# 750 St. David Street North, Fergus, ON

# Transportation Impact Assessment

Paradigm Transportation Solutions Limited

2024-12
240158

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Project Summary

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**Client:**

**2587722 Ontario Inc.**

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# 750 St. David Street North, Fergus, ON
# Transportation Impact Assessment


Erica Bayley, P.Eng.

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# Executive Summary

## Content

2587722 Ontario Inc. retained Paradigm Transportation Solutions Limited (Paradigm) to conduct this Transportation Impact Assessment (TIA) for a proposed residential development located at 750 St. David Street North, Fergus, in the Township of Centre Wellington, Ontario.

This TIS includes an analysis of existing traffic conditions, a description of the proposed development traffic, traffic forecasts for a five-year from build-out horizon (Year 2031), and any recommendations required to accommodate future traffic conditions.

## Development Concept

The property owner is proposing to develop the property to include 12 to 20 stacked-townhouse units. Vehicle access is proposed via a new all-moves driveway connection to Parkside Drive East.

## Conclusions

Based on the investigations carried out, it is concluded that:

- **Existing Traffic Conditions:** The study area intersection is currently operating with acceptable levels of service and within capacity during the AM and PM peak hour with the following critical movements:
  - St. David Street North & Parkside Drive:
    - Westbound approach at LOS E and v/c ratio of 0.11 during the PM peak hour.
- **Development Trip Generation:** The development is forecast to generate 5 new trips in the AM peak hour, and 8 new trips in the PM peak hour.
- **2031 Background Traffic Conditions:** The study area intersections are forecast to operate within acceptable levels of service during the AM and PM peak hours with the follow critical movements:
  - St. David Street North & Parkside Drive:
    - Eastbound approach at LOS E and v/c ratio of 0.41 during the PM peak hour; and
    - Westbound approach at LOS F and v/c ratio of 0.26 during the PM peak hour.

- **2031 Total Traffic Conditions:** the study area intersections are forecast to operate within acceptable levels of service during the AM and PM peak hours with the follow critical movements:
  - St. David Street North & Parkside Drive:
    - Eastbound approach at LOS E and v/c ratio of 0.41 during the PM peak hour; and
    - Westbound approach at LOS F and v/c ratio of 0.26 during the PM peak hour.
- While the minor approaches of Parkside Drive at St. David Street North operate with delay, the v/c ratios indicates that there remains excess capacity for these movements.
- The addition of the site generated traffic does not impact the signalized intersection of St. David Street North and Strathallan Street.
- The site driveway approach to Parkside Drive East is forecast to operate at LOS A and v/c ratio of 0.00 during the AM and PM peak hours.
- Traffic control signals are not warranted at St. David Street North & Parkside Drive using OTM Book 12, Justifications 1 through 4, and 7.
- An eastbound left-turn lane on Parkside Drive East and the Site Access is not warranted under future total traffic conditions.

## Recommendations

Based on the findings of this study, it is recommended that:

- The development application be approved with no provision for off-site transportation network improvements.
- That the Township of Centre Wellington monitor the future traffic volumes at the intersection of St. David Street North and Parkside Drive and provide alternative traffic control measures when required.

# Contents



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# 1 Introduction

## 1.1 Overview

2587722 Ontario Inc. retained Paradigm Transportation Solutions Limited (Paradigm) to conduct this Transportation Impact Assessment (TIA) for a proposed residential development located at 750 St. David Street North, Fergus, in the Township of Centre Wellington, Ontario. **Figure 1.1** shows the subject development location.

## 1.2 Purpose and Scope

This study determines the impact of the additional traffic on the surrounding road network, and remedial measures necessary (if any) to accommodate future traffic in a satisfactory manner. The scope of the study, developed in consultation with the Township of Centre Wellington staff via email in April 2024, includes:

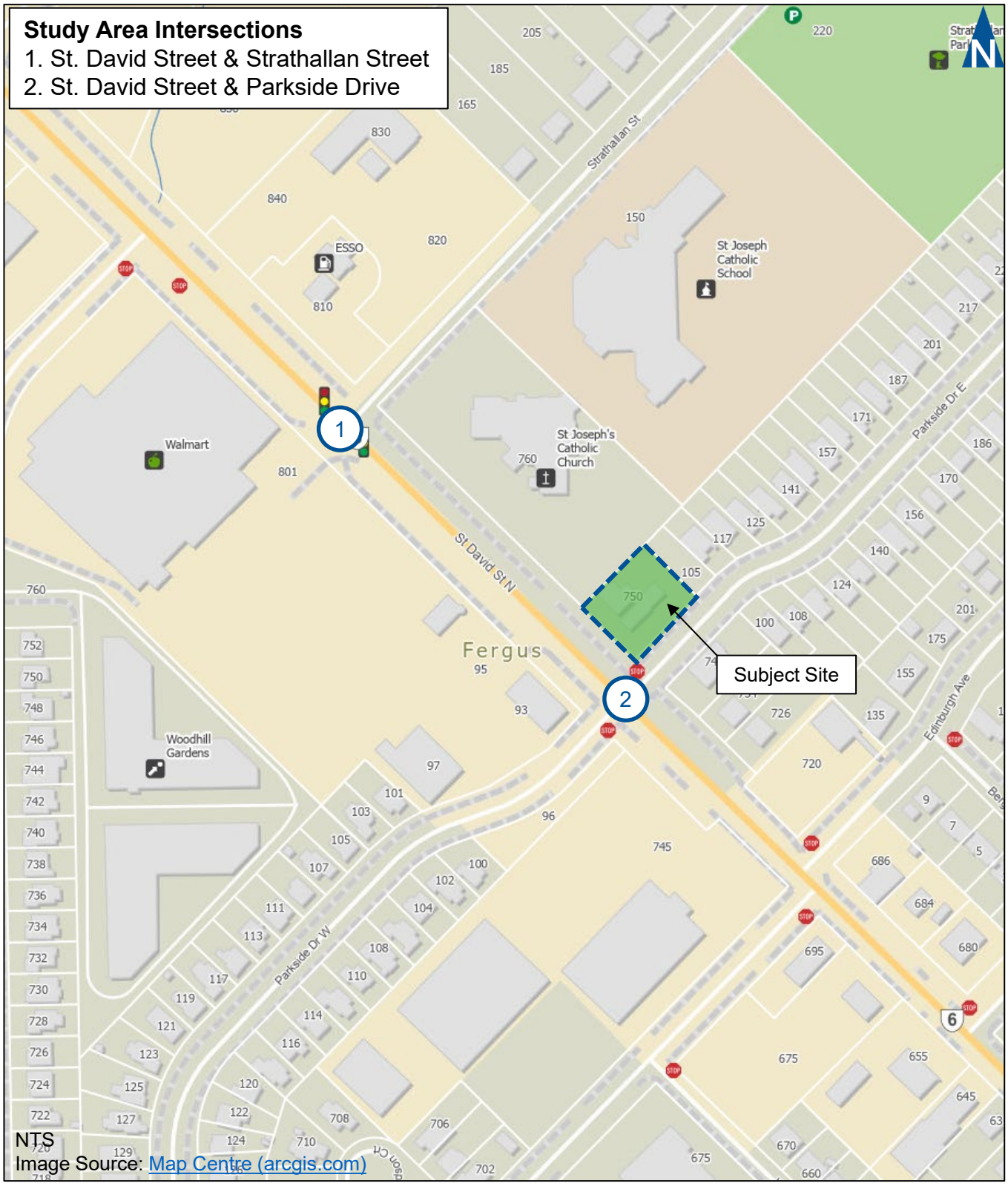
- Documentation of current traffic and site conditions near the development;
- Estimation of the future background traffic growth in the area;
- Estimation of development site generated traffic;
- Assignment of the development traffic to the subject road network;
- Traffic forecasts for assumed five years from full buildout (2031); and
- Identification of any operational concerns and any mitigation measures that may be required to improve operations.

**Appendix A** contains the pre-study consultation with the Township.

## 1.3 Study Area

The study area intersections include:

- St. David Street North and Strathallan Street;
- St. David Street North and Parkside Drive; and
- Driveway connection to Parkside Drive.

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# Location of Subject Site

750 St. David Street North, Fergus
240158

Figure 1.1

# 2 Existing Conditions

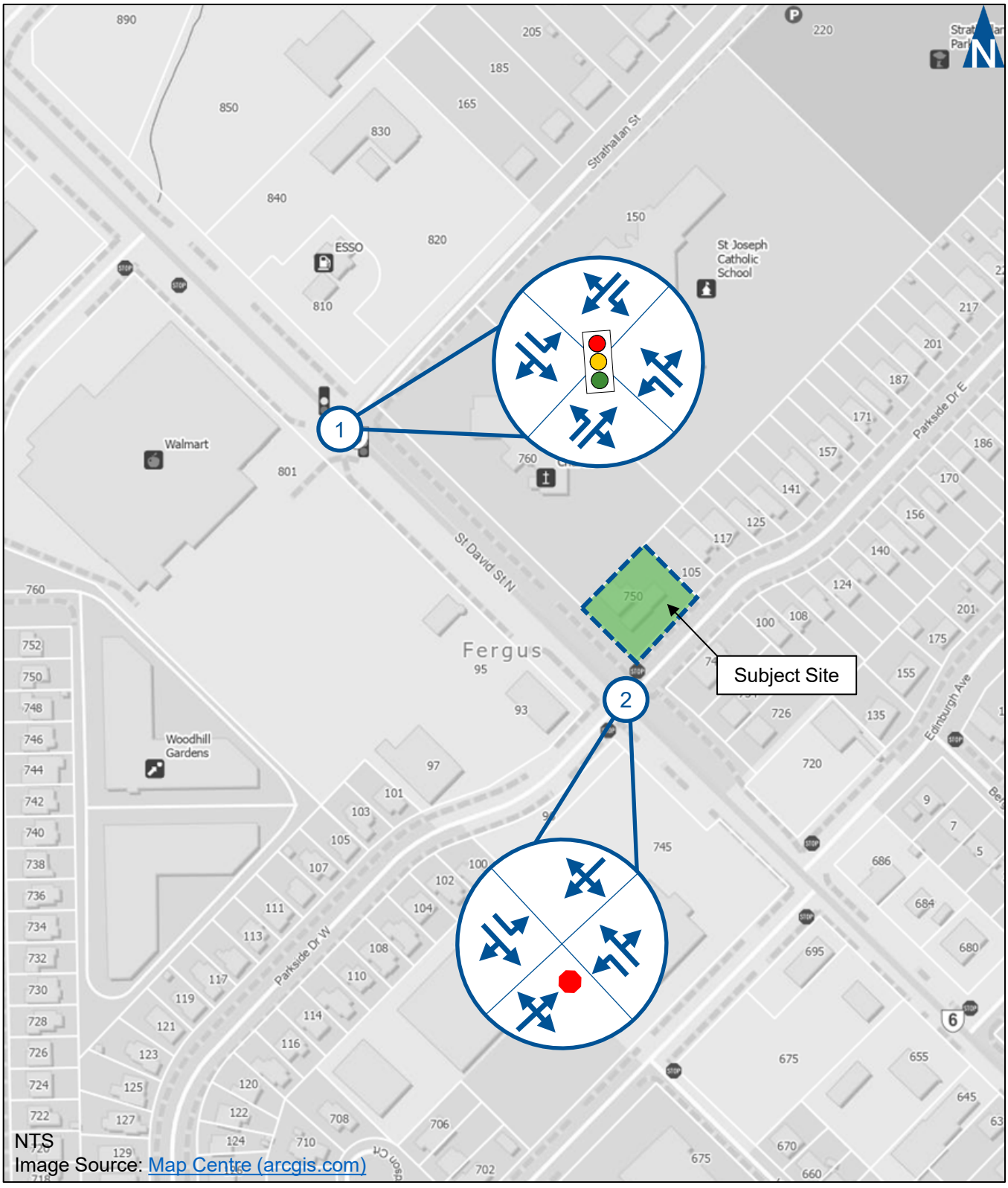
## 2.1 Roadways

The main roadways under the jurisdiction of the Township of Centre Wellington[1] near the subject site include:

- **St. David Street North** is a north-south arterial roadway with a three-lane cross-section(one travel lane per direction and a two-way centre left-turn lane). It is the connecting link for Highway 6 within the north end of Fergus. It has a posted speed limit of 50 km/h;
- **Parkside Drive** is an east-west local roadway with a two-lane cross-section and speed limit of 40 km/h;

**Figure 2.1** illustrates the existing lane configuration and traffic control in the study area.

[1] WSP, *Township of Centre Wellington Transportation Master Plan Final Report*, (WSP: Centre Wellington, January 2019), Figure 12: Principal Roadway Classification in Elora and Fergus.




# Existing Lane Configuration & Traffic Control

750 St. David Street North, Fergus
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Figure 2.1

## 2.2 Active Transportation

### 2.2.1 Pedestrian

St. David Street North and Parkside Drive have sidewalks on both sides of the roadways.

The signalized intersection of St. David Street North and Strathallan Street to the north of the subject site has pedestrian crossing signals and pavement markings.

The subject site is noted to score a Walk Score[2] of 71 and is considered "Very Walkable" which means that most errands can be accomplished on foot. Walk Score is an online tool that assigns a numerical walkability score between 0 and 100. Walk Score ranks communities nationwide based on how many businesses, parks, theatres, schools, and other common destinations are within walking distance.

### 2.2.2 Cycling

There are currently no on-road cycling facilities provided near the subject site. Travel by bicycle to/from the subject site is not restricted by any access-controlled roadways. Cyclists are permitted to ride on all roadways in the study area.

The subject site is noted to score a cycle score of 52. This is considered "Somewhat Bikeable," meaning that some bicycle infrastructure is available.

The Township is currently undertaking reconstruction of St. David Street North between St. Andrew Street to Edinburgh Street. On-street cycle lanes will be installed on both sides of the roadway and may increase the cycle score once completed.

## 2.3 Transit

The Township of Centre Wellington does not currently provide a public transit service; however, the following public transit options are available in Fergus with the following:

- **County of Wellington Ride Well** – a county wide demand based public transit service available to all residents and visitors. It uses a rideshare model of operation to provide on-demand shared rides. The service operates Monday to Friday,

[2] www.walkscore.com/score/750-saint-david-st-n-fergus-on-canada

6:00 AM to 7:00 PM with bookings made from any address in Wellington County; and

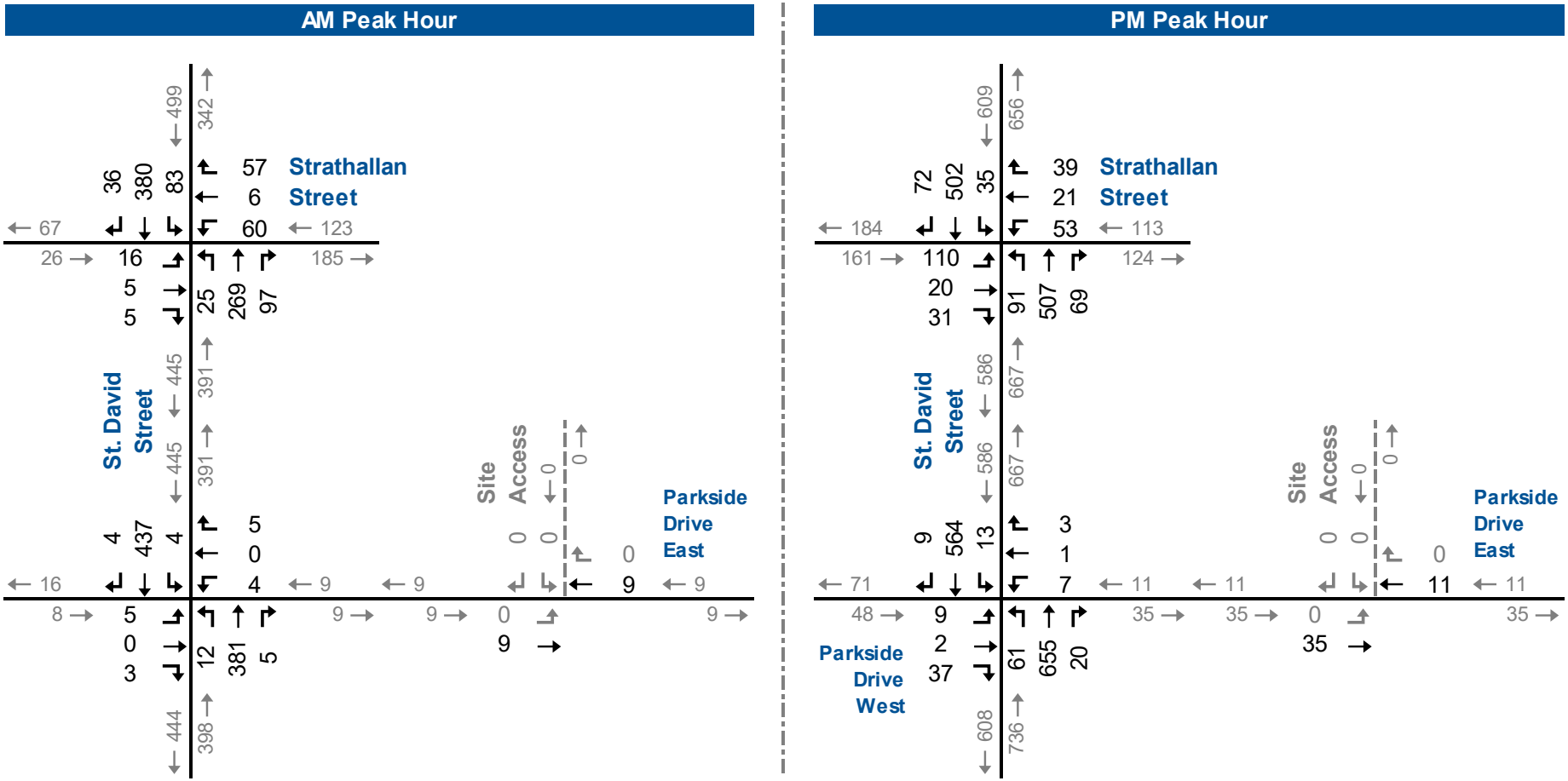
- **GOST (Guelph-Owen Sound Transit)** – a public transportation service connecting people from Owen Sound to Guelph and locations in between run by the City of Owen sound and Voyago. The service runs seven days a week with two trips southbound and two trips northbound. The only stop in Fergus is located at the Centre Wellington Community Sportsplex in the southeast end of the community.

## 2.4 Traffic Volumes

Paradigm undertook turning movement counts at the study area intersections in April 2024.

**Figure 2.2** illustrates the base year weekday AM and PM peak hour traffic volumes.

**Appendix B** contains the observed traffic count.




# Base Year Traffic Volumes

750 St. David Street North, Fergus
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Figure 2.2

## 2.5 Traffic Operations

Intersection level of service (LOS) is a recognized method of quantifying the average delay experienced by drivers at intersections. It is based on the delay experienced by individual vehicles executing the various movements. The delay is related to the number of vehicles intending to make a particular movement, compared to the estimated capacity for that movement. The capacity is based on a number of criteria related to the opposing traffic flows and intersection geometry.

The highest possible rating is LOS A, under which the average total delay is equal or less than 10.0 seconds per vehicle. When the average delay exceeds 80 seconds for signalized intersections, 50 seconds for unsignalized intersections or when the volume to capacity ratio is greater than 1.0, the movement is classed as LOS F and remedial measures are usually implemented if they are feasible. LOS E is usually used as a guideline for the determination of road improvement needs on through lanes, while LOS F may be acceptable for left-turn movements at peak times, depending on delays.

The operations of the study intersections were evaluated using the existing lane configurations, traffic controls, and the base year traffic peak hour volumes.

The level of service conditions on the existing road network have been assessed using Synchro 11. Individual turning movements are considered critical when the volume/capacity ratio (v/c ratio) for overall intersection operations, through movements, or shared through/turning movements increased to 0.85 or above.

**Table 2.1** summarizes the existing intersection operations. The entries in the table indicating the AM and PM peak hour level of service (LOS), volume to capacity ratios (V/C), and 95th percentile queues experienced.

The study area intersections are currently operating at acceptable levels of service with the following critical movements:

- St. David Street North and Parkside Drive:
  - Westbound left/through/right-turn movement with LOS E and v/c ratio of 0.11 during the PM peak hour. The v/c ratio indicates that while there is delay, there remains excess capacity for this movement.

**Appendix C** contains the detailed Synchro reports.

# TABLE 2.1: BASE YEAR OPERATIONS

| Analysis Period | Intersection | Control Type | MOE | Direction / Movement / Approach | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Eastbound | | | | Westbound | | | | Northbound | | | | Southbound | | | | Overall |
| | | | | Left | Through | Right | Approach | Left | Through | Right | Approach | Left | Through | Right | Approach | Left | Through | Right | Approach | |
| AM Peak Hour | St. David Street North & Strathallan Street | TCS | LOS | C | C | > | C | C | C | > | C | A | A | > | A | B | B | A | B | B |
| | | | Delay | 24 | 22 | > | 23 | 23 | 23 | > | 23 | 8 | 8 | > | 8 | 11 | 12 | 9 | 12 | 12 |
| | | | V/C | 0.05 | 0.03 | > | | 0.17 | 0.21 | > | | 0.05 | 0.42 | > | | 0.17 | 0.46 | 0.05 | | |
| | | | Q | 7 | 4 | > | | 19 | 11 | > | | 3 | 39 | > | | 16 | 64 | 1 | | |
| | | | Ex | 25 | - | > | | 25 | - | > | | 20 | - | > | | 20 | - | 30 | | |
| | | | Avail. | 18 | - | > | | 6 | - | > | | 17 | - | > | | 4 | - | 29 | | |
| | St. David Street North & Parkside Drive | TWSC | LOS | < | C | > | C | < | C | > | C | A | A | > | A | A | A | > | A | |
| | | | Delay | < | 17 | > | 17 | < | 15 | > | 15 | 9 | 0 | > | 0 | 8 | 0 | > | 0 | 1 |
| | | | V/C | < | 0.03 | > | | < | 0.03 | > | | 0.01 | 0.00 | > | | 0.00 | 0.00 | > | | |
| | | | Q | < | 1 | > | | < | 1 | > | | 0 | 0 | > | | 0 | 0 | > | | |
| | | | Ex | < | - | > | | < | - | > | | 15 | - | > | | 15 | - | > | | |
| | | | Avail. | < | - | > | | < | - | > | | 15 | - | > | | 15 | - | > | | |
| PM Peak Hour | St. David Street North & Strathallan Street | TCS | LOS | C | C | > | C | C | C | > | C | A | A | > | A | B | B | B | B | B |
| | | | Delay | 29 | 24 | > | 27 | 26 | 24 | > | 25 | 10 | 9 | > | 9 | 14 | 16 | 11 | 15 | 15 |
| | | | V/C | 0.36 | 0.16 | > | | 0.18 | 0.19 | > | | 0.22 | 0.56 | > | | 0.09 | 0.62 | 0.10 | | |
| | | | Q | 32 | 12 | > | | 18 | 13 | > | | 11 | 84 | > | | 9 | 101 | 6 | | |
| | | | Ex | 25 | - | > | | 25 | - | > | | 20 | - | > | | 20 | - | 30 | | |
| | | | Avail. | -7 | - | > | | 7 | - | > | | 9 | - | > | | 11 | - | 24 | | |
| | St. David Street North & Parkside Drive | TWSC | LOS | < | C | > | C | < | E | > | E | A | A | > | A | A | A | > | A | |
| | | | Delay | < | 24 | > | 24 | < | 43 | > | 43 | 9 | 0 | > | 1 | 9 | 0 | > | 0 | 2 |
| | | | V/C | < | 0.21 | > | | < | 0.11 | > | | 0.07 | 0.00 | > | | 0.02 | 0.00 | > | | |
| | | | Q | < | 6 | > | | < | 3 | > | | 2 | 0 | > | | 1 | 0 | > | | |
| | | | Ex | < | - | > | | < | - | > | | 15 | - | > | | 15 | - | > | | |
| | | | Avail. | < | - | > | | < | - | > | | 13 | - | > | | 14 | - | > | | |

MOE - Measure of Effectiveness
LOS - Level of Service
Delay - Average Delay per Vehicle in Seconds

Q - 95th Percentile Queue Length (m)
Ex. - Existing Available Storage (m)
Avail. - Available Storage (m)

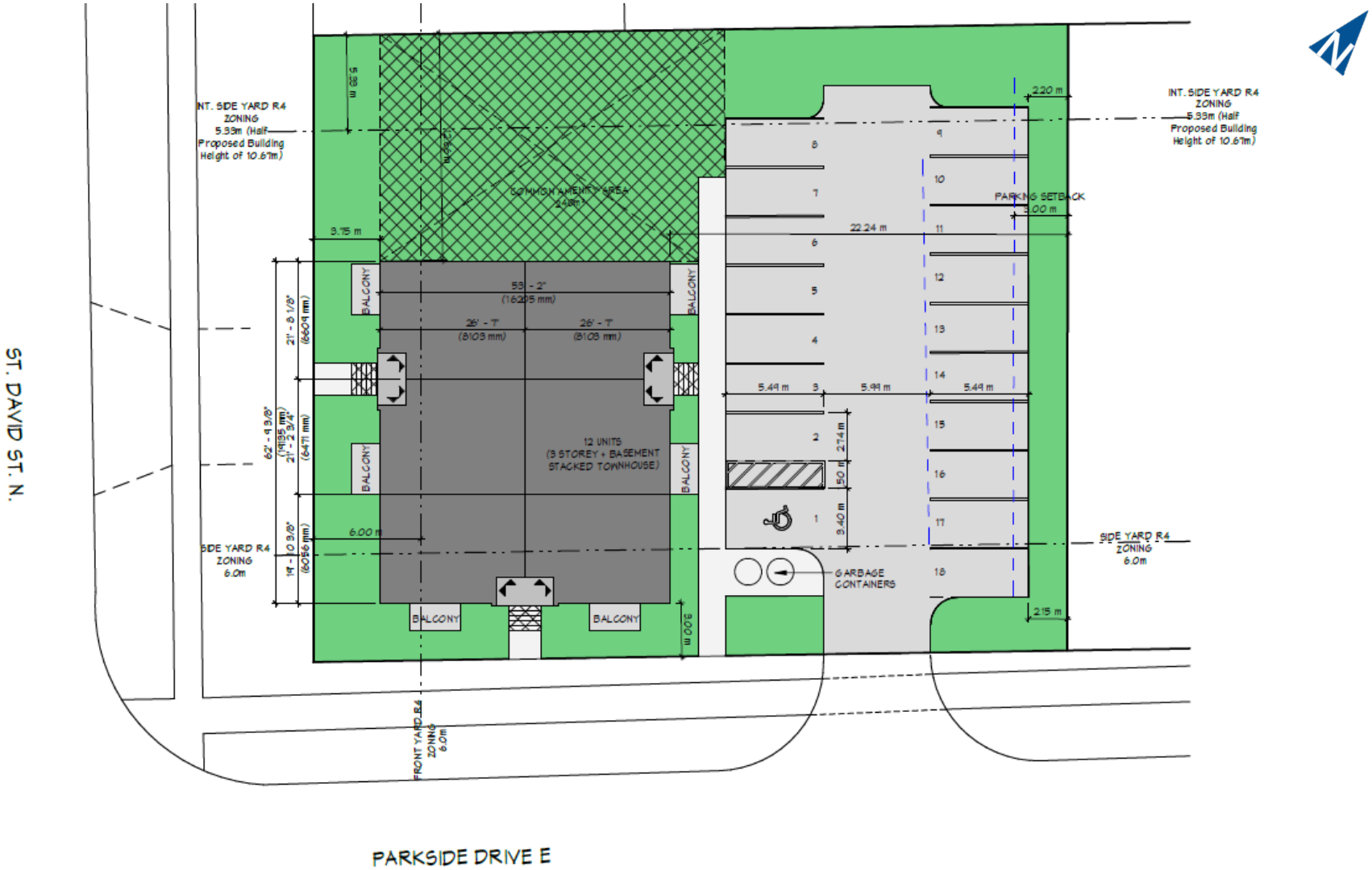
TCS - Traffic Control Signal
TWSC - Two-Way Stop Control

< / > - Shared Turn Lane

# 3 Development Description

The property owner is proposing to develop the property to include 12 to 20 stacked-townhouse units. Vehicle access is proposed via a new all-moves driveway connection to Parkside Drive East.

**Figure 3.1** illustrates the concept plan

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# Concept Plan

750 St. David Street North, Fergus
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Figure 3.1

## 3.1 Trip Generation

The Institute of Transportation Engineers (ITE) *Trip Generation Manual*[3] provides rates and equations used to estimate the peak hour traffic volumes generated by the development. The Land Use Code (LUC) 215 – Single Family, Attached Housing (dwelling units) was used.

**Table 3.1** summarizes the estimated trip generation. It is forecast that the subject development will generate approximately 5 and 8 new trips during the AM and PM peak hours. **Appendix D** contains the detailed ITE trip generation sheets.

**TABLE 3.1: TRIP GENERATION FORECASTS**

| ITE Land Use | Units | AM Peak Hour | | | PM Peak Hour | | |
|---|---|---|---|---|---|---|---|
| | | In | Out | Total | In | Out | Total |
| 215 - Single Family, Attached Housing (Dwelling Units) | 20 | 1 | 4 | **5** | 5 | 3 | **8** |

AM T = 0.52(X) - 5.70 / PM T = 0.60(X) - 3.93

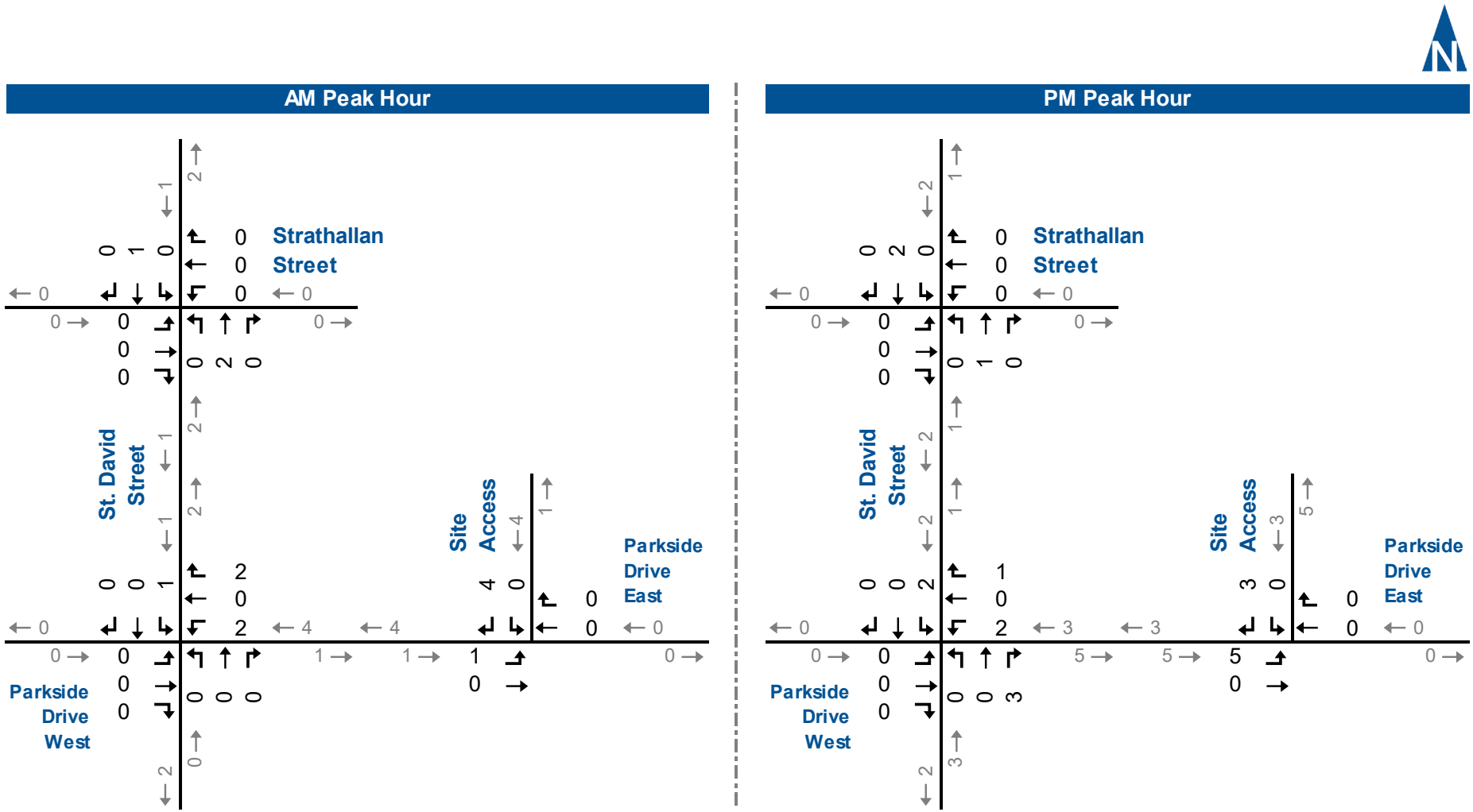
The estimated site generated trips were distributed and assigned to the road network based on the observed traffic volumes entering and exiting the study area. **Table 3.2** summarizes the trip distribution.

**TABLE 3.2: TRIP DISTRIBUTION**

| Direction/Route | | AM Peak Hour | PM Peak Hour |
|---|---|---|---|
| North | St. David Street | 50% | 45% |
| East | Parkside Drive | 0% | 0% |
| South | St. David Street | 50% | 50% |
| West | Parkside Drive | 0% | 5% |
| **Total** | | **100%** | **100%** |

**Figure 3.2** illustrates the site generated trip assignment for the AM and PM peak hours.

[3] Institute of Transportation Engineers, *Trip Generation Manual,* 11th ed., (Washington, DC: ITE, 2021).




# Site Generated Traffic Volumes

750 St. David Street North, Fergus
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Figure 3.2

# 4 Evaluation of Future Traffic Conditions

The assessment of future traffic conditions contained in this section includes estimates of future background and total traffic volumes and analyses for the assumed five years from full buildout horizon (year 2031). The future traffic volumes near the development will consist of increased non-site traffic volumes (background traffic), traffic generated by other developments, and the traffic forecast to be generated by the proposed development.

## 4.1 Future Traffic Forecasts

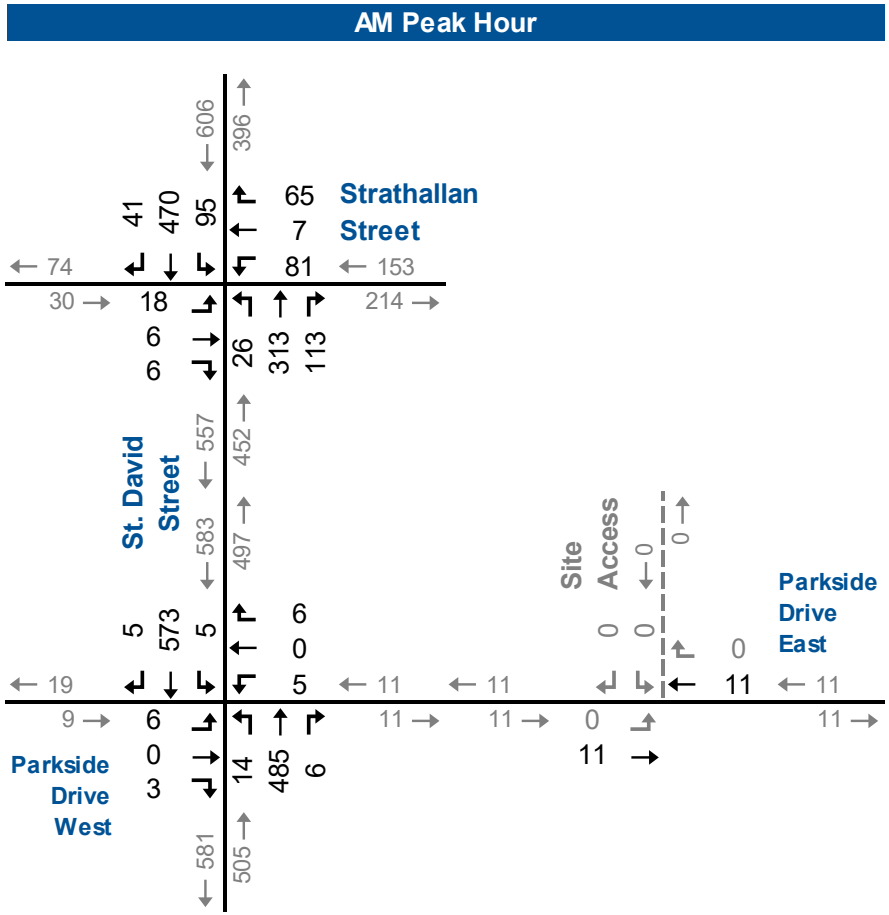
The future traffic volumes are estimated to consist of:

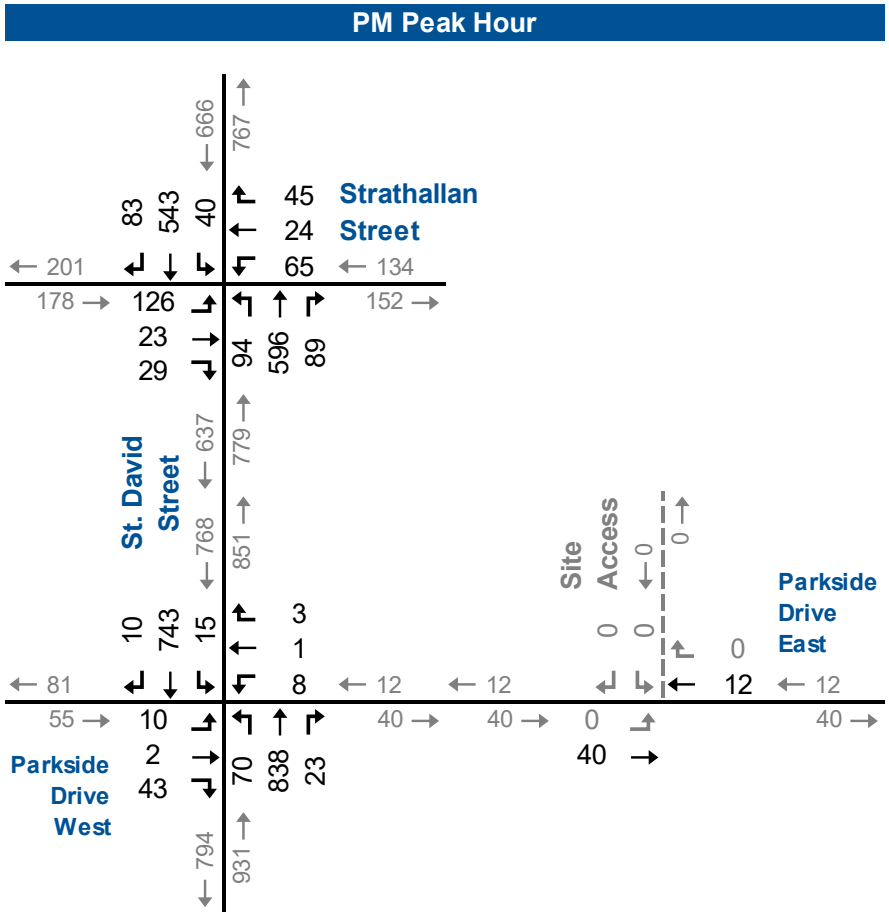
- Increased non-site traffic (generalized background traffic growth) estimated to be 2.00 percent per annum[4]
- Traffic generated by the following adjacent future developments:
  - 950-961 St. David Street North[5], a mixed-use development consisting of 13,500 sq. ft. retail use and 112 townhouse units;
  - 960 St. David Street North[6], a residential development consisting of 13 single detached homes and 37 townhomes; and
  - 820 St. David Street North[7], a five-storey mixed-use development with residential units and commercial ground floor units; and
- Traffic generated by the subject site.

