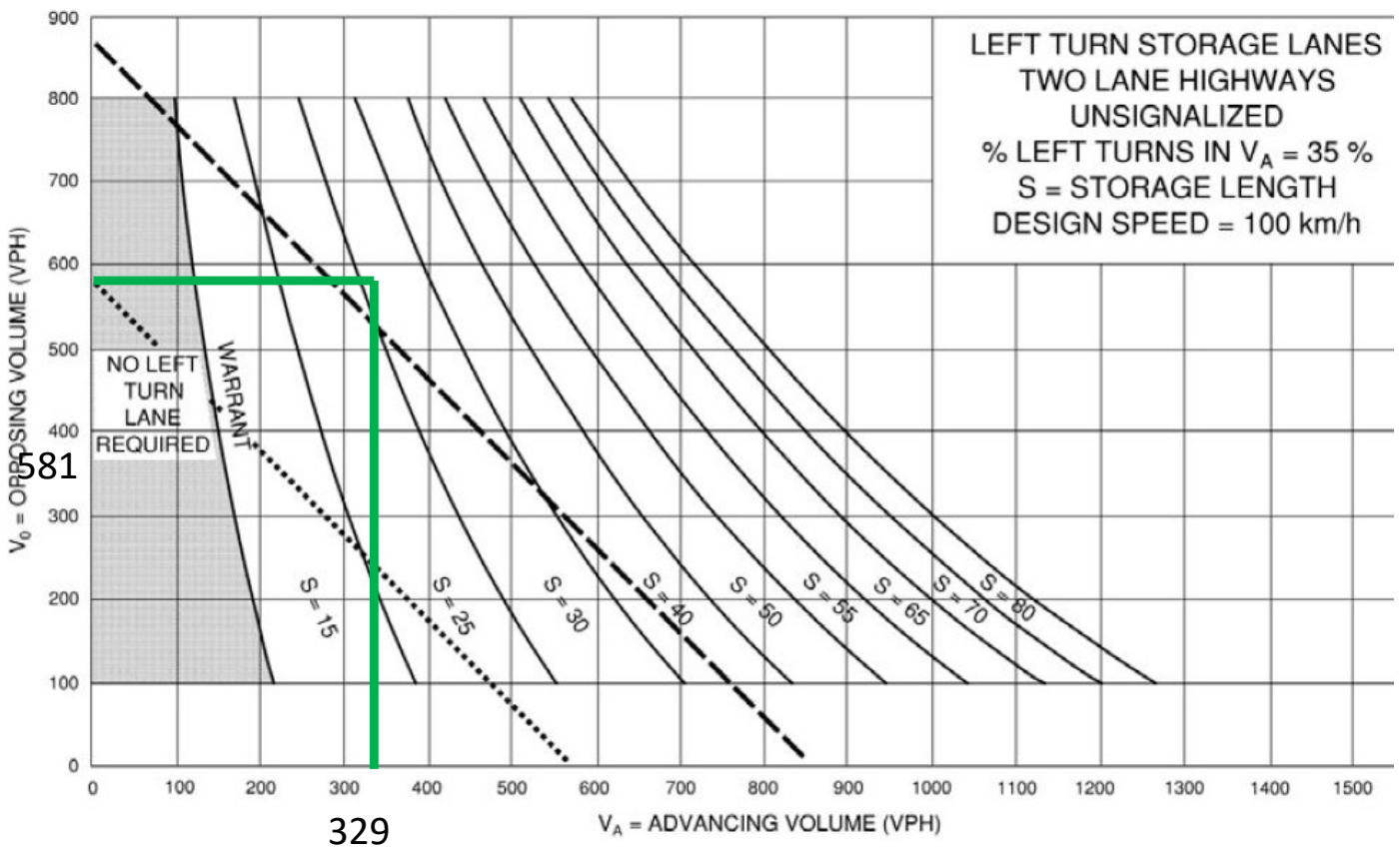
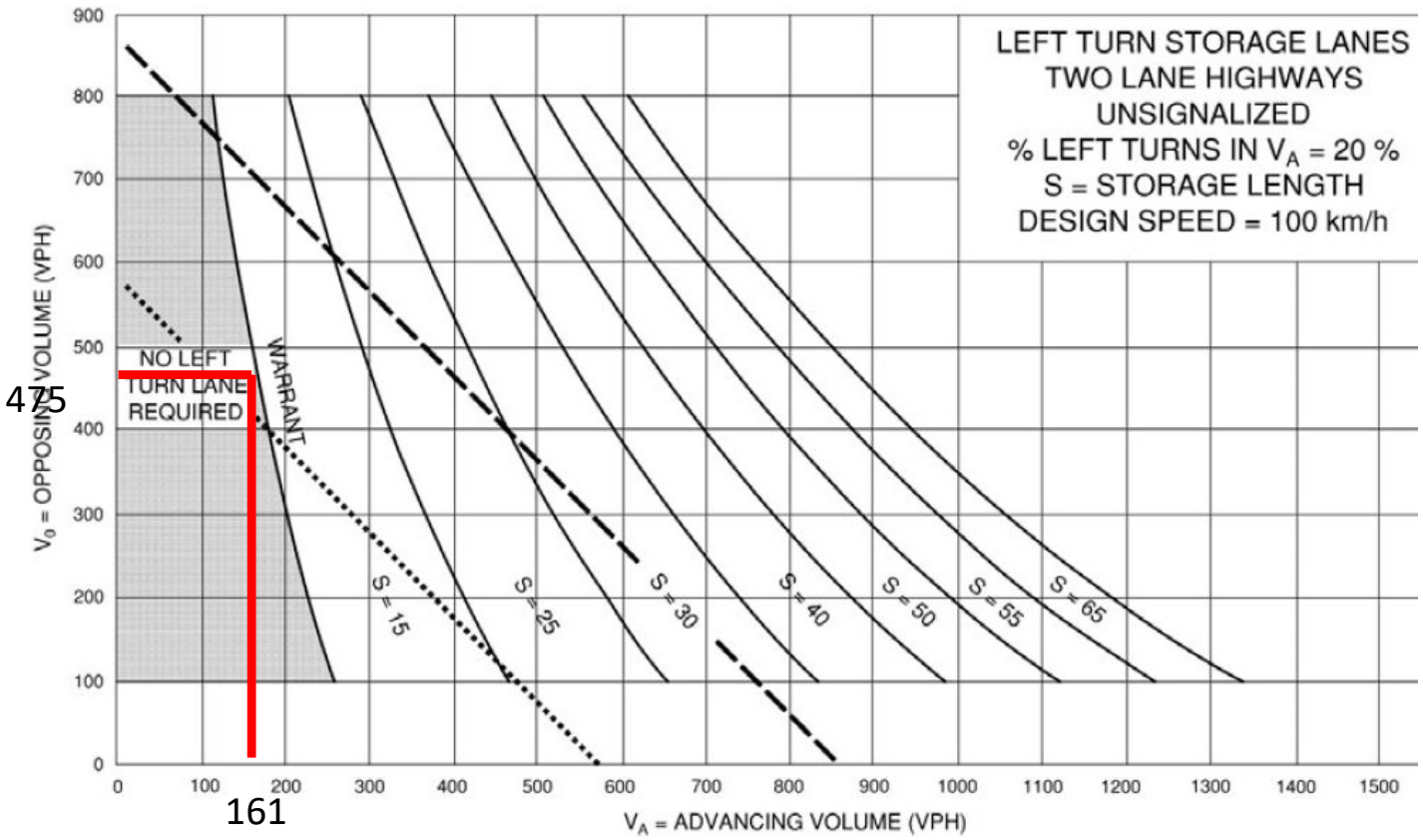
## Warrant Sheets

