Beaver Creek Area (Northgate) Transportation Network Study

Paradigm Transportation Solutions Limited

July 2020
170278

ptsl.com

Project Summary

Project Number
170278

July 2020

Client
Gatestone Development Corporation
c/o
MHBC Planning, Urban Design and Landscape Architecture
540 Bingemans Centre Drive, Suite 200
Kitchener ON N2B 3X9

Client Contact
Paul Britton, MCIP, RPP

Consultant Project Team
Jim Mallett, P.Eng., PTOE
Matthew Brouwer, P.Eng.
Erica Bayley, P.Eng.
Adam Morrison, EIT

Beaver Creek Area (Northgate) Transportation Network Study



Matthew Brouwer, P.Eng.

Disclaimer

This document has been prepared for the titled project or named part thereof (the "project") and except for approval and commenting municipalities and agencies in their review and approval of this project, should not be relied upon or used for any other project without an independent check being carried out as to its suitability and prior written authorization of Paradigm Transportation Solutions Limited being obtained. Paradigm Transportation Solutions Limited accepts no responsibility or liability for the consequence of this document being used for a purpose other than the project for which it was commissioned. Any person using or relying on the document for such other purpose agrees and will by such use or reliance be taken to confirm their agreement to indemnify Paradigm Transportation Solutions Limited for all loss or damage resulting there from. Paradigm Transportation Solutions Limited accepts no responsibility or liability for this document to any party other than the person by whom it was commissioned and the approval and commenting municipalities and agencies for the project.

To the extent that this report is based on information supplied by other parties, Paradigm Transportation Solutions Limited accepts no liability for any loss or damage suffered by the client, whether through contract or tort, stemming from any conclusions based on data supplied by parties other than Paradigm Transportation Solutions Limited and used by Paradigm Transportation Solutions Limited in preparing this report.

Paradigm Transportation Solutions Limited
150 Pinebush Road, Unit 5A
Cambridge ON N1R 8L2
p: 519.896.3163
www.ptsl.com

Executive Summary

Overview

Northgate Land Corporation retained Paradigm Transportation Solutions Limited (Paradigm) to conduct this Transportation Network Assessment Study (TNAS) in support of the proposed residential development south of Conservation Drive and West of Beaver Creek Road in the City of Waterloo.

Study Purpose

The purpose of the Study is to evaluate the overall transportation impacts resulting from development of lands in northwest Waterloo, and to recommend mitigation measures to provide input to the lands use applications.

Planning Policy Direction

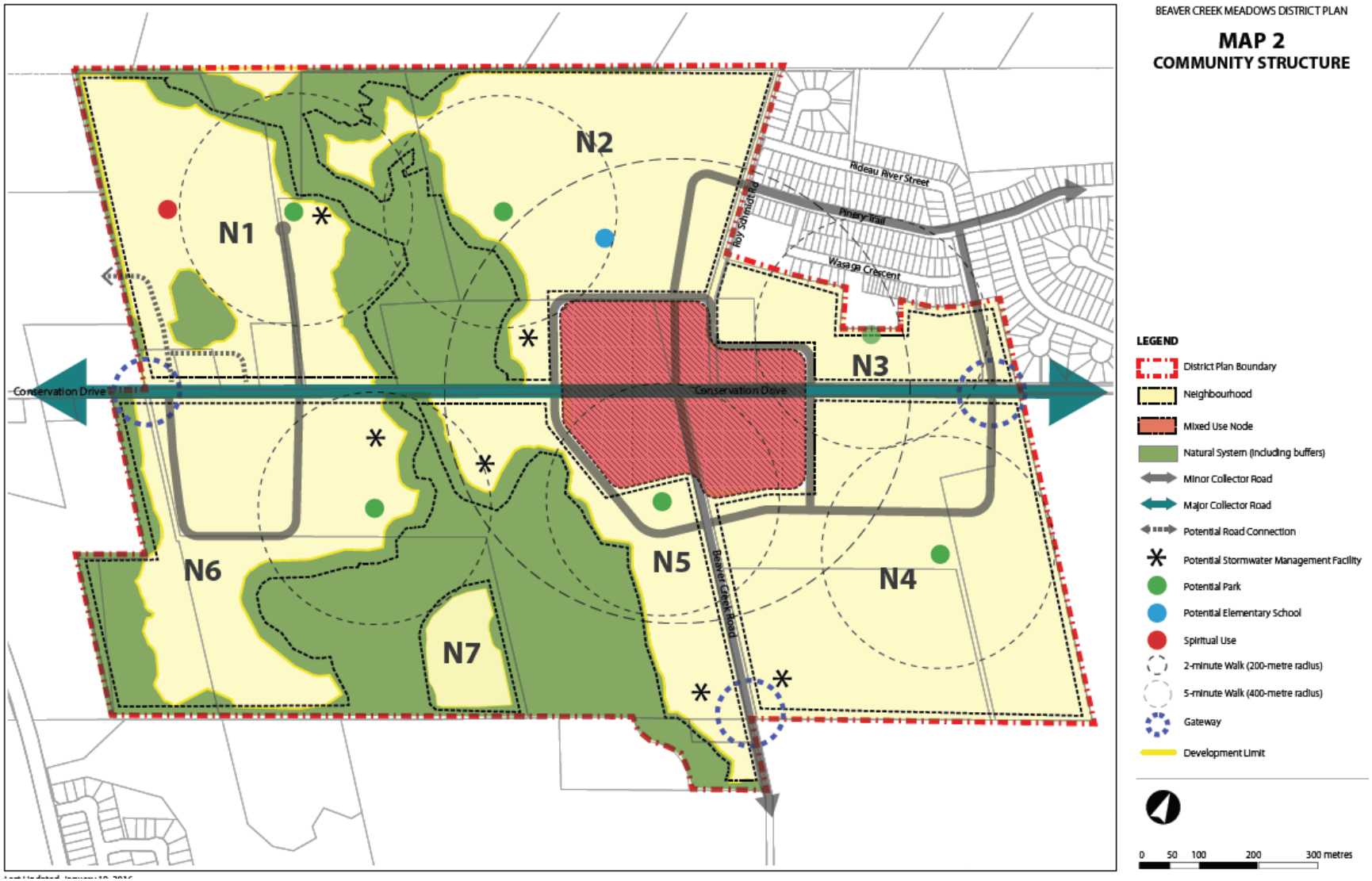
The Beaver Creek Meadows District Plan[1] (BCMDP) set the direction for the development of the lands within the northwest of the City, just south of City limit and north of the Laurel Creek Conservation Area.

The BCMDP set out development policies and a series of maps, including a land use plan (Map 3) depicting a range of land uses (open space, mixed use activity node, commercial, and residential). The land use plan includes a proposed road network, and the proposed alignment and classification of collector roads are also shown on the Community Structure map (Map 2).

Figure ES.1 and **Figure ES.2** illustrate Map 2 and Map 3, respectively.

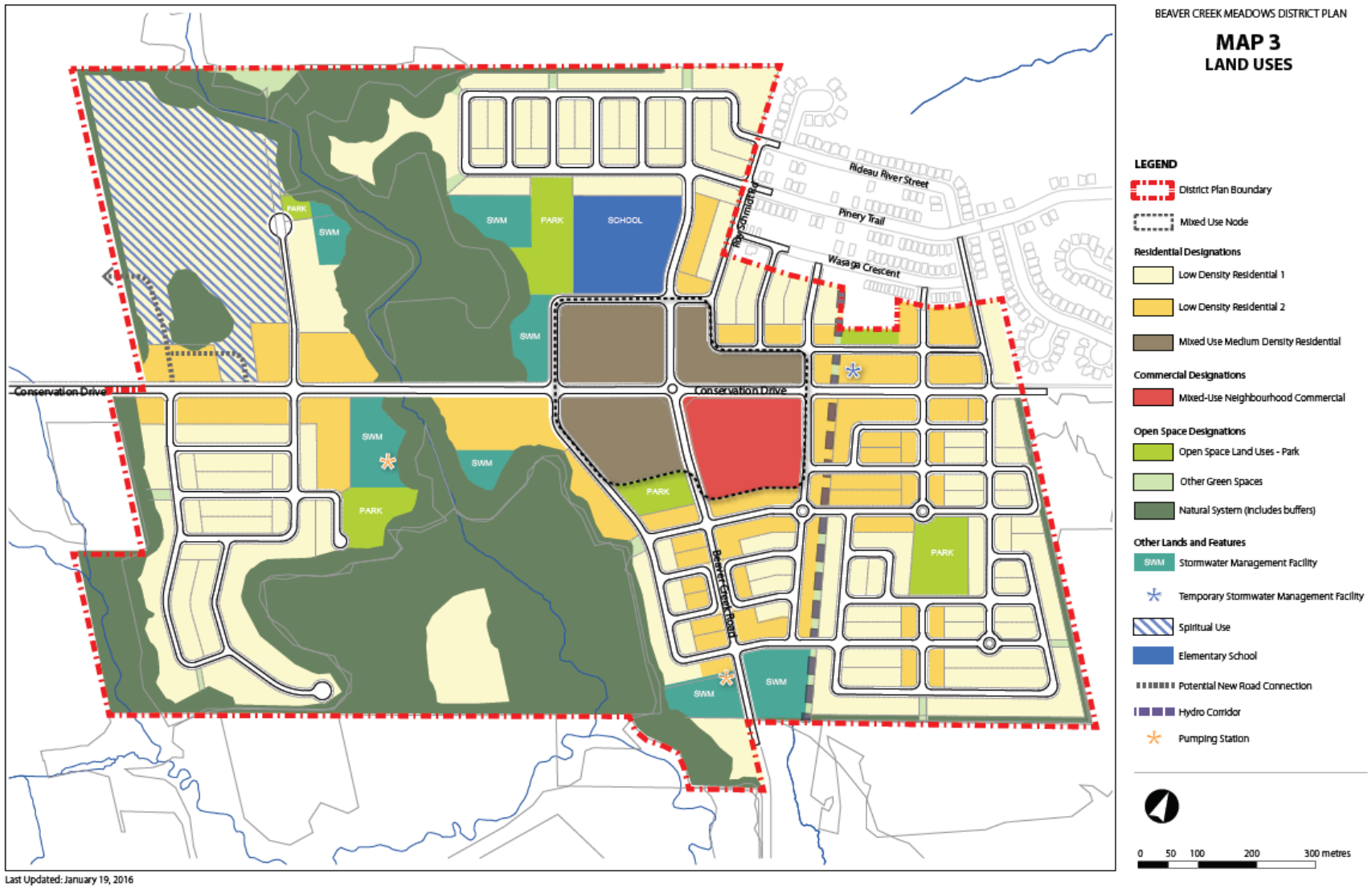
The framework recognized that the transportation system proposed in the concept plan would be subject to minor variation through approval of development applications.

[1] Beaver Creek Meadows District Plan, *The Planning Partnership and the City of Waterloo,* 2015



Beaver Creek Meadows District Plan, Community Structure

Figure ES.1



Beaver Creek Meadows District Plan, Land Uses

Beaver Creek Area TNS
170278

Figure ES.2

Historical Transportation Planning Context

Detailed Long-Range Transportation planning in this area has been ongoing for the past two decades. Notable studies include:

- **Region of Waterloo Transportation Master Plan (2018)[2]:** Authored in 2018, this study identified several roadway capacity improvements to 2041 and beyond on the northwest side of Waterloo required to accommodate forecast traffic volumes:
  - Widening Fischer-Hallman Road/ Bearinger Road from Columbia Street to Westmount Road; and
  - Widening Erbsville Road from Columbia Street W to Wideman Road.

  Aside from the above, the RTMP set modal split targets that were aimed at moving travel demand away from the private automobile and established policy direction to support this. Most notable of this is the recent completion and launch of the ION LRT system.

- **Beaver Creek Road and Conservation Drive Upgrades Municipal Class EA (BCREA)[3]:** The 2015 study reviewed existing traffic conditions and intersection operations; identified planned city and regional transportation improvements; and assessed the impacts of additional traffic that was expected as a result of residential growth in the Northwest Waterloo.

  Traffic forecasts were developed using background growth rates and the Institute of Transportation Engineers (ITE) Trip Generation Manual (9th Edition). An annual background growth rate of 1.5% and an ultimate build-out year of 2032 was approved by the Region of Waterloo.

  Overall, the forecast increase in trips for the proposed developments were 1758, 2311 and 2047 during the AM, PM and Sunday peak hours, respectively.

  Based on the results, the study recommended several additional roadway intersection improvements within the study area not already identified in the City and Region capital programs:
  - **Erbsville Road and Conservation Drive:** Upgrade traffic control from two-way stop-controlled to all way stop control;
  - **Beaver Creek Road and Conservation Drive:** Introduce an additional through-lane in the westbound direction and increase the overall intersection to a two-lane roundabout;

[2] Moving Forward, 2018 Transportation Master Plan, *IBI Group and Region of Waterloo*, 2019
[3] Beaver Creek Road and Conservation Drive Upgrades and Extension Municipal Class EA, *Stantec Consulting Ltd.*, 2015

- **Westmount Road and Conservation Drive:** Conduct further study of the intersection for a higher-order intersection control solution beyond the planning horizon (2031) for the study;
- **Beaver Creek Road and Laurelwood Drive:** Conduct further study of the intersection for improvements and their associated improvements beyond the planning horizon (2031) for the study.

  The BCREA recommended Traffic Calming Measures (TCM) intended to provide current and future residents and employees in and surrounding the study area with viable active transportation options beyond the private automobile:

- During the short-term, passive traffic calming measures are recommended along Conservation Drive including pavement markings, such as zig-zag and exponential speed bar markings adjacent to intersections, and warning signs;
- In the long term, a 50 km/hr posted speed limit should be adopted for Conservation Drive; and
- West of Beaver Creek Road, the reconstruction of Conservation Drive is recommended to use a maximum design speed of 60 km/hr and include passive traffic calming measures at intersections and crossings. If the cycling facilities implemented include cycle tracks or multi-use trails, physical traffic calming measures should include curb extensions to physically narrow Conservation Drive at the intersections. Beaver Creek Road should adopt a similar design speed and passive traffic calming measures as Conservation Drive.

- **Conservation Drive and Beaver Creek Road Upgrades Municipal Services (BCRS)[4]:** This 2017 study reviewed the 2015 BCREA forecasts and reviewed intersection spacing as it was impacted by left-turn lane storage and taper requirements. **Figure ES.1** illustrates the locations of the streets referred to in the conclusions of the study set out below:
  - A westbound left-turn lane on Conservation Drive at Street 4 is not desirable due to its proximity to the roundabout. As such, consideration should be given to relocating Street 4 to the west to increase the separation from the roundabout.
  - However, there are advantages to the current location of the Street 4 intersection. Therefore, Street 3 could be shifted slightly to the east (no more than 25-30 metres from its current location). This would require shifting Street 4 to the west by 55-60 metres but would permit sufficient space to construct a westbound left turn lane at the aligned Street 3-4 intersection.
  - If Street 4 could not be aligned with Street 3 then it should operate as a right-in/right-out (RIRO) intersection. The reassignment of traffic to reflect this configuration is included in Appendix C. This

[4] Conservation Drive and Beaver Creek Road Upgrades and Extension Municipal Services, *Stantec Consulting Ltd.*, 2017



RIRO configuration, and the resulting reassignment of traffic, will not materially impact the operations at the roundabout.