**Appendix E** contains the background development trip assignments.

**Figure 4.1** illustrates the forecast background traffic volumes**. Figure 4.2** illustrates the forecast total traffic volumes.

[4] Requested by Township Staff in comments to the initial study submission.
[5] Paradigm Transportation Solutions Limited, *950-960 St. David Street North Transportation Impact Study*, (PTSL: Reid Heritage Homes, May 2022).
[6] Paradigm Transportation Solutions Limited, *961 St. David Street North Transportation Study,* (PTSL: RE/MAX, April 2021).
[7] Trans-Plan Transportation Engineering, *Transportation Study Proposed Mixed Use Development 820 Saint David Street North*, (TPTE: Harper Dell, October 2020).

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# Future Background Traffic Volumes

750 St. David Street North, Fergus
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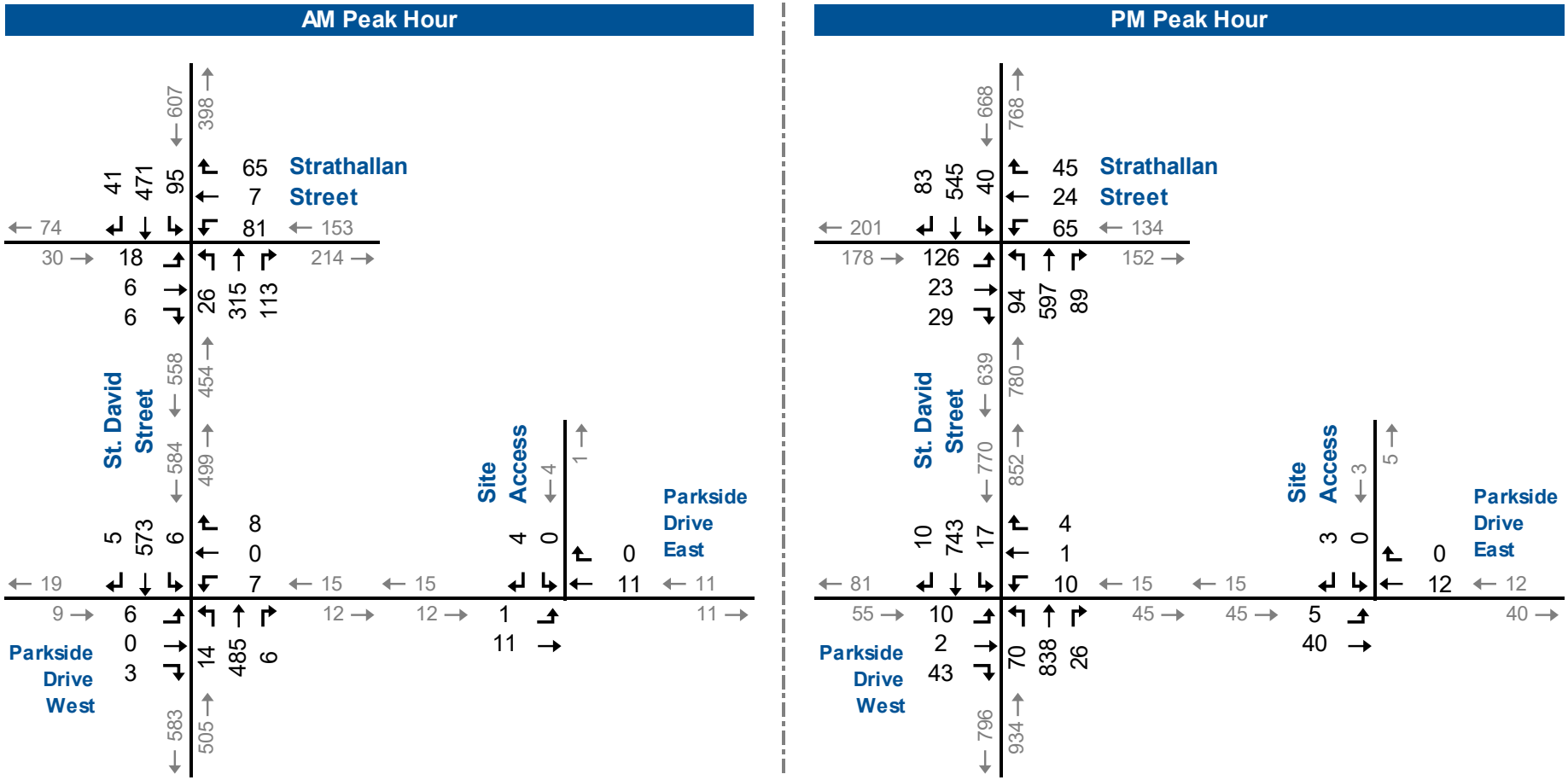
Figure 4.1




# Future Total Traffic Volumes

Figure 4.2

750 St. David Street North, Fergus
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## 4.2 Background Traffic Operations

The operational analysis of background traffic conditions (without development) followed the same methodology and parameters used for existing traffic conditions.

**Table 4.1** summarize the level of service conditions for the weekday AM and PM peak hours. The following critical movements are noted:

- St. David Street North and Parkside Drive:
  - Eastbound left/through/right-turn movement with LOS E and v/c ratio of 0.41 during the PM peak hour; and
  - Westbound left/through/right-turn movement with LOS F and v/c ratio of 0.26 during the PM peak hour.

The v/c ratios of the eastbound and westbound approaches indicate that while there is delay, there remains excess capacity for these movements.

**Appendix F** contains the detailed Synchro reports.

# TABLE 4.1: BACKGROUND OPERATIONS

| Analysis Period | Intersection | Control Type | MOE | Direction / Movement / Approach | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Eastbound | | | | Westbound | | | | Northbound | | | | Southbound | | | | Overall |
| | | | | Left | Through | Right | Approach | Left | Through | Right | Approach | Left | Through | Right | Approach | Left | Through | Right | Approach | |
| AM Peak Hour | St. David Street North & Strathallan Street | TCS | LOS | C | C | > | C | C | C | > | C | A | A | > | A | B | B | A | B | B |
| | | | Delay | 25 | 22 | > | 23 | 24 | 24 | > | 24 | 9 | 9 | > | 9 | 13 | 14 | 9 | 13 | 13 |
| | | | V/C | 0.06 | 0.04 | > | | 0.23 | 0.24 | > | | 0.07 | 0.49 | > | | 0.21 | 0.57 | 0.06 | | |
| | | | Q | 8 | 6 | > | | 25 | 12 | > | | 4 | 51 | > | | 20 | 89 | 2 | | |
| | | | Ex | 25 | - | > | | 25 | - | > | | 20 | - | > | | 20 | - | 30 | | |
| | | | Avail. | 17 | - | > | | 0 | - | > | | 16 | - | > | | 0 | - | 28 | | |
| | St. David Street North & Parkside Drive | TWSC | LOS | < | C | > | C | < | C | > | C | A | A | > | A | A | A | > | A | 1 |
| | | | Delay | < | 24 | > | 24 | < | 20 | > | 20 | 9 | 0 | > | 0 | 9 | 0 | > | 0 | |
| | | | V/C | < | 0.05 | > | | < | 0.05 | > | | 0.02 | 0.00 | > | | 0.01 | 0.00 | > | | |
| | | | Q | < | 1 | > | | < | 1 | > | | 1 | 0 | > | | 0 | 0 | > | | |
| | | | Ex | < | - | > | | < | - | > | | 15 | - | > | | 15 | - | > | | |
| | | | Avail. | < | - | > | | < | - | > | | 14 | - | > | | 15 | - | > | | |
| PM Peak Hour | St. David Street North & Strathallan Street | TCS | LOS | C | C | > | C | C | C | > | C | B | B | > | B | B | B | B | B | B |
| | | | Delay | 30 | 24 | > | 28 | 26 | 24 | > | 25 | 11 | 12 | > | 12 | 18 | 18 | 11 | 17 | 17 |
| | | | V/C | 0.41 | 0.15 | > | | 0.21 | 0.21 | > | | 0.25 | 0.68 | > | | 0.13 | 0.68 | 0.12 | | |
| | | | Q | 36 | 12 | > | | 21 | 14 | > | | 12 | 119 | > | | 11 | 118 | 8 | | |
| | | | Ex | 25 | - | > | | 25 | - | > | | 20 | - | > | | 20 | - | 30 | | |
| | | | Avail. | -11 | - | > | | 4 | - | > | | 8 | - | > | | 9 | - | 22 | | |
| | St. David Street North & Parkside Drive | TWSC | LOS | < | E | > | E | < | F | > | F | A | A | > | A | B | A | > | A | 3 |
| | | | Delay | < | 46 | > | 46 | < | 101 | > | 101 | 10 | 0 | > | 1 | 10 | 0 | > | 0 | |
| | | | V/C | < | 0.41 | > | | < | 0.26 | > | | 0.10 | 0.00 | > | | 0.02 | 0.00 | > | | |
| | | | Q | < | 14 | > | | < | 7 | > | | 2 | 0 | > | | 1 | 0 | > | | |
| | | | Ex | < | - | > | | < | - | > | | 15 | - | > | | 15 | - | > | | |
| | | | Avail. | < | - | > | | < | - | > | | 13 | - | > | | 14 | - | > | | |

MOE - Measure of Effectiveness
LOS - Level of Service
Delay - Average Delay per Vehicle in Seconds

Q - 95th Percentile Queue Length (m)
Ex. - Existing Available Storage (m)
Avail. - Available Storage (m)

TCS - Traffic Control Signal
TWSC - Two-Way Stop Control

< / > - Shared Turn Lane

## 4.3 Total Traffic Operations

The operational analysis of total traffic conditions (with development) followed the same methodology used for existing and background traffic conditions.

**Table 4.2** summarize the level of service conditions for the weekday AM and PM peak hours. The following critical movements are noted:

- St. David Street North and Parkside Drive:
  - Eastbound left/through/right-turn movement with LOS E and v/c ratio of 0.42 during the PM peak hour; and
  - Westbound left/through/right-turn movement with LOS F and v/c ratio of 0.33 during the PM peak hour.

The v/c ratios of the eastbound and westbound approaches indicate that while there is delay, there remains excess capacity for these movements.

**Appendix G** contains the detailed Synchro reports.

The new driveway connection to Parkside Drive East is forecast to operate at LOS A and v/c ratio of 0.00 during the AM and PM peak hours.



# TABLE 4.2: TOTAL OPERATIONS

| Analysis Period | Intersection | Control Type | MOE | Direction / Movement / Approach | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Eastbound | | | | Westbound | | | | Northbound | | | | Southbound | | | | Overall |
| | | | | Left | Through | Right | Approach | Left | Through | Right | Approach | Left | Through | Right | Approach | Left | Through | Right | Approach | |
| AM Peak Hour | St. David Street North & Strathallan Street | TCS | LOS | C | C | > | C | C | C | > | C | A | A | > | A | B | B | A | B | B |
| | | | Delay | 25 | 22 | > | 23 | 24 | 24 | > | 24 | 9 | 9 | > | 9 | 13 | 14 | 9 | 13 | 13 |
| | | | V/C | 0.06 | 0.04 | > | | 0.23 | 0.24 | > | | 0.07 | 0.49 | > | | 0.21 | 0.57 | 0.06 | | |
| | | | Q | 8 | 6 | > | | 25 | 12 | > | | 4 | 52 | > | | 20 | 89 | 2 | | |
| | | | Ex | 25 | - | > | | 25 | - | > | | 20 | - | > | | 20 | - | 30 | | |
| | | | Avail. | 17 | - | > | | 0 | - | > | | 16 | - | > | | 0 | - | 28 | | |
| | St. David Street North & Parkside Drive | TWSC | LOS | < | C | > | C | < | C | > | C | A | A | > | A | A | A | > | A | |
| | | | Delay | < | 24 | > | 24 | < | 20 | > | 20 | 9 | 0 | > | 0 | 9 | 0 | > | 0 | 1 |
| | | | V/C | < | 0.05 | > | | < | 0.07 | > | | 0.02 | 0.00 | > | | 0.01 | 0.00 | > | | |
| | | | Q | < | 2 | > | | < | 2 | > | | 1 | 0 | > | | 0 | 0 | > | | |
| | | | Ex | < | - | > | | < | - | > | | 15 | - | > | | 15 | - | > | | |
| | | | Avail. | < | - | > | | < | - | > | | 14 | - | > | | 15 | - | > | | |
| | Parkside Drive & Site Access | TWSC | LOS | < | A | | A | | A | > | A | | | | | A | | > | A | A |
| | | | Delay | < | 7 | | 1 | | 0 | > | 0 | | | | | 8 | | > | 8 | 2 |
| | | | V/C | < | 0.01 | | | | 0.00 | > | | | | | | 0.04 | | > | | |
| | | | Q | < | 0 | | | | 0 | > | | | | | | 0 | | > | | |
| | | | Ex | < | - | | | | - | > | | | | | | - | | > | | |
| | | | Avail. | < | - | | | | - | > | | | | | | - | | > | | |
| PM Peak Hour | St. David Street North & Strathallan Street | TCS | LOS | C | C | > | C | C | C | > | C | B | B | > | B | B | B | B | B | B |
| | | | Delay | 30 | 24 | > | 28 | 26 | 24 | > | 25 | 11 | 12 | > | 12 | 18 | 18 | 11 | 17 | 17 |
| | | | V/C | 0.41 | 0.15 | > | | 0.21 | 0.21 | > | | 0.25 | 0.68 | > | | 0.13 | 0.68 | 0.12 | | |
| | | | Q | 36 | 12 | > | | 21 | 14 | > | | 12 | 120 | > | | 11 | 118 | 8 | | |
| | | | Ex | 25 | - | > | | 25 | - | > | | 20 | - | > | | 20 | - | 30 | | |
| | | | Avail. | -11 | - | > | | 4 | - | > | | 8 | - | > | | 9 | - | 22 | | |
| | St. David Street North & Parkside Drive | TWSC | LOS | < | E | > | E | < | F | > | F | A | A | > | A | B | A | > | A | |
| | | | Delay | < | 47 | > | 47 | < | 109 | > | 109 | 10 | 0 | > | 1 | 10 | 0 | > | 0 | 3 |
| | | | V/C | < | 0.42 | > | | < | 0.33 | > | | 0.10 | 0.00 | > | | 0.03 | 0.00 | > | | |
| | | | Q | < | 14 | > | | < | 9 | > | | 2 | 0 | > | | 1 | 0 | > | | |
| | | | Ex | < | - | > | | < | - | > | | 15 | - | > | | 15 | - | > | | |
| | | | Avail. | < | - | > | | < | - | > | | 13 | - | > | | 14 | - | > | | |
| | Parkside Drive & Site Access | TWSC | LOS | < | A | | A | | A | > | A | | | | | A | | > | A | A |
| | | | Delay | < | 7 | | 1 | | 0 | > | 0 | | | | | 8 | | > | 8 | 1 |
| | | | V/C | < | 0.00 | | | | 0.00 | > | | | | | | 0.00 | | > | | |
| | | | Q | < | 0 | | | | 0 | > | | | | | | 0 | | > | | |
| | | | Ex | < | - | | | | - | > | | | | | | - | | > | | |
| | | | Avail. | < | - | | | | - | > | | | | | | - | | > | | |

MOE - Measure of Effectiveness
LOS - Level of Service
Delay - Average Delay per Vehicle in Seconds

Q - 95th Percentile Queue Length (m)
Ex. - Existing Available Storage (m)
Avail. - Available Storage (m)

TCS - Traffic Control Signal
TWSC - Two-Way Stop Control

< / > - Shared Turn Lane

# 5 Remedial Measures

## 5.1 Traffic Signal Control

The future traffic analysis indicates that traffic control improvements may be required to accommodate forecast traffic volumes at the intersection of St. David Street North and Parkside Drive.

The intersection was assessed using the Ontario Traffic Manual (OTM Book 12 signal warrant procedures[8] for Justifications 1 through 4 (eight-hour) and Justification 7 (forecast volumes). **Appendix H** contains the warrant analysis.

It indicates that traffic control signals are not warranted at the intersection of St. David Street North and Parkside Drive Courtland Avenue East under current and future traffic conditions.

It is recommended that the Township of Centre Wellington monitor the future traffic volumes at the intersection of St. David Street North and Parkside Drive and provide alternative traffic control measures if required.

## 5.2 Left-Turn Lanes

The Ministry of Transportation's (MTO) *Design Supplement*[9] for the *TAC Geometric Design Guide for Canadian Roads*[10] provides guidance on the assessment and/or need for auxiliary left-turn lanes.

The warrants have been completed for the Parkside Drive East and Site Access intersection for the AM and PM peak hour for the future total horizon years using the two-lane highways unsignalized nomographs. **Appendix G** contains the left-turn warrant nomographs.

The percentages of left-turning vehicles in the approaching volume were rounded to the nearest 5%, as nomographs are only provided for 5% increments. This apparent requirement is due to the nature of the warrant procedure that assumes a minimum of 5% of left turning vehicles in the advancing volume. Therefore, left-turn lanes are automatically not warranted for any left turning volume less than 5%.

[8] *Ontario Traffic Manual Book 12, Ministry of Transportation of Ontario, July 2001.*

[9] MTO. *Design Supplement for the TAC Geometric Design Guide for Canadian Roads: Appendix 9A for Section 9.17 (Left-Turn Lanes)*. October 2023.

[10] Transportation Association of Canada (TAC). *Geometric Design Guide for Canadian Roads*. Ottawa, ON. June 2017.

The left-turn warrant indicates that an eastbound left-turn on Parkside Drive East is not warranted.

As the forecast traffic volumes on Parkside Drive East are generally too low and the future intersection operations show no significant impacts, the need for auxiliary turn lanes at the site driveways are not warranted. No changes to the existing lane geometrics are recommended at this time.

# 6 Conclusions and Recommendations

## 6.1 Conclusions

Based on the investigations carried out, it is concluded that:

- **Existing Traffic Conditions:** The study area intersection is currently operating with acceptable levels of service and within capacity during the AM and PM peak hour with the following critical movements:
  - St. David Street North & Parkside Drive:
    - Westbound approach at LOS E and v/c ratio of 0.11 during the PM peak hour.
- **Development Trip Generation:** The development is forecast to generate 5 new trips in the AM peak hour, and 8 new trips in the PM peak hour.
- **2031 Background Traffic Conditions:** The study area intersections are forecast to operate within acceptable levels of service during the AM and PM peak hours with the follow critical movements:
  - St. David Street North & Parkside Drive:
    - Eastbound approach at LOS E and v/c ratio of 0.41 during the PM peak hour; and
    - Westbound approach at LOS F and v/c ratio of 0.26 during the PM peak hour.
- **2031 Total Traffic Conditions:** The study area intersections are forecast to operate within acceptable levels of service during the AM and PM peak hours with the follow critical movements:
  - St. David Street North & Parkside Drive:
    - Eastbound approach at LOS E and v/c ratio of 0.41 during the PM peak hour; and
    - Westbound approach at LOS F and v/c ratio of 0.26 during the PM peak hour.
- While the minor approaches of Parkside Drive at St. David Street North operate with delay, the v/c ratios indicates that there remains excess capacity for these movements.
- The addition of the site generated traffic does not impact the signalized intersection of St. David Street North and Strathallan Street.



- The site driveway approach to Parkside Drive East is forecast to operate at LOS A and v/c ratio of 0.00 during the AM and PM peak hours.
- Traffic control signals are not warranted at St. David Street North & Parkside Drive using OTM Book 12, Justifications 1 through 4, and 7.
- An eastbound left-turn lane on Parkside Drive East and the Site Access is not warranted under future total traffic conditions.

## 6.2 Recommendations

Based on the findings of this study, it is recommended that:

- The development application be approved with no provision for off-site transportation network improvements.
- That the Township of Centre Wellington monitor the future traffic volumes at the intersection of St. David Street North and Parkside Drive and provide alternative traffic control measures when required.

# Appendix A

## Pre-Study Consultation

**From:** Lee Wheildon
**To:** Andrew Evans
**Cc:** Adam Gilmore; Colin Baker; Erica Bayley
**Subject:** RE: (240158) 750 St. David Street North, Fergus - TIA Scope of Work
**Date:** April 5, 2024 3:07:34 PM
**Attachments:** image002.png
image003.png

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Andrew,

Please see attached the Township's comments regarding PTSL's draft TIA for 750 St. David Street North (in red).

Should you have any questions or concerns, please do not hesitate to contact me.

Regards,

Lee Wheildon C.E.T.,rcca | Supervisor of Development Engineering

Township of Centre Wellington | 1 MacDonald Square, Elora, ON N0B 1S0
519.846.9691 x253 CentreWellington.ca

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**From:** Andrew Evans <aevans@ptsl.com>
**Sent:** Wednesday, April 3, 2024, 9:16 AM
**To:** Lee Wheildon <LWheildon@centrewellington.ca>
**Cc:** Erica Bayley <ebayley@ptsl.com>
**Subject:** (240158) 750 St. David Street North, Fergus - TIA Scope of Work



Greetings,

Paradigm Transportation Solutions Limited is preparing the Transportation Impact Assessment for a proposed residential development of the lands 750 St. David Street North, Fergus, Centre Wellington, ON.

Below is a brief description of the concept and our proposed terms of reference for the TIA. Please review and provide comment at your earliest convenience.

## SITE DESCRIPTION

The property owner is proposing to develop the property to include 12 to 20 stacked townhouse units. Vehicle access is proposed via a new all moves driveway connection to Parkside Drive East. A concept plan is currently unavailable.

**PROPOSED TERMS OF REFERENCE**

Study Area Intersections:

- St. David Street North & Parkside Drive (unsignalized); and
- Driveway connection to Parkside Drive East.
- St. David Street North & Strathallen Street (signalized)

Analysis Periods:

- Weekday AM peak hour; and
- Weekday PM peak hour

Horizon Year

- Five-years from the assumed full build-out (Year 2031).

Existing Data:

- Eight Hour TMC at the study area intersections

Analysis

- Synchro 11

Background Traffic

- Generalized growth rate: **to be provided by Township** (2% following along with County of Wellington typical growth rates)
- Active Development Applications: **to be confirmed by Township**
- Known developments include:
  - 950-960 St. David Street North
  - 961 St. David Street North
  - Centre Wellington Operations Centre (this location will likely be covered in the 2% growth as noted above and can be removed from the Background Traffic Analysis)
  - Dickson Drive Industrial Lands; and (this location will likely be covered in the 2% growth as noted above and can be removed from the Background Traffic Analysis)
  - 820 St. David Street North

Future Road Improvements: **to be provided by Township** (PTSL can review the any assessment information related to St. David Street Reconstruction at www.connectcw.ca)

Trip Generation

- ITE Trip Generation Data 11$^{th}$ Edition with no modal split reductions.

Site Traffic Distribution

- Existing Traffic Patterns.

Report

- We will document the study methodologies, findings, and conclusions in a report with appendices containing the detailed analysis results and any data collected.

Please let us know your comments on the study.

Thank you and regards.

**Andrew Evans, M.Sc.**
Transportation Planner, Associate

5A-150 Pinebush Road Cambridge ON N1R 8J8
p: 905.381.2229 x **305**
e: aevans@ptsl.com
w: www.ptsl.com

Office Hours: 07:30 – 17:30 M-T, closed Fridays

# Appendix B

## Traffic Data

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: St David Street & Strathallen Street
Site Code: 240158
Start Date: 04/16/2024


# Turning Movement Data

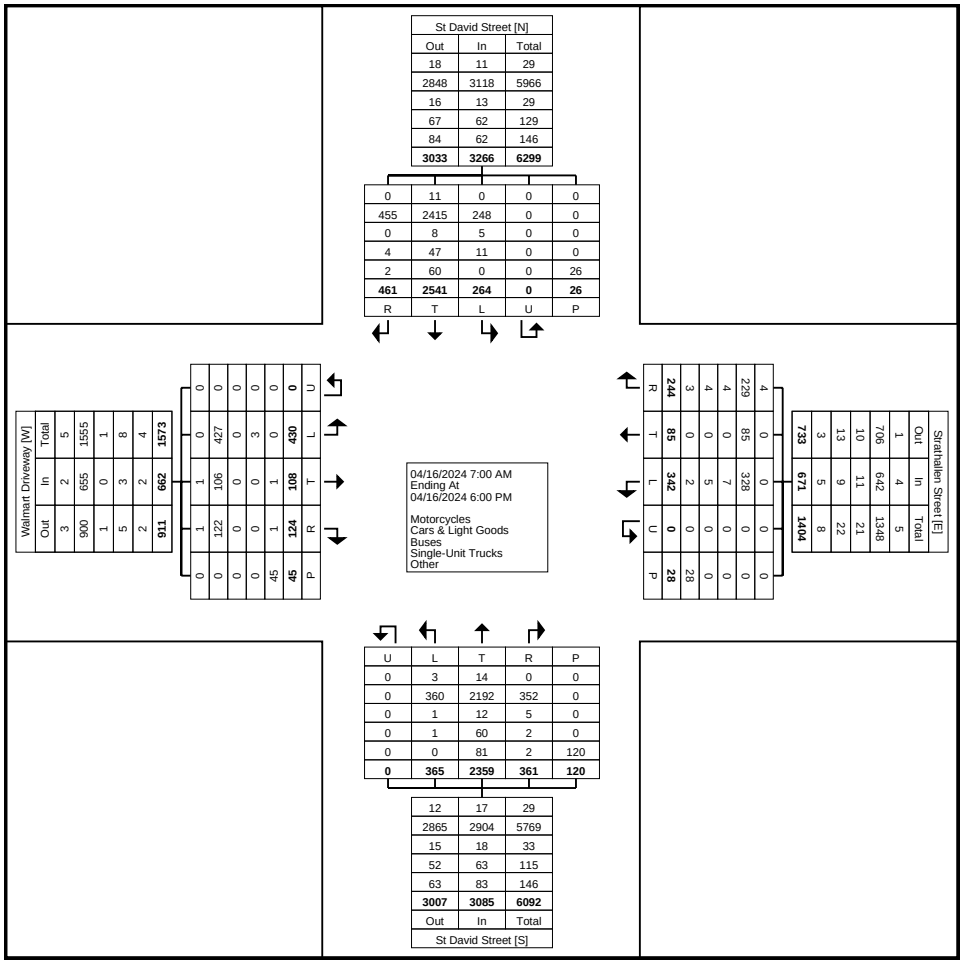
| Start Time | Walmart Driveway Eastbound | | | | | | Strathallen Street Westbound | | | | | | St David Street Northbound | | | | | | St David Street Southbound | | | | | | Int. Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Left | Thru | Right | U-Turn | Peds | App. Total | Left | Thru | Right | U-Turn | Peds | App. Total | Left | Thru | Right | U-Turn | Peds | App. Total | Left | Thru | Right | U-Turn | Peds | App. Total | |
| 7:00 AM | 3 | 0 | 0 | 0 | 0 | 3 | 5 | 0 | 6 | 0 | 0 | 11 | 3 | 30 | 6 | 0 | 0 | 39 | 4 | 67 | 5 | 0 | 0 | 76 | 129 |
| 7:15 AM | 5 | 0 | 0 | 0 | 3 | 5 | 10 | 0 | 8 | 0 | 0 | 18 | 3 | 51 | 5 | 0 | 2 | 59 | 7 | 83 | 5 | 0 | 0 | 95 | 177 |
| 7:30 AM | 3 | 2 | 1 | 0 | 1 | 6 | 19 | 1 | 10 | 0 | 0 | 30 | 2 | 40 | 11 | 0 | 1 | 53 | 3 | 80 | 5 | 0 | 0 | 88 | 177 |
| 7:45 AM | 5 | 3 | 0 | 0 | 1 | 8 | 11 | 2 | 7 | 0 | 2 | 20 | 5 | 80 | 9 | 0 | 0 | 94 | 10 | 83 | 5 | 0 | 0 | 98 | 220 |
| Hourly Total | 16 | 5 | 1 | 0 | 5 | 22 | 45 | 3 | 31 | 0 | 2 | 79 | 13 | 201 | 31 | 0 | 3 | 245 | 24 | 313 | 20 | 0 | 0 | 357 | 703 |
| 8:00 AM | 5 | 1 | 1 | 0 | 0 | 7 | 10 | 0 | 8 | 0 | 0 | 18 | 3 | 51 | 13 | 0 | 2 | 67 | 12 | 85 | 6 | 0 | 0 | 103 | 195 |
| 8:15 AM | 5 | 0 | 2 | 0 | 2 | 7 | 12 | 0 | 7 | 0 | 0 | 19 | 5 | 53 | 10 | 0 | 1 | 68 | 14 | 102 | 10 | 0 | 1 | 126 | 220 |
| 8:30 AM | 0 | 1 | 1 | 0 | 1 | 2 | 14 | 1 | 12 | 0 | 1 | 27 | 4 | 63 | 36 | 0 | 19 | 103 | 41 | 89 | 8 | 0 | 0 | 138 | 270 |
| 8:45 AM | 6 | 3 | 1 | 0 | 0 | 10 | 21 | 5 | 30 | 0 | 2 | 56 | 11 | 76 | 28 | 0 | 4 | 115 | 16 | 85 | 12 | 0 | 1 | 113 | 294 |
| Hourly Total | 16 | 5 | 5 | 0 | 3 | 26 | 57 | 6 | 57 | 0 | 3 | 120 | 23 | 243 | 87 | 0 | 26 | 353 | 83 | 361 | 36 | 0 | 2 | 480 | 979 |
| *** BREAK *** | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 11:30 AM | 21 | 2 | 4 | 0 | 1 | 27 | 7 | 2 | 2 | 0 | 1 | 11 | 13 | 81 | 13 | 0 | 2 | 107 | 7 | 85 | 22 | 0 | 2 | 114 | 259 |
| 11:45 AM | 18 | 4 | 5 | 0 | 3 | 27 | 13 | 2 | 7 | 0 | 0 | 22 | 16 | 73 | 10 | 0 | 0 | 99 | 4 | 86 | 21 | 0 | 1 | 111 | 259 |
| Hourly Total | 39 | 6 | 9 | 0 | 4 | 54 | 20 | 4 | 9 | 0 | 1 | 33 | 29 | 154 | 23 | 0 | 2 | 206 | 11 | 171 | 43 | 0 | 3 | 225 | 518 |
| 12:00 PM | 19 | 3 | 6 | 0 | 1 | 28 | 10 | 3 | 4 | 0 | 2 | 17 | 14 | 86 | 11 | 0 | 1 | 111 | 4 | 98 | 21 | 0 | 0 | 123 | 279 |
| 12:15 PM | 17 | 6 | 4 | 0 | 1 | 27 | 11 | 0 | 8 | 0 | 0 | 19 | 13 | 100 | 8 | 0 | 1 | 121 | 10 | 94 | 26 | 0 | 4 | 130 | 297 |
| 12:30 PM | 8 | 6 | 10 | 0 | 2 | 24 | 9 | 5 | 7 | 0 | 0 | 21 | 10 | 72 | 12 | 0 | 3 | 94 | 11 | 102 | 22 | 0 | 0 | 135 | 274 |
| 12:45 PM | 19 | 2 | 1 | 0 | 0 | 22 | 12 | 5 | 3 | 0 | 0 | 20 | 16 | 85 | 11 | 0 | 0 | 112 | 5 | 93 | 21 | 0 | 0 | 119 | 273 |
| Hourly Total | 63 | 17 | 21 | 0 | 4 | 101 | 42 | 13 | 22 | 0 | 2 | 77 | 53 | 343 | 42 | 0 | 5 | 438 | 30 | 387 | 90 | 0 | 4 | 507 | 1123 |
| 1:00 PM | 15 | 3 | 7 | 0 | 2 | 25 | 5 | 4 | 3 | 0 | 0 | 12 | 14 | 90 | 13 | 0 | 3 | 117 | 7 | 90 | 18 | 0 | 0 | 115 | 269 |
| 1:15 PM | 11 | 7 | 7 | 0 | 2 | 25 | 15 | 1 | 3 | 0 | 0 | 19 | 17 | 71 | 8 | 0 | 0 | 96 | 1 | 84 | 15 | 0 | 0 | 100 | 240 |
| *** BREAK *** | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Hourly Total | 26 | 10 | 14 | 0 | 4 | 50 | 20 | 5 | 6 | 0 | 0 | 31 | 31 | 161 | 21 | 0 | 3 | 213 | 8 | 174 | 33 | 0 | 0 | 215 | 509 |
| 3:00 PM | 16 | 3 | 6 | 0 | 6 | 25 | 10 | 5 | 7 | 0 | 2 | 22 | 20 | 94 | 17 | 0 | 4 | 131 | 23 | 88 | 16 | 0 | 1 | 127 | 305 |
| 3:15 PM | 13 | 6 | 5 | 0 | 1 | 24 | 28 | 2 | 20 | 0 | 1 | 50 | 21 | 94 | 14 | 0 | 35 | 129 | 5 | 89 | 23 | 0 | 1 | 117 | 320 |
| 3:30 PM | 16 | 4 | 4 | 0 | 3 | 24 | 18 | 2 | 14 | 0 | 2 | 34 | 24 | 106 | 13 | 0 | 11 | 143 | 12 | 89 | 24 | 0 | 1 | 125 | 326 |
| 3:45 PM | 33 | 5 | 5 | 0 | 2 | 43 | 12 | 0 | 4 | 0 | 0 | 16 | 16 | 108 | 7 | 0 | 6 | 131 | 6 | 111 | 23 | 0 | 1 | 140 | 330 |
| Hourly Total | 78 | 18 | 20 | 0 | 12 | 116 | 68 | 9 | 45 | 0 | 5 | 122 | 81 | 402 | 51 | 0 | 56 | 534 | 46 | 377 | 86 | 0 | 4 | 509 | 1281 |
| 4:00 PM | 20 | 6 | 8 | 0 | 0 | 34 | 13 | 6 | 11 | 0 | 1 | 30 | 15 | 94 | 16 | 0 | 1 | 125 | 7 | 87 | 27 | 0 | 5 | 121 | 310 |
| 4:15 PM | 22 | 7 | 11 | 0 | 0 | 40 | 15 | 6 | 10 | 0 | 2 | 31 | 19 | 110 | 10 | 0 | 2 | 139 | 12 | 97 | 16 | 0 | 0 | 125 | 335 |
| 4:30 PM | 23 | 4 | 4 | 0 | 0 | 31 | 11 | 7 | 10 | 0 | 1 | 28 | 21 | 113 | 16 | 0 | 3 | 150 | 5 | 94 | 17 | 0 | 5 | 116 | 325 |
| 4:45 PM | 30 | 2 | 7 | 0 | 0 | 39 | 10 | 4 | 14 | 0 | 4 | 28 | 26 | 93 | 18 | 0 | 4 | 137 | 7 | 92 | 20 | 0 | 2 | 119 | 323 |
| Hourly Total | 95 | 19 | 30 | 0 | 0 | 144 | 49 | 23 | 45 | 0 | 8 | 117 | 81 | 410 | 60 | 0 | 10 | 551 | 31 | 370 | 80 | 0 | 12 | 481 | 1293 |
| 5:00 PM | 35 | 7 | 3 | 0 | 4 | 45 | 7 | 4 | 5 | 0 | 2 | 16 | 16 | 143 | 19 | 0 | 10 | 178 | 11 | 121 | 19 | 0 | 1 | 151 | 390 |
| 5:15 PM | 21 | 8 | 9 | 0 | 5 | 38 | 13 | 10 | 9 | 0 | 2 | 32 | 14 | 103 | 10 | 0 | 1 | 127 | 7 | 90 | 18 | 0 | 0 | 115 | 312 |

| | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5:30 PM | 24 | 9 | 5 | 0 | 4 | 38 | 15 | 2 | 8 | 0 | 1 | 25 | 11 | 116 | 10 | 0 | 3 | 137 | 7 | 97 | 20 | 0 | 0 | 124 | 324 |
| 5:45 PM | 17 | 4 | 7 | 0 | 0 | 28 | 6 | 6 | 7 | 0 | 2 | 19 | 13 | 83 | 7 | 0 | 1 | 103 | 6 | 80 | 16 | 0 | 0 | 102 | 252 |
| Hourly Total | 97 | 28 | 24 | 0 | 13 | 149 | 41 | 22 | 29 | 0 | 7 | 92 | 54 | 445 | 46 | 0 | 15 | 545 | 31 | 388 | 73 | 0 | 1 | 492 | 1278 |
| Grand Total | 430 | 108 | 124 | 0 | 45 | 662 | 342 | 85 | 244 | 0 | 28 | 671 | 365 | 2359 | 361 | 0 | 120 | 3085 | 264 | 2541 | 461 | 0 | 26 | 3266 | 7684 |
| Approach % | 65.0 | 16.3 | 18.7 | 0.0 | - | - | 51.0 | 12.7 | 36.4 | 0.0 | - | - | 11.8 | 76.5 | 11.7 | 0.0 | - | - | 8.1 | 77.8 | 14.1 | 0.0 | - | - | - |
| Total % | 5.6 | 1.4 | 1.6 | 0.0 | - | 8.6 | 4.5 | 1.1 | 3.2 | 0.0 | - | 8.7 | 4.8 | 30.7 | 4.7 | 0.0 | - | 40.1 | 3.4 | 33.1 | 6.0 | 0.0 | - | 42.5 | - |
| Motorcycles | 0 | 1 | 1 | 0 | - | 2 | 0 | 0 | 4 | 0 | - | 4 | 3 | 14 | 0 | 0 | - | 17 | 0 | 11 | 0 | 0 | - | 11 | 34 |
| % Motorcycles | 0.0 | 0.9 | 0.8 | - | - | 0.3 | 0.0 | 0.0 | 1.6 | - | - | 0.6 | 0.8 | 0.6 | 0.0 | - | - | 0.6 | 0.0 | 0.4 | 0.0 | - | - | 0.3 | 0.4 |
| Cars & Light Goods | 427 | 106 | 122 | 0 | - | 655 | 328 | 85 | 229 | 0 | - | 642 | 360 | 2192 | 352 | 0 | - | 2904 | 248 | 2415 | 455 | 0 | - | 3118 | 7319 |
| % Cars & Light Goods | 99.3 | 98.1 | 98.4 | - | - | 98.9 | 95.9 | 100.0 | 93.9 | - | - | 95.7 | 98.6 | 92.9 | 97.5 | - | - | 94.1 | 93.9 | 95.0 | 98.7 | - | - | 95.5 | 95.2 |
| Buses | 0 | 0 | 0 | 0 | - | 0 | 7 | 0 | 4 | 0 | - | 11 | 1 | 12 | 5 | 0 | - | 18 | 5 | 8 | 0 | 0 | - | 13 | 42 |
| % Buses | 0.0 | 0.0 | 0.0 | - | - | 0.0 | 2.0 | 0.0 | 1.6 | - | - | 1.6 | 0.3 | 0.5 | 1.4 | - | - | 0.6 | 1.9 | 0.3 | 0.0 | - | - | 0.4 | 0.5 |
| Single-Unit Trucks | 3 | 0 | 0 | 0 | - | 3 | 5 | 0 | 4 | 0 | - | 9 | 1 | 60 | 2 | 0 | - | 63 | 11 | 47 | 4 | 0 | - | 62 | 137 |
| % Single-Unit Trucks | 0.7 | 0.0 | 0.0 | - | - | 0.5 | 1.5 | 0.0 | 1.6 | - | - | 1.3 | 0.3 | 2.5 | 0.6 | - | - | 2.0 | 4.2 | 1.8 | 0.9 | - | - | 1.9 | 1.8 |
| Articulated Trucks | 0 | 0 | 0 | 0 | - | 0 | 1 | 0 | 2 | 0 | - | 3 | 0 | 79 | 2 | 0 | - | 81 | 0 | 59 | 0 | 0 | - | 59 | 143 |
| % Articulated Trucks | 0.0 | 0.0 | 0.0 | - | - | 0.0 | 0.3 | 0.0 | 0.8 | - | - | 0.4 | 0.0 | 3.3 | 0.6 | - | - | 2.6 | 0.0 | 2.3 | 0.0 | - | - | 1.8 | 1.9 |
| Bicycles on Road | 0 | 1 | 1 | 0 | - | 2 | 1 | 0 | 1 | 0 | - | 2 | 0 | 2 | 0 | 0 | - | 2 | 0 | 1 | 2 | 0 | - | 3 | 9 |
| % Bicycles on Road | 0.0 | 0.9 | 0.8 | - | - | 0.3 | 0.3 | 0.0 | 0.4 | - | - | 0.3 | 0.0 | 0.1 | 0.0 | - | - | 0.1 | 0.0 | 0.0 | 0.4 | - | - | 0.1 | 0.1 |
| Bicycles on Crosswalk | - | - | - | - | 3 | - | - | - | - | - | 0 | - | - | - | - | - | 4 | - | - | - | - | - | 1 | - | - |
| % Bicycles on Crosswalk | - | - | - | - | 6.7 | - | - | - | - | - | 0.0 | - | - | - | - | - | 3.3 | - | - | - | - | - | 3.8 | - | - |
| Pedestrians | - | - | - | - | 42 | - | - | - | - | - | 28 | - | - | - | - | - | 116 | - | - | - | - | - | 25 | - | - |
| % Pedestrians | - | - | - | - | 93.3 | - | - | - | - | - | 100.0 | - | - | - | - | - | 96.7 | - | - | - | - | - | 96.2 | - | - |