— AM Peak Hour  
— PM Peak Hour



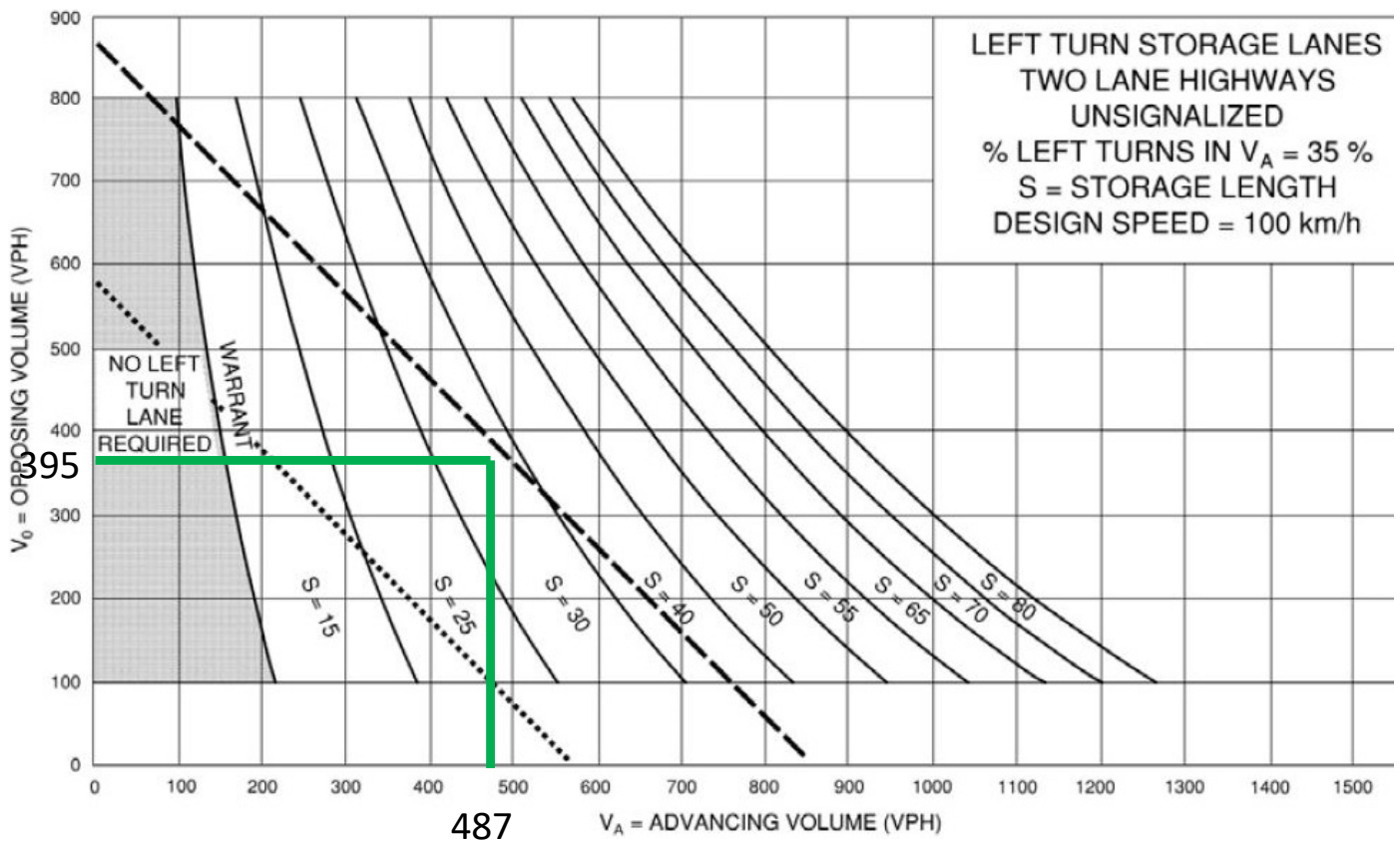
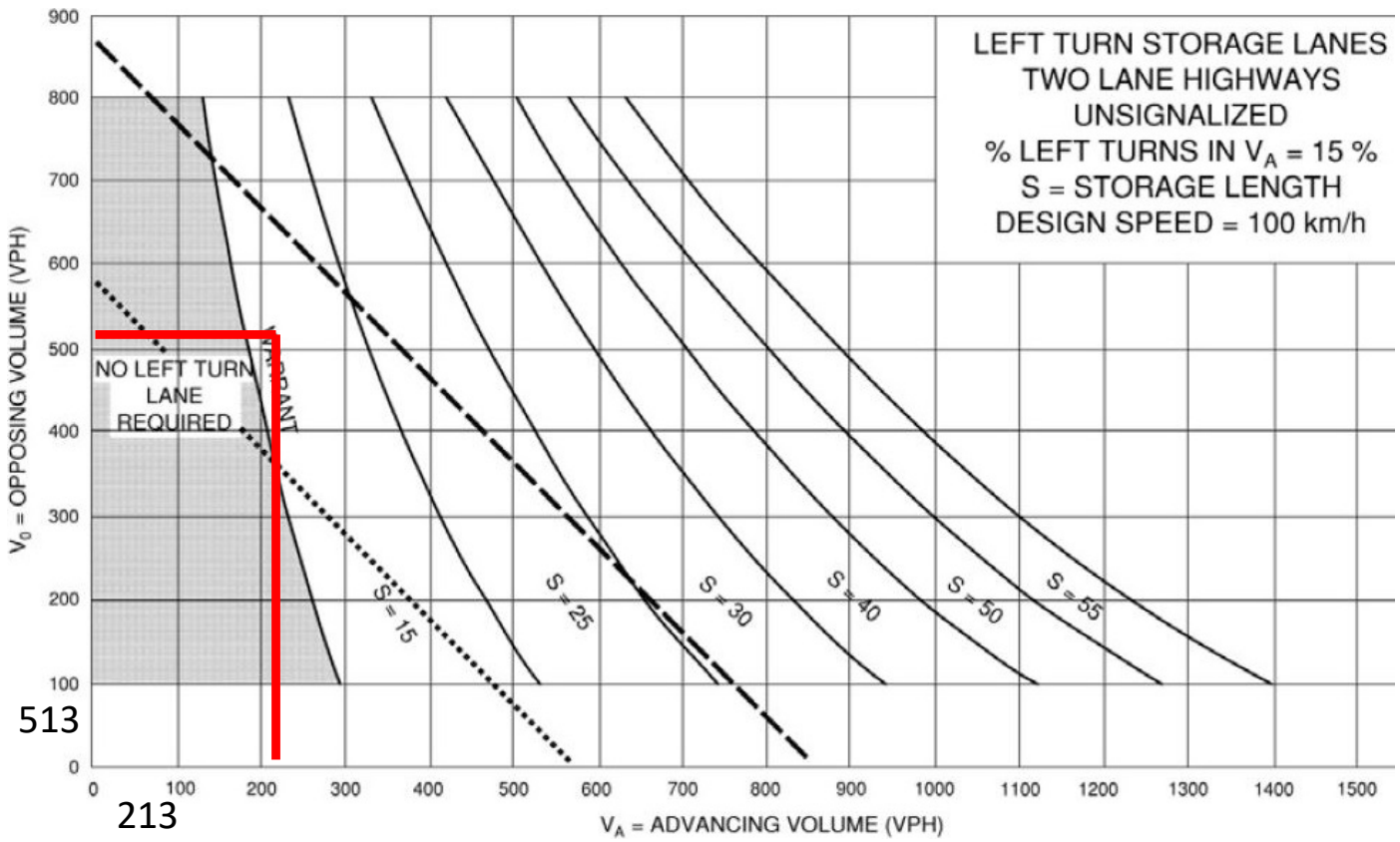
Eliza Street and Future Macauley Street Northbound Left-Turn Lane Warrant – 2035 Future Total Volumes