Study Area

The study area includes the Beaver Creek Meadows District Plan[5] as well as additional lands within the City's urban area boundary in the vicinity planned for developments by 2031. It is bound on the west by Erbsville Road and Kressler Road, on the north by Benjamin Road, on the east by Westmount Road and on the south by Laurelwood Drive. The Westhill District development is south of the study area.

Scope

This report documents the existing traffic and additional traffic forecast to occur as a result of future urban development of the lands in the study area and identifies:

- the current traffic operations at the study area intersections;
- the impact of the net increase in traffic at these intersections; and
- the need to consider traffic calming measures within the proposed subdivision and the adjacent existing residential area.

The findings, conclusions and recommendations of this study are summarized below and outlined in more detail in the body of this document.

Existing Traffic Conditions

The study area intersections were analyzed using existing traffic volumes, current geometry and signal timing and phasing plans. The analyses show that under current conditions all intersections operate within acceptable Regional Standards with respect to delay and LOS during all peak hours, except for the following:

- **Existing Traffic Operations:** Currently, all intersections within the study area operate at acceptable levels of service during the AM and PM peak hours, with the following critical movements:
  - **Fisher-Hallman/Bearinger Road and Laurelwood:** eastbound through-right movements have a v/c > 0.85 during the AM peak hour; and
  - **Benjamin Road and Westmount Road:** northbound movements have a LOS E during the PM peak hour.

[5] Beaver Creek Meadows District Plan, *City of Waterloo*, 2015.

Future Growth and Development

The lands within the study area are assumed to be fully developed and occupied by the horizon year. The proposed development, by Northgate Land Corporation[6] and Erbsville Kartway Limited, is one of 13 parcels located within this study area. The 13 parcels are:

- Creekside Church Inc.;
- Brohman Lands;
- Mattamy Homes;
- Activa Holdings Inc.;
- Martin;
- Erbsville Kartway Ltd.;
- Northgate Farms;
- Northgate Land Corporation; and
- Five additional unidentified developments (other).

Creekside Church

Creekside Church plans to construct 42 single-detached homes and 52 townhouse units by 2027 on their lands north of Conservation Drive, and west of Creekside Church.

This development is forecast to add about 51 and 60 new vehicle trips to the area road network during the AM and PM peak hour, respectively.

Brohman Lands

The Brohman Lands development is estimated to be constructed by 2027. This site is located to the north of Conservation Drive, and east of the Creekside Church. The development is estimated to include 72 single-family detached units, 15 townhouse units, and up to 36 apartment units.

This development is forecast to add about 69 and 87 new vehicle trips to the area road network during the AM and PM peak hour, respectively.

Mattamy Homes (2115881 Ontario Limited and 2014707 Ontario Limited)

Mattamy Homes plans to construct 225 single-detached homes, 220 townhouse units and a 669 student school by 2025 on their lands north of Conservation Drive, straddling the northerly Beaver Creek Road extension.

The lands are forecast to add about 699 and 412 new vehicle trips to the area road network during the AM and PM peak hour, respectively.

[6] The registered owners of the lands proposed to be developed by Northgate are 1017081 Ontario Limited and Gabriella Groff

Activa Holdings Inc.

The Activa Holdings Inc. plans to construct 103 single-detached homes and 176 townhouse units on their lands north of Conservation Drive and east of the Beaver Creek Road northerly extension.

The lands are forecast to add about 146 and 168 new vehicle trips to the area road network during the AM and PM peak hour, respectively.

Martin (Mar-View Farms Ltd, 2607965 Ontario Ltd, 2550891 Ontario Ltd and Bruce Martin)

Martin plans to replace the existing Green Acre R.V. Park and adjacent vacant parcel with 261 single-detached homes and 329 townhouse units on their lands south of Conservation Drive and east of Beaver Creek Road. These unit numbers are based on preliminary concept plans.

These lands are forecast to add about 322 and 378 new vehicle trips to the area road network during the AM and PM peak hour, respectively.

Erbsville Kartway (1455136 Ontario Ltd)

Erbsville Kartway plans to develop 17 single-detached homes and 23 townhouse units on its lands south of Conservation Drive and west of the Northgate Land Corporation development.

The lands are forecast to add about 21 and 25 new vehicle trips to the area road network during the AM and PM peak hour, respectively.

Northgate Farms (Northgate Farms Ltd and Northgate Farms 2 Ltd.)

Northgate Farms plans to construct 159 single-detached homes and 110 townhouse units on their lands north of Conservation Drive east of Bisch Street and west of the Creekside Church. These unit numbers are based on preliminary concept plans.

These lands are forecast to add about 159 and 192 new vehicle trips to the area road network during the AM and PM peak hour, respectively.

Northgate Land Corporation (1017081 Ontario Limited and Gabriella Groff)

Northgate Land Corporation plans to develop 261 single-family detached units, 435 townhouse units, 320 mid-rise apartment units and 23,600 ft^2 of commercial GFA in two phases on lands south of Conservation Drive and west of Beaver Creek Road.

These lands are forecast to add about 473 and 591 new vehicle trips to the area road network during the AM and PM peak hour, respectively.

Other Developments

There are six other developments that are all assumed to be constructed by the horizon year. These sites are located on the east and west side of Erbsville Road from Bisch Street to Forest Gate Crescent, east of the Creekside Church. These developments are estimated to include 446 single-detached houses and 563 townhouse units.

These lands are forecast to add about 549 and 647 new vehicle trips to the area road network during the AM and PM peak hour, respectively.

Future Committed Road Construction

The Region of Waterloo has recently completed its Transportation Master Plan and has not identified the need for infrastructure upgrades within the primary study area, specifically for Fischer-Hallman Road/ Bearinger Road, over the 2019 to 2031 period.

Beaver Creek Road and Conservation Drive Upgrades Municipal Class EA also identified that the intersection of Beaver Creek Road and Conservation Drive is planned to be upgraded to a roundabout under the infrastructure upgrades. As part of the BCM District Plan and the ongoing EA Study, Conservation Drive is proposed to be urbanized with bike lanes.

Future Traffic Conditions

Traffic conditions were analyzed for the weekday AM and PM peak hour analysis periods for the 2032 horizon year.

Background Traffic Operations: All intersections within the study area are forecast to operate within acceptable levels of service, with the following critical movements during the 2032 horizon:

- **Fisher-Hallman/Bearinger Road and Laurelwood:** eastbound through-right movements are forecast to have a v/c > 0.85 during the AM peak hour;
- **Conservation Drive and Westmount Road:** southbound movements are forecast to have a LOS F and v/c >1.0 during the PM peak hour; and
- **Benjamin Road and Westmount Road:** northbound movements are forecast to have a LOS F and a v/c > 1.0.

Total Traffic Operations: Most intersections within the study area are forecast to operate within overall acceptable levels of service at the 2032 horizon similar to background conditions, with the exception of the following movements forecast to operate below desired levels:

- **Fisher-Hallman/Bearinger Road and Laurelwood:** westbound left movements are forecast to have a LOS F and a v/c > 0.85. Eastbound through/right movements are forecast to have a LOS F during the AM

peak hour and v/c > 0.85 during both peak hours. Northbound left movements are forecast to have a LOS F, v/c > 1.0 and a queue that exceeds the available storage length during the PM peak hour;

- **Conservation Drive and Westmount Road:** eastbound right movements are forecast to have a LOS F and a v/c > 0.85 during both peak hours and a queue that exceeds the available storage length during the AM peak hour. Northbound left movements are forecast to have a LOS F and v/c > 0.85 during both peak hours, and a queue that exceeds the available storage length during the PM peak hour. Northbound through/right movements are forecast to have a LOS F and a v/c > 0.85 during the PM peak hour. Southbound movements have a LOS F and a v/c > 1.0 during both peak hours;
- **Benjamin Road and Westmount Road:** northbound movements are forecast to have a LOS F and v/c > 1.0;
- **Conservation Drive and Erbsville Road:** eastbound movements are forecast to have a LOS F during the AM peak hour. Westbound movements are forecast to have a LOS F and a v/c > 1.0 during both peak hours;
- **Beaver Creek Road and Laurelwood Drive:** westbound movements are forecast to have a LOS F and a v/c > 1.0 during the PM peak hour;
- **Beaver Creek Road and Conservation Drive:** eastbound movements are forecast to have a LOS F and a v/c > 1.0 during the AM peak hour. Westbound movements are forecast to have a LOS F and a v/c > 1.0 during the PM peak hour;
- **Erbsville Road and Bisch Street/ Street A:** westbound movements are forecast to have a LOS F during the PM peak hour;
- **Conservation Drive and Rideau River Street:** northbound movements are forecast to have a LOS F during both peak hours. Southbound movements are forecast to have a LOS F and v/c > 1.0 during both peak hours;
- **Street Seven/Creekside Church Road and Conservation Drive:** southbound movements are forecast to have a LOS F during both peak hours, and a v/c > 1.0 during the AM peak hour;
- **Street One/Street H and Conservation Drive:** northbound movements are forecast to have a LOS F during the AM peak hour. Southbound movements are forecast to have a LOS F during both peak hours, and a v/c > 1.0 during the AM peak hour;
- **Conservation Drive and Kawartha Street:** northbound movements are forecast to have a LOS F during both peak hours. Southbound movements are forecast to have a LOS F during both peak hours; and
- **Conservation Drive and Cranberry Street:** northbound movements are forecast to have a LOS F during both peak hours. Southbound movements have a LOS F during both peak hours.

Conclusions

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

- **Table ES.1** summarizes the left-turn lanes forecast to be warranted;

TABLE ES.1: SUMMARY OF AUXILARY LEFT-TURN LANE WARRANTS

Interesection	Direction	Storage Length (m)
Benjamin Road & Westmount Road	WB	55 (PM)
Conservation Drive & Rideau River Street	EB	30 (PM)
Conservation Drive & Lake Louise Boulevard	EB	30 (PM)
Westmount Road & Lake Louise Boulevard/Osprey Drive	NB	25 (PM)
Conservation Drive & Street Three	WB	25 (PM)
Conservation Drive & Creekside Church Road/Street Seven	WB	25 (PM)
Conservation Drive & Street H/Street One	WB	60 (PM)
Conservation Drive & Kawartha Street	WB	30 (PM)
Conservation Drive & Cranberry Street	WB	30 (PM)
Erbsville Road & Regal Place/Street B	SB	25 (PM)

- The proposed intersection locations for Street Three, Street Seven and Street One at Conservation Drive are all acceptable;
- The Conservation Drive/Erbsville Road intersection requires intersection control upgrades to all-way stop control by 2022;
- **Table ES.2** summarizes the OTM Book 7 signal warrants:

TABLE ES.2: SUMMARY OF OTM BOOK 7 SIGNAL WARRANTS

Intersection	Warrant 1	Warrant 2
Conservation Drive & Westmount Road	204.8%	114.5%
Benjamin Road & Westmount Road	108.9%	62.5%
Erbsville Road & Conservation Drive	107.6%	68.8%
Conservation Drive & Rideau River Street	57.8%	47.7%
Conservation Drive & Street H/Street One	39.9%	46.7%

- Roundabouts are forecast to be a feasible method of traffic control as per the Region of Waterloo's Roundabout Screening Tool at the intersections of:
  - Conservation Drive and Westmount Road;
  - Westmount Road and Benjamin Road; and
  - Erbsville Road and Conservation Drive.

Recommendations

Based on the findings of this study, it is recommended that the development be approved. The off-site improvements attributable to projected growth in the broader study area are summarized in **Table ES.3.** It is noted that these recommended improvements are a result of the combined area developments and are not the sole responsibility of the Northgate Land Corporation and Erbsville Kartway Limited. Traffic should be monitored as development proceeds to assist in scheduling the identified improvements.

With the implementation of these recommendations, the traffic growth generated by background growth and the developments within the study area assumed by this study can be mitigated and traffic is forecast to continue to function at reasonably acceptable levels of service through to the 2032 horizon year.

TABLE ES.3: SUMMARY OF RECOMMENDATIONS

Interesection	Recommendations
Laurelwood Drive & Bearinger Road/Fisher Hallman Road	Construction of an eastbound separated right-turn lane.
Conservation Drive & Westmount Road	Completion of an Intersection Control Study. Construction of either: ▶ A signalized intersection with an eastbound channelized right-turn lane, a northbound duel left-turn lane and a southbound right-turn lane; or ▶ A 2-lane roundabout with an eastbound right-turn bypass.
	To construct either of the intersections above it is also recommended that Westmount Road be widened from Conservation Drive to Northfield Drive West
Benjamin Road & Westmount Road	A 40-meter storage westbound left-turn lane.
	A 55-meter storage westbound left-turn lane.
	Completion of an Intersection Control Study. Construction of either: ▶ signalized intersection with an westbound left-turn lane; or ▶ 1-lane roundabout.
Erbsville Road & Conservation Drive	Installation of an all-way stop.
	Construction of westbound left-turn lane, northbound right-turn lane and southbound left-turn lane.
	Completion of an Intersection Control Study. Construction of a: ▶ signalized intersection; or ▶ 1-lane roundabout.
Beaver Creek Road & Laurelwood Drive	Construction of westbound right-turn bypass.
Conservation Drive & Beaver Creek Road	Construction of additional westbound and eastbound entry-lane.
Conservation Drive & Rideau River Street	A 25-meter storage eastbound left-turn lane.
	A 30-meter storage eastbound left-turn lane.
Conservation Drive & Lake Louise Boulevard	A 25-meter storage eastbound left-turn lane.
	A 30-meter storage eastbound left-turn lane.
Westmount Road & Lake Louise Boulevard/Osprey Drive	A 15-meter storage nortbound left-turn lane.
	A 25-meter storage nortbound left-turn lane.
Conservation Drive & Erbsville Kartway Road	A 15-meter storage westbound left-turn lane.
	A 25-meter storage westbound left-turn lane.
Conservation Drive & Creekside Church Road/Street Two	A 15-meter storage westbound left-turn lane.
	A 30-meter storage westbound left-turn lane.
	A 40-meter storage westbound left-turn lane.
	Construction of an southbound separated left-turn lane.
Conservation Drive & Street H/Street One	A 60-meter storage westbound left-turn lane.
	Construction of an southbound separated left-turn lane.
Conservation Drive & Kawartha Street	A 30-meter storage westbound left-turn lane.
Conservation Drive & Cranberry Street	A 30-meter storage westbound left-turn lane.