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada  N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: St David Street & Strathallen Street
Site Code: 240158
Start Date: 04/16/2024


Turning Movement Data Plot

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: St David Street & Strathallen Street
Site Code: 240158
Start Date: 04/16/2024

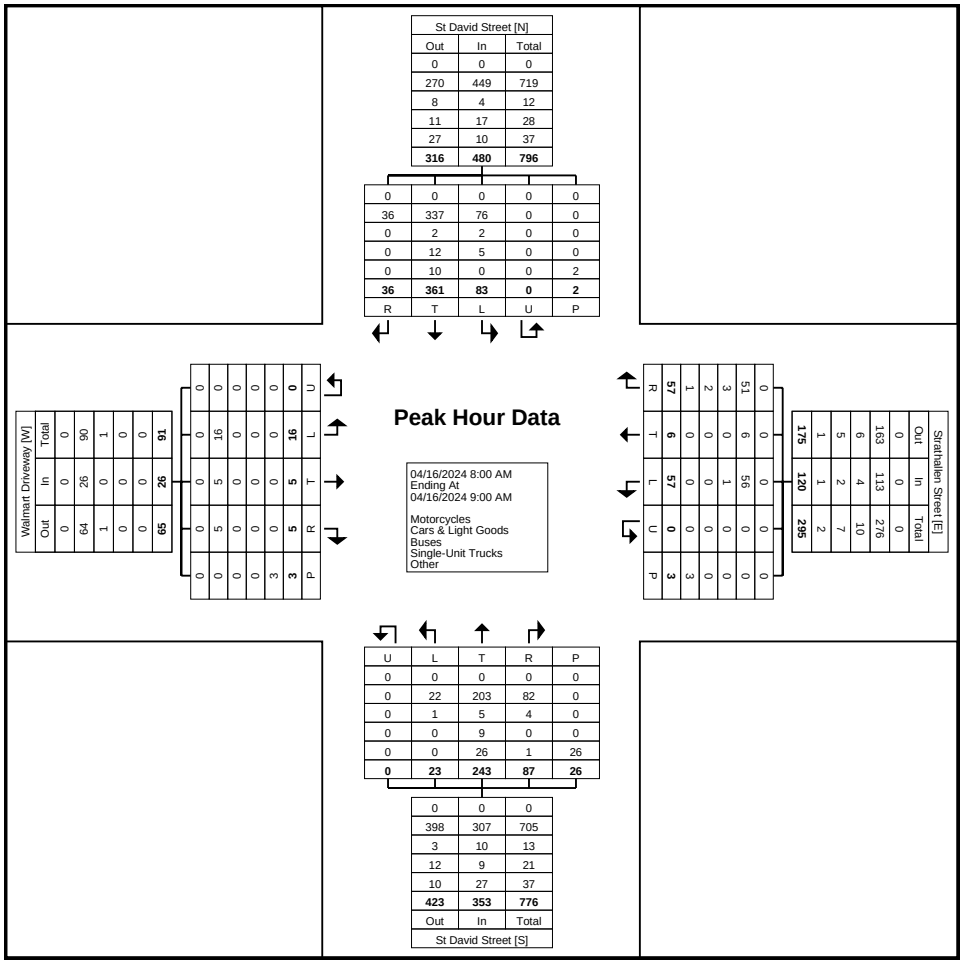

# Turning Movement Peak Hour Data (8:00 AM)

| Start Time | Walmart Driveway Eastbound | | | | | | Strathallen Street Westbound | | | | | | St David Street Northbound | | | | | | St David Street Southbound | | | | | | Int. Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Left | Thru | Right | U-Turn | Peds | App. Total | Left | Thru | Right | U-Turn | Peds | App. Total | Left | Thru | Right | U-Turn | Peds | App. Total | Left | Thru | Right | U-Turn | Peds | App. Total | |
| 8:00 AM | 5 | 1 | 1 | 0 | 0 | 7 | 10 | 0 | 8 | 0 | 0 | 18 | 3 | 51 | 13 | 0 | 2 | 67 | 12 | 85 | 6 | 0 | 0 | 103 | 195 |
| 8:15 AM | 5 | 0 | 2 | 0 | 2 | 7 | 12 | 0 | 7 | 0 | 0 | 19 | 5 | 53 | 10 | 0 | 1 | 68 | 14 | 102 | 10 | 0 | 1 | 126 | 220 |
| 8:30 AM | 0 | 1 | 1 | 0 | 1 | 2 | 14 | 1 | 12 | 0 | 1 | 27 | 4 | 63 | 36 | 0 | 19 | 103 | 41 | 89 | 8 | 0 | 0 | 138 | 270 |
| 8:45 AM | 6 | 3 | 1 | 0 | 0 | 10 | 21 | 5 | 30 | 0 | 2 | 56 | 11 | 76 | 28 | 0 | 4 | 115 | 16 | 85 | 12 | 0 | 1 | 113 | 294 |
| Total | 16 | 5 | 5 | 0 | 3 | 26 | 57 | 6 | 57 | 0 | 3 | 120 | 23 | 243 | 87 | 0 | 26 | 353 | 83 | 361 | 36 | 0 | 2 | 480 | 979 |
| Approach % | 61.5 | 19.2 | 19.2 | 0.0 | - | - | 47.5 | 5.0 | 47.5 | 0.0 | - | - | 6.5 | 68.8 | 24.6 | 0.0 | - | - | 17.3 | 75.2 | 7.5 | 0.0 | - | - | - |
| Total % | 1.6 | 0.5 | 0.5 | 0.0 | - | 2.7 | 5.8 | 0.6 | 5.8 | 0.0 | - | 12.3 | 2.3 | 24.8 | 8.9 | 0.0 | - | 36.1 | 8.5 | 36.9 | 3.7 | 0.0 | - | 49.0 | - |
| PHF | 0.667 | 0.417 | 0.625 | 0.000 | - | 0.650 | 0.679 | 0.300 | 0.475 | 0.000 | - | 0.536 | 0.523 | 0.799 | 0.604 | 0.000 | - | 0.767 | 0.506 | 0.885 | 0.750 | 0.000 | - | 0.870 | 0.832 |
| Motorcycles | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | - | 0 | 0 |
| % Motorcycles | 0.0 | 0.0 | 0.0 | - | - | 0.0 | 0.0 | 0.0 | 0.0 | - | - | 0.0 | 0.0 | 0.0 | 0.0 | - | - | 0.0 | 0.0 | 0.0 | 0.0 | - | - | 0.0 | 0.0 |
| Cars & Light Goods | 16 | 5 | 5 | 0 | - | 26 | 56 | 6 | 51 | 0 | - | 113 | 22 | 203 | 82 | 0 | - | 307 | 76 | 337 | 36 | 0 | - | 449 | 895 |
| % Cars & Light Goods | 100.0 | 100.0 | 100.0 | - | - | 100.0 | 98.2 | 100.0 | 89.5 | - | - | 94.2 | 95.7 | 83.5 | 94.3 | - | - | 87.0 | 91.6 | 93.4 | 100.0 | - | - | 93.5 | 91.4 |
| Buses | 0 | 0 | 0 | 0 | - | 0 | 1 | 0 | 3 | 0 | - | 4 | 1 | 5 | 4 | 0 | - | 10 | 2 | 2 | 0 | 0 | - | 4 | 18 |
| % Buses | 0.0 | 0.0 | 0.0 | - | - | 0.0 | 1.8 | 0.0 | 5.3 | - | - | 3.3 | 4.3 | 2.1 | 4.6 | - | - | 2.8 | 2.4 | 0.6 | 0.0 | - | - | 0.8 | 1.8 |
| Single-Unit Trucks | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 2 | 0 | - | 2 | 0 | 9 | 0 | 0 | - | 9 | 5 | 12 | 0 | 0 | - | 17 | 28 |
| % Single-Unit Trucks | 0.0 | 0.0 | 0.0 | - | - | 0.0 | 0.0 | 0.0 | 3.5 | - | - | 1.7 | 0.0 | 3.7 | 0.0 | - | - | 2.5 | 6.0 | 3.3 | 0.0 | - | - | 3.5 | 2.9 |
| Articulated Trucks | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | - | 0 | 0 | 26 | 1 | 0 | - | 27 | 0 | 10 | 0 | 0 | - | 10 | 37 |
| % Articulated Trucks | 0.0 | 0.0 | 0.0 | - | - | 0.0 | 0.0 | 0.0 | 0.0 | - | - | 0.0 | 0.0 | 10.7 | 1.1 | - | - | 7.6 | 0.0 | 2.8 | 0.0 | - | - | 2.1 | 3.8 |
| Bicycles on Road | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 1 | 0 | - | 1 | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | - | 0 | 1 |
| % Bicycles on Road | 0.0 | 0.0 | 0.0 | - | - | 0.0 | 0.0 | 0.0 | 1.8 | - | - | 0.8 | 0.0 | 0.0 | 0.0 | - | - | 0.0 | 0.0 | 0.0 | 0.0 | - | - | 0.0 | 0.1 |
| Bicycles on Crosswalk | - | - | - | - | 0 | - | - | - | - | - | 0 | - | - | - | - | - | 0 | - | - | - | - | - | 0 | - | - |
| % Bicycles on Crosswalk | - | - | - | - | 0.0 | - | - | - | - | - | 0.0 | - | - | - | - | - | 0.0 | - | - | - | - | - | 0.0 | - | - |
| Pedestrians | - | - | - | - | 3 | - | - | - | - | - | 3 | - | - | - | - | - | 26 | - | - | - | - | - | 2 | - | - |
| % Pedestrians | - | - | - | - | 100.0 | - | - | - | - | - | 100.0 | - | - | - | - | - | 100.0 | - | - | - | - | - | 100.0 | - | - |

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada  N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: St David Street & Strathallen Street
Site Code: 240158
Start Date: 04/16/2024


Turning Movement Peak Hour Data Plot (8:00 AM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada  N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: St David Street & Strathallen Street
Site Code: 240158
Start Date: 04/16/2024


# Turning Movement Peak Hour Data (12:00 PM)

| Start Time | Walmart Driveway Eastbound | | | | | | Strathallen Street Westbound | | | | | | St David Street Northbound | | | | | | St David Street Southbound | | | | | | Int. Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Left | Thru | Right | U-Turn | Peds | App. Total | Left | Thru | Right | U-Turn | Peds | App. Total | Left | Thru | Right | U-Turn | Peds | App. Total | Left | Thru | Right | U-Turn | Peds | App. Total | |
| 12:00 PM | 19 | 3 | 6 | 0 | 1 | 28 | 10 | 3 | 4 | 0 | 2 | 17 | 14 | 86 | 11 | 0 | 1 | 111 | 4 | 98 | 21 | 0 | 0 | 123 | 279 |
| 12:15 PM | 17 | 6 | 4 | 0 | 1 | 27 | 11 | 0 | 8 | 0 | 0 | 19 | 13 | 100 | 8 | 0 | 1 | 121 | 10 | 94 | 26 | 0 | 4 | 130 | 297 |
| 12:30 PM | 8 | 6 | 10 | 0 | 2 | 24 | 9 | 5 | 7 | 0 | 0 | 21 | 10 | 72 | 12 | 0 | 3 | 94 | 11 | 102 | 22 | 0 | 0 | 135 | 274 |
| 12:45 PM | 19 | 2 | 1 | 0 | 0 | 22 | 12 | 5 | 3 | 0 | 0 | 20 | 16 | 85 | 11 | 0 | 0 | 112 | 5 | 93 | 21 | 0 | 0 | 119 | 273 |
| Total | 63 | 17 | 21 | 0 | 4 | 101 | 42 | 13 | 22 | 0 | 2 | 77 | 53 | 343 | 42 | 0 | 5 | 438 | 30 | 387 | 90 | 0 | 4 | 507 | 1123 |
| Approach % | 62.4 | 16.8 | 20.8 | 0.0 | - | - | 54.5 | 16.9 | 28.6 | 0.0 | - | - | 12.1 | 78.3 | 9.6 | 0.0 | - | - | 5.9 | 76.3 | 17.8 | 0.0 | - | - | - |
| Total % | 5.6 | 1.5 | 1.9 | 0.0 | - | 9.0 | 3.7 | 1.2 | 2.0 | 0.0 | - | 6.9 | 4.7 | 30.5 | 3.7 | 0.0 | - | 39.0 | 2.7 | 34.5 | 8.0 | 0.0 | - | 45.1 | - |
| PHF | 0.829 | 0.708 | 0.525 | 0.000 | - | 0.902 | 0.875 | 0.650 | 0.688 | 0.000 | - | 0.917 | 0.828 | 0.858 | 0.875 | 0.000 | - | 0.905 | 0.682 | 0.949 | 0.865 | 0.000 | - | 0.939 | 0.945 |
| Motorcycles | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 4 | 0 | - | 4 | 2 | 5 | 0 | 0 | - | 7 | 0 | 1 | 0 | 0 | - | 1 | 12 |
| % Motorcycles | 0.0 | 0.0 | 0.0 | - | - | 0.0 | 0.0 | 0.0 | 18.2 | - | - | 5.2 | 3.8 | 1.5 | 0.0 | - | - | 1.6 | 0.0 | 0.3 | 0.0 | - | - | 0.2 | 1.1 |
| Cars & Light Goods | 62 | 17 | 21 | 0 | - | 100 | 40 | 13 | 17 | 0 | - | 70 | 51 | 312 | 40 | 0 | - | 403 | 27 | 369 | 87 | 0 | - | 483 | 1056 |
| % Cars & Light Goods | 98.4 | 100.0 | 100.0 | - | - | 99.0 | 95.2 | 100.0 | 77.3 | - | - | 90.9 | 96.2 | 91.0 | 95.2 | - | - | 92.0 | 90.0 | 95.3 | 96.7 | - | - | 95.3 | 94.0 |
| Buses | 0 | 0 | 0 | 0 | - | 0 | 1 | 0 | 0 | 0 | - | 1 | 0 | 0 | 1 | 0 | - | 1 | 0 | 0 | 0 | 0 | - | 0 | 2 |
| % Buses | 0.0 | 0.0 | 0.0 | - | - | 0.0 | 2.4 | 0.0 | 0.0 | - | - | 1.3 | 0.0 | 0.0 | 2.4 | - | - | 0.2 | 0.0 | 0.0 | 0.0 | - | - | 0.0 | 0.2 |
| Single-Unit Trucks | 1 | 0 | 0 | 0 | - | 1 | 1 | 0 | 0 | 0 | - | 1 | 0 | 12 | 1 | 0 | - | 13 | 3 | 4 | 2 | 0 | - | 9 | 24 |
| % Single-Unit Trucks | 1.6 | 0.0 | 0.0 | - | - | 1.0 | 2.4 | 0.0 | 0.0 | - | - | 1.3 | 0.0 | 3.5 | 2.4 | - | - | 3.0 | 10.0 | 1.0 | 2.2 | - | - | 1.8 | 2.1 |
| Articulated Trucks | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 1 | 0 | - | 1 | 0 | 13 | 0 | 0 | - | 13 | 0 | 12 | 0 | 0 | - | 12 | 26 |
| % Articulated Trucks | 0.0 | 0.0 | 0.0 | - | - | 0.0 | 0.0 | 0.0 | 4.5 | - | - | 1.3 | 0.0 | 3.8 | 0.0 | - | - | 3.0 | 0.0 | 3.1 | 0.0 | - | - | 2.4 | 2.3 |
| Bicycles on Road | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | - | 0 | 0 | 1 | 0 | 0 | - | 1 | 0 | 1 | 1 | 0 | - | 2 | 3 |
| % Bicycles on Road | 0.0 | 0.0 | 0.0 | - | - | 0.0 | 0.0 | 0.0 | 0.0 | - | - | 0.0 | 0.0 | 0.3 | 0.0 | - | - | 0.2 | 0.0 | 0.3 | 1.1 | - | - | 0.4 | 0.3 |
| Bicycles on Crosswalk | - | - | - | - | 0 | - | - | - | - | - | 0 | - | - | - | - | - | 0 | - | - | - | - | - | 0 | - | - |
| % Bicycles on Crosswalk | - | - | - | - | 0.0 | - | - | - | - | - | 0.0 | - | - | - | - | - | 0.0 | - | - | - | - | - | 0.0 | - | - |
| Pedestrians | - | - | - | - | 4 | - | - | - | - | - | 2 | - | - | - | - | - | 5 | - | - | - | - | - | 4 | - | - |
| % Pedestrians | - | - | - | - | 100.0 | - | - | - | - | - | 100.0 | - | - | - | - | - | 100.0 | - | - | - | - | - | 100.0 | - | - |

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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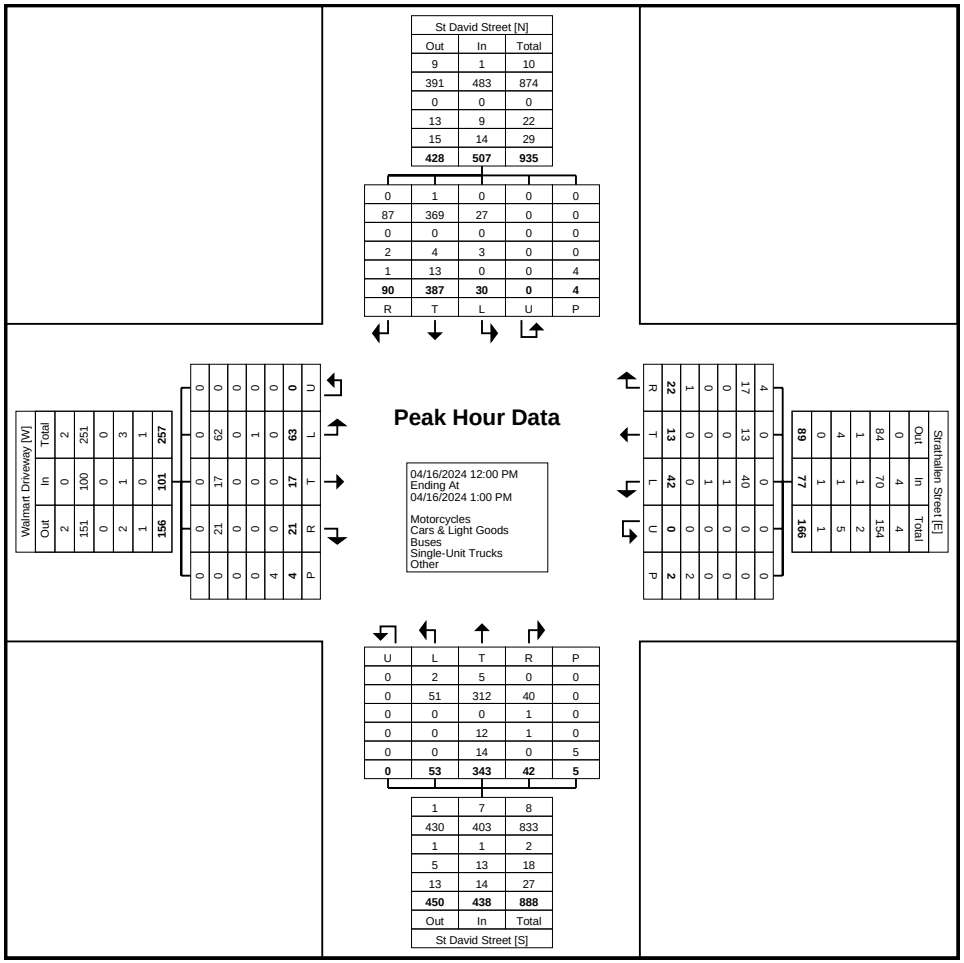
519-896-3163 cbowness@ptsl.com

Count Name: St David Street & Strathallen Street
Site Code: 240158
Start Date: 04/16/2024


Turning Movement Peak Hour Data Plot (12:00 PM)

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Count Name: St David Street & Strathallen Street
Site Code: 240158
Start Date: 04/16/2024


# Turning Movement Peak Hour Data (4:15 PM)

| Start Time | Walmart Driveway Eastbound | | | | | | Strathallen Street Westbound | | | | | | St David Street Northbound | | | | | | St David Street Southbound | | | | | | Int. Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Left | Thru | Right | U-Turn | Peds | App. Total | Left | Thru | Right | U-Turn | Peds | App. Total | Left | Thru | Right | U-Turn | Peds | App. Total | Left | Thru | Right | U-Turn | Peds | App. Total | |
| 4:15 PM | 22 | 7 | 11 | 0 | 0 | 40 | 15 | 6 | 10 | 0 | 2 | 31 | 19 | 110 | 10 | 0 | 2 | 139 | 12 | 97 | 16 | 0 | 0 | 125 | 335 |
| 4:30 PM | 23 | 4 | 4 | 0 | 0 | 31 | 11 | 7 | 10 | 0 | 1 | 28 | 21 | 113 | 16 | 0 | 3 | 150 | 5 | 94 | 17 | 0 | 5 | 116 | 325 |
| 4:45 PM | 30 | 2 | 7 | 0 | 0 | 39 | 10 | 4 | 14 | 0 | 4 | 28 | 26 | 93 | 18 | 0 | 4 | 137 | 7 | 92 | 20 | 0 | 2 | 119 | 323 |
| 5:00 PM | 35 | 7 | 3 | 0 | 4 | 45 | 7 | 4 | 5 | 0 | 2 | 16 | 16 | 143 | 19 | 0 | 10 | 178 | 11 | 121 | 19 | 0 | 1 | 151 | 390 |
| Total | 110 | 20 | 25 | 0 | 4 | 155 | 43 | 21 | 39 | 0 | 9 | 103 | 82 | 459 | 63 | 0 | 19 | 604 | 35 | 404 | 72 | 0 | 8 | 511 | 1373 |
| Approach % | 71.0 | 12.9 | 16.1 | 0.0 | - | - | 41.7 | 20.4 | 37.9 | 0.0 | - | - | 13.6 | 76.0 | 10.4 | 0.0 | - | - | 6.8 | 79.1 | 14.1 | 0.0 | - | - | - |
| Total % | 8.0 | 1.5 | 1.8 | 0.0 | - | 11.3 | 3.1 | 1.5 | 2.8 | 0.0 | - | 7.5 | 6.0 | 33.4 | 4.6 | 0.0 | - | 44.0 | 2.5 | 29.4 | 5.2 | 0.0 | - | 37.2 | - |
| PHF | 0.786 | 0.714 | 0.568 | 0.000 | - | 0.861 | 0.717 | 0.750 | 0.696 | 0.000 | - | 0.831 | 0.788 | 0.802 | 0.829 | 0.000 | - | 0.848 | 0.729 | 0.835 | 0.900 | 0.000 | - | 0.846 | 0.880 |
| Motorcycles | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | - | 0 | 0 | 5 | 0 | 0 | - | 5 | 0 | 2 | 0 | 0 | - | 2 | 7 |
| % Motorcycles | 0.0 | 0.0 | 0.0 | - | - | 0.0 | 0.0 | 0.0 | 0.0 | - | - | 0.0 | 0.0 | 1.1 | 0.0 | - | - | 0.8 | 0.0 | 0.5 | 0.0 | - | - | 0.4 | 0.5 |
| Cars & Light Goods | 110 | 20 | 25 | 0 | - | 155 | 41 | 21 | 39 | 0 | - | 101 | 82 | 446 | 62 | 0 | - | 590 | 34 | 390 | 72 | 0 | - | 496 | 1342 |
| % Cars & Light Goods | 100.0 | 100.0 | 100.0 | - | - | 100.0 | 95.3 | 100.0 | 100.0 | - | - | 98.1 | 100.0 | 97.2 | 98.4 | - | - | 97.7 | 97.1 | 96.5 | 100.0 | - | - | 97.1 | 97.7 |
| Buses | 0 | 0 | 0 | 0 | - | 0 | 1 | 0 | 0 | 0 | - | 1 | 0 | 1 | 0 | 0 | - | 1 | 0 | 0 | 0 | 0 | - | 0 | 2 |
| % Buses | 0.0 | 0.0 | 0.0 | - | - | 0.0 | 2.3 | 0.0 | 0.0 | - | - | 1.0 | 0.0 | 0.2 | 0.0 | - | - | 0.2 | 0.0 | 0.0 | 0.0 | - | - | 0.0 | 0.1 |
| Single-Unit Trucks | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | - | 0 | 0 | 3 | 0 | 0 | - | 3 | 1 | 7 | 0 | 0 | - | 8 | 11 |
| % Single-Unit Trucks | 0.0 | 0.0 | 0.0 | - | - | 0.0 | 0.0 | 0.0 | 0.0 | - | - | 0.0 | 0.0 | 0.7 | 0.0 | - | - | 0.5 | 2.9 | 1.7 | 0.0 | - | - | 1.6 | 0.8 |
| Articulated Trucks | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | - | 0 | 0 | 3 | 1 | 0 | - | 4 | 0 | 5 | 0 | 0 | - | 5 | 9 |
| % Articulated Trucks | 0.0 | 0.0 | 0.0 | - | - | 0.0 | 0.0 | 0.0 | 0.0 | - | - | 0.0 | 0.0 | 0.7 | 1.6 | - | - | 0.7 | 0.0 | 1.2 | 0.0 | - | - | 1.0 | 0.7 |
| Bicycles on Road | 0 | 0 | 0 | 0 | - | 0 | 1 | 0 | 0 | 0 | - | 1 | 0 | 1 | 0 | 0 | - | 1 | 0 | 0 | 0 | 0 | - | 0 | 2 |
| % Bicycles on Road | 0.0 | 0.0 | 0.0 | - | - | 0.0 | 2.3 | 0.0 | 0.0 | - | - | 1.0 | 0.0 | 0.2 | 0.0 | - | - | 0.2 | 0.0 | 0.0 | 0.0 | - | - | 0.0 | 0.1 |
| Bicycles on Crosswalk | - | - | - | - | 0 | - | - | - | - | - | 0 | - | - | - | - | - | 1 | - | - | - | - | - | 0 | - | - |
| % Bicycles on Crosswalk | - | - | - | - | 0.0 | - | - | - | - | - | 0.0 | - | - | - | - | - | 5.3 | - | - | - | - | - | 0.0 | - | - |
| Pedestrians | - | - | - | - | 4 | - | - | - | - | - | 9 | - | - | - | - | - | 18 | - | - | - | - | - | 8 | - | - |
| % Pedestrians | - | - | - | - | 100.0 | - | - | - | - | - | 100.0 | - | - | - | - | - | 94.7 | - | - | - | - | - | 100.0 | - | - |

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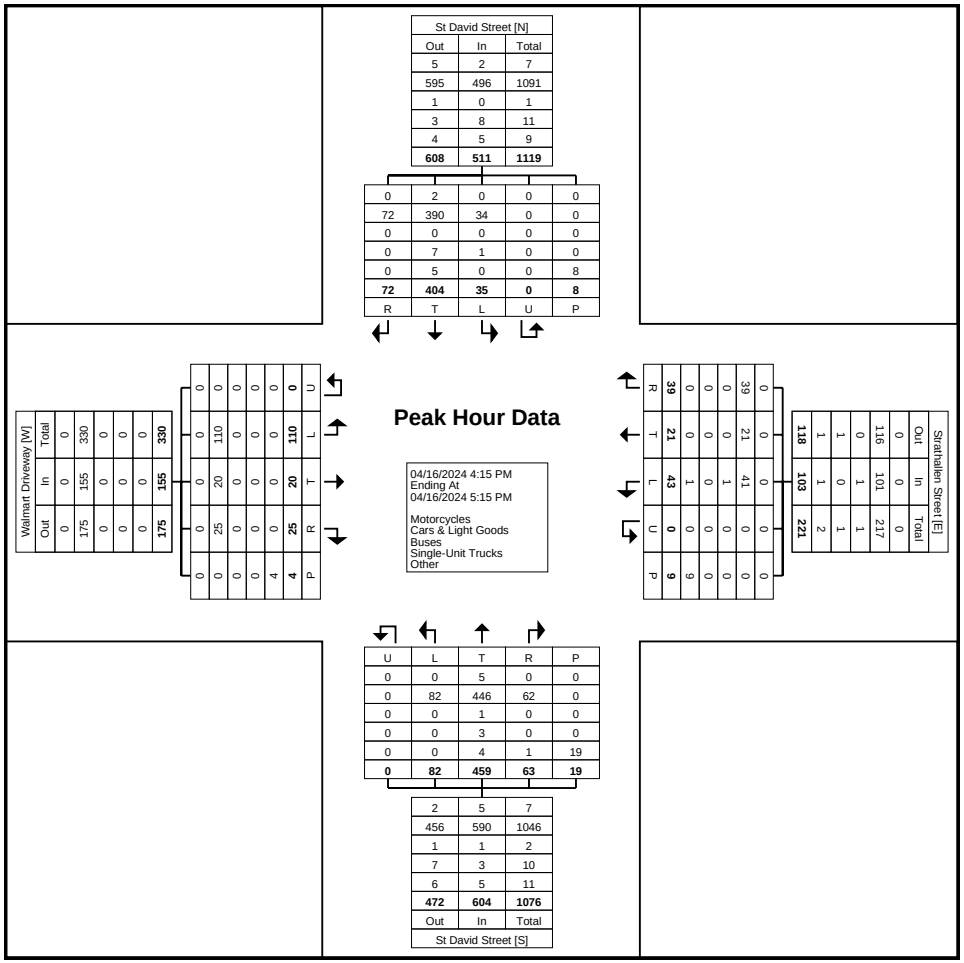
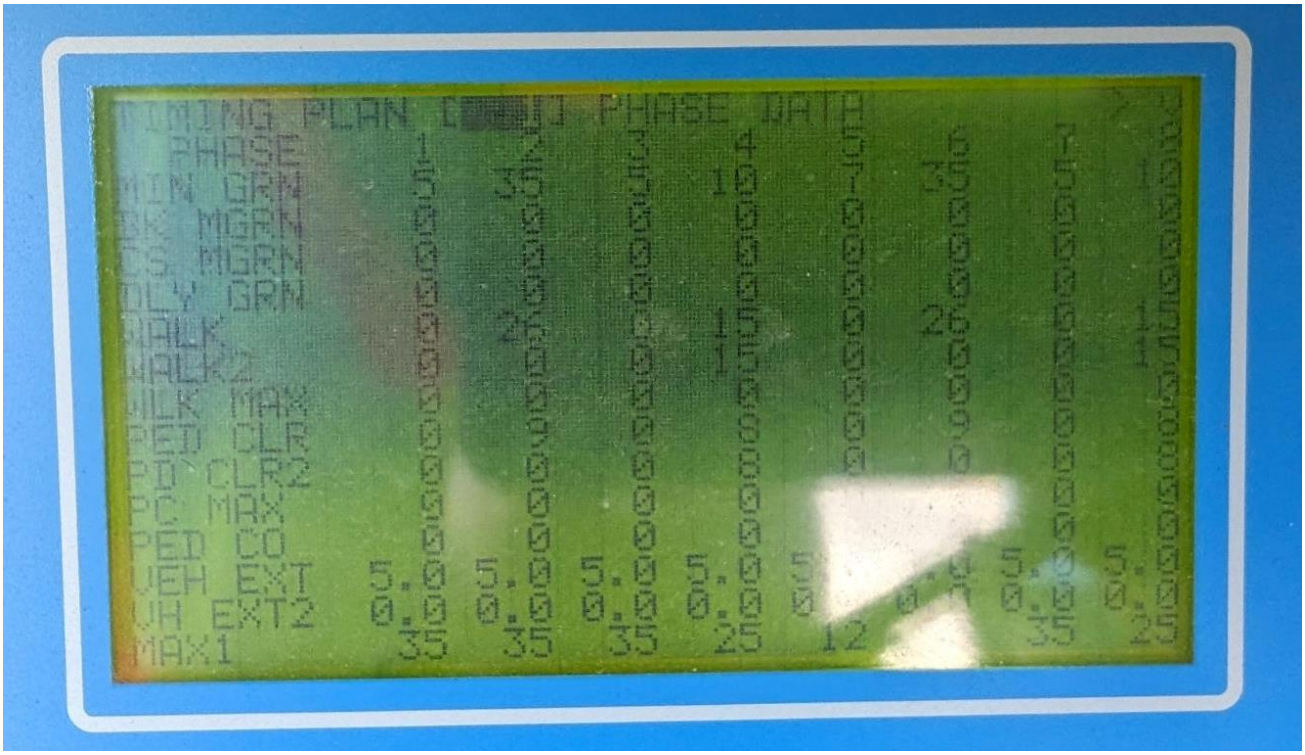
Start Date: 04/16/2024


Turning Movement Peak Hour Data Plot (4:15 PM)


TIMING PLAN
PHASE
MIN GRN
MAX MGRN
EXT MGRN
ONLY GRN
WALK
WALK2
WLK MAX
PED CLR
PD CLR2
PC MAX
PED CO
VEH EXT
VH EXT2
MAX1

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada  N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Parkside Drive & St. David Street
Site Code: 240158
Start Date: 04/16/2024