█ AM Peak Hour  
█ PM Peak Hour



Eliza Street and Tucker Street Eastbound Left-Turn Lane Warrant  
 – 2035 Future Total Volumes

— AM Peak Hour  
— PM Peak Hour



Eliza Street and Tucker Street Northbound Left-Turn Lane  
 Warrant – 2035 Future Total Volumes



**CROZIER**

**TRAFFIC SIGNAL WARRANTS - JUSTIFICATION 7 (PROJECTED VOLUMES)  
PER OTM BOOK 12**

**Project and Scenario Summary**

<b>Project</b>	Tribute Communities	<b>Project Number</b>	1000-7040
		<b>Date</b>	2025-02-21
<b>Horizon</b>	2035 Future Total	<b>Analyst</b>	0

**Study Intersection Summary**

<b>Major Street</b>	Eliza Street	<b>Direction</b>	North/South
<b>Minor Street</b>	Tucker Street	<b>Direction</b>	East/West

**Intersection Details for Warrant Parameters**

<b>Flow Conditions</b>	Free Flow (Rural)	<b>Number of Lanes</b>	1
<b>T-Intersection?</b>	Yes	<b>Intersection Type</b>	Existing

Notes: Free Flow (Rural) is used when the operating speed is greater than or equal to 70km/h. Restricted Flow (Urban) is used otherwise.  
The Number of Lanes greater than 1 only needs to be for one direction along the major road.  
An intersection is considered New if at least 1-leg is added to an existing intersection.

**Input Volumes and Average Hourly Volume Determination**

Peak Hour	Major: Eliza Street						Minor: Tucker Street						Pedestrians Crossing Major Street
	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	
AM	59	154	0	0	321	192	79	0	82	0	0	0	0
PM	141	346	0	0	235	160	214	0	115	0	0	0	0
AHV	30	77	0	0	161	96	40	0	41	0	0	0	0

The AHV is determined by the availability of the peak hour estimates. If both Peak 1 and Peak 2 Peak Hour Volume estimates are available then AHV = (Peak1phv + Peak2phv)/4. In only the case that one estimate is available then AHV = Peak1phv/2 or Peak2phv/2.