Contents

1 Introduction 1
1.1 Overview 1
2 Historical Area Transportation Planning 3
2.1 Planning Direction 3
2.1.1 Beaver Creek Meadows District Plan 3
2.2 Transportation Master Planning 6
2.2.1 Regional Transportation Master Plan (2018) 6
2.3 Detailed Roadway Improvements 8
2.3.1 Beaver Creek Road and Conservation Drive Upgrades Municipal Class EA (BCREA) 8
2.3.2 Conservation Drive and Beaver Creek Road Upgrades Municipal Services (BCRS) 9
3 Existing Conditions 10
3.1 Road Network 10
3.2 Transit Network 13
3.3 Cycling and Pedestrian Facilities 13
3.4 Traffic Volumes 13
3.5 Traffic Operations 19
4 Future Development 23
4.1 Northgate Land Corporation / Erbsville Kartway Limited 26
4.1.1 Internal Road Design and Traffic Calming 26
4.1.2 Conservation Road Intersection Locations 27
4.2 Additional Community Developments 36
4.2.1 Creekside Church 36
4.2.2 Brohman Lands 36
4.2.3 Mattamy Homes 36
4.2.4 Activa Holdings Inc. 36
4.2.5 Martin 36
4.2.6 Northgate Farms 36
4.2.7 Other Developments 36
4.3 Development Trip Generation 37
4.4 Development Trip Distribution and Assignment 38
5 Evaluation of Future Traffic Conditions 42
5.1 2032 Horizon 42
5.1.1 Background Traffic Operations 42
5.1.2 Total Traffic Operations 43
6 Remedial Measures 53
6.1 Left-turn Lanes 53
6.1.1 Conservation Drive Intersection Locations 54

6.2 All-Way Stop Warrants 57
6.3 Signal Warrants 57
6.4 Roundabout Screening Tool 58
6.5 Additional Capacity 59
6.6 2032 Total Traffic Operations with Improvements 60
7 Conclusions and Recommendations 64
7.1 Conclusions 64
7.2 Recommendations 67

Appendices

Appendix A Existing Count Data
Appendix B Existing Traffic Operations Reports
Appendix C 2022 Background Traffic Operations Reports
Appendix D 2022 Total Traffic Operations Reports
Appendix E 2025 Background Traffic Operations Reports
Appendix F 2025 Total Traffic Operations Reports
Appendix G 2027 Background Traffic Operations Reports
Appendix H 2027 Total Traffic Operations Reports
Appendix I 2032 Background Traffic Operations Reports
Appendix J 2032 Total Traffic Operations Reports
Appendix K Auxiliary Left-Turn Lane Warrant Figures
Appendix L OTM Book 5 All-Way Stop Warrants
Appendix M OTM Book 7 Signal Warrants
Appendix N Roundabout Screening Tool
Appendix O 2032 Total Traffic Operations with Improvements Reports

Figures

Figure 1.1: Study Area and Subject Development Location 2
Figure 2.1: Beaver Creek Meadows District Plan, Community Structure 5
Figure 2.2: Waterloo Regional Roads Expansion Program, 2019 to Beyond 2041 7
Figure 3.1: Existing Lane Configurations and Traffic Control 12
Figure 3.2: Existing Transit Network 15
Figure 3.3: 2041 Waterloo Region Active Transportation Network 16
Figure 3.4: Existing Traffic Volumes – AM Peak Hour 17
Figure 3.5: Existing Traffic Volumes – PM Peak Hour 18
Figure 3.6: Existing Traffic Operations – AM Peak Hour 21
Figure 3.7: Existing Traffic Operations – PM Peak Hour 22
Figure 4.1: Development Overview 25
Figure 4.2: Northgate Land Corporation / Erbsville Kartway Limited Subdivision Plan 28
Figure 4.3: Locations of Proposed Traffic Calming Measures 29
Figure 4.4: Location A – Pedestrian Refuge Island 30
Figure 4.5: Location B – Raised Median Island with a Pedestrian Crossing, Lane-Narrowing and Speed Cushions 31
Figure 4.6: Location C – Raised Median Island with a Pedestrian Crossing, Lane-Narrowing and Speed Cushions 32
Figure 4.7: Location D – Roundabout with Pedestrian Crossings 33
Figure 4.8: Location E – Raised Median Island with a Pedestrian Crossing, Lane-Narrowing and Speed Cushions 34
Figure 4.9: Proposed Intersection Locations – Northgate Land Corporation / Erbsville Kartway Limited 35
Figure 4.10: Site Generated Traffic Volumes – AM Peak hour 40
Figure 4.11: Site Generated Traffic Volumes – PM Peak hour 41
Figure 5.1: 2032 Background Traffic Forecasts – AM Peak hour 45
Figure 5.2: 2032 Background Traffic Forecasts – PM Peak hour 46
Figure 5.3: 2032 Background Traffic Operations – AM Peak hour 47
Figure 5.4: 2032 Background Traffic Operations – PM Peak hour 48
Figure 5.5: 2032 Total Traffic Volumes – AM Peak hour 49
Figure 5.6: 2032 Total Traffic Volumes – PM Peak hour 50
Figure 5.7: 2032 Total Traffic Operations – AM Peak hour 51
Figure 5.8: 2032 Total Traffic Operations – PM Peak hour 52
Figure 6.1: Proposed Intersection Locations – Northgate Land Corporation / Erbsville Kartway Limited 56
Figure 6.2: 2032 Total Traffic Operations with Improvements – AM Peak hour 62
Figure 6.3: 2032 Total Traffic Operations with Improvements – PM Peak hour 63



Tables

Table 4.1:	New Road Summary	24
Table 4.2:	Devlopment Descriptions	37
Table 4.3:	Trip Generation	38
Table 4.4:	Trip Distribution of Residential and Commercial	39
Table 4.5:	School Trip Distribution	39
Table 6.1:	Summary of Auxilary Left-Turn Lane Warrants	53
Table 6.2:	Summary Of Northgate Auxiliary Left-Turn Lane Total Lengths	54
Table 6.3:	Summary of Signal Warrants	58
Table 6.4:	Additional Turn-Lane Summary	59
Table 7.1:	Summary of Auxilary Left-Turn Lane Warrants	66
Table 7.2:	Summary of OTM Book 7 Signal Warrants	67
Table 7.3:	Summary of Recommendations	68

1 Introduction

1.1 Overview

Northgate Land Corporation retained Paradigm Transportation Solutions Limited (Paradigm) to conduct this Transportation Network Assessment Study (TNAS) in support of the proposed residential development south of Conservation Drive and West of Beaver Creek Road in the City of Waterloo. **Figure 1.1** illustrates the study area, the location of the subject development and other developments.

The scope of the study includes:

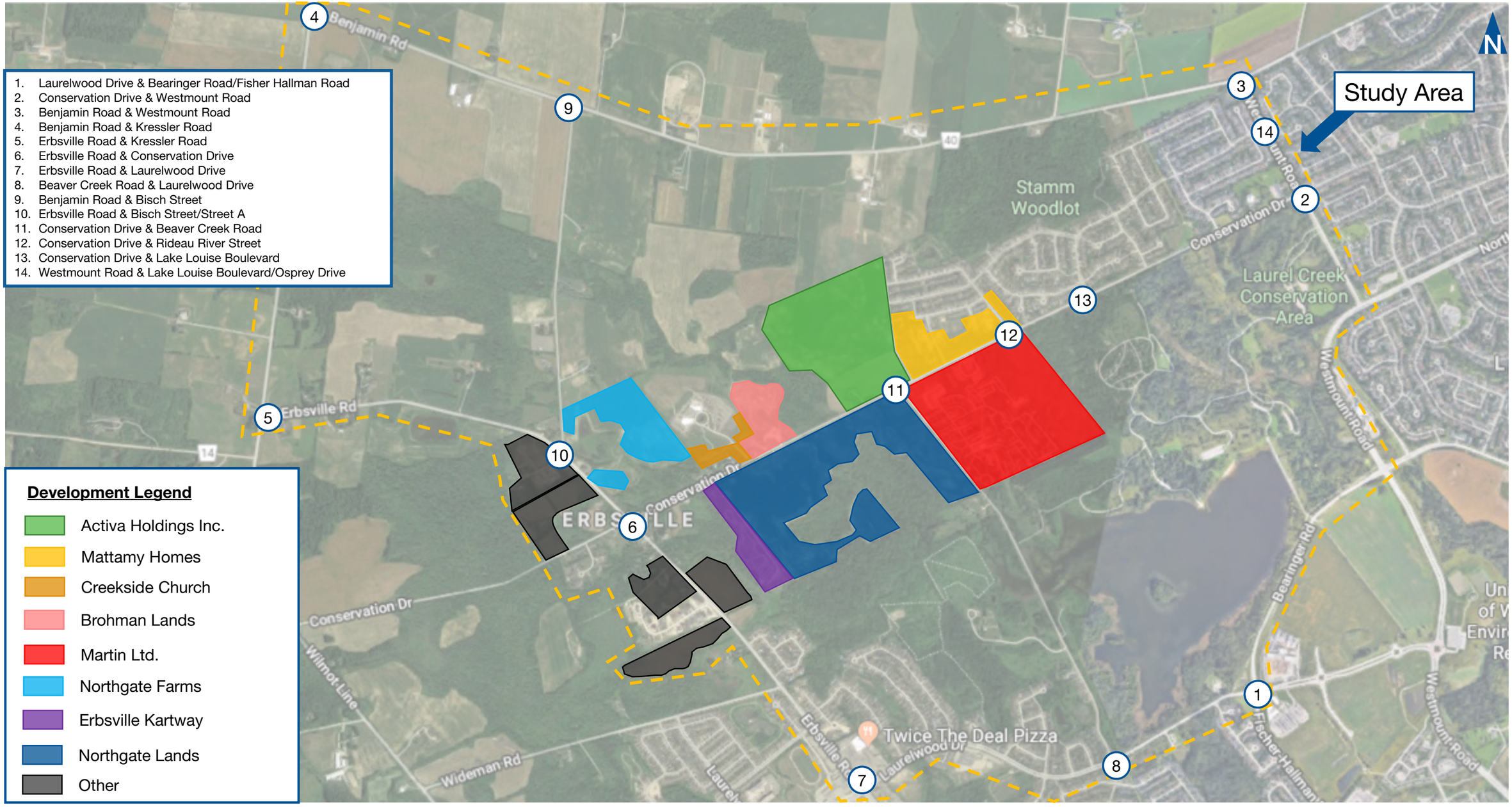
- determining and assessing current traffic conditions near the site;
- forecasting the additional traffic generated by the proposed development;
- analysing any impacts this traffic may have on the adjacent street system; and
- recommending remedial measures to mitigate these impacts.

The impact assessment focuses on the intersections of:

- Laurelwood Drive and Fischer Hallman Road/ Bearinger Road;
- Conservation Drive and Westmount Road;
- Benjamin Road and Westmount Road;
- Conservation Drive and Erbsville Road;
- Erbsville Road and Bisch Street;
- Conservation Drive and Rideau River Street;
- Westmount Road and Lake Louise Boulevard/Osprey Drive;
- Conservation Drive and Erbsville Kartway Road (Street Three);
- Conservation Drive and Creekside Church Road;
- Conservation Drive and Beaver Creek;
- Conservation Drive and Kawartha Street;
- Conservation Drive and Cranberry Street;
- Laurelwood Drive and Beaver Creek.

This study analyses existing traffic conditions, describes the proposed developments, forecasts traffic to a horizon year of 2032, and recommends improvements to mitigate future traffic conditions.





paradigm TRANSPORTATION SOLUTIONS LIMITED

Study Area and Subject Development Location

Beaver Creek Area TES
170278

Figure 1.1

2 Historical Area Transportation Planning

This section outlines the previous, long-range transportation planning which has been studied in this area, including the Beaver Creek Meadows Growth Area, the current Regional 10-year Capital Transportation Program, and the recently completed Regional Transportation Master Plan[7].

2.1 Planning Direction

2.1.1 Beaver Creek Meadows District Plan

The subject lands are located within the Beaver Creek Meadows District Plan (BCMDP) area. The BCMDP is a land use policy document which provides greater detail for implementation of the Official Plan in the northwest side of Waterloo.

The Beaver Creek Meadows District is located in the northwest corner of the City of Waterloo and is south of the City boundary with the Township of Wilmot and north of the Laurel Creek Conservation Area on the south, and Westmount Road on the east.

The Beaver Creek Meadows District is distinguished by some unique existing land uses, including the Creekside Church, a go-kart track (Erbsville Kartway), a trailer park (Green Acre Park), and agricultural uses and estate residential properties.