# Turning Movement Data

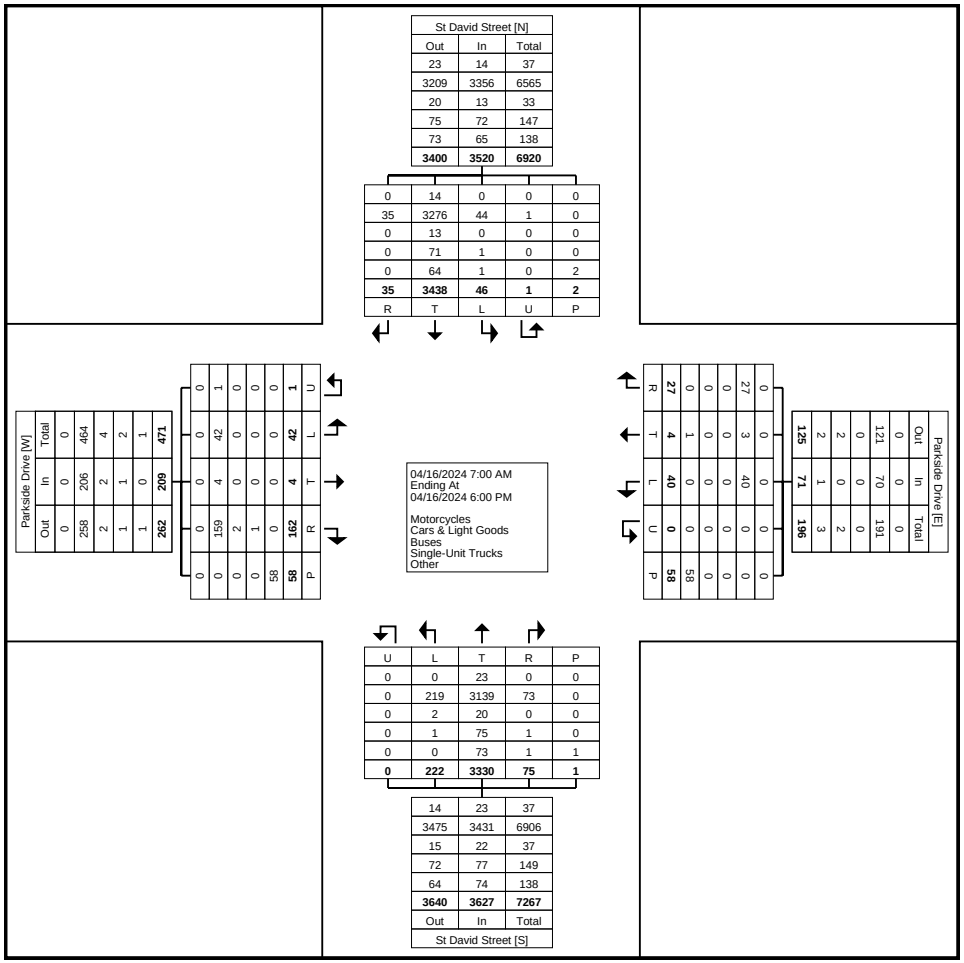
| Start Time | Parkside Drive Eastbound | | | | | | Parkside Drive Westbound | | | | | | St David Street Northbound | | | | | | St David Street Southbound | | | | | | Int. Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Left | Thru | Right | U-Turn | Peds | App. Total | Left | Thru | Right | U-Turn | Peds | App. Total | Left | Thru | Right | U-Turn | Peds | App. Total | Left | Thru | Right | U-Turn | Peds | App. Total | |
| 7:00 AM | 0 | 1 | 3 | 0 | 3 | 4 | 3 | 0 | 0 | 0 | 0 | 3 | 1 | 47 | 0 | 0 | 0 | 48 | 0 | 77 | 0 | 0 | 1 | 77 | 132 |
| 7:15 AM | 1 | 0 | 5 | 0 | 2 | 6 | 0 | 0 | 1 | 0 | 2 | 1 | 0 | 57 | 2 | 0 | 0 | 59 | 0 | 96 | 0 | 0 | 0 | 96 | 162 |
| 7:30 AM | 2 | 0 | 2 | 0 | 3 | 4 | 2 | 0 | 3 | 0 | 0 | 5 | 0 | 62 | 1 | 0 | 0 | 63 | 1 | 98 | 0 | 0 | 0 | 99 | 171 |
| 7:45 AM | 5 | 0 | 2 | 0 | 0 | 7 | 3 | 1 | 1 | 0 | 1 | 5 | 0 | 104 | 0 | 0 | 0 | 104 | 1 | 99 | 1 | 0 | 0 | 101 | 217 |
| Hourly Total | 8 | 1 | 12 | 0 | 8 | 21 | 8 | 1 | 5 | 0 | 3 | 14 | 1 | 270 | 3 | 0 | 0 | 274 | 2 | 370 | 1 | 0 | 1 | 373 | 682 |
| 8:00 AM | 1 | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 70 | 2 | 0 | 0 | 73 | 2 | 97 | 0 | 0 | 0 | 99 | 174 |
| 8:15 AM | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 2 | 4 | 87 | 1 | 0 | 0 | 92 | 0 | 121 | 1 | 0 | 0 | 122 | 217 |
| 8:30 AM | 2 | 0 | 2 | 0 | 1 | 4 | 2 | 0 | 3 | 0 | 1 | 5 | 3 | 104 | 2 | 0 | 0 | 109 | 0 | 108 | 1 | 0 | 0 | 109 | 227 |
| 8:45 AM | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 4 | 2 | 4 | 120 | 0 | 0 | 0 | 124 | 2 | 111 | 2 | 0 | 1 | 115 | 242 |
| Hourly Total | 5 | 0 | 3 | 0 | 2 | 8 | 4 | 0 | 5 | 0 | 6 | 9 | 12 | 381 | 5 | 0 | 0 | 398 | 4 | 437 | 4 | 0 | 1 | 445 | 860 |
| *** BREAK *** | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 11:30 AM | 1 | 0 | 5 | 0 | 2 | 6 | 1 | 1 | 2 | 0 | 2 | 4 | 8 | 112 | 1 | 0 | 0 | 121 | 1 | 115 | 1 | 0 | 0 | 117 | 248 |
| 11:45 AM | 0 | 0 | 5 | 0 | 1 | 5 | 0 | 0 | 0 | 0 | 1 | 0 | 5 | 109 | 2 | 0 | 0 | 116 | 1 | 108 | 2 | 0 | 0 | 111 | 232 |
| Hourly Total | 1 | 0 | 10 | 0 | 3 | 11 | 1 | 1 | 2 | 0 | 3 | 4 | 13 | 221 | 3 | 0 | 0 | 237 | 2 | 223 | 3 | 0 | 0 | 228 | 480 |
| 12:00 PM | 2 | 0 | 10 | 0 | 3 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 128 | 2 | 0 | 0 | 132 | 2 | 133 | 2 | 0 | 0 | 137 | 281 |
| 12:15 PM | 4 | 0 | 3 | 0 | 2 | 7 | 4 | 0 | 0 | 0 | 1 | 4 | 3 | 116 | 2 | 0 | 0 | 121 | 3 | 127 | 0 | 0 | 0 | 130 | 262 |
| 12:30 PM | 0 | 0 | 1 | 0 | 1 | 1 | 2 | 0 | 2 | 0 | 2 | 4 | 10 | 94 | 3 | 0 | 0 | 107 | 2 | 145 | 2 | 0 | 0 | 149 | 261 |
| 12:45 PM | 3 | 0 | 9 | 0 | 0 | 12 | 1 | 0 | 0 | 0 | 2 | 1 | 8 | 118 | 6 | 0 | 0 | 132 | 0 | 122 | 3 | 0 | 0 | 125 | 270 |
| Hourly Total | 9 | 0 | 23 | 0 | 6 | 32 | 7 | 0 | 2 | 0 | 5 | 9 | 23 | 456 | 13 | 0 | 0 | 492 | 7 | 527 | 7 | 0 | 0 | 541 | 1074 |
| 1:00 PM | 1 | 0 | 7 | 1 | 1 | 9 | 3 | 0 | 1 | 0 | 0 | 4 | 6 | 114 | 1 | 0 | 0 | 121 | 0 | 123 | 1 | 0 | 0 | 124 | 258 |
| 1:15 PM | 1 | 0 | 5 | 0 | 5 | 6 | 1 | 0 | 0 | 0 | 4 | 1 | 7 | 121 | 1 | 0 | 0 | 129 | 1 | 122 | 0 | 0 | 0 | 123 | 259 |
| *** BREAK *** | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Hourly Total | 2 | 0 | 12 | 1 | 6 | 15 | 4 | 0 | 1 | 0 | 4 | 5 | 13 | 235 | 2 | 0 | 0 | 250 | 1 | 245 | 1 | 0 | 0 | 247 | 517 |
| 3:00 PM | 0 | 0 | 3 | 0 | 3 | 3 | 1 | 0 | 1 | 0 | 2 | 2 | 13 | 132 | 2 | 0 | 0 | 147 | 2 | 119 | 0 | 0 | 0 | 121 | 273 |
| 3:15 PM | 0 | 0 | 8 | 0 | 4 | 8 | 3 | 0 | 1 | 0 | 11 | 4 | 9 | 147 | 3 | 0 | 0 | 159 | 1 | 148 | 3 | 0 | 0 | 152 | 323 |
| 3:30 PM | 0 | 0 | 13 | 0 | 2 | 13 | 1 | 0 | 0 | 0 | 5 | 1 | 14 | 147 | 4 | 0 | 1 | 165 | 0 | 123 | 2 | 1 | 0 | 126 | 305 |
| 3:45 PM | 2 | 1 | 8 | 0 | 1 | 11 | 1 | 0 | 1 | 0 | 2 | 2 | 7 | 162 | 8 | 0 | 0 | 177 | 6 | 155 | 2 | 0 | 0 | 163 | 353 |
| Hourly Total | 2 | 1 | 32 | 0 | 10 | 35 | 6 | 0 | 3 | 0 | 20 | 9 | 43 | 588 | 17 | 0 | 1 | 648 | 9 | 545 | 7 | 1 | 0 | 562 | 1254 |
| 4:00 PM | 1 | 0 | 11 | 0 | 1 | 12 | 1 | 1 | 1 | 0 | 3 | 3 | 16 | 131 | 3 | 0 | 0 | 150 | 1 | 129 | 1 | 0 | 0 | 131 | 296 |
| 4:15 PM | 0 | 0 | 9 | 0 | 5 | 9 | 1 | 1 | 1 | 0 | 1 | 3 | 11 | 159 | 3 | 0 | 0 | 173 | 5 | 141 | 4 | 0 | 0 | 150 | 335 |
| 4:30 PM | 3 | 2 | 5 | 0 | 5 | 10 | 2 | 0 | 0 | 0 | 2 | 2 | 16 | 156 | 4 | 0 | 0 | 176 | 2 | 126 | 2 | 0 | 0 | 130 | 318 |
| 4:45 PM | 3 | 0 | 13 | 0 | 2 | 16 | 4 | 0 | 2 | 0 | 2 | 6 | 16 | 156 | 8 | 0 | 0 | 180 | 4 | 130 | 2 | 0 | 0 | 136 | 338 |
| Hourly Total | 7 | 2 | 38 | 0 | 13 | 47 | 8 | 2 | 4 | 0 | 8 | 14 | 59 | 602 | 18 | 0 | 0 | 679 | 12 | 526 | 9 | 0 | 0 | 547 | 1287 |
| 5:00 PM | 3 | 0 | 10 | 0 | 3 | 13 | 0 | 0 | 0 | 0 | 3 | 0 | 18 | 184 | 5 | 0 | 0 | 207 | 2 | 167 | 1 | 0 | 0 | 170 | 390 |
| 5:15 PM | 3 | 0 | 4 | 0 | 4 | 7 | 1 | 0 | 2 | 0 | 3 | 3 | 9 | 138 | 3 | 0 | 0 | 150 | 4 | 129 | 1 | 0 | 0 | 134 | 294 |

| | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5:30 PM | 2 | 0 | 5 | 0 | 2 | 7 | 1 | 0 | 2 | 0 | 1 | 3 | 16 | 138 | 4 | 0 | 0 | 158 | 2 | 147 | 1 | 0 | 0 | 150 | 318 |
| 5:45 PM | 0 | 0 | 13 | 0 | 1 | 13 | 0 | 0 | 1 | 0 | 2 | 1 | 15 | 117 | 2 | 0 | 0 | 134 | 1 | 122 | 0 | 0 | 0 | 123 | 271 |
| Hourly Total | 8 | 0 | 32 | 0 | 10 | 40 | 2 | 0 | 5 | 0 | 9 | 7 | 58 | 577 | 14 | 0 | 0 | 649 | 9 | 565 | 3 | 0 | 0 | 577 | 1273 |
| Grand Total | 42 | 4 | 162 | 1 | 58 | 209 | 40 | 4 | 27 | 0 | 58 | 71 | 222 | 3330 | 75 | 0 | 1 | 3627 | 46 | 3438 | 35 | 1 | 2 | 3520 | 7427 |
| Approach % | 20.1 | 1.9 | 77.5 | 0.5 | - | - | 56.3 | 5.6 | 38.0 | 0.0 | - | - | 6.1 | 91.8 | 2.1 | 0.0 | - | - | 1.3 | 97.7 | 1.0 | 0.0 | - | - | - |
| Total % | 0.6 | 0.1 | 2.2 | 0.0 | - | 2.8 | 0.5 | 0.1 | 0.4 | 0.0 | - | 1.0 | 3.0 | 44.8 | 1.0 | 0.0 | - | 48.8 | 0.6 | 46.3 | 0.5 | 0.0 | - | 47.4 | - |
| Motorcycles | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | - | 0 | 0 | 23 | 0 | 0 | - | 23 | 0 | 14 | 0 | 0 | - | 14 | 37 |
| % Motorcycles | 0.0 | 0.0 | 0.0 | 0.0 | - | 0.0 | 0.0 | 0.0 | 0.0 | - | - | 0.0 | 0.0 | 0.7 | 0.0 | - | - | 0.6 | 0.0 | 0.4 | 0.0 | 0.0 | - | 0.4 | 0.5 |
| Cars & Light Goods | 42 | 4 | 159 | 1 | - | 206 | 40 | 3 | 27 | 0 | - | 70 | 219 | 3139 | 73 | 0 | - | 3431 | 44 | 3276 | 35 | 1 | - | 3356 | 7063 |
| % Cars & Light Goods | 100.0 | 100.0 | 98.1 | 100.0 | - | 98.6 | 100.0 | 75.0 | 100.0 | - | - | 98.6 | 98.6 | 94.3 | 97.3 | - | - | 94.6 | 95.7 | 95.3 | 100.0 | 100.0 | - | 95.3 | 95.1 |
| Buses | 0 | 0 | 2 | 0 | - | 2 | 0 | 0 | 0 | 0 | - | 0 | 2 | 20 | 0 | 0 | - | 22 | 0 | 13 | 0 | 0 | - | 13 | 37 |
| % Buses | 0.0 | 0.0 | 1.2 | 0.0 | - | 1.0 | 0.0 | 0.0 | 0.0 | - | - | 0.0 | 0.9 | 0.6 | 0.0 | - | - | 0.6 | 0.0 | 0.4 | 0.0 | 0.0 | - | 0.4 | 0.5 |
| Single-Unit Trucks | 0 | 0 | 1 | 0 | - | 1 | 0 | 0 | 0 | 0 | - | 0 | 1 | 75 | 1 | 0 | - | 77 | 1 | 71 | 0 | 0 | - | 72 | 150 |
| % Single-Unit Trucks | 0.0 | 0.0 | 0.6 | 0.0 | - | 0.5 | 0.0 | 0.0 | 0.0 | - | - | 0.0 | 0.5 | 2.3 | 1.3 | - | - | 2.1 | 2.2 | 2.1 | 0.0 | 0.0 | - | 2.0 | 2.0 |
| Articulated Trucks | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | - | 0 | 0 | 71 | 0 | 0 | - | 71 | 0 | 63 | 0 | 0 | - | 63 | 134 |
| % Articulated Trucks | 0.0 | 0.0 | 0.0 | 0.0 | - | 0.0 | 0.0 | 0.0 | 0.0 | - | - | 0.0 | 0.0 | 2.1 | 0.0 | - | - | 2.0 | 0.0 | 1.8 | 0.0 | 0.0 | - | 1.8 | 1.8 |
| Bicycles on Road | 0 | 0 | 0 | 0 | - | 0 | 0 | 1 | 0 | 0 | - | 1 | 0 | 2 | 1 | 0 | - | 3 | 1 | 1 | 0 | 0 | - | 2 | 6 |
| % Bicycles on Road | 0.0 | 0.0 | 0.0 | 0.0 | - | 0.0 | 0.0 | 25.0 | 0.0 | - | - | 1.4 | 0.0 | 0.1 | 1.3 | - | - | 0.1 | 2.2 | 0.0 | 0.0 | 0.0 | - | 0.1 | 0.1 |
| Bicycles on Crosswalk | - | - | - | - | 2 | - | - | - | - | - | 3 | - | - | - | - | - | 0 | - | - | - | - | - | 0 | - | - |
| % Bicycles on Crosswalk | - | - | - | - | 3.4 | - | - | - | - | - | 5.2 | - | - | - | - | - | 0.0 | - | - | - | - | - | 0.0 | - | - |
| Pedestrians | - | - | - | - | 56 | - | - | - | - | - | 55 | - | - | - | - | - | 1 | - | - | - | - | - | 2 | - | - |
| % Pedestrians | - | - | - | - | 96.6 | - | - | - | - | - | 94.8 | - | - | - | - | - | 100.0 | - | - | - | - | - | 100.0 | - | - |

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada  N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Parkside Drive & St. David Street
Site Code: 240158
Start Date: 04/16/2024


Turning Movement Data Plot

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Parkside Drive & St. David Street
Site Code: 240158
Start Date: 04/16/2024


# Turning Movement Peak Hour Data (8:00 AM)

| Start Time | Parkside Drive Eastbound | | | | | | Parkside Drive Westbound | | | | | | St David Street Northbound | | | | | | St David Street Southbound | | | | | | Int. Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Left | Thru | Right | U-Turn | Peds | App. Total | Left | Thru | Right | U-Turn | Peds | App. Total | Left | Thru | Right | U-Turn | Peds | App. Total | Left | Thru | Right | U-Turn | Peds | App. Total | |
| 8:00 AM | 1 | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 70 | 2 | 0 | 0 | 73 | 2 | 97 | 0 | 0 | 0 | 99 | 174 |
| 8:15 AM | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 2 | 4 | 87 | 1 | 0 | 0 | 92 | 0 | 121 | 1 | 0 | 0 | 122 | 217 |
| 8:30 AM | 2 | 0 | 2 | 0 | 1 | 4 | 2 | 0 | 3 | 0 | 1 | 5 | 3 | 104 | 2 | 0 | 0 | 109 | 0 | 108 | 1 | 0 | 0 | 109 | 227 |
| 8:45 AM | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 4 | 2 | 4 | 120 | 0 | 0 | 0 | 124 | 2 | 111 | 2 | 0 | 1 | 115 | 242 |
| Total | 5 | 0 | 3 | 0 | 2 | 8 | 4 | 0 | 5 | 0 | 6 | 9 | 12 | 381 | 5 | 0 | 0 | 398 | 4 | 437 | 4 | 0 | 1 | 445 | 860 |
| Approach % | 62.5 | 0.0 | 37.5 | 0.0 | - | - | 44.4 | 0.0 | 55.6 | 0.0 | - | - | 3.0 | 95.7 | 1.3 | 0.0 | - | - | 0.9 | 98.2 | 0.9 | 0.0 | - | - | - |
| Total % | 0.6 | 0.0 | 0.3 | 0.0 | - | 0.9 | 0.5 | 0.0 | 0.6 | 0.0 | - | 1.0 | 1.4 | 44.3 | 0.6 | 0.0 | - | 46.3 | 0.5 | 50.8 | 0.5 | 0.0 | - | 51.7 | - |
| PHF | 0.625 | 0.000 | 0.375 | 0.000 | - | 0.500 | 0.500 | 0.000 | 0.417 | 0.000 | - | 0.450 | 0.750 | 0.794 | 0.625 | 0.000 | - | 0.802 | 0.500 | 0.903 | 0.500 | 0.000 | - | 0.912 | 0.888 |
| Motorcycles | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | - | 0 | 0 | 1 | 0 | 0 | - | 1 | 1 |
| % Motorcycles | 0.0 | - | 0.0 | - | - | 0.0 | 0.0 | - | 0.0 | - | - | 0.0 | 0.0 | 0.0 | 0.0 | - | - | 0.0 | 0.0 | 0.2 | 0.0 | - | - | 0.2 | 0.1 |
| Cars & Light Goods | 5 | 0 | 3 | 0 | - | 8 | 4 | 0 | 5 | 0 | - | 9 | 11 | 341 | 5 | 0 | - | 357 | 4 | 412 | 4 | 0 | - | 420 | 794 |
| % Cars & Light Goods | 100.0 | - | 100.0 | - | - | 100.0 | 100.0 | - | 100.0 | - | - | 100.0 | 91.7 | 89.5 | 100.0 | - | - | 89.7 | 100.0 | 94.3 | 100.0 | - | - | 94.4 | 92.3 |
| Buses | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | - | 0 | 1 | 8 | 0 | 0 | - | 9 | 0 | 2 | 0 | 0 | - | 2 | 11 |
| % Buses | 0.0 | - | 0.0 | - | - | 0.0 | 0.0 | - | 0.0 | - | - | 0.0 | 8.3 | 2.1 | 0.0 | - | - | 2.3 | 0.0 | 0.5 | 0.0 | - | - | 0.4 | 1.3 |
| Single-Unit Trucks | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | - | 0 | 0 | 16 | 0 | 0 | - | 16 | 0 | 11 | 0 | 0 | - | 11 | 27 |
| % Single-Unit Trucks | 0.0 | - | 0.0 | - | - | 0.0 | 0.0 | - | 0.0 | - | - | 0.0 | 0.0 | 4.2 | 0.0 | - | - | 4.0 | 0.0 | 2.5 | 0.0 | - | - | 2.5 | 3.1 |
| Articulated Trucks | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | - | 0 | 0 | 16 | 0 | 0 | - | 16 | 0 | 11 | 0 | 0 | - | 11 | 27 |
| % Articulated Trucks | 0.0 | - | 0.0 | - | - | 0.0 | 0.0 | - | 0.0 | - | - | 0.0 | 0.0 | 4.2 | 0.0 | - | - | 4.0 | 0.0 | 2.5 | 0.0 | - | - | 2.5 | 3.1 |
| Bicycles on Road | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | - | 0 | 0 |
| % Bicycles on Road | 0.0 | - | 0.0 | - | - | 0.0 | 0.0 | - | 0.0 | - | - | 0.0 | 0.0 | 0.0 | 0.0 | - | - | 0.0 | 0.0 | 0.0 | 0.0 | - | - | 0.0 | 0.0 |
| Bicycles on Crosswalk | - | - | - | - | 0 | - | - | - | - | - | 0 | - | - | - | - | - | 0 | - | - | - | - | - | 0 | - | - |
| % Bicycles on Crosswalk | - | - | - | - | 0.0 | - | - | - | - | - | 0.0 | - | - | - | - | - | - | - | - | - | - | - | 0.0 | - | - |
| Pedestrians | - | - | - | - | 2 | - | - | - | - | - | 6 | - | - | - | - | - | 0 | - | - | - | - | - | 1 | - | - |
| % Pedestrians | - | - | - | - | 100.0 | - | - | - | - | - | 100.0 | - | - | - | - | - | - | - | - | - | - | - | 100.0 | - | - |

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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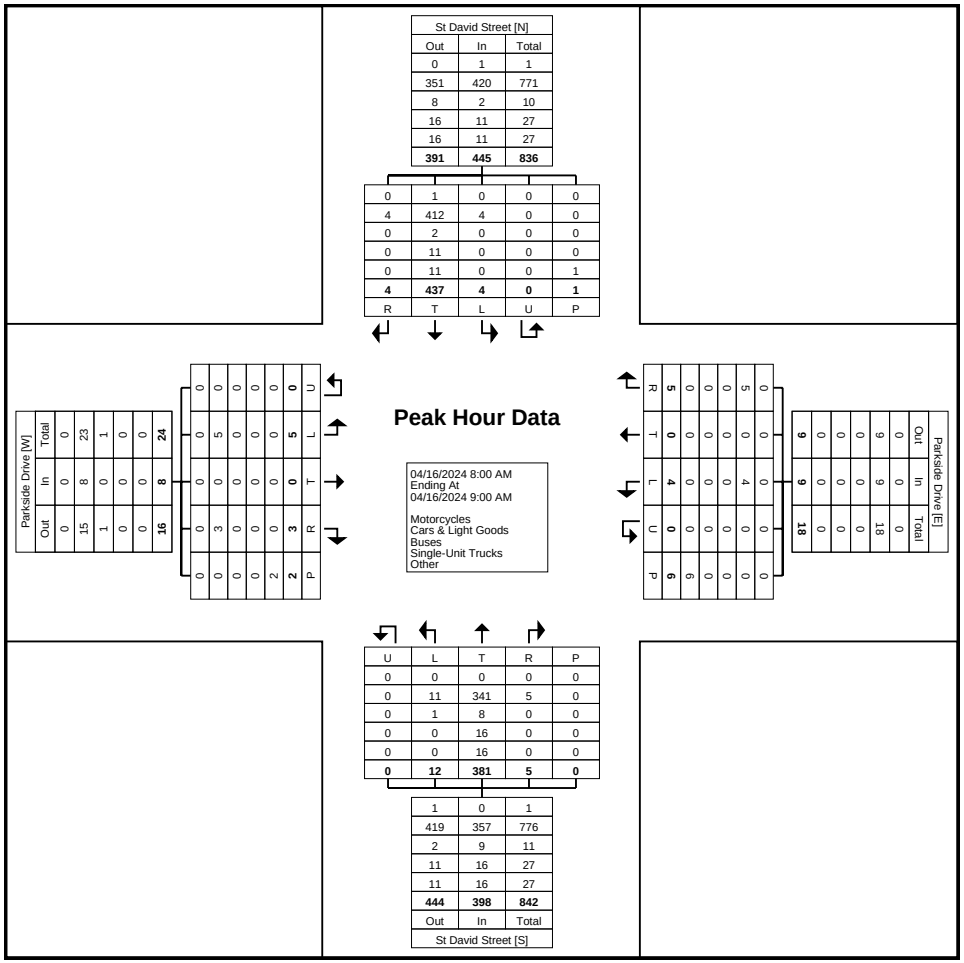
519-896-3163 cbowness@ptsl.com

Count Name: Parkside Drive & St. David Street
Site Code: 240158
Start Date: 04/16/2024


Turning Movement Peak Hour Data Plot (8:00 AM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada  N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Parkside Drive & St. David Street
Site Code: 240158
Start Date: 04/16/2024


# Turning Movement Peak Hour Data (12:00 PM)

| Start Time | Parkside Drive Eastbound | | | | | | Parkside Drive Westbound | | | | | | St David Street Northbound | | | | | | St David Street Southbound | | | | | | Int. Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Left | Thru | Right | U-Turn | Peds | App. Total | Left | Thru | Right | U-Turn | Peds | App. Total | Left | Thru | Right | U-Turn | Peds | App. Total | Left | Thru | Right | U-Turn | Peds | App. Total | |
| 12:00 PM | 2 | 0 | 10 | 0 | 3 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 128 | 2 | 0 | 0 | 132 | 2 | 133 | 2 | 0 | 0 | 137 | 281 |
| 12:15 PM | 4 | 0 | 3 | 0 | 2 | 7 | 4 | 0 | 0 | 0 | 1 | 4 | 3 | 116 | 2 | 0 | 0 | 121 | 3 | 127 | 0 | 0 | 0 | 130 | 262 |
| 12:30 PM | 0 | 0 | 1 | 0 | 1 | 1 | 2 | 0 | 2 | 0 | 2 | 4 | 10 | 94 | 3 | 0 | 0 | 107 | 2 | 145 | 2 | 0 | 0 | 149 | 261 |
| 12:45 PM | 3 | 0 | 9 | 0 | 0 | 12 | 1 | 0 | 0 | 0 | 2 | 1 | 8 | 118 | 6 | 0 | 0 | 132 | 0 | 122 | 3 | 0 | 0 | 125 | 270 |
| Total | 9 | 0 | 23 | 0 | 6 | 32 | 7 | 0 | 2 | 0 | 5 | 9 | 23 | 456 | 13 | 0 | 0 | 492 | 7 | 527 | 7 | 0 | 0 | 541 | 1074 |
| Approach % | 28.1 | 0.0 | 71.9 | 0.0 | - | - | 77.8 | 0.0 | 22.2 | 0.0 | - | - | 4.7 | 92.7 | 2.6 | 0.0 | - | - | 1.3 | 97.4 | 1.3 | 0.0 | - | - | - |
| Total % | 0.8 | 0.0 | 2.1 | 0.0 | - | 3.0 | 0.7 | 0.0 | 0.2 | 0.0 | - | 0.8 | 2.1 | 42.5 | 1.2 | 0.0 | - | 45.8 | 0.7 | 49.1 | 0.7 | 0.0 | - | 50.4 | - |
| PHF | 0.563 | 0.000 | 0.575 | 0.000 | - | 0.667 | 0.438 | 0.000 | 0.250 | 0.000 | - | 0.563 | 0.575 | 0.891 | 0.542 | 0.000 | - | 0.932 | 0.583 | 0.909 | 0.583 | 0.000 | - | 0.908 | 0.956 |
| Motorcycles | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | - | 0 | 0 | 6 | 0 | 0 | - | 6 | 0 | 0 | 0 | 0 | - | 0 | 6 |
| % Motorcycles | 0.0 | - | 0.0 | - | - | 0.0 | 0.0 | - | 0.0 | - | - | 0.0 | 0.0 | 1.3 | 0.0 | - | - | 1.2 | 0.0 | 0.0 | 0.0 | - | - | 0.0 | 0.6 |
| Cars & Light Goods | 9 | 0 | 23 | 0 | - | 32 | 7 | 0 | 2 | 0 | - | 9 | 23 | 418 | 13 | 0 | - | 454 | 6 | 502 | 7 | 0 | - | 515 | 1010 |
| % Cars & Light Goods | 100.0 | - | 100.0 | - | - | 100.0 | 100.0 | - | 100.0 | - | - | 100.0 | 100.0 | 91.7 | 100.0 | - | - | 92.3 | 85.7 | 95.3 | 100.0 | - | - | 95.2 | 94.0 |
| Buses | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | - | 0 | 0 | 1 | 0 | 0 | - | 1 | 0 | 1 | 0 | 0 | - | 1 | 2 |
| % Buses | 0.0 | - | 0.0 | - | - | 0.0 | 0.0 | - | 0.0 | - | - | 0.0 | 0.0 | 0.2 | 0.0 | - | - | 0.2 | 0.0 | 0.2 | 0.0 | - | - | 0.2 | 0.2 |
| Single-Unit Trucks | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | - | 0 | 0 | 17 | 0 | 0 | - | 17 | 1 | 10 | 0 | 0 | - | 11 | 28 |
| % Single-Unit Trucks | 0.0 | - | 0.0 | - | - | 0.0 | 0.0 | - | 0.0 | - | - | 0.0 | 0.0 | 3.7 | 0.0 | - | - | 3.5 | 14.3 | 1.9 | 0.0 | - | - | 2.0 | 2.6 |
| Articulated Trucks | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | - | 0 | 0 | 13 | 0 | 0 | - | 13 | 0 | 14 | 0 | 0 | - | 14 | 27 |
| % Articulated Trucks | 0.0 | - | 0.0 | - | - | 0.0 | 0.0 | - | 0.0 | - | - | 0.0 | 0.0 | 2.9 | 0.0 | - | - | 2.6 | 0.0 | 2.7 | 0.0 | - | - | 2.6 | 2.5 |
| Bicycles on Road | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | - | 0 | 0 | 1 | 0 | 0 | - | 1 | 0 | 0 | 0 | 0 | - | 0 | 1 |
| % Bicycles on Road | 0.0 | - | 0.0 | - | - | 0.0 | 0.0 | - | 0.0 | - | - | 0.0 | 0.0 | 0.2 | 0.0 | - | - | 0.2 | 0.0 | 0.0 | 0.0 | - | - | 0.0 | 0.1 |
| Bicycles on Crosswalk | - | - | - | - | 0 | - | - | - | - | - | 1 | - | - | - | - | - | 0 | - | - | - | - | - | 0 | - | - |
| % Bicycles on Crosswalk | - | - | - | - | 0.0 | - | - | - | - | - | 20.0 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Pedestrians | - | - | - | - | 6 | - | - | - | - | - | 4 | - | - | - | - | - | 0 | - | - | - | - | - | 0 | - | - |
| % Pedestrians | - | - | - | - | 100.0 | - | - | - | - | - | 80.0 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

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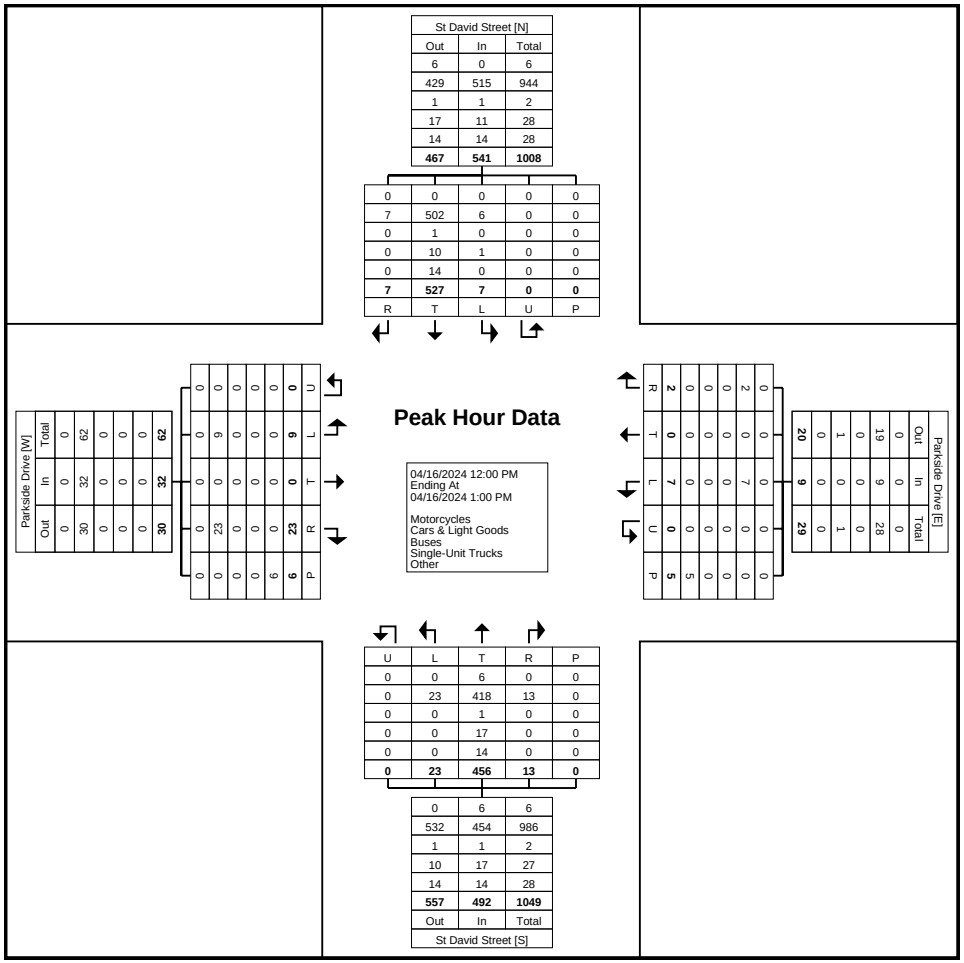
Start Date: 04/16/2024


Turning Movement Peak Hour Data Plot (12:00 PM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
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Count Name: Parkside Drive & St. David Street
Site Code: 240158
Start Date: 04/16/2024

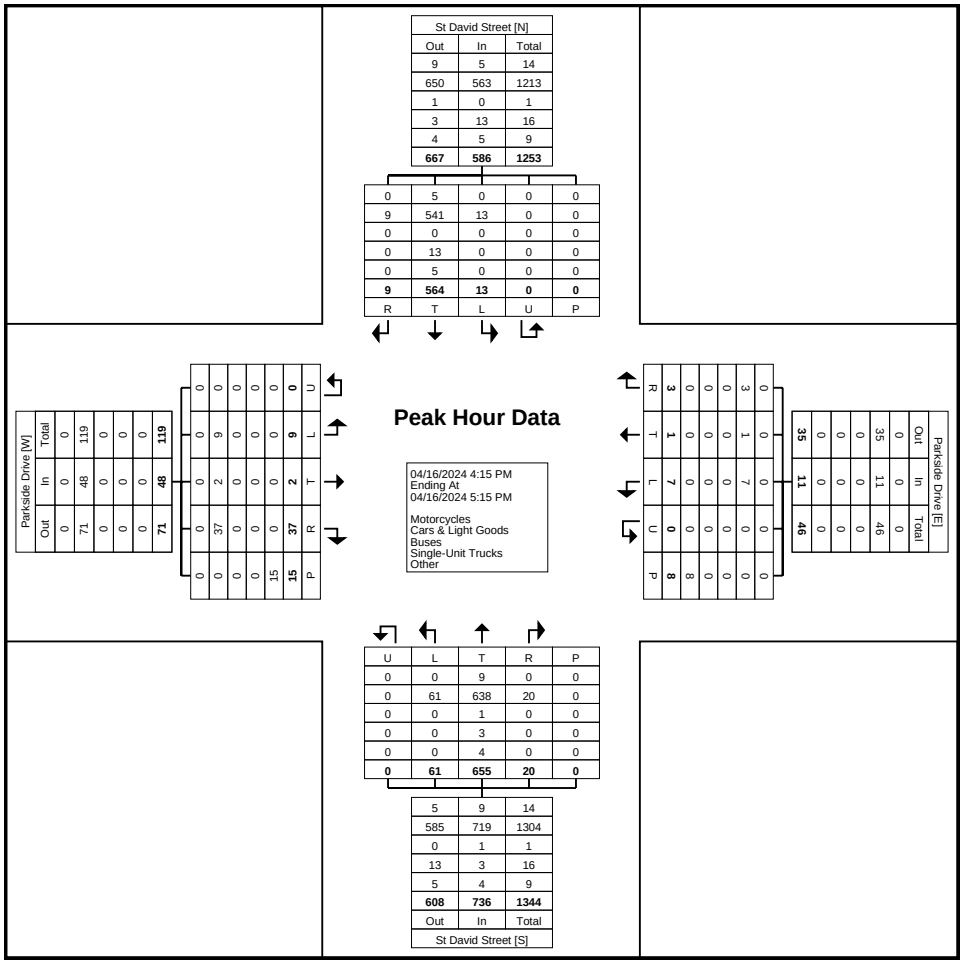

# Turning Movement Peak Hour Data (4:15 PM)

| Start Time | Parkside Drive Eastbound | | | | | | Parkside Drive Westbound | | | | | | St David Street Northbound | | | | | | St David Street Southbound | | | | | | Int. Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Left | Thru | Right | U-Turn | Peds | App. Total | Left | Thru | Right | U-Turn | Peds | App. Total | Left | Thru | Right | U-Turn | Peds | App. Total | Left | Thru | Right | U-Turn | Peds | App. Total | |
| 4:15 PM | 0 | 0 | 9 | 0 | 5 | 9 | 1 | 1 | 1 | 0 | 1 | 3 | 11 | 159 | 3 | 0 | 0 | 173 | 5 | 141 | 4 | 0 | 0 | 150 | 335 |
| 4:30 PM | 3 | 2 | 5 | 0 | 5 | 10 | 2 | 0 | 0 | 0 | 2 | 2 | 16 | 156 | 4 | 0 | 0 | 176 | 2 | 126 | 2 | 0 | 0 | 130 | 318 |
| 4:45 PM | 3 | 0 | 13 | 0 | 2 | 16 | 4 | 0 | 2 | 0 | 2 | 6 | 16 | 156 | 8 | 0 | 0 | 180 | 4 | 130 | 2 | 0 | 0 | 136 | 338 |
| 5:00 PM | 3 | 0 | 10 | 0 | 3 | 13 | 0 | 0 | 0 | 0 | 3 | 0 | 18 | 184 | 5 | 0 | 0 | 207 | 2 | 167 | 1 | 0 | 0 | 170 | 390 |
| Total | 9 | 2 | 37 | 0 | 15 | 48 | 7 | 1 | 3 | 0 | 8 | 11 | 61 | 655 | 20 | 0 | 0 | 736 | 13 | 564 | 9 | 0 | 0 | 586 | 1381 |
| Approach % | 18.8 | 4.2 | 77.1 | 0.0 | - | - | 63.6 | 9.1 | 27.3 | 0.0 | - | - | 8.3 | 89.0 | 2.7 | 0.0 | - | - | 2.2 | 96.2 | 1.5 | 0.0 | - | - | - |
| Total % | 0.7 | 0.1 | 2.7 | 0.0 | - | 3.5 | 0.5 | 0.1 | 0.2 | 0.0 | - | 0.8 | 4.4 | 47.4 | 1.4 | 0.0 | - | 53.3 | 0.9 | 40.8 | 0.7 | 0.0 | - | 42.4 | - |
| PHF | 0.750 | 0.250 | 0.712 | 0.000 | - | 0.750 | 0.438 | 0.250 | 0.375 | 0.000 | - | 0.458 | 0.847 | 0.890 | 0.625 | 0.000 | - | 0.889 | 0.650 | 0.844 | 0.563 | 0.000 | - | 0.862 | 0.885 |
| Motorcycles | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | - | 0 | 0 | 9 | 0 | 0 | - | 9 | 0 | 5 | 0 | 0 | - | 5 | 14 |
| % Motorcycles | 0.0 | 0.0 | 0.0 | - | - | 0.0 | 0.0 | 0.0 | 0.0 | - | - | 0.0 | 0.0 | 1.4 | 0.0 | - | - | 1.2 | 0.0 | 0.9 | 0.0 | - | - | 0.9 | 1.0 |
| Cars & Light Goods | 9 | 2 | 37 | 0 | - | 48 | 7 | 1 | 3 | 0 | - | 11 | 61 | 638 | 20 | 0 | - | 719 | 13 | 541 | 9 | 0 | - | 563 | 1341 |
| % Cars & Light Goods | 100.0 | 100.0 | 100.0 | - | - | 100.0 | 100.0 | 100.0 | 100.0 | - | - | 100.0 | 100.0 | 97.4 | 100.0 | - | - | 97.7 | 100.0 | 95.9 | 100.0 | - | - | 96.1 | 97.1 |
| Buses | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | - | 0 | 0 | 1 | 0 | 0 | - | 1 | 0 | 0 | 0 | 0 | - | 0 | 1 |
| % Buses | 0.0 | 0.0 | 0.0 | - | - | 0.0 | 0.0 | 0.0 | 0.0 | - | - | 0.0 | 0.0 | 0.2 | 0.0 | - | - | 0.1 | 0.0 | 0.0 | 0.0 | - | - | 0.0 | 0.1 |
| Single-Unit Trucks | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | - | 0 | 0 | 3 | 0 | 0 | - | 3 | 0 | 13 | 0 | 0 | - | 13 | 16 |
| % Single-Unit Trucks | 0.0 | 0.0 | 0.0 | - | - | 0.0 | 0.0 | 0.0 | 0.0 | - | - | 0.0 | 0.0 | 0.5 | 0.0 | - | - | 0.4 | 0.0 | 2.3 | 0.0 | - | - | 2.2 | 1.2 |
| Articulated Trucks | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | - | 0 | 0 | 4 | 0 | 0 | - | 4 | 0 | 4 | 0 | 0 | - | 4 | 8 |
| % Articulated Trucks | 0.0 | 0.0 | 0.0 | - | - | 0.0 | 0.0 | 0.0 | 0.0 | - | - | 0.0 | 0.0 | 0.6 | 0.0 | - | - | 0.5 | 0.0 | 0.7 | 0.0 | - | - | 0.7 | 0.6 |
| Bicycles on Road | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | - | 0 | 0 | 1 | 0 | 0 | - | 1 | 1 |
| % Bicycles on Road | 0.0 | 0.0 | 0.0 | - | - | 0.0 | 0.0 | 0.0 | 0.0 | - | - | 0.0 | 0.0 | 0.0 | 0.0 | - | - | 0.0 | 0.0 | 0.2 | 0.0 | - | - | 0.2 | 0.1 |
| Bicycles on Crosswalk | - | - | - | - | 1 | - | - | - | - | - | 0 | - | - | - | - | - | 0 | - | - | - | - | - | 0 | - | - |
| % Bicycles on Crosswalk | - | - | - | - | 6.7 | - | - | - | - | - | 0.0 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Pedestrians | - | - | - | - | 14 | - | - | - | - | - | 8 | - | - | - | - | - | 0 | - | - | - | - | - | 0 | - | - |
| % Pedestrians | - | - | - | - | 93.3 | - | - | - | - | - | 100.0 | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada  N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Parkside Drive & St. David Street
Site Code: 240158
Start Date: 04/16/2024