**Justification 7 - OTM Book 12**

JUSTIFICATION	DESCRIPTION	MINIMUM REQUIREMENT 1 LANE HIGHWAYS		MINIMUM REQUIREMENT 2 OR MORE LANE HIGHWAYS		COMPLIANCE		
		Free Flow	Restricted Flow	Free Flow	Restricted Flow	Sectional		Entire Percentage
						Numerical	Percentage	
1. Minimum Vehicular Volume	A. Vehicle Volume, All Approaches (Avg. Hour)	480	720	600	900	445	92.7%	45.0%
	B. Vehicle Volume, Along Minor Streets (Avg. Hour)	180	255	180	255	81	45.0%	
2. Delay to Cross Traffic	A. Vehicle Volume, Major Street (Avg. Hour)	480	720	600	900	364	75.8%	75.8%
	B. Combined Vehicle and Pedestrian Volume Crossing Artery From Minor Streets (Avg. Hour)	50	75	50	75	40	80.0%	
Applicable Threshold		X						

Note: For T-intersections the thresholds for 1B have been increased by 50% per OTM Book 12.  
Existing Intersections Require 120% Justification  
New/Proposed Intersections Require 150% Justification

Percent Compliance: 75.8%  
Percentage Required to be Justified: 120%

**Signal Justification 7 Met:**  Yes  No



**CROZIER**

**TRAFFIC SIGNAL WARRANTS - JUSTIFICATION 7 (PROJECTED VOLUMES)  
PER OTM BOOK 12**

**Project and Scenario Summary**

<b>Project</b>	Tribute Communities	<b>Project Number</b>	1000-7040
		<b>Date</b>	2025-02-21
<b>Horizon</b>	2035 Future Total	<b>Analyst</b>	0

**Study Intersection Summary**

<b>Major Street</b>	Eliza Street	<b>Direction</b>	North/South
<b>Minor Street</b>	Street A/G	<b>Direction</b>	East/West

**Intersection Details for Warrant Parameters**

<b>Flow Conditions</b>	Free Flow (Rural)	<b>Number of Lanes</b>	1
<b>T-Intersection?</b>	No	<b>Intersection Type</b>	New

Notes: Free Flow (Rural) is used when the operating speed is greater than or equal to 70km/h. Restricted Flow (Urban) is used otherwise.  
The Number of Lanes greater than 1 only needs to be for one direction along the major road.  
An intersection is considered New if at least 1-leg is added to an existing intersection.

**Input Volumes and Average Hourly Volume Determination**

Peak Hour	Major: Eliza Street						Minor: Street A/G						Pedestrians Crossing Major Street
	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	
AM	21	158	30	0	227	6	18	0	62	90	0	0	0
PM	69	320	102	0	259	21	13	0	42	61	0	0	0
AHV	11	79	15	0	114	3	9	0	31	45	0	0	0

The AHV is determined by the availability of the peak hour estimates. If both Peak 1 and Peak 2 Peak Hour Volume estimates are available then AHV = (Peak1phv + Peak2phv)/4. In only the case that one estimate is available then AHV = Peak1phv/2 or Peak2phv/2.

**Justification 7 - OTM Book 12**

JUSTIFICATION	DESCRIPTION	MINIMUM REQUIREMENT 1 LANE HIGHWAYS		MINIMUM REQUIREMENT 2 OR MORE LANE HIGHWAYS		COMPLIANCE		
		Free Flow	Restricted Flow	Free Flow	Restricted Flow	Sectional		Entire Percentage
						Numerical	Percentage	
1. Minimum Vehicular Volume	A. Vehicle Volume, All Approaches (Avg. Hour)	480	720	600	900	307	64.0%	64.0%
	B. Vehicle Volume, Along Minor Streets (Avg. Hour)	120	170	120	170	85	70.8%	
2. Delay to Cross Traffic	A. Vehicle Volume, Major Street (Avg. Hour)	480	720	600	900	222	46.3%	46.3%
	B. Combined Vehicle and Pedestrian Volume Crossing Artery From Minor Streets (Avg. Hour)	50	75	50	75	54	108.0%	
Applicable Threshold		<b>X</b>						

Note: For T-intersections the thresholds for 1B have been increased by 50% per OTM Book 12.  
Existing Intersections Require 120% Justification  
New/Proposed Intersections Require 150% Justification

Percent Compliance: 64.0%  
Percentage Required to be Justified: 150%

**Signal Justification 7 Met:**  Yes  No