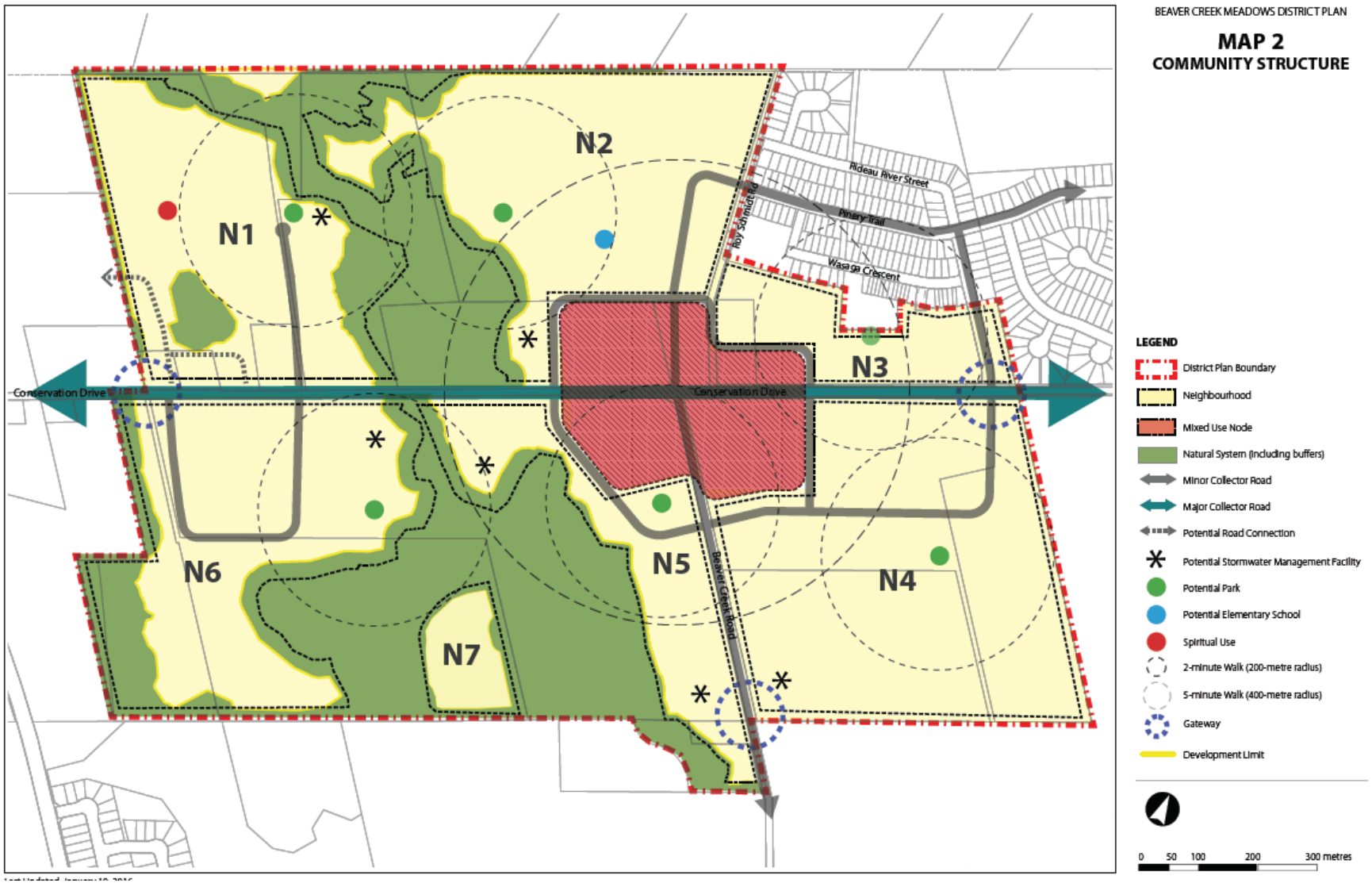
The BCMDP includes development policies and a series of maps, including a Land Use Plan that depicts a range of land uses, including open space, mixed use activity node, arterial commercial, residential areas, and parkland. The Land Use Plan includes a proposed road network, and the proposed alignment and classification of connector roads are also shown on the Community Structure Map (Map 2). The transportation policies note that the transportation system proposed on the mapping, will be subject to minor variation through approval of development applications.

Figure 2.1 illustrates the Community Structure described by the BCMDP. The BCMDP considered the following development:

- **Neighbourhood 1:** 33 single-family detached-units and 113 townhouse units;
- **Neighbourhood 2:** 279 single-family detached-units, 30 townhouse units and a 500 student school;
- **Neighbourhood 3:** 60 single-family detached-units and 130 townhouse units;
- **Neighbourhood 4:** 315 single-family detached-units, 275 townhouse units and 3 recreation fields;

[7] Moving Forward 2031: Region of Waterloo Transportation Master Plan, *Regional Municipality of Waterloo*, June 2010

- **Neighbourhood 5:** 60 single-family detached-units and 173 townhouse units;
- **Neighbourhood 6:** 276 single-family detached-units and 108 townhouse units;
- **Neighbourhood 7:** 62 single-family detached-units;
- **Mixed Use:** 473 townhouse units and 8,500 m^2 retail gross floor area (GFA);
- **Green Acre Park:** 355 mobile home units; and
- **Snowcrest Place:** 8 single-family detached-units.



Beaver Creek Meadows District Plan, Community Structure

2.2 Transportation Master Planning

2.2.1 Regional Transportation Master Plan (2018)

The Regional Transportation Master Plan (RTMP) reflects the policy direction of the Regional Official Plan. The RTMP promotes the role of public transit in a more balanced transportation system and is based on a number of strategies:

- Build a Transportation Network that Supports all Modes of Travel;
- Promote a Healthy Community;
- Develop a Frequent Transit Network;
- Enhance Inter-Regional Connections; and
- Position the Region for New Mobility.

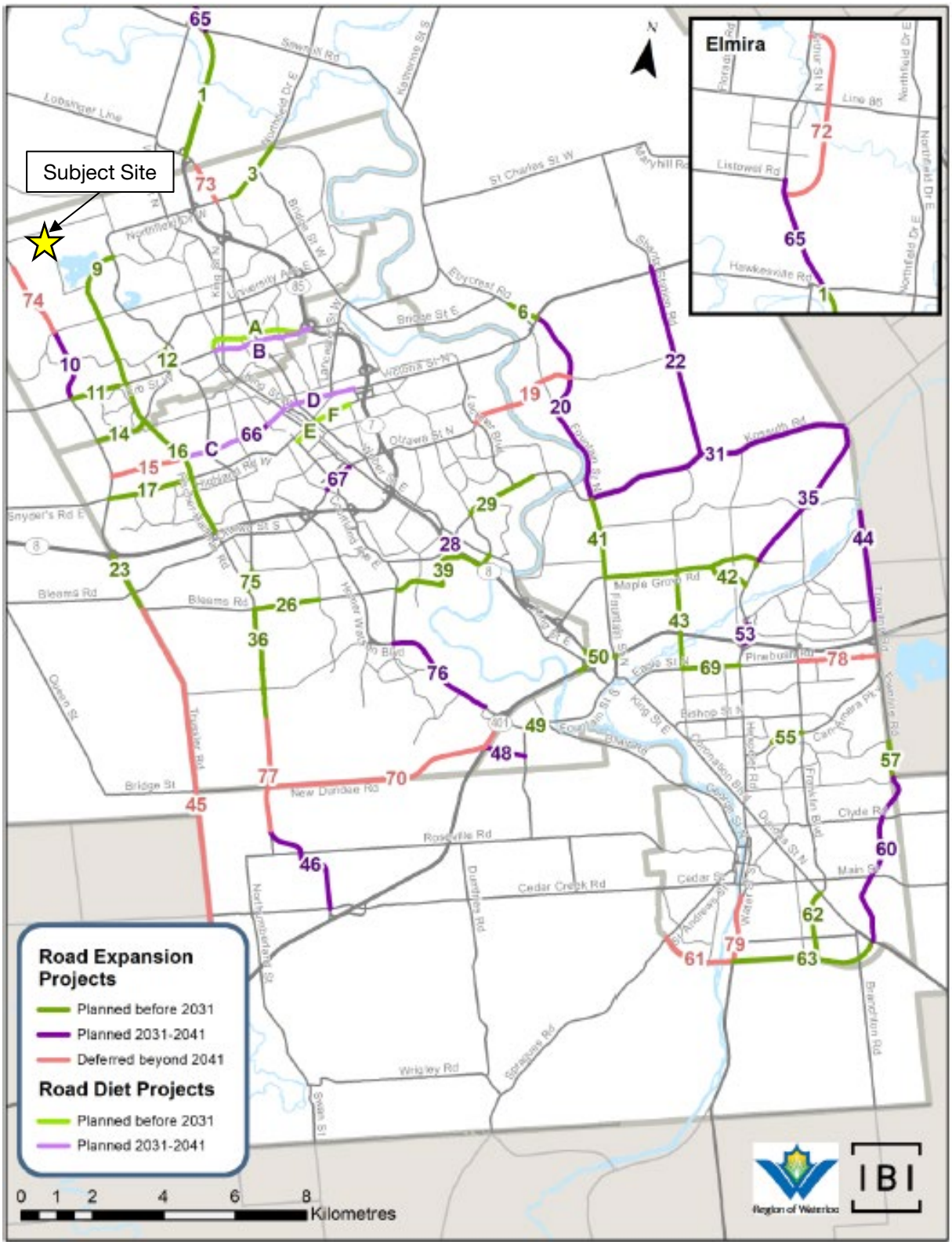
The RTMP includes a complementary regional road network plan, which was developed to assist in prioritizing road network improvements including some expansions, widenings, intersection improvements and transit priority improvements. The RTMP includes a road network plan and related short (0-10 years), medium (10-20 years) and long-term (20+ years) road improvement priorities.

Figure 2.2 illustrates the planned network improvements described by the short to long-term road improvements.

The RTMP confirms that as the community grows, congestion will increase throughout the Region and as a result, transit will become a more competitive travel choice if higher quality transit service is provided. The RTMP acknowledges the increased emphasis on transit may result in a period of transition where vehicle delay experienced on the road network will increase and there may be public pressure to widen/expand roadway infrastructure.

The RTMP's proposed infrastructure improvements in northwest Waterloo would provide both for vehicular and transit connections in the area.





Waterloo Regional Roads Expansion Program, 2019 to Beyond 2041

Beaver Creek Area TES
170278

Figure 2.2

2.3 Detailed Roadway Improvements

2.3.1 Beaver Creek Road and Conservation Drive Upgrades Municipal Class EA (BCREA)

This 2015 study reviewed existing traffic conditions and intersection operations; identified planned city and regional transportation improvements; and assessed the impacts of additional traffic that was expected as a result of urban growth in northwest Waterloo.

Traffic forecasts were developed using background growth rates and the Institute of Transportation Engineers (ITE) Trip Generation Manual (9th Edition). An annual background growth rate of 1.5% and an ultimate build-out year of 2032 was approved by the Region of Waterloo.

Overall, the forecast increase in trips for the proposed developments were 1758, 2311 and 2047 during the AM, PM and Sunday peak hours, respectively. It is noted that the proposed developments considered in this study did not encompass all developments considered by this TNA.

The study recommended several additional roadway improvements within the study area not already identified in the City and Region capital programs:

- **Erbsville Road and Conservation Drive**: Upgrade the existing two-way stop-controlled intersection to an all way stop;
- **Beaver Creek Road and Conservation Drive**: Introduce an additional through-lane in the westbound direction and increase the overall intersection to a two-lane roundabout;
- **Westmount Road and Conservation Drive**: Expected to experience significant delays and will warrant a signal, it is recommended to conduct further study of the intersection for a higher-order intersection control solution; and
- **Beaver Creek Road and Laurelwood Drive**: Expected to experience significant delays, it is recommended to conduct further study of the intersection for improvements and their associated improvements.

The BCREA recommended travel demand management measures intended to provide current and future residents and employees in and surrounding the study area with viable active transportation options beyond the private automobile. TDM recommendations included:

- During the short-term, passive traffic calming measures are recommended along Conservation Drive including pavement markings, such as zig-zag and exponential speed bar markings adjacent to intersections, and warning signs;
- In the long term, a 50 km/hr posted speed limit should be adopted for Conservation Drive; and
- West of Beaver Creek Road, the reconstruction of Conservation Drive is recommended to use a maximum design speed of 60 km/hr and

include passive traffic calming measures at intersections and crossings. If the cycling facilities implemented include cycle tracks or multi-use trails, physical traffic calming measures should include curb extensions to physically narrow Conservation Drive at intersection. Beaver Creek Road should adopt a similar design speed and passive traffic calming measures as Conservation Drive.

2.3.2 Conservation Drive and Beaver Creek Road Upgrades Municipal Services (BCRS)[8]

The 2017 BCRS study reviewed the 2015 BCREA forecasts and applied them to left-turn lane warrant analyses.

From the left-turn lane warrant analysis, the intersection spacing was determined, giving the following recommendations:

- In its current configuration, a westbound left turn lane on Conservation Drive at Street 4 is not desirable due to its proximity to the roundabout. As such, consideration should be given to relocating Street 4 to the west to increase the separation from the roundabout.
- There may be some advantages to the current location of the Street 4 intersection. Therefore, Street 3 could be shifted slightly to the east (no more than 25-30 metres from its current location). This would entail shifting Street 4 to the west by 55-60 metres but would permit sufficient space to construct a westbound left turn lane at the aligned Street 3-4 intersection.
- Should it not be feasible/desirable for Street 4 to be shifted west to align with Street 3, Street 4 could remain in its current location, if it were restricted to right-in/right-out (RIRO) movements only. The reassignment of traffic to reflect this configuration is included in Appendix C (of the BCRS report). This RIRO configuration, and the resulting reassignment of traffic, will not materially impact the operations at the roundabout.

Figure 2.3 illustrates the location of the streets referred to by the BCRS.

[8] Conservation Drive and Beaver Creek Road Upgrades and Extension Municipal Services, *Stantec Consulting Ltd.*, 2017

3 Existing Conditions

This section documents current traffic conditions, operational deficiencies, and constraints experienced by the public travelling at the intersections within the study area. The operational deficiencies and constraints identified at this stage will be fundamental to the process of defining the required remedial measures.

3.1 Road Network

The study area roadways include:

- **Benjamin Road** has a 2-lane rural cross-section within the study area and a posted speed limit of 70 km/hr;
- **Kressler Road** has a 2-lane rural cross-section within the study area and a posted speed limit of 80 km/hr;
- **Bisch Street** has a 2-lane rural cross-section within the study area and a posted speed limit of 70 km/hr;
- **Westmount Road** has a 2-lane cross-section within the study area and a posted speed limit of 50 km/hr;
- **Erbsville Road** has a 2-lane cross-section within the study area and a posted speed limit of 80 km/hr west of Bisch Street and 50 km/hr within the remainder of the study area;
- **Conservation Drive** has a 2-lane cross-section within the study area and a posted speed limit of 50 km/hr;
- **Lake Louise Boulevard** has a 2-lane cross-section within the study area and a posted speed limit of 50 km/hr;
- **Beaver Creek Road** has a 2-lane cross-section within the study area and a posted speed limit of 50 km/hr;
- **Rideau River Street** has a 2-lane cross-section within the study area and a posted speed limit of 50 km/hr;
- **Laurelwood Drive** has a 2-lane cross-section within the study area and a posted speed limit of 50 km/hr;
- **Fisher Hallman Road** has a 2-lane cross-section within the study area and a posted speed limit of 50 km/hr; and
- **Bearinger Road** has a 2-lane cross-section within the study area and a posted speed limit of 50 km/hr.

The study area is primarily bordered by single family residential areas, agricultural lands and the Laurel Creek Conservation area.

The following intersections within the study area are signalized:

- Erbsville Road and Laurelwood Drive; and

- Laurelwood Drive and Fischer Hallman Road/ Bearinger Road.

The following intersections are unsignalized:

- Benjamin Road and Westmount Road;
- Benjamin Road and Bisch Street;
- Conservation Drive and Westmount Road;
- Conservation Drive and Erbsville Road;
- Conservation Drive and Rideau River Street;
- Conservation Drive and Erbsville Kartway Road (Street Three);
- Conservation Drive and Creekside Church Road;
- Conservation Drive and Beaver Creek;
- Conservation Drive and Kawartha Street;
- Conservation Drive and Cranberry Street;
- Erbsville Road and Bisch Street;
- Erbsville Road and Kressler Road; and
- Westmount Road and Lake Louise Boulevard/Osprey Drive.

The intersection of Laurelwood Drive and Beaver Creek is a roundabout.

Figure 3.1 displays existing lane configurations and traffic controls of intersections within the study area.