Turning Movement Peak Hour Data Plot (4:15 PM)

# Appendix C

## Base Year Traffic Synchro Reports

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 16 | 5 | 5 | 60 | 6 | 57 | 25 | 269 | 97 | 83 | 380 | 36 |
| Future Volume (vph) | 16 | 5 | 5 | 60 | 6 | 57 | 25 | 269 | 97 | 83 | 380 | 36 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (m) | 25.0 | | 0.0 | 25.0 | | 0.0 | 20.0 | | 0.0 | 20.0 | | 30.0 |
| Storage Lanes | 1 | | 0 | 1 | | 0 | 1 | | 0 | 1 | | 1 |
| Taper Length (m) | 25.0 | | | 25.0 | | | 20.0 | | | 20.0 | | |
| 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 |
| Ped Bike Factor | 1.00 | 0.97 | | 0.95 | 0.98 | | 1.00 | 0.99 | | 1.00 | | 0.98 |
| Frt | | 0.925 | | | 0.865 | | | 0.960 | | | | 0.850 |
| Flt Protected | 0.950 | | | 0.950 | | | 0.950 | | | 0.950 | | |
| Satd. Flow (prot) | 1805 | 1697 | 0 | 1770 | 1464 | 0 | 1736 | 1599 | 0 | 1671 | 1776 | 1615 |
| Flt Permitted | 0.712 | | | 0.751 | | | 0.453 | | | 0.528 | | |
| Satd. Flow (perm) | 1348 | 1697 | 0 | 1330 | 1464 | 0 | 826 | 1599 | 0 | 927 | 1776 | 1577 |
| Right Turn on Red | | | Yes | | | Yes | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | 5 | | | 62 | | | 33 | | | | 87 |
| Link Speed (k/h) | | 50 | | | 50 | | | 50 | | | 50 | |
| Link Distance (m) | | 53.1 | | | 392.2 | | | 191.3 | | | 343.1 | |
| Travel Time (s) | | 3.8 | | | 28.2 | | | 13.8 | | | 24.7 | |
| Confl. Peds. (#/hr) | 2 | | 26 | 26 | | 2 | 3 | | 3 | 3 | | 3 |
| 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 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 2% | 0% | 11% | 4% | 16% | 6% | 8% | 7% | 0% |
| Adj. Flow (vph) | 17 | 5 | 5 | 65 | 7 | 62 | 27 | 292 | 105 | 90 | 413 | 39 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 17 | 10 | 0 | 65 | 69 | 0 | 27 | 397 | 0 | 90 | 413 | 39 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(m) | | 3.6 | | | 3.6 | | | 3.6 | | | 3.6 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 4.8 | | | 4.8 | | | 4.8 | | | 4.8 | |
| Two way Left Turn Lane | | | | | | | | Yes | | | Yes | |
| Headway 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 |
| Turning Speed (k/h) | 25 | | 15 | 25 | | 15 | 25 | | 15 | 25 | | 15 |
| Number of Detectors | 1 | 2 | | 1 | 2 | | 1 | 2 | | 1 | 2 | 1 |
| Detector Template | Left | Thru | | Left | Thru | | Left | Thru | | Left | Thru | Right |
| Leading Detector (m) | 2.0 | 10.0 | | 2.0 | 10.0 | | 2.0 | 10.0 | | 2.0 | 10.0 | 2.0 |
| Trailing Detector (m) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 |
| Detector 1 Position(m) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 |
| Detector 1 Size(m) | 2.0 | 0.6 | | 2.0 | 0.6 | | 2.0 | 0.6 | | 2.0 | 0.6 | 2.0 |
| Detector 1 Type | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | Cl+Ex |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 |
| Detector 1 Queue (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 |
| Detector 1 Delay (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 |
| Detector 2 Position(m) | | 9.4 | | | 9.4 | | | 9.4 | | | 9.4 | |
| Detector 2 Size(m) | | 0.6 | | | 0.6 | | | 0.6 | | | 0.6 | |
| Detector 2 Type | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |





| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Turn Type | Perm | NA | | Perm | NA | | pm+pt | NA | | Perm | NA | Perm |
| Protected Phases | | 4 | | | 8 | | 5 | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | 6 |
| Detector Phase | 4 | 4 | | 8 | 8 | | 5 | 2 | | 6 | 6 | 6 |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 10.0 | 10.0 | | 10.0 | 10.0 | | 7.0 | 35.0 | | 35.0 | 35.0 | 35.0 |
| Minimum Split (s) | 32.0 | 32.0 | | 32.0 | 32.0 | | 12.0 | 42.0 | | 44.0 | 44.0 | 44.0 |
| Total Split (s) | 32.0 | 32.0 | | 32.0 | 32.0 | | 12.0 | 56.0 | | 44.0 | 44.0 | 44.0 |
| Total Split (%) | 36.4% | 36.4% | | 36.4% | 36.4% | | 13.6% | 63.6% | | 50.0% | 50.0% | 50.0% |
| Maximum Green (s) | 26.0 | 26.0 | | 26.0 | 26.0 | | 8.0 | 49.0 | | 37.0 | 37.0 | 37.0 |
| Yellow Time (s) | 3.7 | 3.7 | | 3.7 | 3.7 | | 3.0 | 3.8 | | 3.8 | 3.8 | 3.8 |
| All-Red Time (s) | 2.3 | 2.3 | | 2.3 | 2.3 | | 1.0 | 3.2 | | 3.2 | 3.2 | 3.2 |
| Lost Time Adjust (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 6.0 | 6.0 | | 6.0 | 6.0 | | 4.0 | 7.0 | | 7.0 | 7.0 | 7.0 |
| Lead/Lag | | | | | | | Lead | | | Lag | Lag | Lag |
| Lead-Lag Optimize? | | | | | | | Yes | | | Yes | Yes | Yes |
| Vehicle Extension (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | 5.0 |
| Recall Mode | None | None | | None | None | | None | Min | | Min | Min | Min |
| Walk Time (s) | 15.0 | 15.0 | | 15.0 | 15.0 | | | 26.0 | | 26.0 | 26.0 | 26.0 |
| Flash Dont Walk (s) | 8.0 | 8.0 | | 8.0 | 8.0 | | | 9.0 | | 9.0 | 9.0 | 9.0 |
| Pedestrian Calls (#/hr) | 0 | 0 | | 0 | 0 | | | 0 | | 0 | 0 | 0 |
| Act Effct Green (s) | 11.3 | 11.3 | | 11.3 | 11.3 | | 46.1 | 44.6 | | 40.4 | 40.4 | 40.4 |
| Actuated g/C Ratio | 0.18 | 0.18 | | 0.18 | 0.18 | | 0.72 | 0.70 | | 0.63 | 0.63 | 0.63 |
| v/c Ratio | 0.07 | 0.03 | | 0.28 | 0.22 | | 0.04 | 0.35 | | 0.15 | 0.37 | 0.04 |
| Control Delay | 25.1 | 19.3 | | 28.0 | 10.9 | | 3.9 | 6.3 | | 10.4 | 10.8 | 0.5 |
| Queue Delay | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 |
| Total Delay | 25.1 | 19.3 | | 28.0 | 10.9 | | 3.9 | 6.3 | | 10.4 | 10.8 | 0.5 |
| LOS | C | B | | C | B | | A | A | | B | B | A |
| Approach Delay | | 22.9 | | | 19.2 | | | 6.1 | | | 10.0 | |
| Approach LOS | | C | | | B | | | A | | | A | |

| Intersection Summary | | |
|---|---|---|
| Area Type: | Other | |
| Cycle Length: 88 | | |
| Actuated Cycle Length: 63.9 | | |
| Natural Cycle: 90 | | |
| Control Type: Semi Act-Uncoord | | |
| Maximum v/c Ratio: 0.37 | | |
| Intersection Signal Delay: 9.9 | | Intersection LOS: A |
| Intersection Capacity Utilization 89.6% | | ICU Level of Service E |
| Analysis Period (min) 15 | | |

Splits and Phases: 101: St. David Street North & Strathallan Street

| Lane Group | EBL | EBT | WBL | WBT | NBL | NBT | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|
| Lane Group Flow (vph) | 17 | 10 | 65 | 69 | 27 | 397 | 90 | 413 | 39 |
| v/c Ratio | 0.07 | 0.03 | 0.28 | 0.22 | 0.04 | 0.35 | 0.15 | 0.37 | 0.04 |
| Control Delay | 25.1 | 19.3 | 28.0 | 10.9 | 3.9 | 6.3 | 10.4 | 10.8 | 0.5 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 25.1 | 19.3 | 28.0 | 10.9 | 3.9 | 6.3 | 10.4 | 10.8 | 0.5 |
| Queue Length 50th (m) | 1.6 | 0.5 | 6.4 | 0.7 | 0.9 | 17.8 | 3.8 | 20.3 | 0.0 |
| Queue Length 95th (m) | 7.3 | 4.4 | 19.0 | 11.0 | 3.3 | 38.5 | 16.4 | 64.4 | 0.9 |
| Internal Link Dist (m) | | 29.1 | | 368.2 | | 167.3 | | 319.1 | |
| Turn Bay Length (m) | 25.0 | | 25.0 | | 20.0 | | 20.0 | | 30.0 |
| Base Capacity (vph) | 556 | 702 | 548 | 640 | 710 | 1294 | 609 | 1167 | 1066 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.03 | 0.01 | 0.12 | 0.11 | 0.04 | 0.31 | 0.15 | 0.35 | 0.04 |

Intersection Summary





| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 16 | 5 | 5 | 60 | 6 | 57 | 25 | 269 | 97 | 83 | 380 | 36 |
| Future Volume (veh/h) | 16 | 5 | 5 | 60 | 6 | 57 | 25 | 269 | 97 | 83 | 380 | 36 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 0.95 | | 0.94 | 0.94 | | 0.94 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1900 | 1900 | 1900 | 1870 | 1900 | 1737 | 1841 | 1663 | 1811 | 1781 | 1796 | 1900 |
| Adj Flow Rate, veh/h | 17 | 5 | 5 | 65 | 7 | 62 | 27 | 292 | 105 | 90 | 413 | 39 |
| 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 |
| Percent Heavy Veh, % | 0 | 0 | 0 | 2 | 0 | 11 | 4 | 16 | 6 | 8 | 7 | 0 |
| Cap, veh/h | 331 | 180 | 180 | 380 | 34 | 297 | 500 | 699 | 251 | 540 | 900 | 805 |
| Arrive On Green | 0.21 | 0.21 | 0.21 | 0.21 | 0.21 | 0.21 | 0.04 | 0.60 | 0.60 | 0.50 | 0.50 | 0.50 |
| Sat Flow, veh/h | 1285 | 842 | 842 | 1322 | 157 | 1388 | 1753 | 1167 | 420 | 939 | 1796 | 1605 |
| Grp Volume(v), veh/h | 17 | 0 | 10 | 65 | 0 | 69 | 27 | 0 | 397 | 90 | 413 | 39 |
| Grp Sat Flow(s),veh/h/ln | 1285 | 0 | 1684 | 1322 | 0 | 1544 | 1753 | 0 | 1586 | 939 | 1796 | 1605 |
| Q Serve(g_s), s | 0.8 | 0.0 | 0.3 | 2.9 | 0.0 | 2.6 | 0.5 | 0.0 | 9.3 | 4.0 | 10.4 | 0.9 |
| Cycle Q Clear(g_c), s | 3.3 | 0.0 | 0.3 | 3.2 | 0.0 | 2.6 | 0.5 | 0.0 | 9.3 | 6.4 | 10.4 | 0.9 |
| Prop In Lane | 1.00 | | 0.50 | 1.00 | | 0.90 | 1.00 | | 0.26 | 1.00 | | 1.00 |
| Lane Grp Cap(c), veh/h | 331 | 0 | 361 | 380 | 0 | 331 | 500 | 0 | 951 | 540 | 900 | 805 |
| V/C Ratio(X) | 0.05 | 0.00 | 0.03 | 0.17 | 0.00 | 0.21 | 0.05 | 0.00 | 0.42 | 0.17 | 0.46 | 0.05 |
| Avail Cap(c_a), veh/h | 534 | 0 | 627 | 589 | 0 | 575 | 629 | 0 | 1113 | 567 | 952 | 851 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 23.9 | 0.0 | 21.7 | 22.9 | 0.0 | 22.6 | 7.7 | 0.0 | 7.5 | 11.0 | 11.3 | 8.9 |
| Incr Delay (d2), s/veh | 0.1 | 0.0 | 0.1 | 0.5 | 0.0 | 0.7 | 0.1 | 0.0 | 0.6 | 0.3 | 0.8 | 0.1 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 0.2 | 0.0 | 0.1 | 0.6 | 0.0 | 0.6 | 0.0 | 0.0 | 0.2 | 0.3 | 1.1 | 0.1 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 24.1 | 0.0 | 21.7 | 23.4 | 0.0 | 23.2 | 7.8 | 0.0 | 8.1 | 11.3 | 12.1 | 9.0 |
| LnGrp LOS | C | A | C | C | A | C | A | A | A | B | B | A |
| Approach Vol, veh/h | | 27 | | | 134 | | | 424 | | | 542 | |
| Approach Delay, s/veh | | 23.2 | | | 23.3 | | | 8.1 | | | 11.7 | |
| Approach LOS | | C | | | C | | | A | | | B | |

| Timer - Assigned Phs | | 2 | | 4 | 5 | 6 | | 8 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Phs Duration (G+Y+Rc), s | | 48.9 | | 21.0 | 6.9 | 42.0 | | 21.0 | | | | |
| Change Period (Y+Rc), s | | 7.0 | | 6.0 | 4.0 | 7.0 | | 6.0 | | | | |
| Max Green Setting (Gmax), s | | 49.0 | | 26.0 | 8.0 | 37.0 | | 26.0 | | | | |
| Max Q Clear Time (g_c+I1), s | | 11.3 | | 5.3 | 2.5 | 12.4 | | 5.2 | | | | |
| Green Ext Time (p_c), s | | 6.6 | | 0.1 | 0.0 | 7.3 | | 1.2 | | | | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 6th Ctrl Delay | | 12.0 | |
| HCM 6th LOS | | B | |

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 5 | 0 | 3 | 4 | 0 | 5 | 12 | 381 | 5 | 4 | 437 | 4 |
| Future Volume (vph) | 5 | 0 | 3 | 4 | 0 | 5 | 12 | 381 | 5 | 4 | 437 | 4 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (m) | 0.0 | | 0.0 | 0.0 | | 0.0 | 15.0 | | 0.0 | 15.0 | | 0.0 |
| Storage Lanes | 0 | | 0 | 0 | | 0 | 1 | | 0 | 1 | | 0 |
| Taper Length (m) | 7.5 | | | 7.5 | | | 5.0 | | | 5.0 | | |
| 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 |
| Ped Bike Factor | | | | | | | | | | | | |
| Frt | | 0.949 | | | 0.925 | | | 0.998 | | | 0.999 | |
| Flt Protected | | 0.970 | | | 0.978 | | 0.950 | | | 0.950 | | |
| Satd. Flow (prot) | 0 | 1749 | 0 | 0 | 1719 | 0 | 1671 | 1726 | 0 | 1805 | 1808 | 0 |
| Flt Permitted | | 0.970 | | | 0.978 | | 0.950 | | | 0.950 | | |
| Satd. Flow (perm) | 0 | 1749 | 0 | 0 | 1719 | 0 | 1671 | 1726 | 0 | 1805 | 1808 | 0 |
| Link Speed (k/h) | | 40 | | | 40 | | | 50 | | | 50 | |
| Link Distance (m) | | 166.9 | | | 266.9 | | | 236.2 | | | 191.3 | |
| Travel Time (s) | | 15.0 | | | 24.0 | | | 17.0 | | | 13.8 | |
| Confl. Peds. (#/hr) | 1 | | | | | 1 | 2 | | 6 | 6 | | 2 |
| 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 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 0% | 0% | 8% | 10% | 0% | 0% | 5% | 0% |
| Adj. Flow (vph) | 5 | 0 | 3 | 4 | 0 | 5 | 13 | 414 | 5 | 4 | 475 | 4 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 8 | 0 | 0 | 9 | 0 | 13 | 419 | 0 | 4 | 479 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(m) | | 0.0 | | | 0.0 | | | 3.6 | | | 3.6 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 4.8 | | | 4.8 | | | 4.8 | | | 4.8 | |
| Two way Left Turn Lane | | | | | | | | Yes | | | Yes | |
| Headway 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 |
| Turning Speed (k/h) | 25 | | 15 | 25 | | 15 | 25 | | 15 | 25 | | 15 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Control Type: Unsignalized | | | |
| Intersection Capacity Utilization | 33.6% | ICU Level of Service A | |
| Analysis Period (min) | 15 | | |





| Intersection | |
|---|---|
| Int Delay, s/veh | 0.5 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 5 | 0 | 3 | 4 | 0 | 5 | 12 | 381 | 5 | 4 | 437 | 4 |
| Future Vol, veh/h | 5 | 0 | 3 | 4 | 0 | 5 | 12 | 381 | 5 | 4 | 437 | 4 |
| Conflicting Peds, #/hr | 1 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 6 | 6 | 0 | 2 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | 15 | - | - | 15 | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 10 | 0 | 0 | 5 | 0 |
| Mvmt Flow | 5 | 0 | 3 | 4 | 0 | 5 | 13 | 414 | 5 | 4 | 475 | 4 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 933 | 938 | 479 | 936 | 938 | 424 | 481 | 0 | 0 | 425 | 0 | 0 |
| Stage 1 | 487 | 487 | - | 449 | 449 | - | - | - | - | - | - | - |
| Stage 2 | 446 | 451 | - | 487 | 489 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.18 | - | - | 4.1 | - | - |
| Critical Hdwy Stg 1 | 6.1 | 5.5 | - | 6.1 | 5.5 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.1 | 5.5 | - | 6.1 | 5.5 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 4 | 3.3 | 3.5 | 4 | 3.3 | 2.272 | - | - | 2.2 | - | - |
| Pot Cap-1 Maneuver | 248 | 266 | 591 | 247 | 266 | 634 | 1051 | - | - | 1145 | - | - |
| Stage 1 | 566 | 554 | - | 593 | 576 | - | - | - | - | - | - | - |
| Stage 2 | 595 | 574 | - | 566 | 553 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 242 | 260 | 590 | 241 | 260 | 630 | 1049 | - | - | 1139 | - | - |
| Mov Cap-2 Maneuver | 242 | 260 | - | 241 | 260 | - | - | - | - | - | - | - |
| Stage 1 | 558 | 551 | - | 583 | 566 | - | - | - | - | - | - | - |
| Stage 2 | 582 | 564 | - | 561 | 550 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 16.9 | 15.1 | 0.3 | 0.1 |
| HCM LOS | C | C | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 1049 | - | - | 311 | 367 | 1139 | - | - |
| HCM Lane V/C Ratio | 0.012 | - | - | 0.028 | 0.027 | 0.004 | - | - |
| HCM Control Delay (s) | 8.5 | - | - | 16.9 | 15.1 | 8.2 | - | - |
| HCM Lane LOS | A | - | - | C | C | A | - | - |
| HCM 95th %tile Q(veh) | 0 | - | - | 0.1 | 0.1 | 0 | - | - |

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 110 | 20 | 31 | 53 | 21 | 39 | 91 | 507 | 69 | 35 | 502 | 72 |
| Future Volume (vph) | 110 | 20 | 31 | 53 | 21 | 39 | 91 | 507 | 69 | 35 | 502 | 72 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (m) | 25.0 | | 0.0 | 25.0 | | 0.0 | 20.0 | | 0.0 | 20.0 | | 30.0 |
| Storage Lanes | 1 | | 0 | 1 | | 0 | 1 | | 0 | 1 | | 1 |
| Taper Length (m) | 25.0 | | | 25.0 | | | 20.0 | | | 20.0 | | |
| 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 |
| Ped Bike Factor | 0.99 | 0.97 | | 0.97 | 0.98 | | 1.00 | 1.00 | | 1.00 | | 0.98 |
| Frt | | 0.909 | | | 0.903 | | | 0.982 | | | | 0.850 |
| Flt Protected | 0.950 | | | 0.950 | | | 0.950 | | | 0.950 | | |
| Satd. Flow (prot) | 1805 | 1669 | 0 | 1719 | 1677 | 0 | 1805 | 1822 | 0 | 1752 | 1845 | 1615 |
| Flt Permitted | 0.715 | | | 0.720 | | | 0.334 | | | 0.427 | | |
| Satd. Flow (perm) | 1340 | 1669 | 0 | 1259 | 1677 | 0 | 634 | 1822 | 0 | 784 | 1845 | 1575 |
| Right Turn on Red | | | Yes | | | Yes | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | 34 | | | 42 | | | 13 | | | | 87 |
| Link Speed (k/h) | | 50 | | | 50 | | | 50 | | | 50 | |
| Link Distance (m) | | 53.1 | | | 392.2 | | | 191.3 | | | 343.1 | |
| Travel Time (s) | | 3.8 | | | 28.2 | | | 13.8 | | | 24.7 | |
| Confl. Peds. (#/hr) | 8 | | 19 | 19 | | 8 | 4 | | 9 | 9 | | 4 |
| 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 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 5% | 0% | 0% | 0% | 2% | 2% | 3% | 3% | 0% |
| Adj. Flow (vph) | 120 | 22 | 34 | 58 | 23 | 42 | 99 | 551 | 75 | 38 | 546 | 78 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 120 | 56 | 0 | 58 | 65 | 0 | 99 | 626 | 0 | 38 | 546 | 78 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(m) | | 3.6 | | | 3.6 | | | 3.6 | | | 3.6 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 4.8 | | | 4.8 | | | 4.8 | | | 4.8 | |
| Two way Left Turn Lane | | | | | | | | Yes | | | Yes | |
| Headway 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 |
| Turning Speed (k/h) | 25 | | 15 | 25 | | 15 | 25 | | 15 | 25 | | 15 |
| Number of Detectors | 1 | 2 | | 1 | 2 | | 1 | 2 | | 1 | 2 | 1 |
| Detector Template | Left | Thru | | Left | Thru | | Left | Thru | | Left | Thru | Right |
| Leading Detector (m) | 2.0 | 10.0 | | 2.0 | 10.0 | | 2.0 | 10.0 | | 2.0 | 10.0 | 2.0 |
| Trailing Detector (m) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 |
| Detector 1 Position(m) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 |
| Detector 1 Size(m) | 2.0 | 0.6 | | 2.0 | 0.6 | | 2.0 | 0.6 | | 2.0 | 0.6 | 2.0 |
| Detector 1 Type | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | Cl+Ex |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 |
| Detector 1 Queue (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 |
| Detector 1 Delay (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 |
| Detector 2 Position(m) | | 9.4 | | | 9.4 | | | 9.4 | | | 9.4 | |
| Detector 2 Size(m) | | 0.6 | | | 0.6 | | | 0.6 | | | 0.6 | |
| Detector 2 Type | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |





| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Turn Type | Perm | NA | | Perm | NA | | pm+pt | NA | | Perm | NA | Perm |
| Protected Phases | | 4 | | | 8 | | 5 | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | 6 |
| Detector Phase | 4 | 4 | | 8 | 8 | | 5 | 2 | | 6 | 6 | 6 |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 10.0 | 10.0 | | 10.0 | 10.0 | | 7.0 | 35.0 | | 35.0 | 35.0 | 35.0 |
| Minimum Split (s) | 32.0 | 32.0 | | 32.0 | 32.0 | | 12.0 | 42.0 | | 44.0 | 44.0 | 44.0 |
| Total Split (s) | 32.0 | 32.0 | | 32.0 | 32.0 | | 12.0 | 56.0 | | 44.0 | 44.0 | 44.0 |
| Total Split (%) | 36.4% | 36.4% | | 36.4% | 36.4% | | 13.6% | 63.6% | | 50.0% | 50.0% | 50.0% |
| Maximum Green (s) | 26.0 | 26.0 | | 26.0 | 26.0 | | 8.0 | 49.0 | | 37.0 | 37.0 | 37.0 |
| Yellow Time (s) | 3.7 | 3.7 | | 3.7 | 3.7 | | 3.0 | 3.8 | | 3.8 | 3.8 | 3.8 |
| All-Red Time (s) | 2.3 | 2.3 | | 2.3 | 2.3 | | 1.0 | 3.2 | | 3.2 | 3.2 | 3.2 |
| Lost Time Adjust (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 6.0 | 6.0 | | 6.0 | 6.0 | | 4.0 | 7.0 | | 7.0 | 7.0 | 7.0 |
| Lead/Lag | | | | | | | Lead | | | Lag | Lag | Lag |
| Lead-Lag Optimize? | | | | | | | Yes | | | Yes | Yes | Yes |
| Vehicle Extension (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | 5.0 |
| Recall Mode | None | None | | None | None | | None | Min | | Min | Min | Min |
| Walk Time (s) | 15.0 | 15.0 | | 15.0 | 15.0 | | | 26.0 | | 26.0 | 26.0 | 26.0 |
| Flash Dont Walk (s) | 8.0 | 8.0 | | 8.0 | 8.0 | | | 9.0 | | 9.0 | 9.0 | 9.0 |
| Pedestrian Calls (#/hr) | 0 | 0 | | 0 | 0 | | | 0 | | 0 | 0 | 0 |
| Act Effct Green (s) | 14.0 | 14.0 | | 14.0 | 14.0 | | 51.8 | 50.6 | | 41.4 | 41.4 | 41.4 |
| Actuated g/C Ratio | 0.19 | 0.19 | | 0.19 | 0.19 | | 0.72 | 0.70 | | 0.58 | 0.58 | 0.58 |
| v/c Ratio | 0.46 | 0.16 | | 0.24 | 0.18 | | 0.17 | 0.49 | | 0.08 | 0.51 | 0.08 |
| Control Delay | 33.0 | 14.5 | | 28.1 | 13.7 | | 5.5 | 9.0 | | 12.7 | 16.4 | 3.0 |
| Queue Delay | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 |
| Total Delay | 33.0 | 14.5 | | 28.1 | 13.7 | | 5.5 | 9.0 | | 12.7 | 16.4 | 3.0 |
| LOS | C | B | | C | B | | A | A | | B | B | A |
| Approach Delay | | 27.1 | | | 20.5 | | | 8.5 | | | 14.6 | |
| Approach LOS | | C | | | C | | | A | | | B | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Cycle Length: 88 | | | |
| Actuated Cycle Length: 71.9 | | | |
| Natural Cycle: 90 | | | |
| Control Type: Semi Act-Uncoord | | | |
| Maximum v/c Ratio: 0.51 | | | |
| Intersection Signal Delay: 13.7 | | Intersection LOS: B | |
| Intersection Capacity Utilization 92.6% | | ICU Level of Service F | |
| Analysis Period (min) 15 | | | |

Splits and Phases: 101: St. David Street North & Strathallan Street

| Lane Group | EBL | EBT | WBL | WBT | NBL | NBT | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|
| Lane Group Flow (vph) | 120 | 56 | 58 | 65 | 99 | 626 | 38 | 546 | 78 |
| v/c Ratio | 0.46 | 0.16 | 0.24 | 0.18 | 0.17 | 0.49 | 0.08 | 0.51 | 0.08 |
| Control Delay | 33.0 | 14.5 | 28.1 | 13.7 | 5.5 | 9.0 | 12.7 | 16.4 | 3.0 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 33.0 | 14.5 | 28.1 | 13.7 | 5.5 | 9.0 | 12.7 | 16.4 | 3.0 |
| Queue Length 50th (m) | 15.8 | 2.7 | 7.3 | 2.8 | 4.1 | 42.6 | 2.9 | 56.2 | 0.0 |
| Queue Length 95th (m) | 32.1 | 11.9 | 17.6 | 12.7 | 10.8 | 84.1 | 9.2 | 101.3 | 6.4 |
| Internal Link Dist (m) | | 29.1 | | 368.2 | | 167.3 | | 319.1 | |
| Turn Bay Length (m) | 25.0 | | 25.0 | | 20.0 | | 20.0 | | 30.0 |
| Base Capacity (vph) | 491 | 633 | 461 | 641 | 589 | 1314 | 464 | 1092 | 968 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.24 | 0.09 | 0.13 | 0.10 | 0.17 | 0.48 | 0.08 | 0.50 | 0.08 |

Intersection Summary





| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 110 | 20 | 31 | 53 | 21 | 39 | 91 | 507 | 69 | 35 | 502 | 72 |
| Future Volume (veh/h) | 110 | 20 | 31 | 53 | 21 | 39 | 91 | 507 | 69 | 35 | 502 | 72 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 0.96 | | 0.95 | 0.96 | | 0.95 | 1.00 | | 0.99 | 1.00 | | 0.99 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1900 | 1900 | 1900 | 1826 | 1900 | 1900 | 1900 | 1870 | 1870 | 1856 | 1856 | 1900 |
| Adj Flow Rate, veh/h | 120 | 22 | 34 | 58 | 23 | 42 | 99 | 551 | 75 | 38 | 546 | 78 |
| 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 |
| Percent Heavy Veh, % | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 2 | 2 | 3 | 3 | 0 |
| Cap, veh/h | 330 | 137 | 212 | 329 | 123 | 224 | 456 | 986 | 134 | 423 | 883 | 759 |
| Arrive On Green | 0.21 | 0.21 | 0.21 | 0.21 | 0.21 | 0.21 | 0.08 | 0.61 | 0.61 | 0.48 | 0.48 | 0.48 |
| Sat Flow, veh/h | 1306 | 653 | 1009 | 1264 | 583 | 1065 | 1810 | 1610 | 219 | 790 | 1856 | 1595 |
| Grp Volume(v), veh/h | 120 | 0 | 56 | 58 | 0 | 65 | 99 | 0 | 626 | 38 | 546 | 78 |
| Grp Sat Flow(s),veh/h/ln | 1306 | 0 | 1662 | 1264 | 0 | 1649 | 1810 | 0 | 1829 | 790 | 1856 | 1595 |
| Q Serve(g_s), s | 6.1 | 0.0 | 2.0 | 2.9 | 0.0 | 2.4 | 1.8 | 0.0 | 14.8 | 2.2 | 16.1 | 2.0 |
| Cycle Q Clear(g_c), s | 8.5 | 0.0 | 2.0 | 4.9 | 0.0 | 2.4 | 1.8 | 0.0 | 14.8 | 6.9 | 16.1 | 2.0 |
| Prop In Lane | 1.00 | | 0.61 | 1.00 | | 0.65 | 1.00 | | 0.12 | 1.00 | | 1.00 |
| Lane Grp Cap(c), veh/h | 330 | 0 | 350 | 329 | 0 | 347 | 456 | 0 | 1121 | 423 | 883 | 759 |
| V/C Ratio(X) | 0.36 | 0.00 | 0.16 | 0.18 | 0.00 | 0.19 | 0.22 | 0.00 | 0.56 | 0.09 | 0.62 | 0.10 |
| Avail Cap(c_a), veh/h | 517 | 0 | 587 | 510 | 0 | 583 | 503 | 0 | 1218 | 444 | 933 | 802 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 27.4 | 0.0 | 23.7 | 25.7 | 0.0 | 23.9 | 9.2 | 0.0 | 8.4 | 13.4 | 14.3 | 10.6 |
| Incr Delay (d2), s/veh | 1.4 | 0.0 | 0.5 | 0.5 | 0.0 | 0.6 | 0.5 | 0.0 | 1.0 | 0.2 | 1.8 | 0.1 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 1.3 | 0.0 | 0.5 | 0.6 | 0.0 | 0.6 | 0.1 | 0.0 | 0.3 | 0.2 | 2.6 | 0.3 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 28.8 | 0.0 | 24.2 | 26.3 | 0.0 | 24.4 | 9.7 | 0.0 | 9.3 | 13.6 | 16.1 | 10.8 |
| LnGrp LOS | C | A | C | C | A | C | A | A | A | B | B | B |
| Approach Vol, veh/h | | 176 | | | 123 | | | 725 | | | 662 | |
| Approach Delay, s/veh | | 27.3 | | | 25.3 | | | 9.4 | | | 15.3 | |
| Approach LOS | | C | | | C | | | A | | | B | |
| Timer - Assigned Phs | | 2 | | 4 | 5 | 6 | | 8 | | | | |
| Phs Duration (G+Y+Rc), s | | 52.1 | | 21.5 | 10.1 | 42.0 | | 21.5 | | | | |
| Change Period (Y+Rc), s | | 7.0 | | 6.0 | 4.0 | 7.0 | | 6.0 | | | | |
| Max Green Setting (Gmax), s | | 49.0 | | 26.0 | 8.0 | 37.0 | | 26.0 | | | | |
| Max Q Clear Time (g_c+I1), s | | 16.8 | | 10.5 | 3.8 | 18.1 | | 6.9 | | | | |
| Green Ext Time (p_c), s | | 10.8 | | 1.4 | 0.2 | 8.1 | | 1.1 | | | | |

| Intersection Summary | |
|---|---|
| HCM 6th Ctrl Delay | 14.8 |
| HCM 6th LOS | B |

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 9 | 2 | 37 | 7 | 1 | 3 | 61 | 655 | 20 | 13 | 564 | 9 |
| Future Volume (vph) | 9 | 2 | 37 | 7 | 1 | 3 | 61 | 655 | 20 | 13 | 564 | 9 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (m) | 0.0 | | 0.0 | 0.0 | | 0.0 | 15.0 | | 0.0 | 15.0 | | 0.0 |
| Storage Lanes | 0 | | 0 | 0 | | 0 | 1 | | 0 | 1 | | 0 |
| Taper Length (m) | 7.5 | | | 7.5 | | | 5.0 | | | 5.0 | | |
| 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 |
| Ped Bike Factor | | | | | | | | | | | | |
| Frt | | 0.896 | | | 0.966 | | | 0.996 | | | 0.998 | |
| Flt Protected | | 0.990 | | | 0.968 | | 0.950 | | | 0.950 | | |
| Satd. Flow (prot) | 0 | 1685 | 0 | 0 | 1777 | 0 | 1805 | 1874 | 0 | 1805 | 1842 | 0 |
| Flt Permitted | | 0.990 | | | 0.968 | | 0.950 | | | 0.950 | | |
| Satd. Flow (perm) | 0 | 1685 | 0 | 0 | 1777 | 0 | 1805 | 1874 | 0 | 1805 | 1842 | 0 |
| Link Speed (k/h) | | 40 | | | 40 | | | 50 | | | 50 | |
| Link Distance (m) | | 166.9 | | | 266.9 | | | 236.2 | | | 191.3 | |
| Travel Time (s) | | 15.0 | | | 24.0 | | | 17.0 | | | 13.8 | |
| Confl. Peds. (#/hr) | | | | | | | 15 | | 8 | 8 | | 15 |
| 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 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 1% | 0% | 0% | 3% | 0% |
| Adj. Flow (vph) | 10 | 2 | 40 | 8 | 1 | 3 | 66 | 712 | 22 | 14 | 613 | 10 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 52 | 0 | 0 | 12 | 0 | 66 | 734 | 0 | 14 | 623 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(m) | | 0.0 | | | 0.0 | | | 3.6 | | | 3.6 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 4.8 | | | 4.8 | | | 4.8 | | | 4.8 | |
| Two way Left Turn Lane | | | | | | | | Yes | | | Yes | |
| Headway 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 |
| Turning Speed (k/h) | 25 | | 15 | 25 | | 15 | 25 | | 15 | 25 | | 15 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Control Type: Unsignalized | | | |
| Intersection Capacity Utilization | 52.4% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |





| Intersection | |
|---|---|
| Int Delay, s/veh | 1.7 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 9 | 2 | 37 | 7 | 1 | 3 | 61 | 655 | 20 | 13 | 564 | 9 |
| Future Vol, veh/h | 9 | 2 | 37 | 7 | 1 | 3 | 61 | 655 | 20 | 13 | 564 | 9 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 0 | 8 | 8 | 0 | 15 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | 15 | - | - | 15 | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 3 | 0 |
| Mvmt Flow | 10 | 2 | 40 | 8 | 1 | 3 | 66 | 712 | 22 | 14 | 613 | 10 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1518 | 1535 | 633 | 1530 | 1529 | 731 | 638 | 0 | 0 | 742 | 0 | 0 |
| Stage 1 | 661 | 661 | - | 863 | 863 | - | - | - | - | - | - | - |
| Stage 2 | 857 | 874 | - | 667 | 666 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.1 | - | - | 4.1 | - | - |
| Critical Hdwy Stg 1 | 6.1 | 5.5 | - | 6.1 | 5.5 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.1 | 5.5 | - | 6.1 | 5.5 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 4 | 3.3 | 3.5 | 4 | 3.3 | 2.2 | - | - | 2.2 | - | - |
| Pot Cap-1 Maneuver | 99 | 117 | 483 | 97 | 118 | 425 | 956 | - | - | 874 | - | - |
| Stage 1 | 455 | 463 | - | 352 | 374 | - | - | - | - | - | - | - |
| Stage 2 | 355 | 370 | - | 451 | 460 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 90 | 105 | 477 | 81 | 106 | 422 | 944 | - | - | 868 | - | - |
| Mov Cap-2 Maneuver | 90 | 105 | - | 81 | 106 | - | - | - | - | - | - | - |
| Stage 1 | 418 | 450 | - | 325 | 345 | - | - | - | - | - | - | - |
| Stage 2 | 327 | 342 | - | 404 | 447 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 23.7 | 42.8 | 0.8 | 0.2 |
| HCM LOS | C | E | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 944 | - | - | 244 | 107 | 868 | - | - |
| HCM Lane V/C Ratio | 0.07 | - | - | 0.214 | 0.112 | 0.016 | - | - |
| HCM Control Delay (s) | 9.1 | - | - | 23.7 | 42.8 | 9.2 | - | - |
| HCM Lane LOS | A | - | - | C | E | A | - | - |
| HCM 95th %tile Q(veh) | 0.2 | - | - | 0.8 | 0.4 | 0.1 | - | - |

# Appendix D

## ITE Trip Generation Sheets

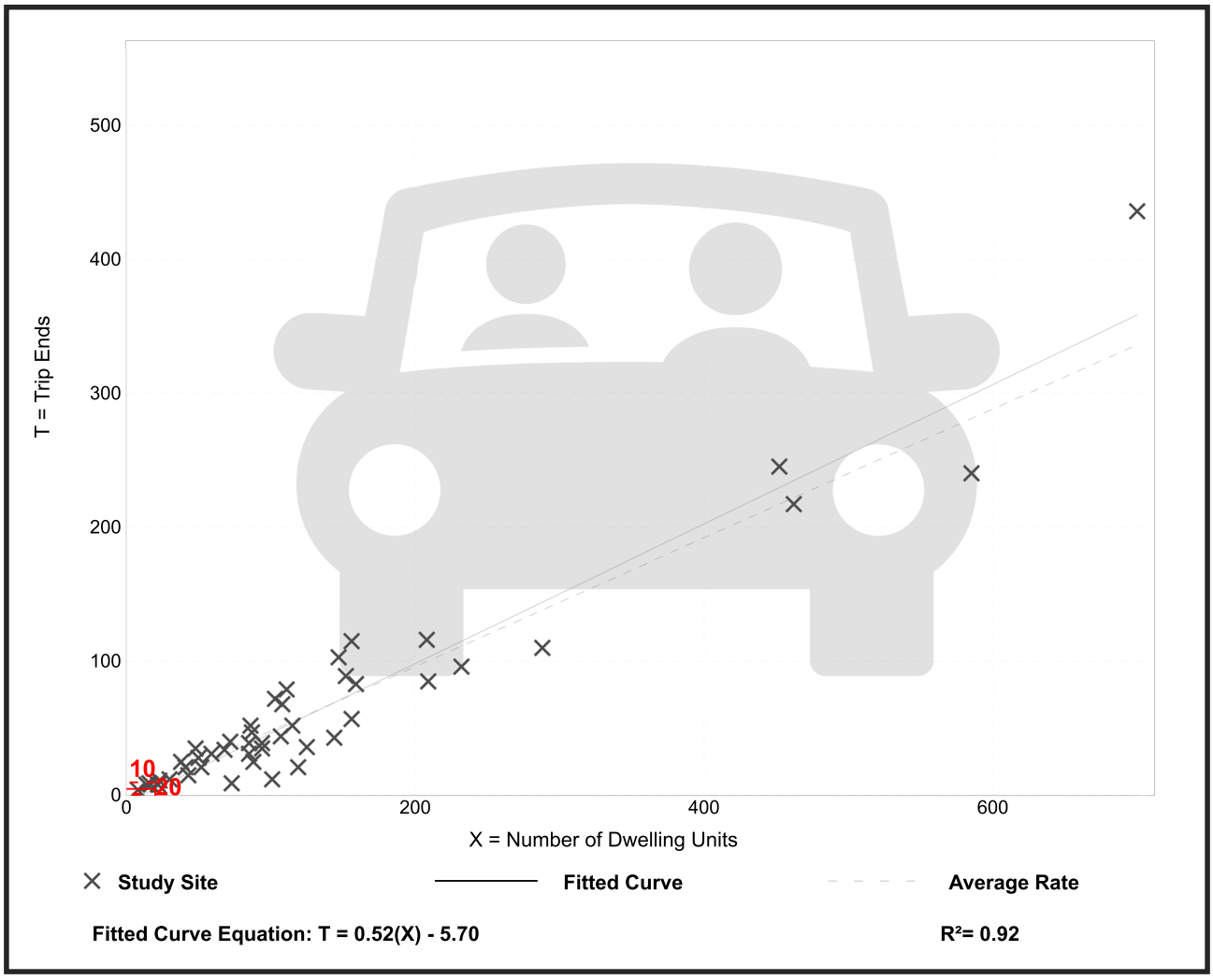
# Single-Family Attached Housing
(215)

| | |
|---|---|
| **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



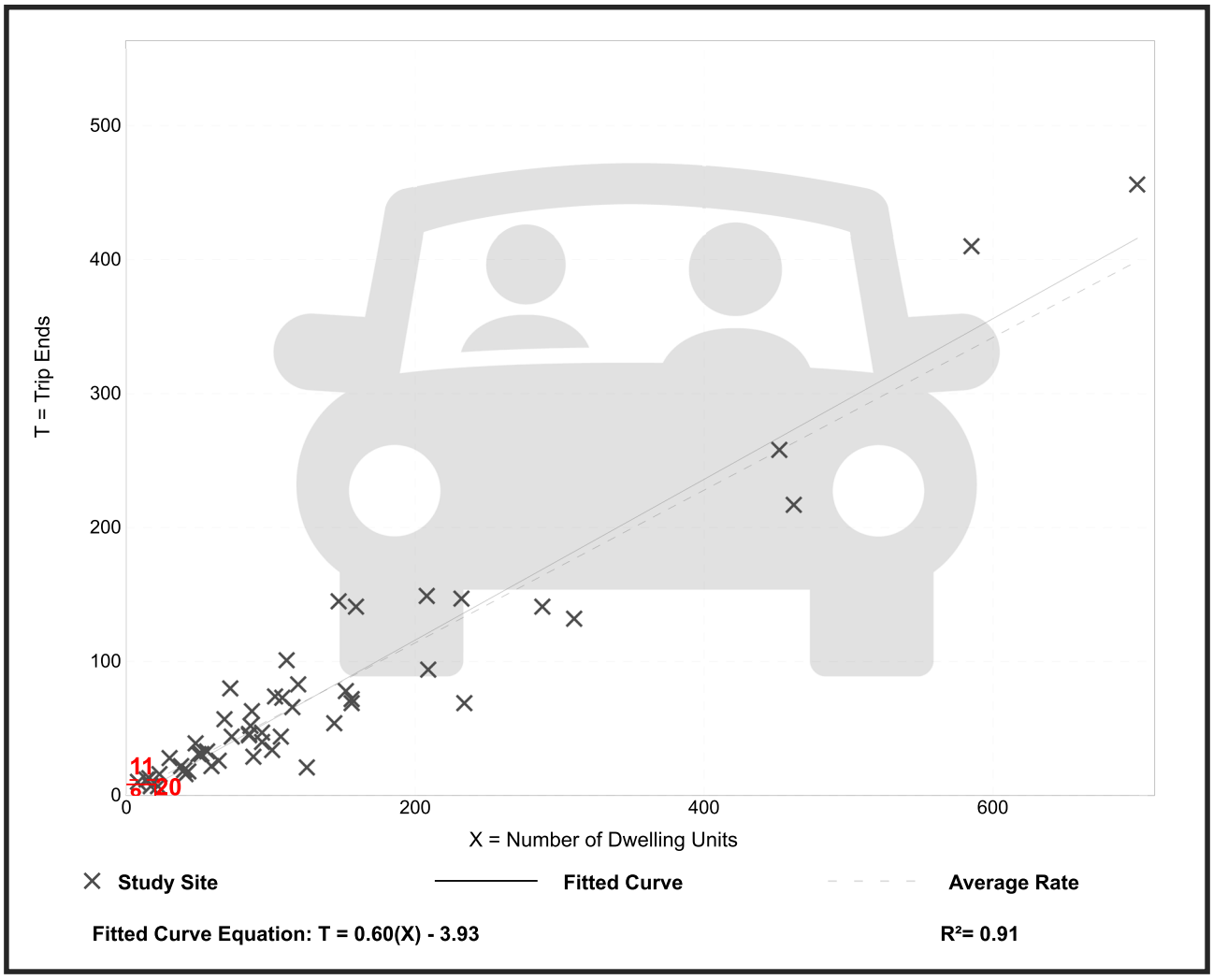
# Single-Family Attached Housing
(215)

| | |
|---|---|
| **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 |

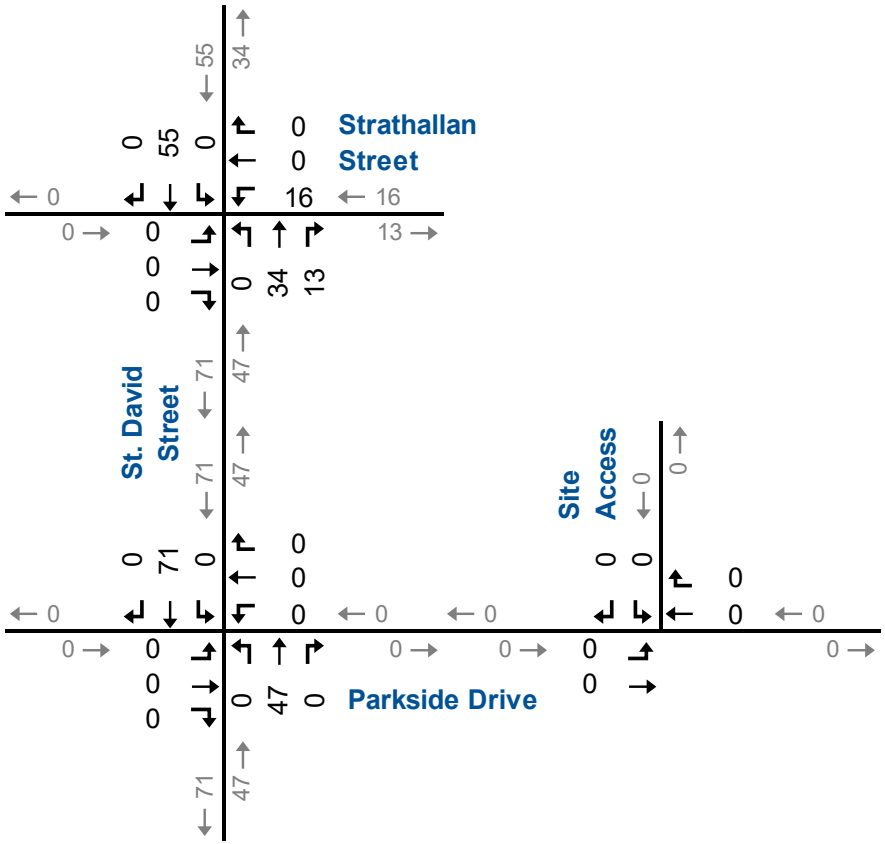
## Data Plot and Equation



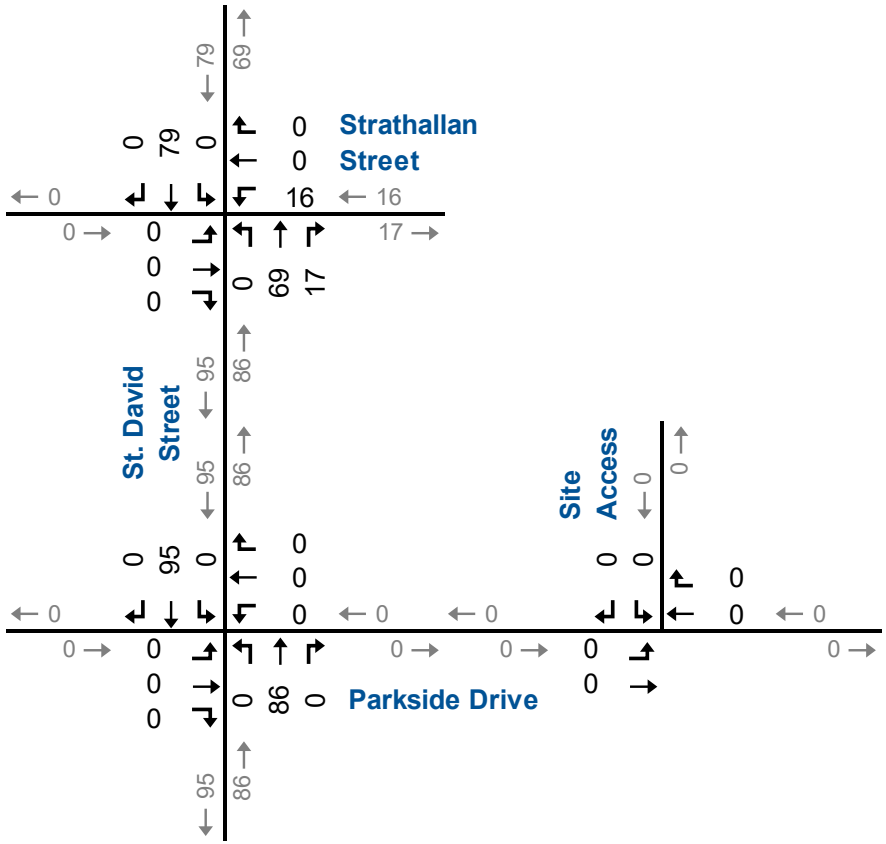
# Appendix E

## Background Developments Traffic Volumes

## AM Peak Hour




## PM Peak Hour




paradigm TRANSPORTATION SOLUTIONS LIMITED

# Background Developments
# Traffic Volumes

750 St. David Street North, Fergus
240158

Figure 1

# Appendix F

## Background Traffic Synchro Reports



| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 18 | 6 | 6 | 81 | 7 | 65 | 26 | 313 | 113 | 95 | 470 | 41 |
| Future Volume (vph) | 18 | 6 | 6 | 81 | 7 | 65 | 26 | 313 | 113 | 95 | 470 | 41 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (m) | 25.0 | | 0.0 | 25.0 | | 0.0 | 20.0 | | 0.0 | 20.0 | | 30.0 |
| Storage Lanes | 1 | | 0 | 1 | | 0 | 1 | | 0 | 1 | | 1 |
| Taper Length (m) | 25.0 | | | 25.0 | | | 20.0 | | | 20.0 | | |
| 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 |
| Ped Bike Factor | 1.00 | 0.97 | | 0.95 | 0.98 | | 1.00 | 0.99 | | 1.00 | | 0.98 |
| Frt | | 0.925 | | | 0.865 | | | 0.960 | | | | 0.850 |
| Flt Protected | 0.950 | | | 0.950 | | | 0.950 | | | 0.950 | | |
| Satd. Flow (prot) | 1805 | 1697 | 0 | 1770 | 1464 | 0 | 1736 | 1599 | 0 | 1671 | 1776 | 1615 |
| Flt Permitted | 0.706 | | | 0.748 | | | 0.380 | | | 0.497 | | |
| Satd. Flow (perm) | 1337 | 1697 | 0 | 1325 | 1464 | 0 | 693 | 1599 | 0 | 873 | 1776 | 1577 |
| Right Turn on Red | | | Yes | | | Yes | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | 7 | | | 71 | | | 33 | | | | 87 |
| Link Speed (k/h) | | 50 | | | 50 | | | 50 | | | 50 | |
| Link Distance (m) | | 53.1 | | | 392.2 | | | 191.3 | | | 343.1 | |
| Travel Time (s) | | 3.8 | | | 28.2 | | | 13.8 | | | 24.7 | |
| Confl. Peds. (#/hr) | 2 | | 26 | 26 | | 2 | 3 | | 3 | 3 | | 3 |
| 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 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 2% | 0% | 11% | 4% | 16% | 6% | 8% | 7% | 0% |
| Adj. Flow (vph) | 20 | 7 | 7 | 88 | 8 | 71 | 28 | 340 | 123 | 103 | 511 | 45 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 20 | 14 | 0 | 88 | 79 | 0 | 28 | 463 | 0 | 103 | 511 | 45 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(m) | | 3.6 | | | 3.6 | | | 3.6 | | | 3.6 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 4.8 | | | 4.8 | | | 4.8 | | | 4.8 | |
| Two way Left Turn Lane | | | | | | | | Yes | | | Yes | |
| Headway 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 |
| Turning Speed (k/h) | 25 | | 15 | 25 | | 15 | 25 | | 15 | 25 | | 15 |
| Number of Detectors | 1 | 2 | | 1 | 2 | | 1 | 2 | | 1 | 2 | 1 |
| Detector Template | Left | Thru | | Left | Thru | | Left | Thru | | Left | Thru | Right |
| Leading Detector (m) | 2.0 | 10.0 | | 2.0 | 10.0 | | 2.0 | 10.0 | | 2.0 | 10.0 | 2.0 |
| Trailing Detector (m) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 |
| Detector 1 Position(m) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 |
| Detector 1 Size(m) | 2.0 | 0.6 | | 2.0 | 0.6 | | 2.0 | 0.6 | | 2.0 | 0.6 | 2.0 |
| Detector 1 Type | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | Cl+Ex |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 |
| Detector 1 Queue (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 |
| Detector 1 Delay (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 |
| Detector 2 Position(m) | | 9.4 | | | 9.4 | | | 9.4 | | | 9.4 | |
| Detector 2 Size(m) | | 0.6 | | | 0.6 | | | 0.6 | | | 0.6 | |
| Detector 2 Type | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |





| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Turn Type | Perm | NA | | Perm | NA | | pm+pt | NA | | Perm | NA | Perm |
| Protected Phases | | 4 | | | 8 | | 5 | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | 6 |
| Detector Phase | 4 | 4 | | 8 | 8 | | 5 | 2 | | 6 | 6 | 6 |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 10.0 | 10.0 | | 10.0 | 10.0 | | 7.0 | 35.0 | | 35.0 | 35.0 | 35.0 |
| Minimum Split (s) | 32.0 | 32.0 | | 32.0 | 32.0 | | 12.0 | 42.0 | | 44.0 | 44.0 | 44.0 |
| Total Split (s) | 32.0 | 32.0 | | 32.0 | 32.0 | | 12.0 | 56.0 | | 44.0 | 44.0 | 44.0 |
| Total Split (%) | 36.4% | 36.4% | | 36.4% | 36.4% | | 13.6% | 63.6% | | 50.0% | 50.0% | 50.0% |
| Maximum Green (s) | 26.0 | 26.0 | | 26.0 | 26.0 | | 8.0 | 49.0 | | 37.0 | 37.0 | 37.0 |
| Yellow Time (s) | 3.7 | 3.7 | | 3.7 | 3.7 | | 3.0 | 3.8 | | 3.8 | 3.8 | 3.8 |
| All-Red Time (s) | 2.3 | 2.3 | | 2.3 | 2.3 | | 1.0 | 3.2 | | 3.2 | 3.2 | 3.2 |
| Lost Time Adjust (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 6.0 | 6.0 | | 6.0 | 6.0 | | 4.0 | 7.0 | | 7.0 | 7.0 | 7.0 |
| Lead/Lag | | | | | | | Lead | | | Lag | Lag | Lag |
| Lead-Lag Optimize? | | | | | | | Yes | | | Yes | Yes | Yes |
| Vehicle Extension (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | 5.0 |
| Recall Mode | None | None | | None | None | | None | Min | | Min | Min | Min |
| Walk Time (s) | 15.0 | 15.0 | | 15.0 | 15.0 | | | 26.0 | | 26.0 | 26.0 | 26.0 |
| Flash Dont Walk (s) | 8.0 | 8.0 | | 8.0 | 8.0 | | | 9.0 | | 9.0 | 9.0 | 9.0 |
| Pedestrian Calls (#/hr) | 0 | 0 | | 0 | 0 | | | 0 | | 0 | 0 | 0 |
| Act Effct Green (s) | 12.2 | 12.2 | | 12.2 | 12.2 | | 46.6 | 45.1 | | 41.0 | 41.0 | 41.0 |
| Actuated g/C Ratio | 0.19 | 0.19 | | 0.19 | 0.19 | | 0.71 | 0.69 | | 0.63 | 0.63 | 0.63 |
| v/c Ratio | 0.08 | 0.04 | | 0.36 | 0.24 | | 0.05 | 0.42 | | 0.19 | 0.46 | 0.04 |
| Control Delay | 24.9 | 18.8 | | 29.4 | 10.4 | | 4.4 | 7.4 | | 11.4 | 12.5 | 0.8 |
| Queue Delay | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 |
| Total Delay | 24.9 | 18.8 | | 29.4 | 10.4 | | 4.4 | 7.4 | | 11.4 | 12.5 | 0.8 |
| LOS | C | B | | C | B | | A | A | | B | B | A |
| Approach Delay | | 22.4 | | | 20.4 | | | 7.2 | | | 11.5 | |
| Approach LOS | | C | | | C | | | A | | | B | |

| Intersection Summary | | |
|---|---|---|
| Area Type: | Other | |
| Cycle Length: 88 | | |
| Actuated Cycle Length: 65.3 | | |
| Natural Cycle: 90 | | |
| Control Type: Semi Act-Uncoord | | |
| Maximum v/c Ratio: 0.46 | | |
| Intersection Signal Delay: 11.3 | | Intersection LOS: B |
| Intersection Capacity Utilization 89.6% | | ICU Level of Service E |
| Analysis Period (min) 15 | | |

Splits and Phases: 101: St. David Street North & Strathallan Street

| Lane Group | EBL | EBT | WBL | WBT | NBL | NBT | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|
| Lane Group Flow (vph) | 20 | 14 | 88 | 79 | 28 | 463 | 103 | 511 | 45 |
| v/c Ratio | 0.08 | 0.04 | 0.36 | 0.24 | 0.05 | 0.42 | 0.19 | 0.46 | 0.04 |
| Control Delay | 24.9 | 18.8 | 29.4 | 10.4 | 4.4 | 7.4 | 11.4 | 12.5 | 0.8 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 24.9 | 18.8 | 29.4 | 10.4 | 4.4 | 7.4 | 11.4 | 12.5 | 0.8 |
| Queue Length 50th (m) | 1.9 | 0.7 | 8.8 | 0.8 | 1.0 | 23.6 | 4.7 | 28.7 | 0.0 |
| Queue Length 95th (m) | 8.2 | 5.5 | 24.8 | 11.8 | 3.7 | 51.4 | 19.7 | 88.8 | 1.7 |
| Internal Link Dist (m) | | 29.1 | | 368.2 | | 167.3 | | 319.1 | |
| Turn Bay Length (m) | 25.0 | | 25.0 | | 20.0 | | 20.0 | | 30.0 |
| Base Capacity (vph) | 542 | 692 | 537 | 635 | 624 | 1274 | 565 | 1149 | 1051 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.04 | 0.02 | 0.16 | 0.12 | 0.04 | 0.36 | 0.18 | 0.44 | 0.04 |

Intersection Summary





| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 18 | 6 | 6 | 81 | 7 | 65 | 26 | 313 | 113 | 95 | 470 | 41 |
| Future Volume (veh/h) | 18 | 6 | 6 | 81 | 7 | 65 | 26 | 313 | 113 | 95 | 470 | 41 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 0.95 | | 0.94 | 0.94 | | 0.94 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1900 | 1900 | 1900 | 1870 | 1900 | 1737 | 1841 | 1663 | 1811 | 1781 | 1796 | 1900 |
| Adj Flow Rate, veh/h | 20 | 7 | 7 | 88 | 8 | 71 | 28 | 340 | 123 | 103 | 511 | 45 |
| 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 |
| Percent Heavy Veh, % | 0 | 0 | 0 | 2 | 0 | 11 | 4 | 16 | 6 | 8 | 7 | 0 |
| Cap, veh/h | 324 | 182 | 182 | 379 | 34 | 300 | 428 | 697 | 252 | 486 | 897 | 802 |
| Arrive On Green | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 | 0.04 | 0.60 | 0.60 | 0.50 | 0.50 | 0.50 |
| Sat Flow, veh/h | 1275 | 842 | 842 | 1318 | 156 | 1389 | 1753 | 1165 | 421 | 884 | 1796 | 1605 |
| Grp Volume(v), veh/h | 20 | 0 | 14 | 88 | 0 | 79 | 28 | 0 | 463 | 103 | 511 | 45 |
| Grp Sat Flow(s),veh/h/ln | 1275 | 0 | 1685 | 1318 | 0 | 1545 | 1753 | 0 | 1586 | 884 | 1796 | 1605 |
| Q Serve(g_s), s | 0.9 | 0.0 | 0.5 | 4.0 | 0.0 | 3.0 | 0.5 | 0.0 | 11.6 | 5.2 | 13.9 | 1.0 |
| Cycle Q Clear(g_c), s | 3.9 | 0.0 | 0.5 | 4.4 | 0.0 | 3.0 | 0.5 | 0.0 | 11.6 | 9.9 | 13.9 | 1.0 |
| Prop In Lane | 1.00 | | 0.50 | 1.00 | | 0.90 | 1.00 | | 0.27 | 1.00 | | 1.00 |
| Lane Grp Cap(c), veh/h | 324 | 0 | 364 | 379 | 0 | 333 | 428 | 0 | 949 | 486 | 897 | 802 |
| V/C Ratio(X) | 0.06 | 0.00 | 0.04 | 0.23 | 0.00 | 0.24 | 0.07 | 0.00 | 0.49 | 0.21 | 0.57 | 0.06 |
| Avail Cap(c_a), veh/h | 522 | 0 | 625 | 583 | 0 | 573 | 555 | 0 | 1109 | 511 | 949 | 848 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 24.3 | 0.0 | 21.7 | 23.5 | 0.0 | 22.7 | 8.5 | 0.0 | 8.0 | 12.7 | 12.3 | 9.0 |
| Incr Delay (d2), s/veh | 0.2 | 0.0 | 0.1 | 0.7 | 0.0 | 0.8 | 0.1 | 0.0 | 0.8 | 0.5 | 1.3 | 0.1 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 0.2 | 0.0 | 0.1 | 0.8 | 0.0 | 0.7 | 0.0 | 0.0 | 0.2 | 0.4 | 1.6 | 0.1 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 24.5 | 0.0 | 21.8 | 24.1 | 0.0 | 23.5 | 8.6 | 0.0 | 8.8 | 13.2 | 13.6 | 9.1 |
| LnGrp LOS | C | A | C | C | A | C | A | A | A | B | B | A |
| Approach Vol, veh/h | | 34 | | | 167 | | | 491 | | | 659 | |
| Approach Delay, s/veh | | 23.4 | | | 23.8 | | | 8.8 | | | 13.2 | |
| Approach LOS | | C | | | C | | | A | | | B | |
| Timer - Assigned Phs | | 2 | | 4 | 5 | 6 | | 8 | | | | |
| Phs Duration (G+Y+Rc), s | | 48.9 | | 21.1 | 6.9 | 42.0 | | 21.1 | | | | |
| Change Period (Y+Rc), s | | 7.0 | | 6.0 | 4.0 | 7.0 | | 6.0 | | | | |
| Max Green Setting (Gmax), s | | 49.0 | | 26.0 | 8.0 | 37.0 | | 26.0 | | | | |
| Max Q Clear Time (g_c+I1), s | | 13.6 | | 5.9 | 2.5 | 15.9 | | 6.4 | | | | |
| Green Ext Time (p_c), s | | 7.9 | | 0.2 | 0.0 | 8.6 | | 1.5 | | | | |

| Intersection Summary | |
|---|---|
| HCM 6th Ctrl Delay | 13.2 |
| HCM 6th LOS | B |

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 6 | 0 | 3 | 5 | 0 | 6 | 14 | 485 | 6 | 5 | 573 | 5 |
| Future Volume (vph) | 6 | 0 | 3 | 5 | 0 | 6 | 14 | 485 | 6 | 5 | 573 | 5 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (m) | 0.0 | | 0.0 | 0.0 | | 0.0 | 15.0 | | 0.0 | 15.0 | | 0.0 |
| Storage Lanes | 0 | | 0 | 0 | | 0 | 1 | | 0 | 1 | | 0 |
| Taper Length (m) | 7.5 | | | 7.5 | | | 5.0 | | | 5.0 | | |
| 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 |
| Ped Bike Factor | | | | | | | | | | | | |
| Frt | | 0.959 | | | 0.921 | | | 0.998 | | | 0.999 | |
| Flt Protected | | 0.966 | | | 0.980 | | 0.950 | | | 0.950 | | |
| Satd. Flow (prot) | 0 | 1760 | 0 | 0 | 1715 | 0 | 1671 | 1726 | 0 | 1805 | 1808 | 0 |
| Flt Permitted | | 0.966 | | | 0.980 | | 0.950 | | | 0.950 | | |
| Satd. Flow (perm) | 0 | 1760 | 0 | 0 | 1715 | 0 | 1671 | 1726 | 0 | 1805 | 1808 | 0 |
| Link Speed (k/h) | | 40 | | | 40 | | | 50 | | | 50 | |
| Link Distance (m) | | 166.9 | | | 266.9 | | | 236.2 | | | 191.3 | |
| Travel Time (s) | | 15.0 | | | 24.0 | | | 17.0 | | | 13.8 | |
| Confl. Peds. (#/hr) | 1 | | | | | 1 | 2 | | 6 | 6 | | 2 |
| 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 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 0% | 0% | 8% | 10% | 0% | 0% | 5% | 0% |
| Adj. Flow (vph) | 7 | 0 | 3 | 5 | 0 | 7 | 15 | 527 | 7 | 5 | 623 | 5 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 10 | 0 | 0 | 12 | 0 | 15 | 534 | 0 | 5 | 628 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(m) | | 0.0 | | | 0.0 | | | 3.6 | | | 3.6 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 4.8 | | | 4.8 | | | 4.8 | | | 4.8 | |
| Two way Left Turn Lane | | | | | | | | Yes | | | Yes | |
| Headway 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 |
| Turning Speed (k/h) | 25 | | 15 | 25 | | 15 | 25 | | 15 | 25 | | 15 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Control Type: Unsignalized | | | |
| Intersection Capacity Utilization | 40.8% | ICU Level of Service A | |
| Analysis Period (min) | 15 | | |





| Intersection | |
|---|---|
| Int Delay, s/veh | 0.5 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 6 | 0 | 3 | 5 | 0 | 6 | 14 | 485 | 6 | 5 | 573 | 5 |
| Future Vol, veh/h | 6 | 0 | 3 | 5 | 0 | 6 | 14 | 485 | 6 | 5 | 573 | 5 |
| Conflicting Peds, #/hr | 1 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 6 | 6 | 0 | 2 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | 15 | - | - | 15 | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 10 | 0 | 0 | 5 | 0 |
| Mvmt Flow | 7 | 0 | 3 | 5 | 0 | 7 | 15 | 527 | 7 | 5 | 623 | 5 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1203 | 1208 | 628 | 1204 | 1207 | 538 | 630 | 0 | 0 | 540 | 0 | 0 |
| Stage 1 | 638 | 638 | - | 567 | 567 | - | - | - | - | - | - | - |
| Stage 2 | 565 | 570 | - | 637 | 640 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.18 | - | - | 4.1 | - | - |
| Critical Hdwy Stg 1 | 6.1 | 5.5 | - | 6.1 | 5.5 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.1 | 5.5 | - | 6.1 | 5.5 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 4 | 3.3 | 3.5 | 4 | 3.3 | 2.272 | - | - | 2.2 | - | - |
| Pot Cap-1 Maneuver | 163 | 185 | 487 | 162 | 185 | 547 | 924 | - | - | 1039 | - | - |
| Stage 1 | 468 | 474 | - | 512 | 510 | - | - | - | - | - | - | - |
| Stage 2 | 513 | 509 | - | 469 | 473 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 158 | 180 | 486 | 157 | 180 | 544 | 922 | - | - | 1034 | - | - |
| Mov Cap-2 Maneuver | 158 | 180 | - | 157 | 180 | - | - | - | - | - | - | - |
| Stage 1 | 460 | 471 | - | 501 | 499 | - | - | - | - | - | - | - |
| Stage 2 | 498 | 498 | - | 464 | 470 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 23.5 | 19.7 | 0.2 | 0.1 |
| HCM LOS | C | C | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 922 | - | - | 204 | 257 | 1034 | - | - |
| HCM Lane V/C Ratio | 0.017 | - | - | 0.048 | 0.047 | 0.005 | - | - |
| HCM Control Delay (s) | 9 | - | - | 23.5 | 19.7 | 8.5 | - | - |
| HCM Lane LOS | A | - | - | C | C | A | - | - |
| HCM 95th %tile Q(veh) | 0.1 | - | - | 0.1 | 0.1 | 0 | - | - |

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 126 | 23 | 29 | 65 | 24 | 45 | 94 | 596 | 89 | 40 | 543 | 83 |
| Future Volume (vph) | 126 | 23 | 29 | 65 | 24 | 45 | 94 | 596 | 89 | 40 | 543 | 83 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (m) | 25.0 | | 0.0 | 25.0 | | 0.0 | 20.0 | | 0.0 | 20.0 | | 30.0 |
| Storage Lanes | 1 | | 0 | 1 | | 0 | 1 | | 0 | 1 | | 1 |
| Taper Length (m) | 25.0 | | | 25.0 | | | 20.0 | | | 20.0 | | |
| 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 |
| Ped Bike Factor | 0.99 | 0.97 | | 0.97 | 0.98 | | 1.00 | 1.00 | | 1.00 | | 0.98 |
| Frt | | 0.916 | | | 0.902 | | | 0.980 | | | | 0.850 |
| Flt Protected | 0.950 | | | 0.950 | | | 0.950 | | | 0.950 | | |
| Satd. Flow (prot) | 1805 | 1686 | 0 | 1719 | 1675 | 0 | 1805 | 1818 | 0 | 1752 | 1845 | 1615 |
| Flt Permitted | 0.708 | | | 0.720 | | | 0.296 | | | 0.376 | | |
| Satd. Flow (perm) | 1327 | 1686 | 0 | 1259 | 1675 | 0 | 562 | 1818 | 0 | 691 | 1845 | 1575 |
| Right Turn on Red | | | Yes | | | Yes | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | 32 | | | 49 | | | 14 | | | | 87 |
| Link Speed (k/h) | | 50 | | | 50 | | | 50 | | | 50 | |
| Link Distance (m) | | 53.1 | | | 392.2 | | | 191.3 | | | 343.1 | |
| Travel Time (s) | | 3.8 | | | 28.2 | | | 13.8 | | | 24.7 | |
| Confl. Peds. (#/hr) | 8 | | 19 | 19 | | 8 | 4 | | 9 | 9 | | 4 |
| 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 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 5% | 0% | 0% | 0% | 2% | 2% | 3% | 3% | 0% |
| Adj. Flow (vph) | 137 | 25 | 32 | 71 | 26 | 49 | 102 | 648 | 97 | 43 | 590 | 90 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 137 | 57 | 0 | 71 | 75 | 0 | 102 | 745 | 0 | 43 | 590 | 90 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(m) | | 3.6 | | | 3.6 | | | 3.6 | | | 3.6 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 4.8 | | | 4.8 | | | 4.8 | | | 4.8 | |
| Two way Left Turn Lane | | | | | | | | Yes | | | Yes | |
| Headway 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 |
| Turning Speed (k/h) | 25 | | 15 | 25 | | 15 | 25 | | 15 | 25 | | 15 |
| Number of Detectors | 1 | 2 | | 1 | 2 | | 1 | 2 | | 1 | 2 | 1 |
| Detector Template | Left | Thru | | Left | Thru | | Left | Thru | | Left | Thru | Right |
| Leading Detector (m) | 2.0 | 10.0 | | 2.0 | 10.0 | | 2.0 | 10.0 | | 2.0 | 10.0 | 2.0 |
| Trailing Detector (m) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 |
| Detector 1 Position(m) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 |
| Detector 1 Size(m) | 2.0 | 0.6 | | 2.0 | 0.6 | | 2.0 | 0.6 | | 2.0 | 0.6 | 2.0 |
| Detector 1 Type | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | Cl+Ex |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 |
| Detector 1 Queue (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 |
| Detector 1 Delay (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 |
| Detector 2 Position(m) | | 9.4 | | | 9.4 | | | 9.4 | | | 9.4 | |
| Detector 2 Size(m) | | 0.6 | | | 0.6 | | | 0.6 | | | 0.6 | |
| Detector 2 Type | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |





| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Turn Type | Perm | NA | | Perm | NA | | pm+pt | NA | | Perm | NA | Perm |
| Protected Phases | | 4 | | | 8 | | 5 | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | 6 |
| Detector Phase | 4 | 4 | | 8 | 8 | | 5 | 2 | | 6 | 6 | 6 |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 10.0 | 10.0 | | 10.0 | 10.0 | | 7.0 | 35.0 | | 35.0 | 35.0 | 35.0 |
| Minimum Split (s) | 32.0 | 32.0 | | 32.0 | 32.0 | | 12.0 | 42.0 | | 44.0 | 44.0 | 44.0 |
| Total Split (s) | 32.0 | 32.0 | | 32.0 | 32.0 | | 12.0 | 56.0 | | 44.0 | 44.0 | 44.0 |
| Total Split (%) | 36.4% | 36.4% | | 36.4% | 36.4% | | 13.6% | 63.6% | | 50.0% | 50.0% | 50.0% |
| Maximum Green (s) | 26.0 | 26.0 | | 26.0 | 26.0 | | 8.0 | 49.0 | | 37.0 | 37.0 | 37.0 |
| Yellow Time (s) | 3.7 | 3.7 | | 3.7 | 3.7 | | 3.0 | 3.8 | | 3.8 | 3.8 | 3.8 |
| All-Red Time (s) | 2.3 | 2.3 | | 2.3 | 2.3 | | 1.0 | 3.2 | | 3.2 | 3.2 | 3.2 |
| Lost Time Adjust (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 6.0 | 6.0 | | 6.0 | 6.0 | | 4.0 | 7.0 | | 7.0 | 7.0 | 7.0 |
| Lead/Lag | | | | | | | Lead | | | Lag | Lag | Lag |
| Lead-Lag Optimize? | | | | | | | Yes | | | Yes | Yes | Yes |
| Vehicle Extension (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | 5.0 |
| Recall Mode | None | None | | None | None | | None | Min | | Min | Min | Min |
| Walk Time (s) | 15.0 | 15.0 | | 15.0 | 15.0 | | | 26.0 | | 26.0 | 26.0 | 26.0 |
| Flash Dont Walk (s) | 8.0 | 8.0 | | 8.0 | 8.0 | | | 9.0 | | 9.0 | 9.0 | 9.0 |
| Pedestrian Calls (#/hr) | 0 | 0 | | 0 | 0 | | | 0 | | 0 | 0 | 0 |
| Act Effct Green (s) | 15.1 | 15.1 | | 15.1 | 15.1 | | 50.3 | 49.4 | | 40.5 | 40.5 | 40.5 |
| Actuated g/C Ratio | 0.21 | 0.21 | | 0.21 | 0.21 | | 0.71 | 0.70 | | 0.57 | 0.57 | 0.57 |
| v/c Ratio | 0.48 | 0.15 | | 0.26 | 0.19 | | 0.19 | 0.59 | | 0.11 | 0.56 | 0.10 |
| Control Delay | 33.4 | 14.8 | | 28.4 | 13.2 | | 6.0 | 11.3 | | 13.7 | 18.0 | 3.8 |
| Queue Delay | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 |
| Total Delay | 33.4 | 14.8 | | 28.4 | 13.2 | | 6.0 | 11.3 | | 13.7 | 18.0 | 3.8 |
| LOS | C | B | | C | B | | A | B | | B | B | A |
| Approach Delay | | 28.0 | | | 20.6 | | | 10.7 | | | 16.0 | |
| Approach LOS | | C | | | C | | | B | | | B | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Cycle Length: 88 | | | |
| Actuated Cycle Length: 70.8 | | | |
| Natural Cycle: 90 | | | |
| Control Type: Semi Act-Uncoord | | | |
| Maximum v/c Ratio: 0.59 | | | |
| Intersection Signal Delay: 15.2 | | Intersection LOS: B | |
| Intersection Capacity Utilization 99.0% | | ICU Level of Service F | |
| Analysis Period (min) 15 | | | |