1. Laurelwood Drive & Bearinger Road/Fisher Hallman Road
2. Conservation Drive & Westmount Road
3. Benjamin Road & Westmount Road
4. Benjamin Road & Kressler Road
5. Erbsville Road & Kressler Road
6. Erbsville Road & Conservation Drive
7. Erbsville Road & Laurelwood Drive
8. Beaver Creek Road & Laurelwood Drive
9. Benjamin Road & Bisch Street
10. Erbsville Road & Bisch Street/Street A
11. Conservation Drive & Beaver Creek Road
12. Conservation Drive & Rideau River Street
13. Conservation Drive & Lake Louise Boulevard
14. Westmount Road & Lake Louise Boulevard/Osprey Drive

Bisch Street

Beaver Creek Road

Stamm Woodlot

Laurel Creek Conservation Area

ERBSVILLE

Conservation Dr

Wideman Rd

Wilmot Line

Erbsville Rd

Bearinger Rd

Westmount Road

Fischer-Hallman

Laurelwood Dr

N

paradigm TRANSPORTATION SOLUTIONS LIMITED

Existing Lane Configurations & Traffic Control

Beaver Creek Area TES
170278

Figure 3.1

3.2 Transit Network

Grand River Transit currently only operates **Route 73** within the study area. This route services the north east part of the city along Conservation Drive and Weber Street North, servicing subdivisions and industries, with major stops at the intersection of Weber Street North and Northfield Drive West. There are multiple stops within the study area, located along Conservation Drive, Lake Louise Boulevard and Rideau River Street.

Figure 3.2 displays the map of the existing transit network around the subject site.

3.3 Cycling and Pedestrian Facilities

All local residential roads have side walks on both sides of the roads, except for Conservation Drive, Erbsville Road, Beaver Creek Road and Bearinger Road. Conservation Drive has a sidewalk on the north side from Westmount to Beaver Creek, there are no sidewalks in the remainder of the study area on this road. Erbsville, Beaver Creek and Bearinger Roads have no sidewalks. All rural roads within the study have no sidewalks.

There are multiple on-road cycling facilities, denoted by markings and signage, within the study area on Conservation Drive, Lake Louise Boulevard, Erbsville Road and Benjamin Road. However, Conservation Drive only has cycling facilities east of Beaver Creek Road, and Benjamin Road only has cycling facilities east of Westmount Road N. There are multiple off-road cycling facilities, shown as paved trails, within the study area that follow Westmount Drive N, Benjamin Road and Bearinger Road.

There are multiple trails within the study area including the Trans Canada, Laurel, West Connector and Doreen Thomas Trails. The Trans Canada Trail travels from the north to the south through the center of Waterloo, travelling approximately 6.3 km. This trail travels through Laurel Creek Conservation Area, the University of Waterloo, Uptown Waterloo, Waterloo Park, the Iron Horse Trail and Laurel Trail. Laurel Trail overlaps with the Trans Canada Trail within the study area, travelling the route for 4.3 km. Laurel Trail diverges from the Trans Canada Trail at Erb Street, then travels to east Waterloo. West Connector Trail travels from northwest to south Waterloo, from Laurel Creek Forest to Waterloo Park, travelling approximately 5.2 km. Doreen Thomas Trail travels from the intersection of Westmount Road and Bearinger Road to 100 metres west of the intersection of Laurelwood Drive and Bearinger Road / Fischer-Hallman Road North, travelling approximately 1.2 km.

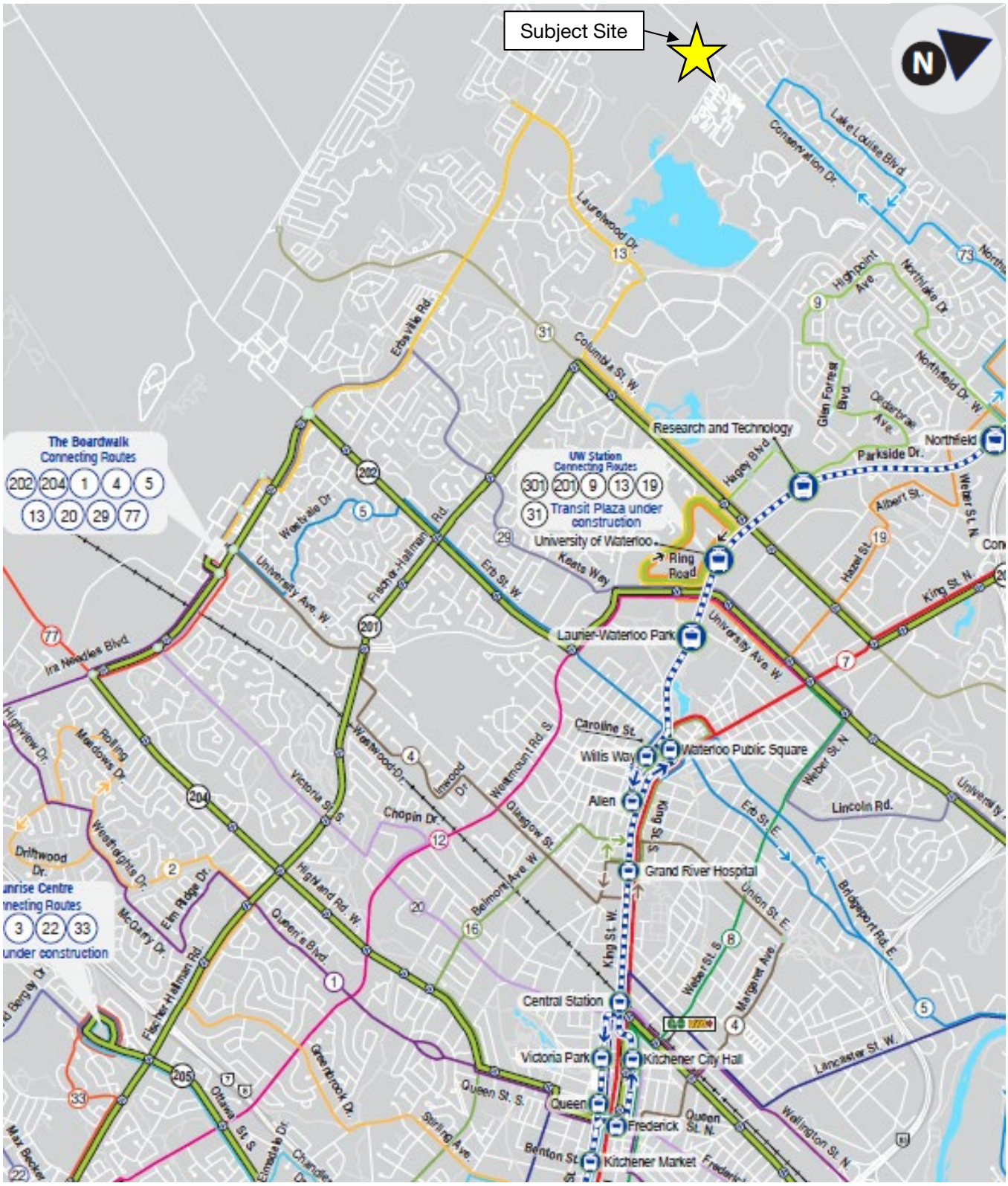
Figure 3.3 illustrates the current and future active transportation network.

3.4 Traffic Volumes

In January and July 2018, Paradigm collected study area peak hour intersection turning movement data using Miovision cameras.



Figure 3.4 and **Figure 3.5** summarizes the existing AM and PM peak hour traffic volumes, respectively. **Appendix A** contains the existing count data.