Splits and Phases: 101: St. David Street North & Strathallan Street

| Lane Group | EBL | EBT | WBL | WBT | NBL | NBT | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|
| Lane Group Flow (vph) | 137 | 57 | 71 | 75 | 102 | 745 | 43 | 590 | 90 |
| v/c Ratio | 0.48 | 0.15 | 0.26 | 0.19 | 0.19 | 0.59 | 0.11 | 0.56 | 0.10 |
| Control Delay | 33.4 | 14.8 | 28.4 | 13.2 | 6.0 | 11.3 | 13.7 | 18.0 | 3.8 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 33.4 | 14.8 | 28.4 | 13.2 | 6.0 | 11.3 | 13.7 | 18.0 | 3.8 |
| Queue Length 50th (m) | 18.3 | 3.1 | 9.0 | 3.2 | 4.5 | 59.5 | 3.4 | 65.0 | 0.3 |
| Queue Length 95th (m) | 36.1 | 12.3 | 20.6 | 13.7 | 11.9 | 118.9 | 10.8 | 117.7 | 8.2 |
| Internal Link Dist (m) | | 29.1 | | 368.2 | | 167.3 | | 319.1 | |
| Turn Bay Length (m) | 25.0 | | 25.0 | | 20.0 | | 20.0 | | 30.0 |
| Base Capacity (vph) | 512 | 670 | 486 | 677 | 546 | 1291 | 403 | 1076 | 955 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.27 | 0.09 | 0.15 | 0.11 | 0.19 | 0.58 | 0.11 | 0.55 | 0.09 |

| Intersection Summary |
|---|





| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 126 | 23 | 29 | 65 | 24 | 45 | 94 | 596 | 89 | 40 | 543 | 83 |
| Future Volume (veh/h) | 126 | 23 | 29 | 65 | 24 | 45 | 94 | 596 | 89 | 40 | 543 | 83 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 0.96 | | 0.96 | 0.96 | | 0.96 | 1.00 | | 0.99 | 1.00 | | 0.99 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1900 | 1900 | 1900 | 1826 | 1900 | 1900 | 1900 | 1870 | 1870 | 1856 | 1856 | 1900 |
| Adj Flow Rate, veh/h | 137 | 25 | 32 | 71 | 26 | 49 | 102 | 648 | 97 | 43 | 590 | 90 |
| 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 |
| Percent Heavy Veh, % | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 2 | 2 | 3 | 3 | 0 |
| Cap, veh/h | 336 | 163 | 209 | 342 | 127 | 239 | 415 | 960 | 144 | 331 | 869 | 747 |
| Arrive On Green | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 | 0.08 | 0.60 | 0.60 | 0.47 | 0.47 | 0.47 |
| Sat Flow, veh/h | 1298 | 737 | 943 | 1266 | 572 | 1077 | 1810 | 1588 | 238 | 708 | 1856 | 1595 |
| Grp Volume(v), veh/h | 137 | 0 | 57 | 71 | 0 | 75 | 102 | 0 | 745 | 43 | 590 | 90 |
| Grp Sat Flow(s),veh/h/ln | 1298 | 0 | 1680 | 1266 | 0 | 1649 | 1810 | 0 | 1825 | 708 | 1856 | 1595 |
| Q Serve(g_s), s | 7.2 | 0.0 | 2.0 | 3.6 | 0.0 | 2.8 | 1.9 | 0.0 | 20.4 | 3.2 | 18.5 | 2.4 |
| Cycle Q Clear(g_c), s | 10.0 | 0.0 | 2.0 | 5.6 | 0.0 | 2.8 | 1.9 | 0.0 | 20.4 | 13.5 | 18.5 | 2.4 |
| Prop In Lane | 1.00 | | 0.56 | 1.00 | | 0.65 | 1.00 | | 0.13 | 1.00 | | 1.00 |
| Lane Grp Cap(c), veh/h | 336 | 0 | 373 | 342 | 0 | 366 | 415 | 0 | 1103 | 331 | 869 | 747 |
| V/C Ratio(X) | 0.41 | 0.00 | 0.15 | 0.21 | 0.00 | 0.21 | 0.25 | 0.00 | 0.68 | 0.13 | 0.68 | 0.12 |
| Avail Cap(c_a), veh/h | 500 | 0 | 585 | 502 | 0 | 574 | 460 | 0 | 1197 | 350 | 919 | 790 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 27.8 | 0.0 | 23.4 | 25.7 | 0.0 | 23.7 | 10.3 | 0.0 | 9.9 | 17.8 | 15.5 | 11.2 |
| Incr Delay (d2), s/veh | 1.7 | 0.0 | 0.4 | 0.6 | 0.0 | 0.6 | 0.7 | 0.0 | 2.0 | 0.4 | 2.6 | 0.2 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 1.5 | 0.0 | 0.5 | 0.7 | 0.0 | 0.7 | 0.2 | 0.0 | 0.9 | 0.3 | 3.3 | 0.3 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 29.5 | 0.0 | 23.8 | 26.3 | 0.0 | 24.3 | 11.0 | 0.0 | 11.9 | 18.2 | 18.1 | 11.3 |
| LnGrp LOS | C | A | C | C | A | C | B | A | B | B | B | B |
| Approach Vol, veh/h | | 194 | | | 146 | | | 847 | | | 723 | |
| Approach Delay, s/veh | | 27.8 | | | 25.3 | | | 11.8 | | | 17.3 | |
| Approach LOS | | C | | | C | | | B | | | B | |

| Timer - Assigned Phs | | 2 | | 4 | 5 | 6 | | 8 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Phs Duration (G+Y+Rc), s | | 52.2 | | 22.6 | 10.2 | 42.0 | | 22.6 | | | | |
| Change Period (Y+Rc), s | | 7.0 | | 6.0 | 4.0 | 7.0 | | 6.0 | | | | |
| Max Green Setting (Gmax), s | | 49.0 | | 26.0 | 8.0 | 37.0 | | 26.0 | | | | |
| Max Q Clear Time (g_c+I1), s | | 22.4 | | 12.0 | 3.9 | 20.5 | | 7.6 | | | | |
| Green Ext Time (p_c), s | | 12.4 | | 1.4 | 0.2 | 8.2 | | 1.3 | | | | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 6th Ctrl Delay | | 16.5 | |
| HCM 6th LOS | | B | |

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 10 | 2 | 43 | 8 | 1 | 3 | 70 | 838 | 23 | 15 | 743 | 10 |
| Future Volume (vph) | 10 | 2 | 43 | 8 | 1 | 3 | 70 | 838 | 23 | 15 | 743 | 10 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (m) | 0.0 | | 0.0 | 0.0 | | 0.0 | 15.0 | | 0.0 | 15.0 | | 0.0 |
| Storage Lanes | 0 | | 0 | 0 | | 0 | 1 | | 0 | 1 | | 0 |
| Taper Length (m) | 7.5 | | | 7.5 | | | 5.0 | | | 5.0 | | |
| 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 |
| Ped Bike Factor | | | | | | | | | | | | |
| Frt | | 0.894 | | | 0.969 | | | 0.996 | | | 0.998 | |
| Flt Protected | | 0.991 | | | 0.967 | | 0.950 | | | 0.950 | | |
| Satd. Flow (prot) | 0 | 1683 | 0 | 0 | 1780 | 0 | 1805 | 1874 | 0 | 1805 | 1842 | 0 |
| Flt Permitted | | 0.991 | | | 0.967 | | 0.950 | | | 0.950 | | |
| Satd. Flow (perm) | 0 | 1683 | 0 | 0 | 1780 | 0 | 1805 | 1874 | 0 | 1805 | 1842 | 0 |
| Link Speed (k/h) | | 40 | | | 40 | | | 50 | | | 50 | |
| Link Distance (m) | | 166.9 | | | 266.9 | | | 236.2 | | | 191.3 | |
| Travel Time (s) | | 15.0 | | | 24.0 | | | 17.0 | | | 13.8 | |
| Confl. Peds. (#/hr) | | | | | | | 15 | | 8 | 8 | | 15 |
| 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 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 1% | 0% | 0% | 3% | 0% |
| Adj. Flow (vph) | 11 | 2 | 47 | 9 | 1 | 3 | 76 | 911 | 25 | 16 | 808 | 11 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 60 | 0 | 0 | 13 | 0 | 76 | 936 | 0 | 16 | 819 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(m) | | 0.0 | | | 0.0 | | | 3.6 | | | 3.6 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 4.8 | | | 4.8 | | | 4.8 | | | 4.8 | |
| Two way Left Turn Lane | | | | | | | | Yes | | | Yes | |
| Headway 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 |
| Turning Speed (k/h) | 25 | | 15 | 25 | | 15 | 25 | | 15 | 25 | | 15 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Control Type: Unsignalized | | | |
| Intersection Capacity Utilization | 62.2% | ICU Level of Service B | |
| Analysis Period (min) | 15 | | |





| Intersection | |
|---|---|
| Int Delay, s/veh | 2.6 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 10 | 2 | 43 | 8 | 1 | 3 | 70 | 838 | 23 | 15 | 743 | 10 |
| Future Vol, veh/h | 10 | 2 | 43 | 8 | 1 | 3 | 70 | 838 | 23 | 15 | 743 | 10 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 0 | 8 | 8 | 0 | 15 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | 15 | - | - | 15 | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 3 | 0 |
| Mvmt Flow | 11 | 2 | 47 | 9 | 1 | 3 | 76 | 911 | 25 | 16 | 808 | 11 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1939 | 1957 | 829 | 1954 | 1950 | 932 | 834 | 0 | 0 | 944 | 0 | 0 |
| Stage 1 | 861 | 861 | - | 1084 | 1084 | - | - | - | - | - | - | - |
| Stage 2 | 1078 | 1096 | - | 870 | 866 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.1 | - | - | 4.1 | - | - |
| Critical Hdwy Stg 1 | 6.1 | 5.5 | - | 6.1 | 5.5 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.1 | 5.5 | - | 6.1 | 5.5 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 4 | 3.3 | 3.5 | 4 | 3.3 | 2.2 | - | - | 2.2 | - | - |
| Pot Cap-1 Maneuver | 50 | 64 | 374 | 49 | 65 | 326 | 808 | - | - | 735 | - | - |
| Stage 1 | 353 | 375 | - | 265 | 296 | - | - | - | - | - | - | - |
| Stage 2 | 267 | 292 | - | 349 | 373 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 44 | 55 | 369 | 38 | 56 | 324 | 798 | - | - | 730 | - | - |
| Mov Cap-2 Maneuver | 44 | 55 | - | 38 | 56 | - | - | - | - | - | - | - |
| Stage 1 | 315 | 362 | - | 238 | 266 | - | - | - | - | - | - | - |
| Stage 2 | 238 | 263 | - | 296 | 360 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 46.2 | 100.7 | 0.8 | 0.2 |
| HCM LOS | E | F | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 798 | - | - | 145 | 50 | 730 | - | - |
| HCM Lane V/C Ratio | 0.095 | - | - | 0.412 | 0.261 | 0.022 | - | - |
| HCM Control Delay (s) | 10 | - | - | 46.2 | 100.7 | 10 | - | - |
| HCM Lane LOS | A | - | - | E | F | B | - | - |
| HCM 95th %tile Q(veh) | 0.3 | - | - | 1.8 | 0.9 | 0.1 | - | - |

# Appendix G

## Total Traffic Synchro Reports



| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 18 | 6 | 6 | 81 | 7 | 65 | 26 | 315 | 113 | 95 | 471 | 41 |
| Future Volume (vph) | 18 | 6 | 6 | 81 | 7 | 65 | 26 | 315 | 113 | 95 | 471 | 41 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (m) | 25.0 | | 0.0 | 25.0 | | 0.0 | 20.0 | | 0.0 | 20.0 | | 30.0 |
| Storage Lanes | 1 | | 0 | 1 | | 0 | 1 | | 0 | 1 | | 1 |
| Taper Length (m) | 25.0 | | | 25.0 | | | 20.0 | | | 20.0 | | |
| 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 |
| Ped Bike Factor | 1.00 | 0.97 | | 0.95 | 0.98 | | 1.00 | 0.99 | | 1.00 | | 0.98 |
| Frt | | 0.925 | | | 0.865 | | | 0.960 | | | | 0.850 |
| Flt Protected | 0.950 | | | 0.950 | | | 0.950 | | | 0.950 | | |
| Satd. Flow (prot) | 1805 | 1697 | 0 | 1770 | 1464 | 0 | 1736 | 1599 | 0 | 1671 | 1776 | 1615 |
| Flt Permitted | 0.706 | | | 0.748 | | | 0.379 | | | 0.496 | | |
| Satd. Flow (perm) | 1337 | 1697 | 0 | 1325 | 1464 | 0 | 691 | 1599 | 0 | 871 | 1776 | 1577 |
| Right Turn on Red | | | Yes | | | Yes | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | 7 | | | 71 | | | 33 | | | | 87 |
| Link Speed (k/h) | | 50 | | | 50 | | | 50 | | | 50 | |
| Link Distance (m) | | 53.1 | | | 392.2 | | | 191.3 | | | 343.1 | |
| Travel Time (s) | | 3.8 | | | 28.2 | | | 13.8 | | | 24.7 | |
| Confl. Peds. (#/hr) | 2 | | 26 | 26 | | 2 | 3 | | 3 | 3 | | 3 |
| 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 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 2% | 0% | 11% | 4% | 16% | 6% | 8% | 7% | 0% |
| Adj. Flow (vph) | 20 | 7 | 7 | 88 | 8 | 71 | 28 | 342 | 123 | 103 | 512 | 45 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 20 | 14 | 0 | 88 | 79 | 0 | 28 | 465 | 0 | 103 | 512 | 45 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(m) | | 3.6 | | | 3.6 | | | 3.6 | | | 3.6 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 4.8 | | | 4.8 | | | 4.8 | | | 4.8 | |
| Two way Left Turn Lane | | | | | | | | Yes | | | Yes | |
| Headway 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 |
| Turning Speed (k/h) | 25 | | 15 | 25 | | 15 | 25 | | 15 | 25 | | 15 |
| Number of Detectors | 1 | 2 | | 1 | 2 | | 1 | 2 | | 1 | 2 | 1 |
| Detector Template | Left | Thru | | Left | Thru | | Left | Thru | | Left | Thru | Right |
| Leading Detector (m) | 2.0 | 10.0 | | 2.0 | 10.0 | | 2.0 | 10.0 | | 2.0 | 10.0 | 2.0 |
| Trailing Detector (m) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 |
| Detector 1 Position(m) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 |
| Detector 1 Size(m) | 2.0 | 0.6 | | 2.0 | 0.6 | | 2.0 | 0.6 | | 2.0 | 0.6 | 2.0 |
| Detector 1 Type | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | Cl+Ex |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 |
| Detector 1 Queue (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 |
| Detector 1 Delay (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 |
| Detector 2 Position(m) | | 9.4 | | | 9.4 | | | 9.4 | | | 9.4 | |
| Detector 2 Size(m) | | 0.6 | | | 0.6 | | | 0.6 | | | 0.6 | |
| Detector 2 Type | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |





| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Turn Type | Perm | NA | | Perm | NA | | pm+pt | NA | | Perm | NA | Perm |
| Protected Phases | | 4 | | | 8 | | 5 | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | 6 |
| Detector Phase | 4 | 4 | | 8 | 8 | | 5 | 2 | | 6 | 6 | 6 |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 10.0 | 10.0 | | 10.0 | 10.0 | | 7.0 | 35.0 | | 35.0 | 35.0 | 35.0 |
| Minimum Split (s) | 32.0 | 32.0 | | 32.0 | 32.0 | | 12.0 | 42.0 | | 44.0 | 44.0 | 44.0 |
| Total Split (s) | 32.0 | 32.0 | | 32.0 | 32.0 | | 12.0 | 56.0 | | 44.0 | 44.0 | 44.0 |
| Total Split (%) | 36.4% | 36.4% | | 36.4% | 36.4% | | 13.6% | 63.6% | | 50.0% | 50.0% | 50.0% |
| Maximum Green (s) | 26.0 | 26.0 | | 26.0 | 26.0 | | 8.0 | 49.0 | | 37.0 | 37.0 | 37.0 |
| Yellow Time (s) | 3.7 | 3.7 | | 3.7 | 3.7 | | 3.0 | 3.8 | | 3.8 | 3.8 | 3.8 |
| All-Red Time (s) | 2.3 | 2.3 | | 2.3 | 2.3 | | 1.0 | 3.2 | | 3.2 | 3.2 | 3.2 |
| Lost Time Adjust (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 6.0 | 6.0 | | 6.0 | 6.0 | | 4.0 | 7.0 | | 7.0 | 7.0 | 7.0 |
| Lead/Lag | | | | | | | Lead | | | Lag | Lag | Lag |
| Lead-Lag Optimize? | | | | | | | Yes | | | Yes | Yes | Yes |
| Vehicle Extension (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | 5.0 |
| Recall Mode | None | None | | None | None | | None | Min | | Min | Min | Min |
| Walk Time (s) | 15.0 | 15.0 | | 15.0 | 15.0 | | | 26.0 | | 26.0 | 26.0 | 26.0 |
| Flash Dont Walk (s) | 8.0 | 8.0 | | 8.0 | 8.0 | | | 9.0 | | 9.0 | 9.0 | 9.0 |
| Pedestrian Calls (#/hr) | 0 | 0 | | 0 | 0 | | | 0 | | 0 | 0 | 0 |
| Act Effct Green (s) | 12.2 | 12.2 | | 12.2 | 12.2 | | 46.6 | 45.1 | | 41.0 | 41.0 | 41.0 |
| Actuated g/C Ratio | 0.19 | 0.19 | | 0.19 | 0.19 | | 0.71 | 0.69 | | 0.63 | 0.63 | 0.63 |
| v/c Ratio | 0.08 | 0.04 | | 0.36 | 0.24 | | 0.05 | 0.42 | | 0.19 | 0.46 | 0.04 |
| Control Delay | 24.9 | 18.8 | | 29.4 | 10.4 | | 4.4 | 7.4 | | 11.4 | 12.5 | 0.8 |
| Queue Delay | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 |
| Total Delay | 24.9 | 18.8 | | 29.4 | 10.4 | | 4.4 | 7.4 | | 11.4 | 12.5 | 0.8 |
| LOS | C | B | | C | B | | A | A | | B | B | A |
| Approach Delay | | 22.4 | | | 20.4 | | | 7.2 | | | 11.5 | |
| Approach LOS | | C | | | C | | | A | | | B | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Cycle Length: 88 | | | |
| Actuated Cycle Length: 65.3 | | | |
| Natural Cycle: 90 | | | |
| Control Type: Semi Act-Uncoord | | | |
| Maximum v/c Ratio: 0.46 | | | |
| Intersection Signal Delay: 11.3 | | Intersection LOS: B | |
| Intersection Capacity Utilization 89.6% | | ICU Level of Service E | |
| Analysis Period (min) 15 | | | |

Splits and Phases: 101: St. David Street North & Strathallan Street

## Queues
## 101: St. David Street North & Strathallan Street

Total - 2031
AM Peak Hour

| Lane Group | EBL | EBT | WBL | WBT | NBL | NBT | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|
| Lane Group Flow (vph) | 20 | 14 | 88 | 79 | 28 | 465 | 103 | 512 | 45 |
| v/c Ratio | 0.08 | 0.04 | 0.36 | 0.24 | 0.05 | 0.42 | 0.19 | 0.46 | 0.04 |
| Control Delay | 24.9 | 18.8 | 29.4 | 10.4 | 4.4 | 7.4 | 11.4 | 12.5 | 0.8 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 24.9 | 18.8 | 29.4 | 10.4 | 4.4 | 7.4 | 11.4 | 12.5 | 0.8 |
| Queue Length 50th (m) | 1.9 | 0.7 | 8.8 | 0.8 | 1.0 | 23.8 | 4.7 | 28.9 | 0.0 |
| Queue Length 95th (m) | 8.2 | 5.5 | 24.8 | 11.8 | 3.7 | 51.7 | 19.8 | 89.1 | 1.7 |
| Internal Link Dist (m) | | 29.1 | | 368.2 | | 167.3 | | 319.1 | |
| Turn Bay Length (m) | 25.0 | | 25.0 | | 20.0 | | 20.0 | | 30.0 |
| Base Capacity (vph) | 542 | 692 | 537 | 635 | 623 | 1274 | 564 | 1149 | 1051 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.04 | 0.02 | 0.16 | 0.12 | 0.04 | 0.36 | 0.18 | 0.45 | 0.04 |

| Intersection Summary |
|---|



## HCM 6th Signalized Intersection Summary
## 101: St. David Street North & Strathallan Street

Total - 2031
AM Peak Hour

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 18 | 6 | 6 | 81 | 7 | 65 | 26 | 315 | 113 | 95 | 471 | 41 |
| Future Volume (veh/h) | 18 | 6 | 6 | 81 | 7 | 65 | 26 | 315 | 113 | 95 | 471 | 41 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 0.95 | | 0.94 | 0.94 | | 0.94 | 1.00 | | 1.00 | 1.00 | | 1.00 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1900 | 1900 | 1900 | 1870 | 1900 | 1737 | 1841 | 1663 | 1811 | 1781 | 1796 | 1900 |
| Adj Flow Rate, veh/h | 20 | 7 | 7 | 88 | 8 | 71 | 28 | 342 | 123 | 103 | 512 | 45 |
| 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 |
| Percent Heavy Veh, % | 0 | 0 | 0 | 2 | 0 | 11 | 4 | 16 | 6 | 8 | 7 | 0 |
| Cap, veh/h | 324 | 182 | 182 | 379 | 34 | 300 | 428 | 698 | 251 | 484 | 897 | 802 |
| Arrive On Green | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 | 0.04 | 0.60 | 0.60 | 0.50 | 0.50 | 0.50 |
| Sat Flow, veh/h | 1275 | 842 | 842 | 1318 | 156 | 1389 | 1753 | 1167 | 420 | 882 | 1796 | 1605 |
| Grp Volume(v), veh/h | 20 | 0 | 14 | 88 | 0 | 79 | 28 | 0 | 465 | 103 | 512 | 45 |
| Grp Sat Flow(s),veh/h/ln | 1275 | 0 | 1685 | 1318 | 0 | 1545 | 1753 | 0 | 1586 | 882 | 1796 | 1605 |
| Q Serve(g_s), s | 0.9 | 0.0 | 0.5 | 4.0 | 0.0 | 3.0 | 0.5 | 0.0 | 11.7 | 5.3 | 14.0 | 1.0 |
| Cycle Q Clear(g_c), s | 3.9 | 0.0 | 0.5 | 4.4 | 0.0 | 3.0 | 0.5 | 0.0 | 11.7 | 10.0 | 14.0 | 1.0 |
| Prop In Lane | 1.00 | | 0.50 | 1.00 | | 0.90 | 1.00 | | 0.26 | 1.00 | | 1.00 |
| Lane Grp Cap(c), veh/h | 324 | 0 | 364 | 379 | 0 | 333 | 428 | 0 | 949 | 484 | 897 | 802 |
| V/C Ratio(X) | 0.06 | 0.00 | 0.04 | 0.23 | 0.00 | 0.24 | 0.07 | 0.00 | 0.49 | 0.21 | 0.57 | 0.06 |
| Avail Cap(c_a), veh/h | 522 | 0 | 625 | 583 | 0 | 573 | 554 | 0 | 1109 | 509 | 949 | 848 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 24.3 | 0.0 | 21.7 | 23.5 | 0.0 | 22.7 | 8.5 | 0.0 | 8.0 | 12.8 | 12.3 | 9.0 |
| Incr Delay (d2), s/veh | 0.2 | 0.0 | 0.1 | 0.7 | 0.0 | 0.8 | 0.1 | 0.0 | 0.8 | 0.5 | 1.3 | 0.1 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 0.2 | 0.0 | 0.1 | 0.8 | 0.0 | 0.7 | 0.0 | 0.0 | 0.2 | 0.4 | 1.6 | 0.1 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 24.5 | 0.0 | 21.8 | 24.1 | 0.0 | 23.5 | 8.6 | 0.0 | 8.8 | 13.3 | 13.6 | 9.1 |
| LnGrp LOS | C | A | C | C | A | C | A | A | A | B | B | A |
| Approach Vol, veh/h | | 34 | | | 167 | | | 493 | | | 660 | |
| Approach Delay, s/veh | | 23.4 | | | 23.8 | | | 8.8 | | | 13.2 | |
| Approach LOS | | C | | | C | | | A | | | B | |

| Timer - Assigned Phs | | 2 | | 4 | 5 | 6 | | 8 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Phs Duration (G+Y+Rc), s | | 48.9 | | 21.1 | 6.9 | 42.0 | | 21.1 | | | | |
| Change Period (Y+Rc), s | | 7.0 | | 6.0 | 4.0 | 7.0 | | 6.0 | | | | |
| Max Green Setting (Gmax), s | | 49.0 | | 26.0 | 8.0 | 37.0 | | 26.0 | | | | |
| Max Q Clear Time (g_c+I1), s | | 13.7 | | 5.9 | 2.5 | 16.0 | | 6.4 | | | | |
| Green Ext Time (p_c), s | | 7.9 | | 0.2 | 0.0 | 8.6 | | 1.5 | | | | |

| Intersection Summary | | | |
|---|---|---|---|
| HCM 6th Ctrl Delay | | 13.2 | |
| HCM 6th LOS | | B | |

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 6 | 0 | 3 | 7 | 0 | 8 | 14 | 485 | 6 | 6 | 573 | 5 |
| Future Volume (vph) | 6 | 0 | 3 | 7 | 0 | 8 | 14 | 485 | 6 | 6 | 573 | 5 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (m) | 0.0 | | 0.0 | 0.0 | | 0.0 | 15.0 | | 0.0 | 15.0 | | 0.0 |
| Storage Lanes | 0 | | 0 | 0 | | 0 | 1 | | 0 | 1 | | 0 |
| Taper Length (m) | 7.5 | | | 7.5 | | | 5.0 | | | 5.0 | | |
| 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 |
| Ped Bike Factor | | | | | | | | | | | | |
| Frt | | 0.959 | | | 0.929 | | | 0.998 | | | 0.999 | |
| Flt Protected | | 0.966 | | | 0.977 | | 0.950 | | | 0.950 | | |
| Satd. Flow (prot) | 0 | 1760 | 0 | 0 | 1725 | 0 | 1671 | 1726 | 0 | 1805 | 1808 | 0 |
| Flt Permitted | | 0.966 | | | 0.977 | | 0.950 | | | 0.950 | | |
| Satd. Flow (perm) | 0 | 1760 | 0 | 0 | 1725 | 0 | 1671 | 1726 | 0 | 1805 | 1808 | 0 |
| Link Speed (k/h) | | 40 | | | 40 | | | 50 | | | 50 | |
| Link Distance (m) | | 166.9 | | | 64.1 | | | 236.2 | | | 191.3 | |
| Travel Time (s) | | 15.0 | | | 5.8 | | | 17.0 | | | 13.8 | |
| Confl. Peds. (#/hr) | 1 | | | | | 1 | 2 | | 6 | 6 | | 2 |
| 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 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 0% | 0% | 8% | 10% | 0% | 0% | 5% | 0% |
| Adj. Flow (vph) | 7 | 0 | 3 | 8 | 0 | 9 | 15 | 527 | 7 | 7 | 623 | 5 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 10 | 0 | 0 | 17 | 0 | 15 | 534 | 0 | 7 | 628 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(m) | | 0.0 | | | 0.0 | | | 3.6 | | | 3.6 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 4.8 | | | 4.8 | | | 4.8 | | | 4.8 | |
| Two way Left Turn Lane | | | | | | | | Yes | | | Yes | |
| Headway 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 |
| Turning Speed (k/h) | 25 | | 15 | 25 | | 15 | 25 | | 15 | 25 | | 15 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Control Type: Unsignalized | | | |
| Intersection Capacity Utilization | 40.8% | ICU Level of Service A | |
| Analysis Period (min) | 15 | | |





| Intersection | |
|---|---|
| Int Delay, s/veh | 0.6 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 6 | 0 | 3 | 7 | 0 | 8 | 14 | 485 | 6 | 6 | 573 | 5 |
| Future Vol, veh/h | 6 | 0 | 3 | 7 | 0 | 8 | 14 | 485 | 6 | 6 | 573 | 5 |
| Conflicting Peds, #/hr | 1 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 6 | 6 | 0 | 2 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | 15 | - | - | 15 | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 10 | 0 | 0 | 5 | 0 |
| Mvmt Flow | 7 | 0 | 3 | 8 | 0 | 9 | 15 | 527 | 7 | 7 | 623 | 5 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1208 | 1212 | 628 | 1208 | 1211 | 538 | 630 | 0 | 0 | 540 | 0 | 0 |
| Stage 1 | 642 | 642 | - | 567 | 567 | - | - | - | - | - | - | - |
| Stage 2 | 566 | 570 | - | 641 | 644 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.18 | - | - | 4.1 | - | - |
| Critical Hdwy Stg 1 | 6.1 | 5.5 | - | 6.1 | 5.5 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.1 | 5.5 | - | 6.1 | 5.5 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 4 | 3.3 | 3.5 | 4 | 3.3 | 2.272 | - | - | 2.2 | - | - |
| Pot Cap-1 Maneuver | 161 | 184 | 487 | 161 | 184 | 547 | 924 | - | - | 1039 | - | - |
| Stage 1 | 466 | 472 | - | 512 | 510 | - | - | - | - | - | - | - |
| Stage 2 | 513 | 509 | - | 466 | 471 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 155 | 178 | 486 | 156 | 178 | 544 | 922 | - | - | 1034 | - | - |
| Mov Cap-2 Maneuver | 155 | 178 | - | 156 | 178 | - | - | - | - | - | - | - |
| Stage 1 | 458 | 468 | - | 501 | 499 | - | - | - | - | - | - | - |
| Stage 2 | 496 | 498 | - | 460 | 467 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 23.8 | 20.3 | 0.2 | 0.1 |
| HCM LOS | C | C | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 922 | - | - | 201 | 252 | 1034 | - | - |
| HCM Lane V/C Ratio | 0.017 | - | - | 0.049 | 0.065 | 0.006 | - | - |
| HCM Control Delay (s) | 9 | - | - | 23.8 | 20.3 | 8.5 | - | - |
| HCM Lane LOS | A | - | - | C | C | A | - | - |
| HCM 95th %tile Q(veh) | 0.1 | - | - | 0.2 | 0.2 | 0 | - | - |

| Lane Group | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (vph) | 1 | 11 | 11 | 0 | 0 | 4 |
| Future Volume (vph) | 1 | 11 | 11 | 0 | 0 | 4 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | | | | | | |
| Frt | | | | | 0.865 | |
| Flt Protected | | 0.996 | | | | |
| Satd. Flow (prot) | 0 | 1892 | 1900 | 0 | 1644 | 0 |
| Flt Permitted | | 0.996 | | | | |
| Satd. Flow (perm) | 0 | 1892 | 1900 | 0 | 1644 | 0 |
| Link Speed (k/h) | | 50 | 40 | | 50 | |
| Link Distance (m) | | 64.1 | 202.8 | | 37.1 | |
| Travel Time (s) | | 4.6 | 18.3 | | 2.7 | |
| Confl. Peds. (#/hr) | | | | | 5 | 5 |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 0% | 0% |
| Adj. Flow (vph) | 1 | 12 | 12 | 0 | 0 | 4 |
| Shared Lane Traffic (%) | | | | | | |
| Lane Group Flow (vph) | 0 | 13 | 12 | 0 | 4 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Left | Right | Left | Right |
| Median Width(m) | | 0.0 | 0.0 | | 3.6 | |
| Link Offset(m) | | 0.0 | 0.0 | | 0.0 | |
| Crosswalk Width(m) | | 4.8 | 4.8 | | 4.8 | |
| Two way Left Turn Lane | | | | | | |
| Headway Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Turning Speed (k/h) | 25 | | | 15 | 25 | 15 |
| Sign Control | | Free | Free | | Stop | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Control Type: Unsignalized | | | |
| Intersection Capacity Utilization | 14.9% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |





| Intersection | |
|---|---|
| Int Delay, s/veh | 1.5 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 1 | 11 | 11 | 0 | 0 | 4 |
| Future Vol, veh/h | 1 | 11 | 11 | 0 | 0 | 4 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 5 | 5 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 1 | 12 | 12 | 0 | 0 | 4 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 12 | 0 | - | 0 | 31 | 17 |
| Stage 1 | - | - | - | - | 12 | - |
| Stage 2 | - | - | - | - | 19 | - |
| Critical Hdwy | 4.1 | - | - | - | 6.4 | 6.2 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.4 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.4 | - |
| Follow-up Hdwy | 2.2 | - | - | - | 3.5 | 3.3 |
| Pot Cap-1 Maneuver | 1620 | - | - | - | 988 | 1068 |
| Stage 1 | - | - | - | - | 1016 | - |
| Stage 2 | - | - | - | - | 1009 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 1620 | - | - | - | 987 | 1063 |
| Mov Cap-2 Maneuver | - | - | - | - | 987 | - |
| Stage 1 | - | - | - | - | 1015 | - |
| Stage 2 | - | - | - | - | 1009 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0.6 | 0 | 8.4 |
| HCM LOS | | | A |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1620 | - | - | - | 1063 |
| HCM Lane V/C Ratio | 0.001 | - | - | - | 0.004 |
| HCM Control Delay (s) | 7.2 | 0 | - | - | 8.4 |
| HCM Lane LOS | A | A | - | - | A |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 0 |

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 126 | 23 | 29 | 65 | 24 | 45 | 94 | 597 | 89 | 40 | 545 | 83 |
| Future Volume (vph) | 126 | 23 | 29 | 65 | 24 | 45 | 94 | 597 | 89 | 40 | 545 | 83 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (m) | 25.0 | | 0.0 | 25.0 | | 0.0 | 20.0 | | 0.0 | 20.0 | | 30.0 |
| Storage Lanes | 1 | | 0 | 1 | | 0 | 1 | | 0 | 1 | | 1 |
| Taper Length (m) | 25.0 | | | 25.0 | | | 20.0 | | | 20.0 | | |
| 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 |
| Ped Bike Factor | 0.99 | 0.97 | | 0.97 | 0.98 | | 1.00 | 1.00 | | 1.00 | | 0.98 |
| Frt | | 0.916 | | | 0.902 | | | 0.980 | | | | 0.850 |
| Flt Protected | 0.950 | | | 0.950 | | | 0.950 | | | 0.950 | | |
| Satd. Flow (prot) | 1805 | 1686 | 0 | 1719 | 1675 | 0 | 1805 | 1818 | 0 | 1752 | 1845 | 1615 |
| Flt Permitted | 0.708 | | | 0.720 | | | 0.294 | | | 0.375 | | |
| Satd. Flow (perm) | 1327 | 1686 | 0 | 1259 | 1675 | 0 | 558 | 1818 | 0 | 689 | 1845 | 1575 |
| Right Turn on Red | | | Yes | | | Yes | | | Yes | | | Yes |
| Satd. Flow (RTOR) | | 32 | | | 49 | | | 14 | | | | 87 |
| Link Speed (k/h) | | 50 | | | 50 | | | 50 | | | 50 | |
| Link Distance (m) | | 53.1 | | | 392.2 | | | 191.3 | | | 343.1 | |
| Travel Time (s) | | 3.8 | | | 28.2 | | | 13.8 | | | 24.7 | |
| Confl. Peds. (#/hr) | 8 | | 19 | 19 | | 8 | 4 | | 9 | 9 | | 4 |
| 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 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 5% | 0% | 0% | 0% | 2% | 2% | 3% | 3% | 0% |
| Adj. Flow (vph) | 137 | 25 | 32 | 71 | 26 | 49 | 102 | 649 | 97 | 43 | 592 | 90 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 137 | 57 | 0 | 71 | 75 | 0 | 102 | 746 | 0 | 43 | 592 | 90 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(m) | | 3.6 | | | 3.6 | | | 3.6 | | | 3.6 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 4.8 | | | 4.8 | | | 4.8 | | | 4.8 | |
| Two way Left Turn Lane | | | | | | | | Yes | | | Yes | |
| Headway 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 |
| Turning Speed (k/h) | 25 | | 15 | 25 | | 15 | 25 | | 15 | 25 | | 15 |
| Number of Detectors | 1 | 2 | | 1 | 2 | | 1 | 2 | | 1 | 2 | 1 |
| Detector Template | Left | Thru | | Left | Thru | | Left | Thru | | Left | Thru | Right |
| Leading Detector (m) | 2.0 | 10.0 | | 2.0 | 10.0 | | 2.0 | 10.0 | | 2.0 | 10.0 | 2.0 |
| Trailing Detector (m) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 |
| Detector 1 Position(m) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 |
| Detector 1 Size(m) | 2.0 | 0.6 | | 2.0 | 0.6 | | 2.0 | 0.6 | | 2.0 | 0.6 | 2.0 |
| Detector 1 Type | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | | Cl+Ex | Cl+Ex | Cl+Ex |
| Detector 1 Channel | | | | | | | | | | | | |
| Detector 1 Extend (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 |
| Detector 1 Queue (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 |
| Detector 1 Delay (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 |
| Detector 2 Position(m) | | 9.4 | | | 9.4 | | | 9.4 | | | 9.4 | |
| Detector 2 Size(m) | | 0.6 | | | 0.6 | | | 0.6 | | | 0.6 | |
| Detector 2 Type | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | | | Cl+Ex | |
| Detector 2 Channel | | | | | | | | | | | | |
| Detector 2 Extend (s) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |





| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Turn Type | Perm | NA | | Perm | NA | | pm+pt | NA | | Perm | NA | Perm |
| Protected Phases | | 4 | | | 8 | | 5 | 2 | | | 6 | |
| Permitted Phases | 4 | | | 8 | | | 2 | | | 6 | | 6 |
| Detector Phase | 4 | 4 | | 8 | 8 | | 5 | 2 | | 6 | 6 | 6 |
| Switch Phase | | | | | | | | | | | | |
| Minimum Initial (s) | 10.0 | 10.0 | | 10.0 | 10.0 | | 7.0 | 35.0 | | 35.0 | 35.0 | 35.0 |
| Minimum Split (s) | 32.0 | 32.0 | | 32.0 | 32.0 | | 12.0 | 42.0 | | 44.0 | 44.0 | 44.0 |
| Total Split (s) | 32.0 | 32.0 | | 32.0 | 32.0 | | 12.0 | 56.0 | | 44.0 | 44.0 | 44.0 |
| Total Split (%) | 36.4% | 36.4% | | 36.4% | 36.4% | | 13.6% | 63.6% | | 50.0% | 50.0% | 50.0% |
| Maximum Green (s) | 26.0 | 26.0 | | 26.0 | 26.0 | | 8.0 | 49.0 | | 37.0 | 37.0 | 37.0 |
| Yellow Time (s) | 3.7 | 3.7 | | 3.7 | 3.7 | | 3.0 | 3.8 | | 3.8 | 3.8 | 3.8 |
| All-Red Time (s) | 2.3 | 2.3 | | 2.3 | 2.3 | | 1.0 | 3.2 | | 3.2 | 3.2 | 3.2 |
| Lost Time Adjust (s) | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 |
| Total Lost Time (s) | 6.0 | 6.0 | | 6.0 | 6.0 | | 4.0 | 7.0 | | 7.0 | 7.0 | 7.0 |
| Lead/Lag | | | | | | | Lead | | | Lag | Lag | Lag |
| Lead-Lag Optimize? | | | | | | | Yes | | | Yes | Yes | Yes |
| Vehicle Extension (s) | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | | 5.0 | 5.0 | 5.0 |
| Recall Mode | None | None | | None | None | | None | Min | | Min | Min | Min |
| Walk Time (s) | 15.0 | 15.0 | | 15.0 | 15.0 | | | 26.0 | | 26.0 | 26.0 | 26.0 |
| Flash Dont Walk (s) | 8.0 | 8.0 | | 8.0 | 8.0 | | | 9.0 | | 9.0 | 9.0 | 9.0 |
| Pedestrian Calls (#/hr) | 0 | 0 | | 0 | 0 | | | 0 | | 0 | 0 | 0 |
| Act Effct Green (s) | 15.1 | 15.1 | | 15.1 | 15.1 | | 50.3 | 49.3 | | 40.5 | 40.5 | 40.5 |
| Actuated g/C Ratio | 0.21 | 0.21 | | 0.21 | 0.21 | | 0.71 | 0.70 | | 0.57 | 0.57 | 0.57 |
| v/c Ratio | 0.48 | 0.15 | | 0.26 | 0.19 | | 0.19 | 0.59 | | 0.11 | 0.56 | 0.10 |
| Control Delay | 33.4 | 14.8 | | 28.4 | 13.2 | | 6.0 | 11.3 | | 13.7 | 18.1 | 3.8 |
| Queue Delay | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 |
| Total Delay | 33.4 | 14.8 | | 28.4 | 13.2 | | 6.0 | 11.3 | | 13.7 | 18.1 | 3.8 |
| LOS | C | B | | C | B | | A | B | | B | B | A |
| Approach Delay | | 27.9 | | | 20.5 | | | 10.7 | | | 16.1 | |
| Approach LOS | | C | | | C | | | B | | | B | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Cycle Length: 88 | | | |
| Actuated Cycle Length: 70.8 | | | |
| Natural Cycle: 90 | | | |
| Control Type: Semi Act-Uncoord | | | |
| Maximum v/c Ratio: 0.59 | | | |
| Intersection Signal Delay: 15.2 | | Intersection LOS: B | |
| Intersection Capacity Utilization 99.0% | | ICU Level of Service F | |
| Analysis Period (min) 15 | | | |