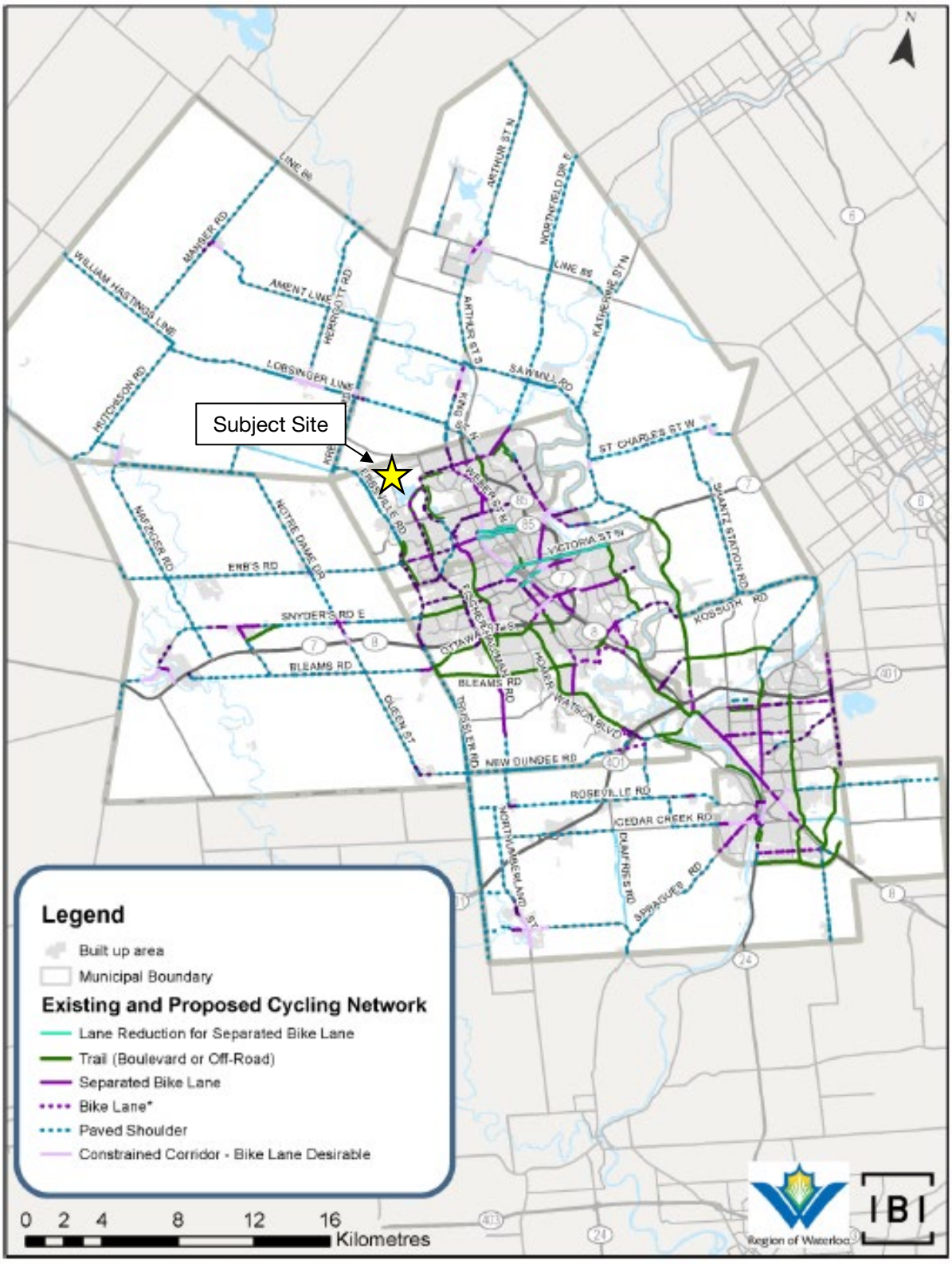


paradigm TRANSPORTATION SOLUTIONS LIMITED

Existing Transit Network

Beaver Creek Area TES
170278

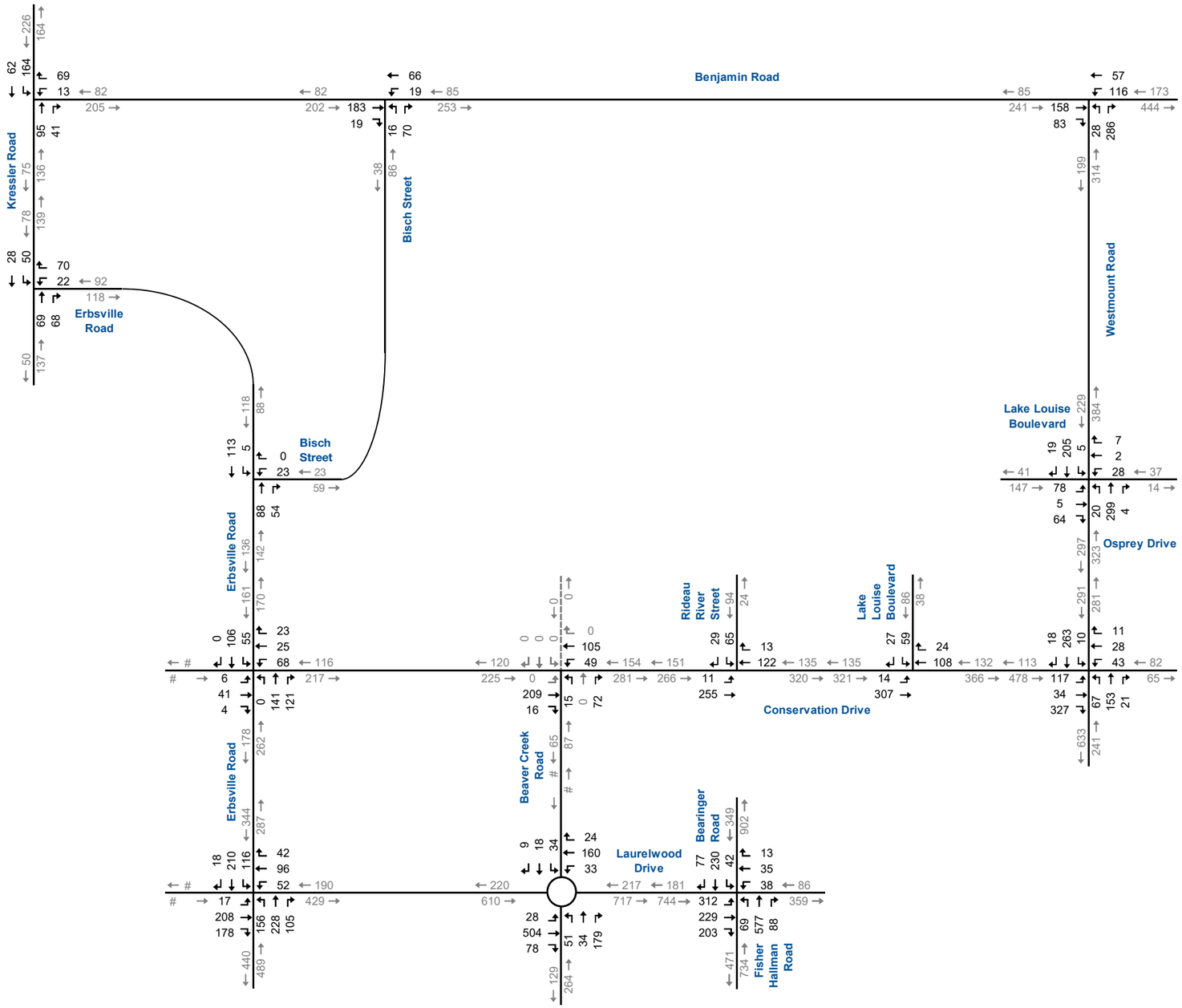
Figure 3.2



2041 Waterloo Region Active Transportation Network

Beaver Creek Area TES
170278

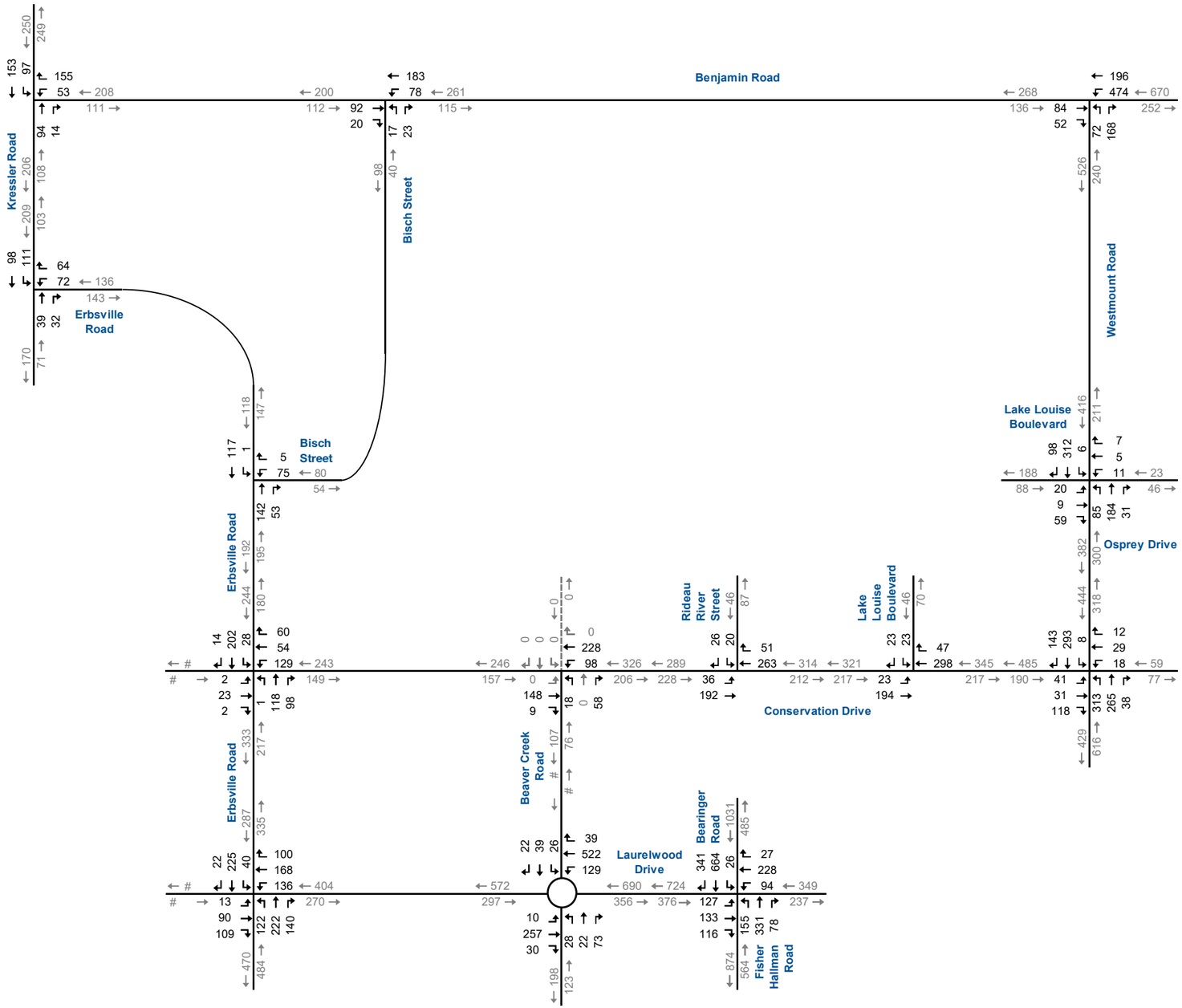
Figure 3.3



Existing Traffic Volumes – AM Peak

Figure 3.4

Beaver Creek Area TES
170278


Benjamin Road
Kressler Road
Bisch Street
Erbsville Road
Westmount Road
Lake Louise Boulevard
Osprey Drive
Rideau River Street
Conservation Drive
Beaver Creek Road
Laurelwood Drive
Bearinger Road
Fisher Hallman Road

3.5 Traffic Operations

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

Intersection level of service (LOS) is a recognized method of quantifying the efficiency of traffic flow 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 desiring to make a movement, compared to the estimated capacity for that movement. The capacity is based on several criteria related to the opposing traffic flows. 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 at signalized intersections (50 seconds at unsignalized intersections), the movement is considered to have a LOS F and remedial measures are usually implemented, if they are feasible.

The LOS conditions on the existing road network have been assessed using Synchro 9 and Arcady. The criteria for identifying “critical” intersections, as per the Region of Waterloo TIS Requirements[9], are:

- overall LOS E or F (i.e. average control delay per vehicle greater than 55 seconds) for signalized intersections; and
- overall LOS E or F (i.e. average control delay per vehicle greater than 35 seconds) for unsignalized intersections.

The criteria for identifying “critical” movements are:

- the average control delay for individual movements is greater than 55 seconds;
- estimated 95th percentile queue length for an exclusive movement exceeds the available storage space;
- estimated 95th percentile queue length for an individual movement will block an existing access;
- exclusive turning lanes are inaccessible because of queue lengths in adjacent through lanes; and
- poor quality of service for non-auto modes.

Figure 3.6 and **Figure 3.7** summarizes the LOS and other performance results under existing conditions. All study area intersections are currently operating with acceptable LOS and delays. **Appendix B** contains the detailed Synchro reports.

The analyses indicate that all intersections and individual movements within the study area are currently operating overall at acceptable levels of services

[9] Transportation Impact Study Guidelines, *Region of Waterloo*, July 2014

with a critical movement at **Benjamin Road and Westmount Road;** northbound movements have a LOS E during the PM peak hour.

1. Laurelwood Drive & Bearinger Road/Fisher Hallman Road
2. Conservation Drive & Westmount Road
3. Benjamin Road & Westmount Road
4. Benjamin Road & Kressler Road
5. Erbsville Road & Kressler Road
6. Erbsville Road & Conservation Drive
7. Erbsville Road & Laurelwood Drive
8. Beaver Creek Road & Laurelwood Drive
9. Benjamin Road & Bisch Street
10. Erbsville Road & Bisch Street/Street A
11. Conservation Drive & Beaver Creek Road
12. Conservation Drive & Rideau River Street
13. Conservation Drive & Lake Louise Boulevard
14. Westmount Road & Lake Louise Boulevard/Osprey Drive

Overall Intersection LOS
- LOS A – D
- LOS E
- LOS F

Specific Movement LOS
- LOS E
- LOS F

Existing Traffic Operations – AM Peak

Figure 3.6



Existing Traffic Operations – PM Peak

Figure 3.7

4 Future Development

The various development parcels within the study area are forecast to be fully developed and occupied by 2032. A maximum build-out of 1566 single-detached homes, 1867 low-rise multi-family units, 320 mid-rise multi-family units, a 669-student elementary school and 23,600 ft^2 commercial space for the entire area is assumed. The parcels of land (labelled as "Other") for which owners have not provided proposed development yields, the unit type distribution and yield was taken from the participating land parcels. The proposed development by Northgate Land Corporation and Erbsville Kartway Limited, is one of 13 parcels located within this study area, the 13 property owners are:

- Creekside Church Inc.;
- Brohman Lands;
- Mattamy Homes;
- Activa Holdings Inc.;
- Martin;
- Erbsville Kartway Ltd.;
- Northgate Farms;
- Northgate Land Corporation[10]; and
- Five additional unidentified developments (other).

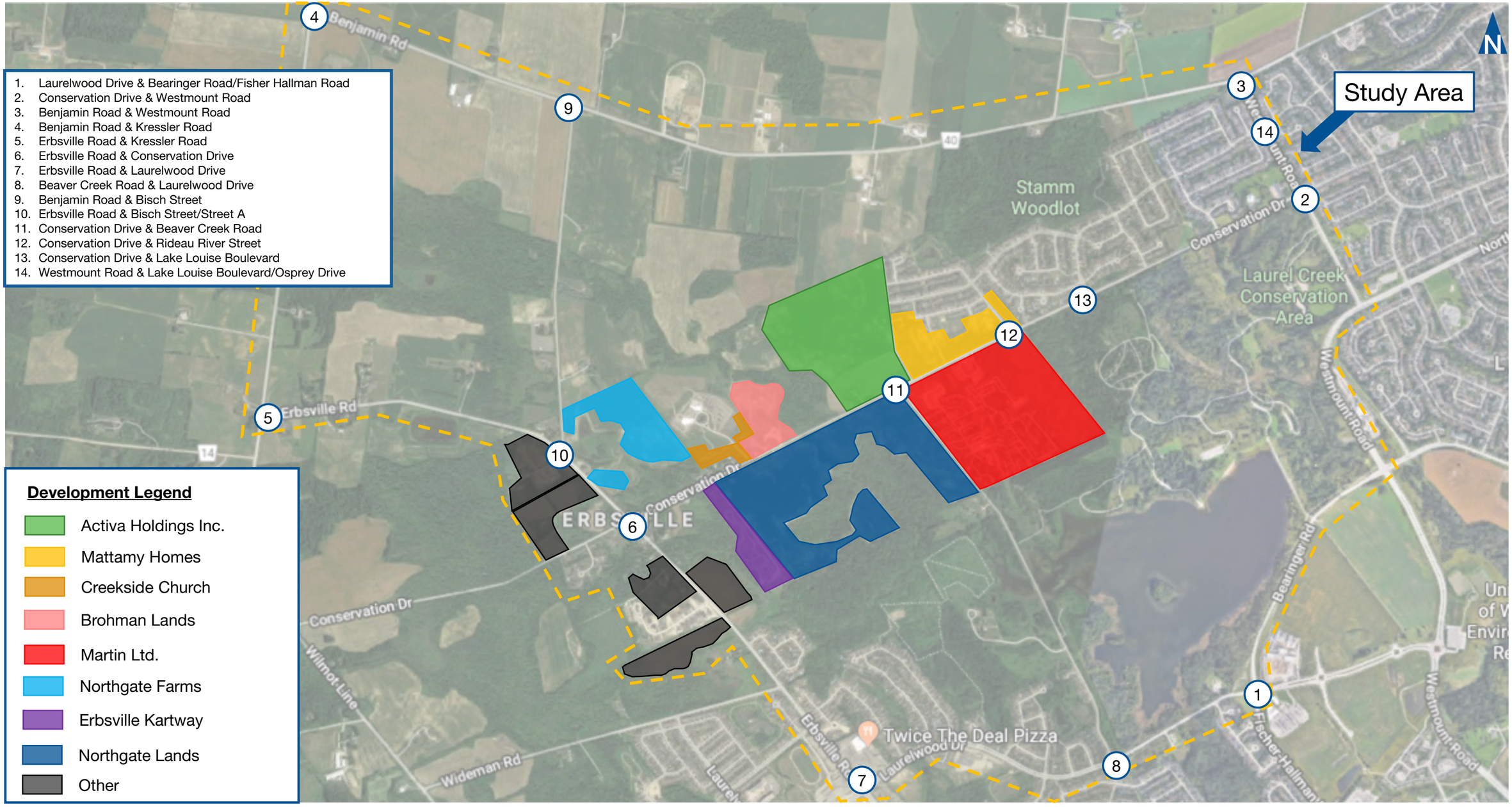
Figure 4.1 details the location of the subject development.

Access to these developments will be provided via eight new intersections at Conservation Drive, four new intersections at Beaver Creek Road, three new intersections at Erbsville Road and one new intersection at Bisch Street. **Table 4.1** summarizes the road connections and location.

[10] The registered owners of the lands proposed to be developed by Northgate are 1017081 Ontario Limited and Gabriella Groff

TABLE 4.1: NEW ROAD SUMMARY

Road Name	Road Connection	Development Connection	Road Aligned With
Ziester-Lee Road	Bisch Street	Northgate Farms	None
Street Three	Conservation Drive	Erbsville Kartway Ltd.	None
Creekside Church Road		Creekside Church Inc.	Street Seven
Street Seven		Northgate Land Corperation	Creekside Church Road
Street H		Mattamy Homes	Street One
Street One		Northgate Land Corperation	Street H
Kawartha Street		Mattamy Homes Martin	Existing Kawartha Street
Cranberry Street		Mattamy Homes Martin	Existing Cranberry Street
Rideau River Street		Mattamy Homes Martin	Existing Cranberry Street
Street One	Beaver Creek Road	Northgate Land Corperation	Martin Road 1
Street Two		Northgate Land Corperation	Martin Road 2
Martin Road 1		Martin	Street One
Martin Road 2		Martin	Street Two
Schnarr Street	Erbsville Road	Other	None
Street A		Other	Bisch Street
Street B		Other	Regal Place



paradigm TRANSPORTATION SOLUTIONS LIMITED

Development Overview

Figure 4.1

4.1 Northgate Land Corporation / Erbsville Kartway Limited

The Northgate Land Corporation and Erbsville Kartway Limited development is estimated to be constructed in multiple phases, with full buildout by 2032. This site is located to the south of Conservation Drive, west of the Beaver Creek Road. The development is estimated to include 261 single-family detached units, 435 townhouse units, 320 mid-rise apartment units and 23,600 ft^2 of commercial GFA.

Figure 4.2 illustrates the Northgate Land Corporation and Erbsville Kartway Limited proposed Draft Plan of Subdivision.

4.1.1 Internal Road Design and Traffic Calming

Within the Northgate Land Corporation and Erbsville Kartway Limited parcel, **Figure 4.3** illustrates the proposed traffic calming features:

- **Location A –** Raised median island;
- **Location B –** Raised median island with a pedestrian crossing, lane-narrowing and speed cushions;
- **Location C –** Raised median island with a pedestrian crossing, lane-narrowing and speed cushions;
- **Location D –** Roundabout with pedestrian crossings; and
- **Location E –** Raised median island with a pedestrian crossing, lane-narrowing and speed cushions.

Figure 4.4 – Figure 4.8 details each of the specific traffic calming measures:

- **Raised median island and lane-narrowing:** These two features decrease the overall width of the road and serve as a visual cue to drivers that they are entering a neighbourhood street or area. When used in this way, the narrowing is called a “gateway” to minor streets. Narrowing utilizes curb extensions to add to public space and serve as a traffic calming treatment (also known as a traffic “choker”). Narrowing can also facilitate midblock pedestrian crossings (see Pedestrian Crossing) on low-volume streets.
- **Speed Cushions:** These features are essentially speed humps with channels that allow for unrestricted passage of large vehicles, emergency vehicles, and bicycles while reducing the speeds of passenger cars. Since large vehicles can pass through speed cushions without the vertical deflection, a reduction in noise from suspension and shifting loads is achieved.
- **Pedestrian Crossing:** These unsignalized crossings are typically at trailheads or near parks or schools. These crossings can be raised to meet sidewalk height to slow vehicles and increase safety and accessibility for pedestrians. Signage, signals (RRFB, half-signals) and line painting can increase visibility of pedestrians to drivers. Pedestrian crossings can also be used in roundabouts.

- **Roundabouts:** These traffic control devices are used as speed and traffic control within residential areas. They reduce intersection conflicts, improve vehicle and pedestrian safety. They require raised splitter islands to channel approaching traffic to the right. They are found primarily on arterial and collector streets.

4.1.2 Conservation Road Intersection Locations

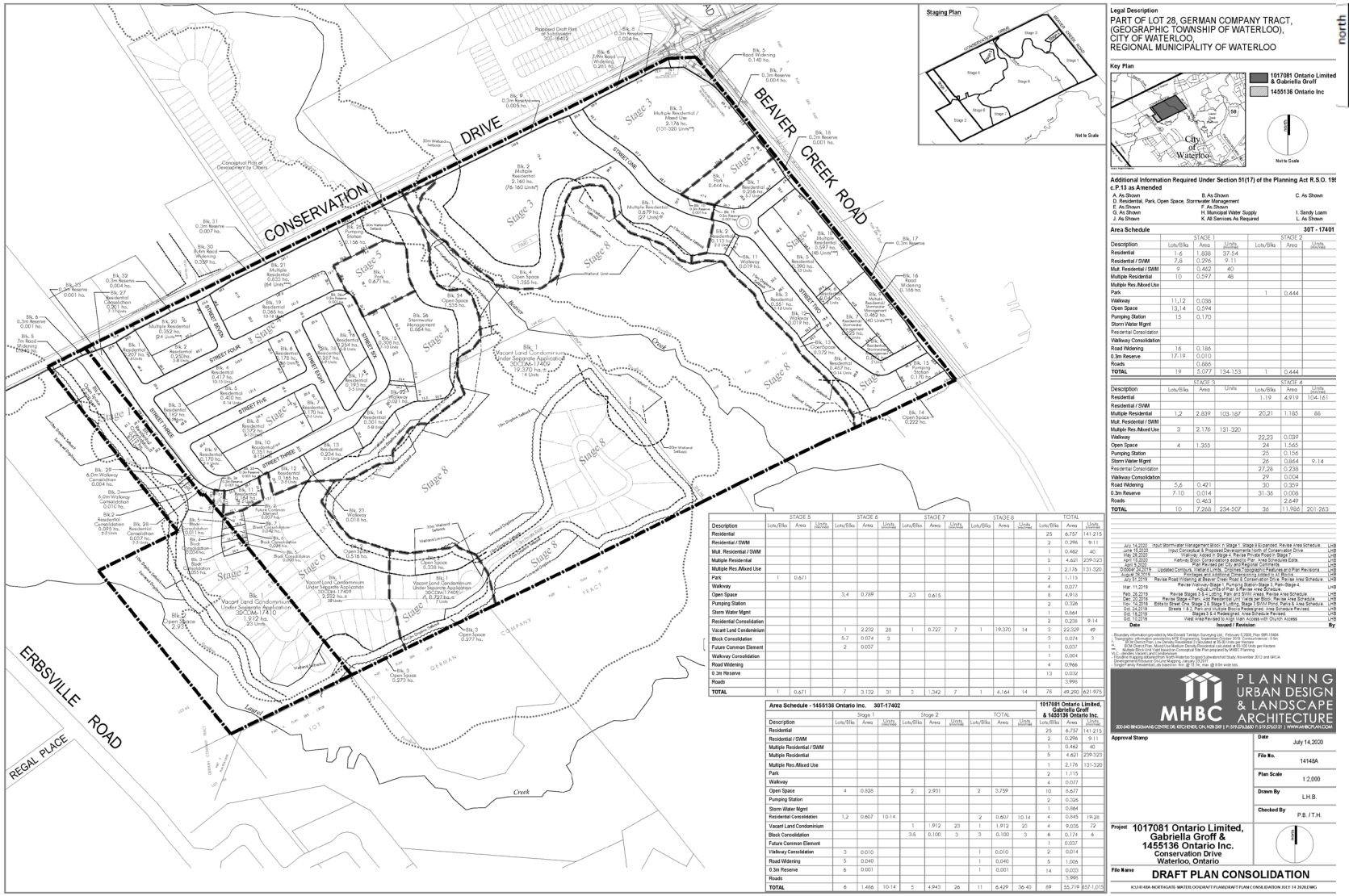
The following intersections locations are proposed for the Northgate lands to Conservation Drive:

- **Street Three**: This road is located approximately 455 metres east of Erbsville Road, and 120 west of Creekside Church Road;
- **Street Seven:** This road is located approximately 550 metres east of Street One and is aligned with the existing Creekside Church Road; and
- **Street One:** This road is located approximately 140 metres west of Beaver Creek Road and is aligned with the proposed Activa development Street H.

The proposed locations will provide adequate spacing for left-turn lanes, determined by the storage length and taper length requirements. **Section 6.1.1** provides further details on the technical analysis.

The draft plan has been revised to shift the Street One access westerly in order that both left- and right-turn movements can be achieved at Conservation Drive. The revised draft plan has been provided to the developer to the north who has been asked to review relative to their draft plan of subdivision. The draft plan associated with the lands to the north has been designed such that the subdivision road connecting to Conservation Drive can also be shifted. We have been advised that the design change is not material or of concern to Northgate's development neighbor and as a result, we anticipate the roads will align, recommended turning lanes can be accommodated at the Street One / Conservation Drive intersection and the Beaver Creek Road / Conservation Drive roundabout will function adequately.

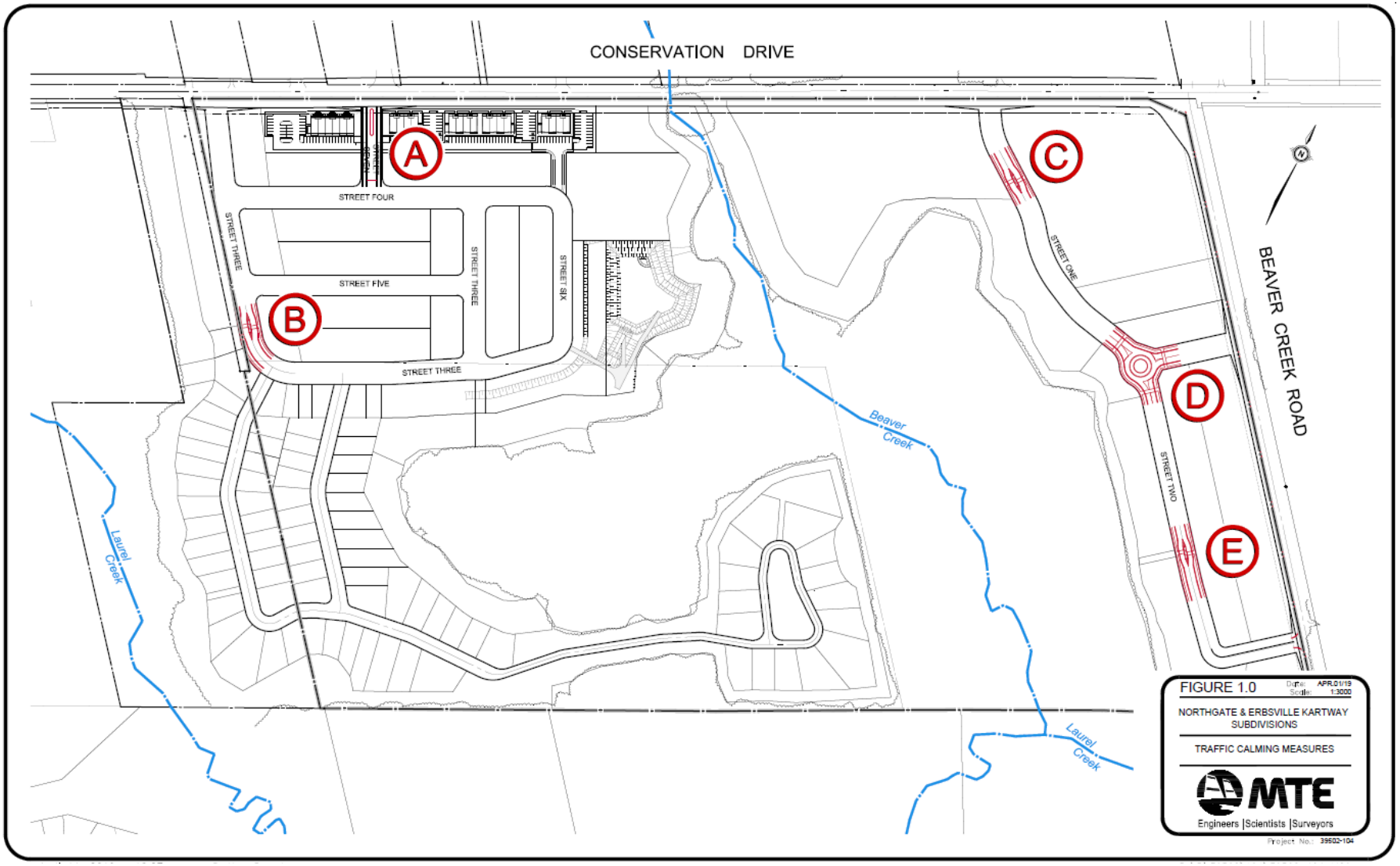
Figure 4.9 illustrates the proposed road intersection locations.