Splits and Phases: 101: St. David Street North & Strathallan Street

## Queues
## 101: St. David Street North & Strathallan Street

Total - 2031
PM Peak Hour

| Lane Group | EBL | EBT | WBL | WBT | NBL | NBT | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|
| Lane Group Flow (vph) | 137 | 57 | 71 | 75 | 102 | 746 | 43 | 592 | 90 |
| v/c Ratio | 0.48 | 0.15 | 0.26 | 0.19 | 0.19 | 0.59 | 0.11 | 0.56 | 0.10 |
| Control Delay | 33.4 | 14.8 | 28.4 | 13.2 | 6.0 | 11.3 | 13.7 | 18.1 | 3.8 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total Delay | 33.4 | 14.8 | 28.4 | 13.2 | 6.0 | 11.3 | 13.7 | 18.1 | 3.8 |
| Queue Length 50th (m) | 18.3 | 3.1 | 9.0 | 3.2 | 4.5 | 59.9 | 3.4 | 65.6 | 0.3 |
| Queue Length 95th (m) | 36.1 | 12.3 | 20.6 | 13.7 | 11.9 | 119.5 | 10.8 | 118.2 | 8.2 |
| Internal Link Dist (m) | | 29.1 | | 368.2 | | 167.3 | | 319.1 | |
| Turn Bay Length (m) | 25.0 | | 25.0 | | 20.0 | | 20.0 | | 30.0 |
| Base Capacity (vph) | 512 | 670 | 486 | 677 | 544 | 1290 | 402 | 1076 | 955 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reduced v/c Ratio | 0.27 | 0.09 | 0.15 | 0.11 | 0.19 | 0.58 | 0.11 | 0.55 | 0.09 |

Intersection Summary



## HCM 6th Signalized Intersection Summary
## 101: St. David Street North & Strathallan Street

Total - 2031
PM Peak Hour

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (veh/h) | 126 | 23 | 29 | 65 | 24 | 45 | 94 | 597 | 89 | 40 | 545 | 83 |
| Future Volume (veh/h) | 126 | 23 | 29 | 65 | 24 | 45 | 94 | 597 | 89 | 40 | 545 | 83 |
| Initial Q (Qb), veh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Ped-Bike Adj(A_pbT) | 0.96 | | 0.96 | 0.96 | | 0.96 | 1.00 | | 0.99 | 1.00 | | 0.99 |
| Parking Bus, Adj | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Work Zone On Approach | | No | | | No | | | No | | | No | |
| Adj Sat Flow, veh/h/ln | 1900 | 1900 | 1900 | 1826 | 1900 | 1900 | 1900 | 1870 | 1870 | 1856 | 1856 | 1900 |
| Adj Flow Rate, veh/h | 137 | 25 | 32 | 71 | 26 | 49 | 102 | 649 | 97 | 43 | 592 | 90 |
| 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 |
| Percent Heavy Veh, % | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 2 | 2 | 3 | 3 | 0 |
| Cap, veh/h | 336 | 163 | 209 | 342 | 127 | 239 | 414 | 960 | 143 | 330 | 869 | 747 |
| Arrive On Green | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 | 0.08 | 0.60 | 0.60 | 0.47 | 0.47 | 0.47 |
| Sat Flow, veh/h | 1298 | 737 | 943 | 1266 | 572 | 1077 | 1810 | 1588 | 237 | 707 | 1856 | 1595 |
| Grp Volume(v), veh/h | 137 | 0 | 57 | 71 | 0 | 75 | 102 | 0 | 746 | 43 | 592 | 90 |
| Grp Sat Flow(s),veh/h/ln | 1298 | 0 | 1680 | 1266 | 0 | 1649 | 1810 | 0 | 1826 | 707 | 1856 | 1595 |
| Q Serve(g_s), s | 7.2 | 0.0 | 2.0 | 3.6 | 0.0 | 2.8 | 1.9 | 0.0 | 20.4 | 3.2 | 18.6 | 2.4 |
| Cycle Q Clear(g_c), s | 10.0 | 0.0 | 2.0 | 5.6 | 0.0 | 2.8 | 1.9 | 0.0 | 20.4 | 13.5 | 18.6 | 2.4 |
| Prop In Lane | 1.00 | | 0.56 | 1.00 | | 0.65 | 1.00 | | 0.13 | 1.00 | | 1.00 |
| Lane Grp Cap(c), veh/h | 336 | 0 | 373 | 342 | 0 | 366 | 414 | 0 | 1103 | 330 | 869 | 747 |
| V/C Ratio(X) | 0.41 | 0.00 | 0.15 | 0.21 | 0.00 | 0.21 | 0.25 | 0.00 | 0.68 | 0.13 | 0.68 | 0.12 |
| Avail Cap(c_a), veh/h | 500 | 0 | 585 | 502 | 0 | 574 | 459 | 0 | 1197 | 349 | 919 | 790 |
| HCM Platoon Ratio | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Upstream Filter(I) | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Uniform Delay (d), s/veh | 27.8 | 0.0 | 23.4 | 25.7 | 0.0 | 23.7 | 10.3 | 0.0 | 9.9 | 17.8 | 15.5 | 11.2 |
| Incr Delay (d2), s/veh | 1.7 | 0.0 | 0.4 | 0.6 | 0.0 | 0.6 | 0.7 | 0.0 | 2.0 | 0.4 | 2.7 | 0.2 |
| Initial Q Delay(d3),s/veh | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| %ile BackOfQ(50%),veh/ln | 1.5 | 0.0 | 0.5 | 0.7 | 0.0 | 0.7 | 0.2 | 0.0 | 0.9 | 0.3 | 3.3 | 0.3 |
| Unsig. Movement Delay, s/veh | | | | | | | | | | | | |
| LnGrp Delay(d),s/veh | 29.5 | 0.0 | 23.8 | 26.3 | 0.0 | 24.3 | 11.0 | 0.0 | 11.9 | 18.2 | 18.2 | 11.3 |
| LnGrp LOS | C | A | C | C | A | C | B | A | B | B | B | B |
| Approach Vol, veh/h | | 194 | | | 146 | | | 848 | | | 725 | |
| Approach Delay, s/veh | | 27.8 | | | 25.3 | | | 11.8 | | | 17.3 | |
| Approach LOS | | C | | | C | | | B | | | B | |
| Timer - Assigned Phs | | 2 | | 4 | 5 | 6 | | 8 | | | | |
| Phs Duration (G+Y+Rc), s | | 52.2 | | 22.6 | 10.2 | 42.0 | | 22.6 | | | | |
| Change Period (Y+Rc), s | | 7.0 | | 6.0 | 4.0 | 7.0 | | 6.0 | | | | |
| Max Green Setting (Gmax), s | | 49.0 | | 26.0 | 8.0 | 37.0 | | 26.0 | | | | |
| Max Q Clear Time (g_c+I1), s | | 22.4 | | 12.0 | 3.9 | 20.6 | | 7.6 | | | | |
| Green Ext Time (p_c), s | | 12.4 | | 1.4 | 0.2 | 8.2 | | 1.3 | | | | |
| Intersection Summary | | | | | | | | | | | | |
| HCM 6th Ctrl Delay | | | 16.5 | | | | | | | | | |
| HCM 6th LOS | | | B | | | | | | | | | |

| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 10 | 2 | 43 | 10 | 1 | 4 | 70 | 838 | 26 | 17 | 743 | 10 |
| Future Volume (vph) | 10 | 2 | 43 | 10 | 1 | 4 | 70 | 838 | 26 | 17 | 743 | 10 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Storage Length (m) | 0.0 | | 0.0 | 0.0 | | 0.0 | 15.0 | | 0.0 | 15.0 | | 0.0 |
| Storage Lanes | 0 | | 0 | 0 | | 0 | 1 | | 0 | 1 | | 0 |
| Taper Length (m) | 7.5 | | | 7.5 | | | 5.0 | | | 5.0 | | |
| 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 |
| Ped Bike Factor | | | | | | | | | | | | |
| Frt | | 0.894 | | | 0.966 | | | 0.996 | | | 0.998 | |
| Flt Protected | | 0.991 | | | 0.967 | | 0.950 | | | 0.950 | | |
| Satd. Flow (prot) | 0 | 1683 | 0 | 0 | 1775 | 0 | 1805 | 1874 | 0 | 1805 | 1842 | 0 |
| Flt Permitted | | 0.991 | | | 0.967 | | 0.950 | | | 0.950 | | |
| Satd. Flow (perm) | 0 | 1683 | 0 | 0 | 1775 | 0 | 1805 | 1874 | 0 | 1805 | 1842 | 0 |
| Link Speed (k/h) | | 40 | | | 40 | | | 50 | | | 50 | |
| Link Distance (m) | | 166.9 | | | 60.0 | | | 236.2 | | | 191.3 | |
| Travel Time (s) | | 15.0 | | | 5.4 | | | 17.0 | | | 13.8 | |
| Confl. Peds. (#/hr) | | | | | | | 15 | | 8 | 8 | | 15 |
| 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 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 0% | 0% | 0% | 1% | 0% | 0% | 3% | 0% |
| Adj. Flow (vph) | 11 | 2 | 47 | 11 | 1 | 4 | 76 | 911 | 28 | 18 | 808 | 11 |
| Shared Lane Traffic (%) | | | | | | | | | | | | |
| Lane Group Flow (vph) | 0 | 60 | 0 | 0 | 16 | 0 | 76 | 939 | 0 | 18 | 819 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Right | Left | Left | Right | Left | Left | Right | Left | Left | Right |
| Median Width(m) | | 0.0 | | | 0.0 | | | 3.6 | | | 3.6 | |
| Link Offset(m) | | 0.0 | | | 0.0 | | | 0.0 | | | 0.0 | |
| Crosswalk Width(m) | | 4.8 | | | 4.8 | | | 4.8 | | | 4.8 | |
| Two way Left Turn Lane | | | | | | | | Yes | | | Yes | |
| Headway 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 |
| Turning Speed (k/h) | 25 | | 15 | 25 | | 15 | 25 | | 15 | 25 | | 15 |
| Sign Control | | Stop | | | Stop | | | Free | | | Free | |

| Intersection Summary | | | |
|---|---|---|---|
| Area Type: | Other | | |
| Control Type: Unsignalized | | | |
| Intersection Capacity Utilization | 62.4% | ICU Level of Service | B |
| Analysis Period (min) | 15 | | |





| Intersection | |
|---|---|
| Int Delay, s/veh | 2.8 |

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Vol, veh/h | 10 | 2 | 43 | 10 | 1 | 4 | 70 | 838 | 26 | 17 | 743 | 10 |
| Future Vol, veh/h | 10 | 2 | 43 | 10 | 1 | 4 | 70 | 838 | 26 | 17 | 743 | 10 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 0 | 8 | 8 | 0 | 15 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | 15 | - | - | 15 | - | - |
| Veh in Median Storage, # | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 3 | 0 |
| Mvmt Flow | 11 | 2 | 47 | 11 | 1 | 4 | 76 | 911 | 28 | 18 | 808 | 11 |

| Major/Minor | Minor2 | | | Minor1 | | | Major1 | | | Major2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Conflicting Flow All | 1945 | 1964 | 829 | 1959 | 1955 | 933 | 834 | 0 | 0 | 947 | 0 | 0 |
| Stage 1 | 865 | 865 | - | 1085 | 1085 | - | - | - | - | - | - | - |
| Stage 2 | 1080 | 1099 | - | 874 | 870 | - | - | - | - | - | - | - |
| Critical Hdwy | 7.1 | 6.5 | 6.2 | 7.1 | 6.5 | 6.2 | 4.1 | - | - | 4.1 | - | - |
| Critical Hdwy Stg 1 | 6.1 | 5.5 | - | 6.1 | 5.5 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.1 | 5.5 | - | 6.1 | 5.5 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.5 | 4 | 3.3 | 3.5 | 4 | 3.3 | 2.2 | - | - | 2.2 | - | - |
| Pot Cap-1 Maneuver | 49 | 64 | 374 | 48 | 65 | 325 | 808 | - | - | 733 | - | - |
| Stage 1 | 351 | 374 | - | 265 | 295 | - | - | - | - | - | - | - |
| Stage 2 | 267 | 291 | - | 347 | 372 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 43 | 55 | 369 | 37 | 56 | 323 | 798 | - | - | 728 | - | - |
| Mov Cap-2 Maneuver | 43 | 55 | - | 37 | 56 | - | - | - | - | - | - | - |
| Stage 1 | 313 | 360 | - | 238 | 265 | - | - | - | - | - | - | - |
| Stage 2 | 237 | 262 | - | 294 | 358 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|---|---|---|---|---|
| HCM Control Delay, s | 47.2 | 108.6 | 0.7 | 0.2 |
| HCM LOS | E | F | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1 | WBLn1 | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|
| Capacity (veh/h) | 798 | - | - | 143 | 50 | 728 | - | - |
| HCM Lane V/C Ratio | 0.095 | - | - | 0.418 | 0.326 | 0.025 | - | - |
| HCM Control Delay (s) | 10 | - | - | 47.2 | 108.6 | 10.1 | - | - |
| HCM Lane LOS | A | - | - | E | F | B | - | - |
| HCM 95th %tile Q(veh) | 0.3 | - | - | 1.8 | 1.1 | 0.1 | - | - |

| Lane Group | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Volume (vph) | 5 | 40 | 12 | 0 | 0 | 3 |
| Future Volume (vph) | 5 | 40 | 12 | 0 | 0 | 3 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Lane Util. Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Ped Bike Factor | | | | | | |
| Frt | | | | | 0.865 | |
| Flt Protected | | 0.995 | | | | |
| Satd. Flow (prot) | 0 | 1890 | 1900 | 0 | 1644 | 0 |
| Flt Permitted | | 0.995 | | | | |
| Satd. Flow (perm) | 0 | 1890 | 1900 | 0 | 1644 | 0 |
| Link Speed (k/h) | | 50 | 40 | | 50 | |
| Link Distance (m) | | 60.0 | 206.9 | | 33.5 | |
| Travel Time (s) | | 4.3 | 18.6 | | 2.4 | |
| Confl. Peds. (#/hr) | | | | | 5 | 5 |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Heavy Vehicles (%) | 0% | 0% | 0% | 0% | 0% | 0% |
| Adj. Flow (vph) | 5 | 43 | 13 | 0 | 0 | 3 |
| Shared Lane Traffic (%) | | | | | | |
| Lane Group Flow (vph) | 0 | 48 | 13 | 0 | 3 | 0 |
| Enter Blocked Intersection | No | No | No | No | No | No |
| Lane Alignment | Left | Left | Left | Right | Left | Right |
| Median Width(m) | | 0.0 | 0.0 | | 3.6 | |
| Link Offset(m) | | 0.0 | 0.0 | | 0.0 | |
| Crosswalk Width(m) | | 4.8 | 4.8 | | 4.8 | |
| Two way Left Turn Lane | | | | | | |
| Headway Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Turning Speed (k/h) | 25 | | | 15 | 25 | 15 |
| 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 | | |





| Intersection | |
|---|---|
| Int Delay, s/veh | 1 |

| Movement | EBL | EBT | WBT | WBR | SBL | SBR |
|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | |
| Traffic Vol, veh/h | 5 | 40 | 12 | 0 | 0 | 3 |
| Future Vol, veh/h | 5 | 40 | 12 | 0 | 0 | 3 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 5 | 5 |
| Sign Control | Free | Free | Free | Free | Stop | Stop |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | - | - | - | 0 | - |
| Veh in Median Storage, # | - | 0 | 0 | - | 0 | - |
| Grade, % | - | 0 | 0 | - | 0 | - |
| Peak Hour Factor | 92 | 92 | 92 | 92 | 92 | 92 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 0 | 0 |
| Mvmt Flow | 5 | 43 | 13 | 0 | 0 | 3 |

| Major/Minor | Major1 | | Major2 | | Minor2 | |
|---|---|---|---|---|---|---|
| Conflicting Flow All | 13 | 0 | - | 0 | 71 | 18 |
| Stage 1 | - | - | - | - | 13 | - |
| Stage 2 | - | - | - | - | 58 | - |
| Critical Hdwy | 4.1 | - | - | - | 6.4 | 6.2 |
| Critical Hdwy Stg 1 | - | - | - | - | 5.4 | - |
| Critical Hdwy Stg 2 | - | - | - | - | 5.4 | - |
| Follow-up Hdwy | 2.2 | - | - | - | 3.5 | 3.3 |
| Pot Cap-1 Maneuver | 1619 | - | - | - | 938 | 1066 |
| Stage 1 | - | - | - | - | 1015 | - |
| Stage 2 | - | - | - | - | 970 | - |
| Platoon blocked, % | | - | - | - | | |
| Mov Cap-1 Maneuver | 1619 | - | - | - | 935 | 1061 |
| Mov Cap-2 Maneuver | - | - | - | - | 935 | - |
| Stage 1 | - | - | - | - | 1012 | - |
| Stage 2 | - | - | - | - | 970 | - |

| Approach | EB | WB | SB |
|---|---|---|---|
| HCM Control Delay, s | 0.8 | 0 | 8.4 |
| HCM LOS | | | A |

| Minor Lane/Major Mvmt | EBL | EBT | WBT | WBR | SBLn1 |
|---|---|---|---|---|---|
| Capacity (veh/h) | 1619 | - | - | - | 1061 |
| HCM Lane V/C Ratio | 0.003 | - | - | - | 0.003 |
| HCM Control Delay (s) | 7.2 | 0 | - | - | 8.4 |
| HCM Lane LOS | A | A | - | - | A |
| HCM 95th %tile Q(veh) | 0 | - | - | - | 0 |

# Appendix H

## Traffic Control Signal Warrants

# Analysis Sheet

Input Sheet | Results Sheet | Proposed Collision

GO TO Justification:

Intersection: St. David Street North & Parkside Drive, Fergus, Centre Wellir Count Date: 2024 Base Year

## Justification 1: Minimum Vehicle Volumes

**Restricted Flow Urban Conditions**

| Justification | Guidance Approach Lanes | | | | Percentage Warrant | | | | | | | | Total Across | Section Percent |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 Lanes | | 2 or More Lanes | | Hour Ending | | | | | | | | | |
| Flow Condition | FREE FLOW ☐ | RESTR. FLOW ☑ | FREE FLOW ☐ | RESTR. FLOW ☐ | 8:00 | 9:00 | 10:00 | 12:00 | 13:00 | 16:00 | 17:00 | 18:00 | | |
| 1A | 480 | 720 | 600 | 900 | 682 | 860 | 960 | 1,074 | 1,032 | 1,253 | 1,287 | 1,273 | | |
| | COMPLIANCE % | | | | 95 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 795 | 99 |
| 1B | 120 | 170 | 120 | 170 | 35 | 17 | 30 | 41 | 38 | 44 | 61 | 47 | | |
| | COMPLIANCE % | | | | 21 | 10 | 18 | 24 | 22 | 26 | 36 | 28 | 184 | 23 |
| **Restricted Flow Signal Justification 1:** | | | | | Both 1A and 1B 100% Fullfilled each of 8 hours — Yes ☐ No ☑ | | | | | | | | | |
| | | | | | Lesser of 1A or 1B at least 80% fulfilled each of 8 hours — Yes ☐ No ☑ | | | | | | | | | |

## Justification 2: Delay to Cross Traffic

**Restricted Flow Urban Conditions**

| Justification | Guidance Approach Lanes | | | | Percentage Warrant | | | | | | | | Total Across | Section Percent |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 lanes | | 2 or More lanes | | Hour Ending | | | | | | | | | |
| Flow Condition | FREE FLOW ☐ | RESTR. FLOW ☑ | FREE FLOW ☐ | RESTR. FLOW ☐ | 8:00 | 9:00 | 10:00 | 12:00 | 13:00 | 16:00 | 17:00 | 18:00 | | |
| 2A | 480 | 720 | 600 | 900 | 647 | 843 | 930 | 1,033 | 994 | 1,209 | 1,226 | 1,226 | | |
| | COMPLIANCE % | | | | 90 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 790 | 99 |
| 2B | 50 | 75 | 50 | 75 | 29 | 18 | 18 | 26 | 32 | 40 | 38 | 29 | | |
| | COMPLIANCE % | | | | 39 | 24 | 24 | 35 | 43 | 53 | 51 | 39 | 307 | 38 |
| **Restricted Flow Signal Justification 2:** | | | | | Both 2A and 2B 100% Fullfilled each of 8 hours — Yes ☐ No ☑ | | | | | | | | | |
| | | | | | Lesser of 2A or 2B at least 80% fulfilled each of 8 hours — Yes ☐ No ☑ | | | | | | | | | |

## Justification 3: Combination

**Combination Justification 1 and 2**

| Justification Satisfied 80% or More | | | | Two Justifications Satisfied 80% or More | |
|---|---|---|---|---|---|
| Justification 1 | Minimun Vehicular Volume | YES ☐ | NO ☑ | YES ☐ | NO ☑ |
| Justification 2 | Delay Cross Traffic | YES ☐ | NO ☑ | | NOT JUSTIFIED |

## Justification 4: Four Hour Volume

| Justification | Time Period | Total Volume of Both Approaches (Main) X | Heaviest Minor Approach Y (actual) | Required Value Y (warrant threshold) | Average % Compliance | Overall % Compliance |
|---|---|---|---|---|---|---|
| Justification 4 | 12:00 | 1,033 | 32 | 96 | 33 % | 46 % |
| | 16:00 | 1,209 | 35 | 80 | 44 % | |
| | 17:00 | 1,226 | 47 | 80 | 59 % | |
| | 18:00 | 1,226 | 40 | 80 | 50 % | |

# Analysis Sheet

Input Sheet | Results Sheet | Proposed Collision

GO TO Justification:

Intersection: St. David Street North & Parkside Drive, Fergus, Centre Wellir Count Date: 2024 Base Year

## Justification 5: Collision Experience

| Justification | Preceding Months | % Fulfillment | Overall % Compliance |
|---|---|---|---|
| Justification 5 | 1-12 | 0 % | 0 % |
| | 13-24 | 0 % | |
| | 25-36 | 0 % | |

## Justification 6: Pedestrian Volume

### Pedestrian Volume Analysis

| 8 Hour Vehicular Volume $V_8$ | | Net 8 Hour Pedestrian Volume | | | | |
|---|---|---|---|---|---|---|
| | | < 200 | 200 - 275 | 276 - 475 | 476 - 1000 | >1000 |
| Justification 6A | < 1440 | | | | | |
| | 1440 - 2600 | | | | | |
| | 2601 - 7000 | | | | | |
| | > 7000 | Not Justified | | | | |

### Pedestrian Delay Analysis

| Net Total 8 Hour Volume of Total Pedestrians | | Net Total 8 Hour Volume of Delayed Pedestrians | | |
|---|---|---|---|---|
| | | < 75 | 75 - 130 | > 130 |
| Justification 6B | < 200 | Not Justified | | |
| | 200 - 300 | | | |
| | > 300 | | | |

# Results Sheet

Input Sheet | Analysis Sheet | Proposed Collision

Intersection: St. David Street North & Parkside Drive, Fergus, Cen Count Date: 2024 Base Year

## Summary Results

| Justification | | | Compliance | | Signal Justified? YES | Signal Justified? NO |
|---|---|---|---|---|---|---|
| 1. Minimum Vehicular Volume | A | Total Volume | 99 | % | ☐ | ☑ |
| | B | Crossing Volume | 23 | % | | |
| 2. Delay to Cross Traffic | A | Main Road | 99 | % | ☐ | ☑ |
| | B | Crossing Road | 38 | % | | |
| 3. Combination | A | Justificaton 1 | 23 | % | ☐ | ☑ |
| | B | Justification 2 | 38 | % | | |
| 4. 4-Hr Volume | | | 46 | % | ☐ | ☑ |
| 5. Collision Experience | | | 0 | % | ☐ | ☑ |
| 6. Pedestrians | A | Volume | Justification not met | | ☐ | ☑ |
| | B | Delay | Justification not met | | | |

# Signal Justification Calculation for Forecasted Volumes
## (OTM Book 12 - Justification 7)

Horizon Year: Background - 2031
Region/City/Township: Fergus, Centre Wellington

Major Street: St. David Street North
Minor Street: Parkside Drive

North/South?: Y

Number of Approach Lanes: 1
Tee Intersection? N
Flow Conditions: Restricted

PM Forecast Only? N

| Warrant Results | | |
|---|---|---|
| 150% Satisfied | No | Justification for new intersections with forecast traffic |
| 120% Satisfied | No | Justification for existing intersections with forecast traffic |

| | Major Street | | | | | | Minor Street | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | St. David Street North | | | | | | Parkside Drive | | | | | | |
| | Northbound | | | Southbound | | | Eastbound | | | Westbound | | | Peds Crossing |
| Time Period | Left | Through | Right | Left | Through | Right | Left | Through | Right | Left | Through | Right | Main Road |
| AM Peak Hour | 14 | 485 | 6 | 5 | 573 | 5 | 6 | 0 | 3 | 5 | 0 | 6 | 0 |
| PM Peak Hour | 70 | 838 | 23 | 15 | 743 | 10 | 10 | 2 | 43 | 8 | 1 | 3 | 0 |
| Average Hourly Volume | 21 | 331 | 7 | 5 | 329 | 4 | 4 | 1 | 12 | 3 | 0 | 2 | 0 |

| Warrant | AHV |
|---|---|
| 1A - All | 719 |
| 1B - Minor | 22 |
| 2A - Major | 697 |
| 2B - Cross | 8 |

### Warrant 1 - Minimum Vehicular Volume

| | Approach Lanes | 1 | | 2 or more | | Average Hourly Volume |
|---|---|---|---|---|---|---|
| 1A | Flow Conditions | Free | Restricted | Free | Restricted | |
| | | | X | | | |
| | All Approaches | 480 | 720 | 600 | 900 | 719 |
| | | | | | % Fulfilled | 99.8% |

| | Approach Lanes | 1 | | 2 or more | | Average Hourly Volume |
|---|---|---|---|---|---|---|
| 1B | Flow Conditions | Free | Restricted | Free | Restricted | |
| | | | X | | | |
| | Minor Street Approaches | 120 | 170 | 120 | 170 | 22 |
| | | | | | % Fulfilled | 12.8% |

### Warrant 2 - Delay To Cross Traffic

| | Approach Lanes | 1 | | 2 or more | | Average Hourly Volume |
|---|---|---|---|---|---|---|
| 2A | Flow Conditions | Free | Restricted | Free | Restricted | |
| | | | X | | | |
| | Major Street Approaches | 480 | 720 | 600 | 900 | 697 |
| | | | | | % Fulfilled | 96.8% |

| | Approach Lanes | 1 | | 2 or more | | Average Hourly Volume |
|---|---|---|---|---|---|---|
| 2B | Flow Conditions | Free | Restricted | Free | Restricted | |
| | | | X | | | |
| | Traffic Crossing Major Street | 50 | 75 | 50 | 75 | 8 |
| | | | | | % Fulfilled | 10.3% |

# Signal Justification Calculation for Forecasted Volumes
## (OTM Book 12 - Justification 7)

Horizon Year: Total - 2031
Region/City/Township: Fergus, Centre Wellington

Major Street: St. David Street North
Minor Street: Parkside Drive

North/South?: Y

Number of Approach Lanes: 1
Tee Intersection? N
Flow Conditions: Restricted

PM Forecast Only? N

| Warrant Results | | |
|---|---|---|
| 150% Satisfied | No | Justification for new intersections with forecast traffic |
| 120% Satisfied | No | Justification for existing intersections with forecast traffic |

| | Major Street | | | | | | Minor Street | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | St. David Street North | | | | | | Parkside Drive | | | | | | |
| | Northbound | | | Southbound | | | Eastbound | | | Westbound | | | Peds Crossing |
| Time Period | Left | Through | Right | Left | Through | Right | Left | Through | Right | Left | Through | Right | Main Road |
| AM Peak Hour | 14 | 485 | 6 | 6 | 573 | 5 | 6 | 0 | 3 | 7 | 0 | 8 | 0 |
| PM Peak Hour | 70 | 838 | 26 | 17 | 743 | 10 | 10 | 2 | 43 | 10 | 1 | 4 | 0 |
| Average Hourly Volume | 21 | 331 | 8 | 6 | 329 | 4 | 4 | 1 | 12 | 4 | 0 | 3 | 0 |

| Warrant | AHV |
|---|---|
| 1A - All | 722 |
| 1B - Minor | 24 |
| 2A - Major | 698 |
| 2B - Cross | 9 |

### Warrant 1 - Minimum Vehicular Volume

| | Approach Lanes | 1 | | 2 or more | | Average Hourly Volume |
|---|---|---|---|---|---|---|
| 1A | Flow Conditions | Free | Restricted | Free | Restricted | |
| | | | X | | | |
| | All Approaches | 480 | 720 | 600 | 900 | 722 |
| | | | | | % Fulfilled | 100.2% |

| | Approach Lanes | 1 | | 2 or more | | Average Hourly Volume |
|---|---|---|---|---|---|---|
| 1B | Flow Conditions | Free | Restricted | Free | Restricted | |
| | | | X | | | |
| | Minor Street Approaches | 120 | 170 | 120 | 170 | 24 |
| | | | | | % Fulfilled | 13.8% |

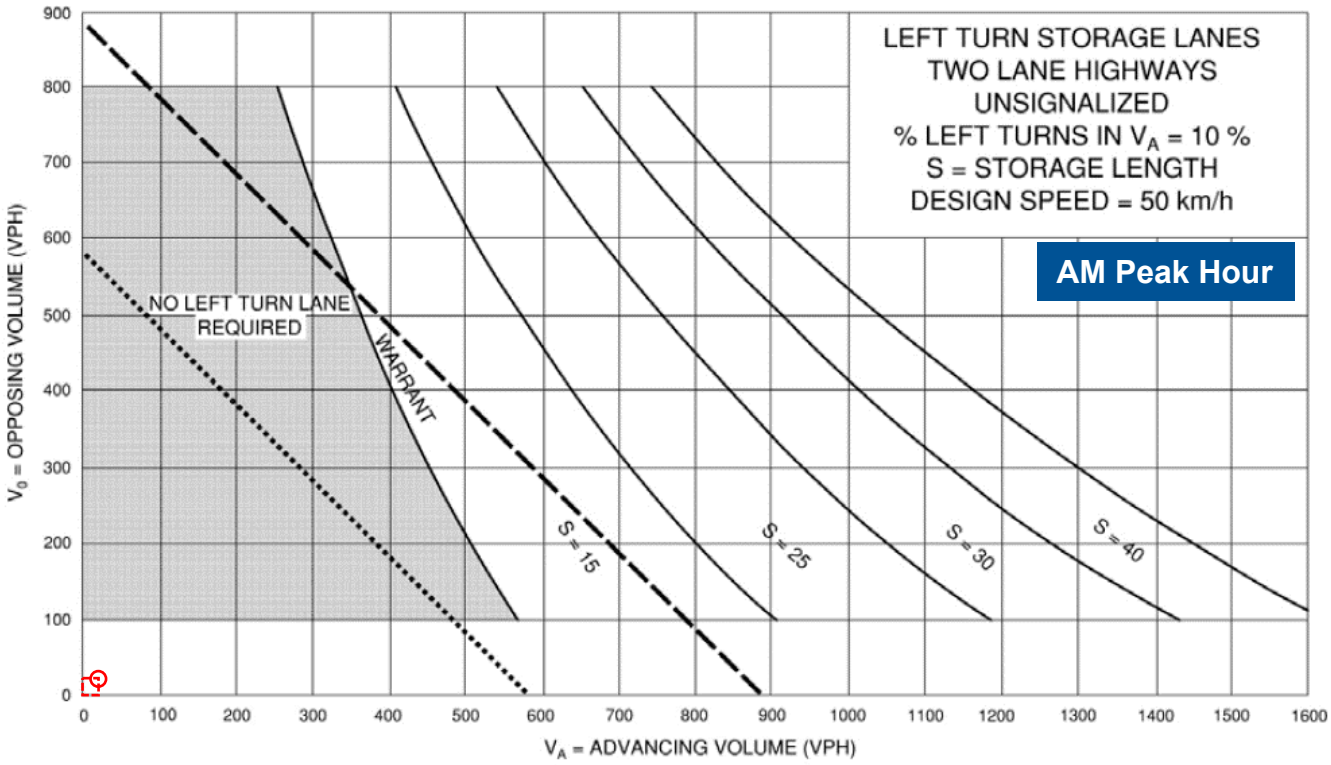
### Warrant 2 - Delay To Cross Traffic

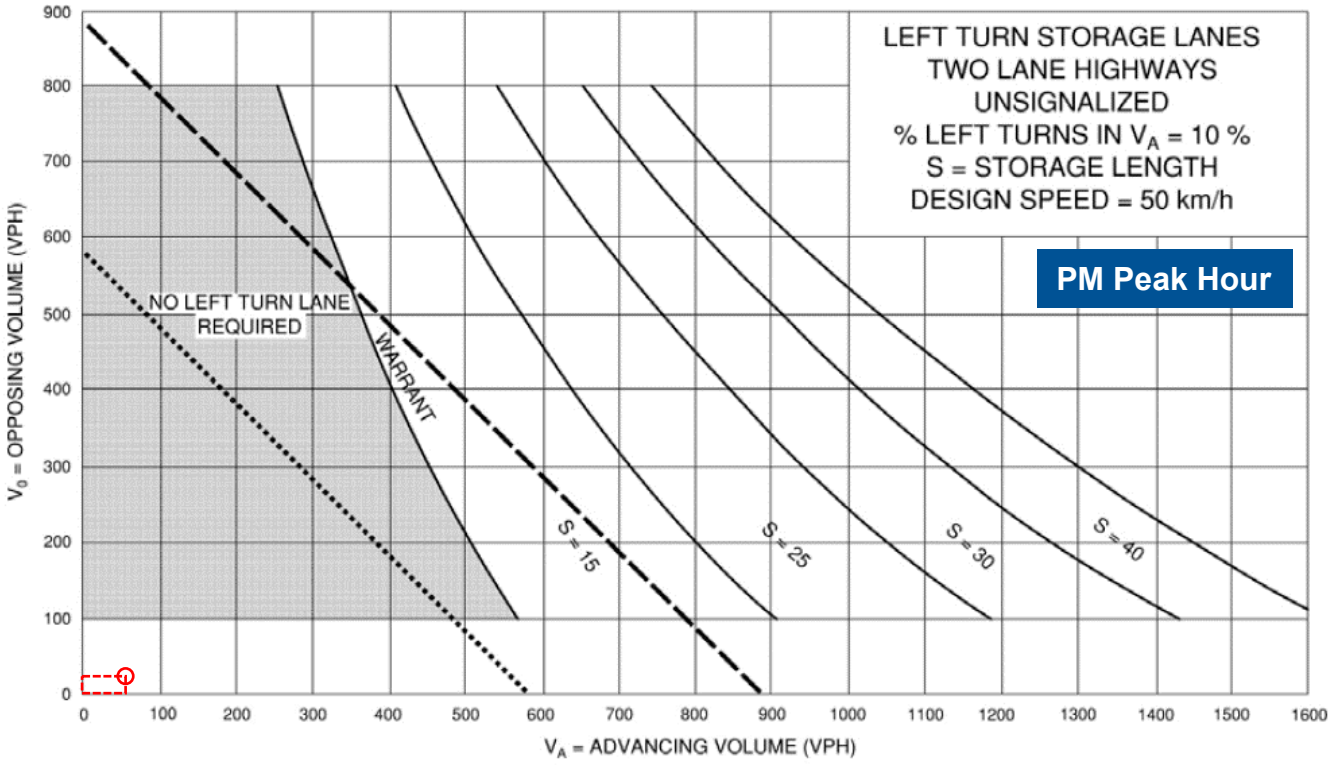
| | Approach Lanes | 1 | | 2 or more | | Average Hourly Volume |
|---|---|---|---|---|---|---|
| 2A | Flow Conditions | Free | Restricted | Free | Restricted | |
| | | | X | | | |
| | Major Street Approaches | 480 | 720 | 600 | 900 | 698 |
| | | | | | % Fulfilled | 97.0% |

| | Approach Lanes | 1 | | 2 or more | | Average Hourly Volume |
|---|---|---|---|---|---|---|
| 2B | Flow Conditions | Free | Restricted | Free | Restricted | |
| | | | X | | | |
| | Traffic Crossing Major Street | 50 | 75 | 50 | 75 | 9 |
| | | | | | % Fulfilled | 11.7% |

# Appendix I

## Left-Turn Lane Warrant Nomographs




paradigm TRANSPORTATION SOLUTIONS LIMITED

# Left-Turn Lane Warrant
# Parkside Drive & Site Driveway
# 2031 Total Traffic

750 St. David Street North, Fergus
240158

Figure 1