Northgate Land Corporation / Erbsville Kartway Limited
Subdivision Plan

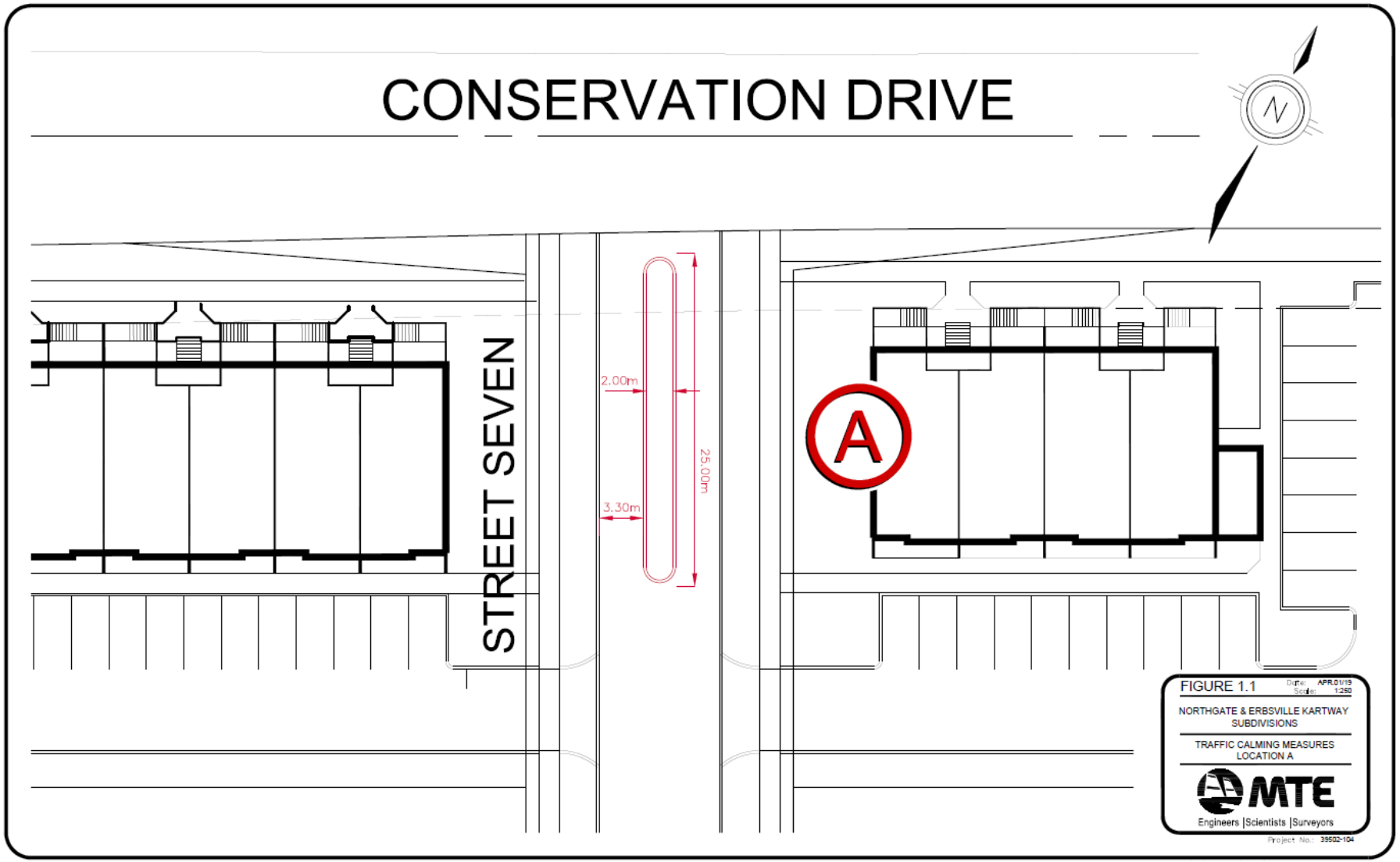
Beaver Creek Area TNS
170278

Figure 4.2



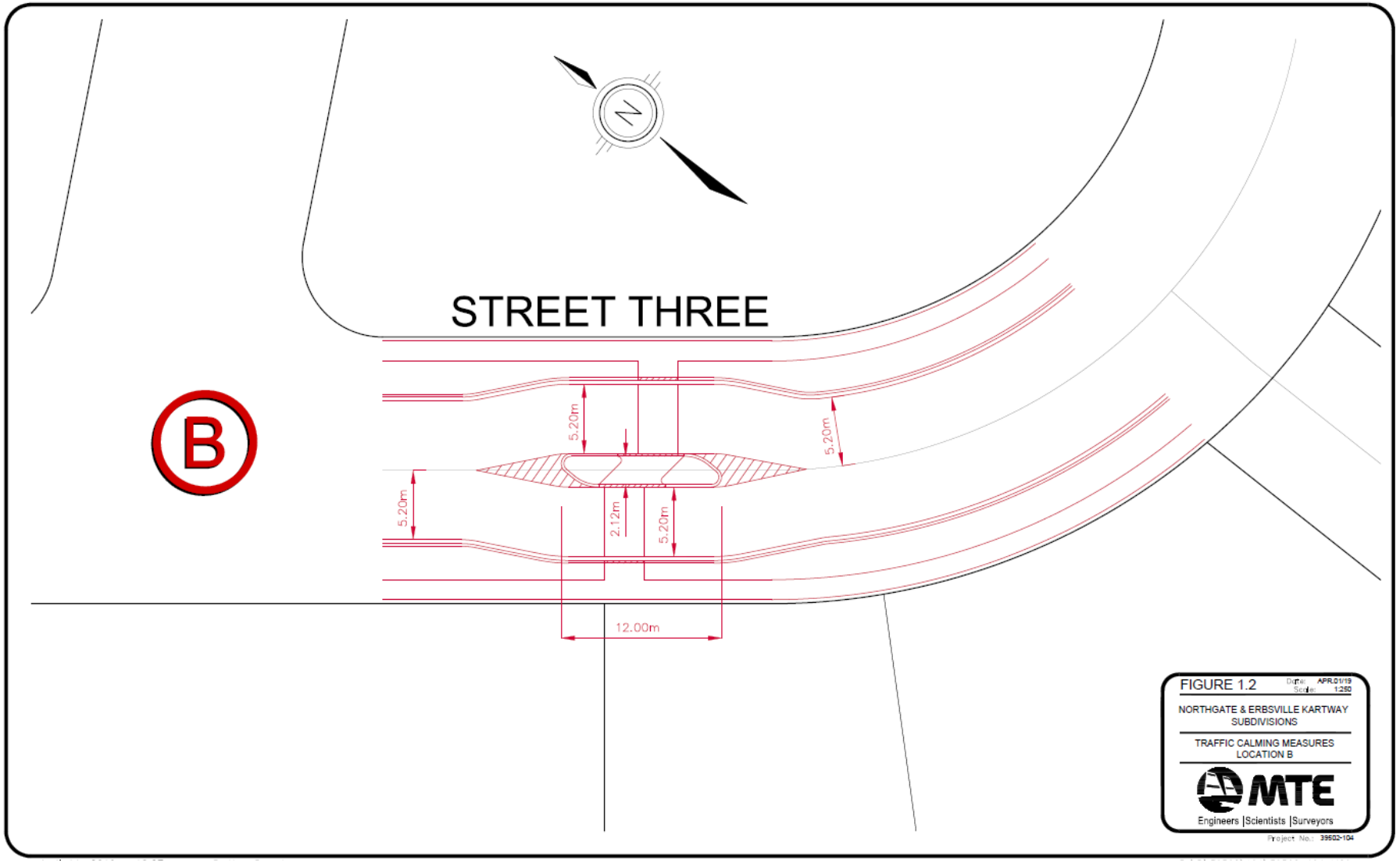
paradigm TRANSPORTATION SOLUTIONS LIMITED

Locations of Proposed Traffic Calming Measures



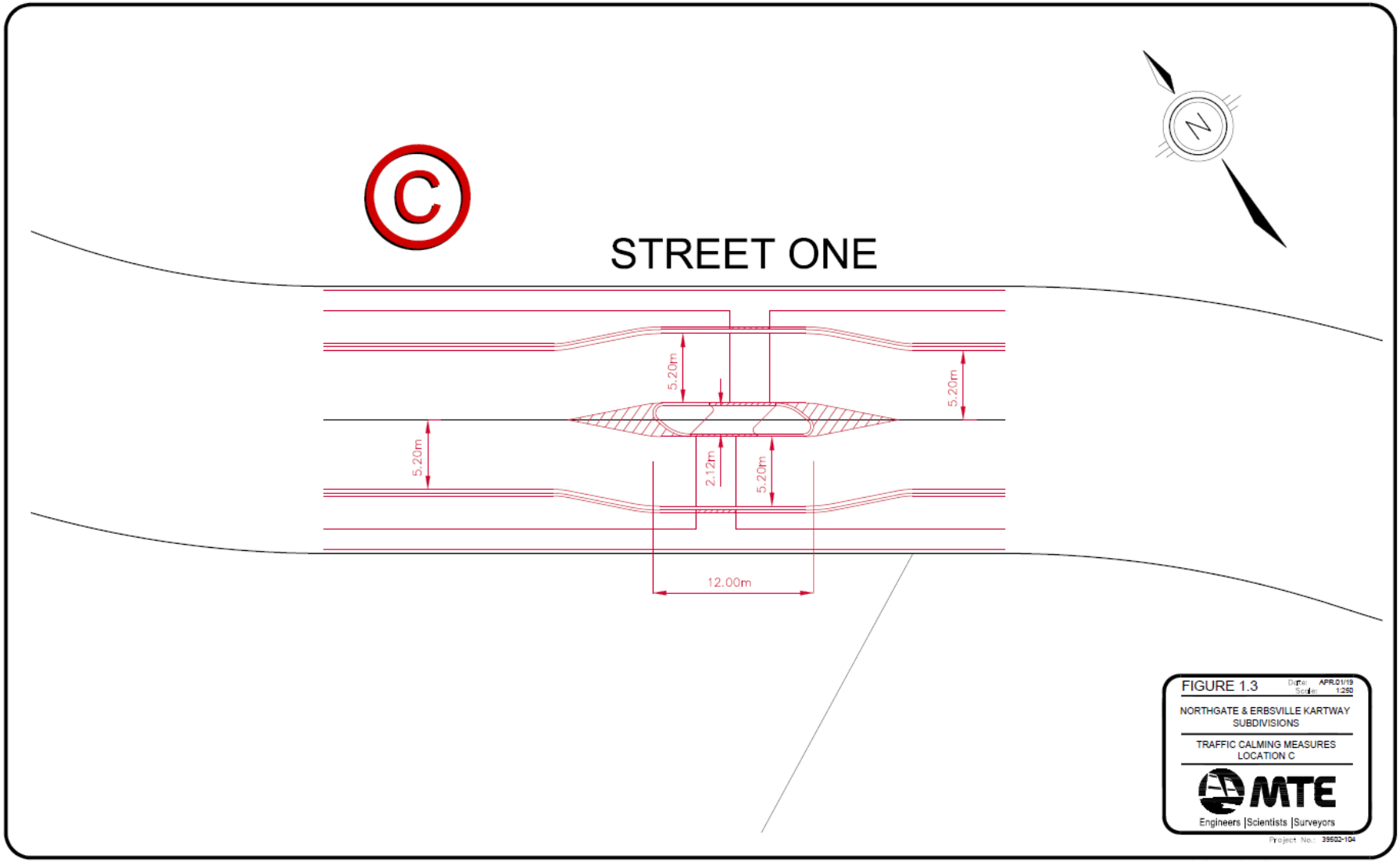
paradigm TRANSPORTATION SOLUTIONS LIMITED

Location A – Pedestrian Refuge Island

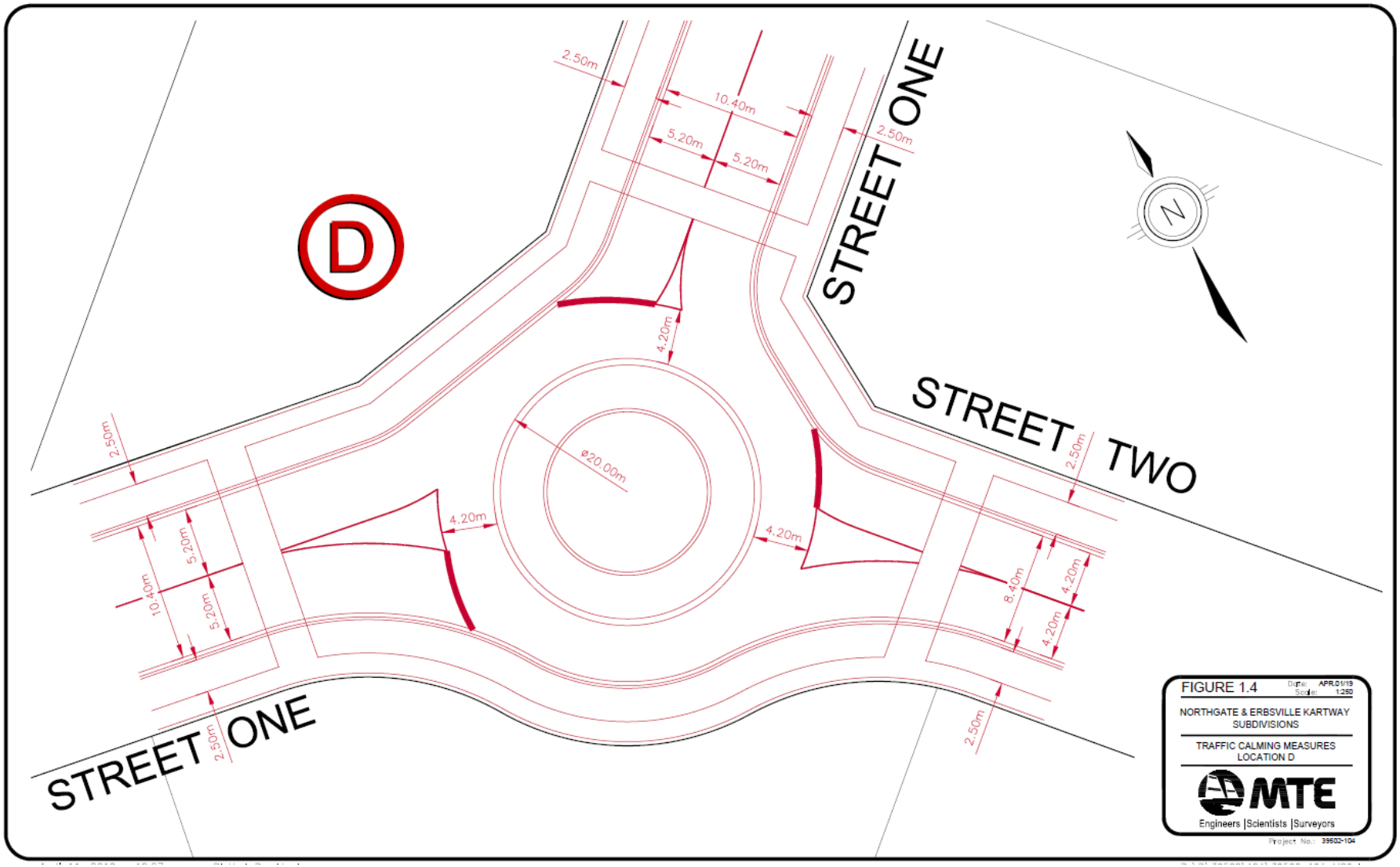


paradigm TRANSPORTATION SOLUTIONS LIMITED

Location B – Raised Median Island with a Pedestrian Crossing, Lane-Narrowing and Speed Cushions

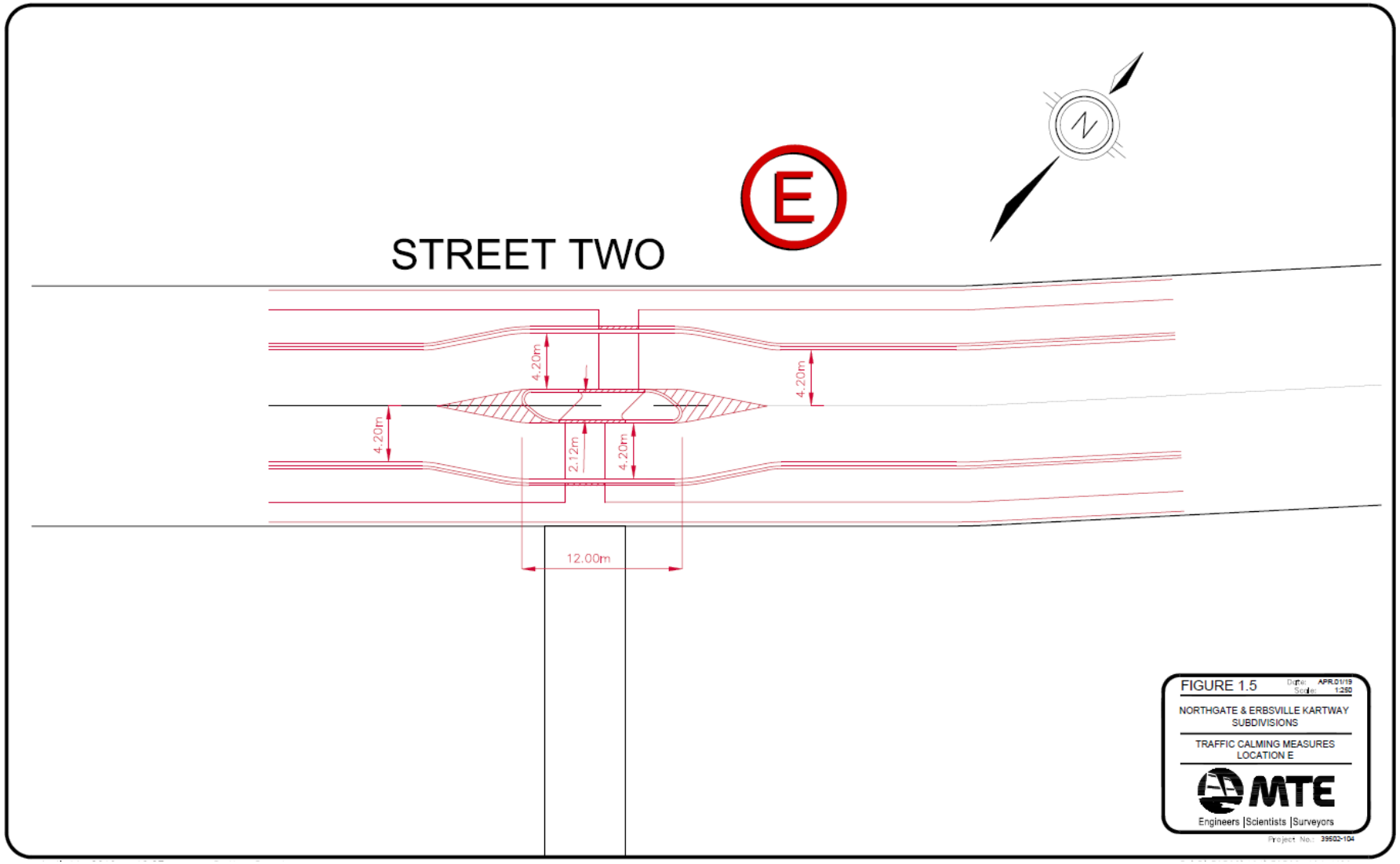


Location C – Raised Median Island with a Pedestrian Crossing, Lane-Narrowing and Speed Cushions



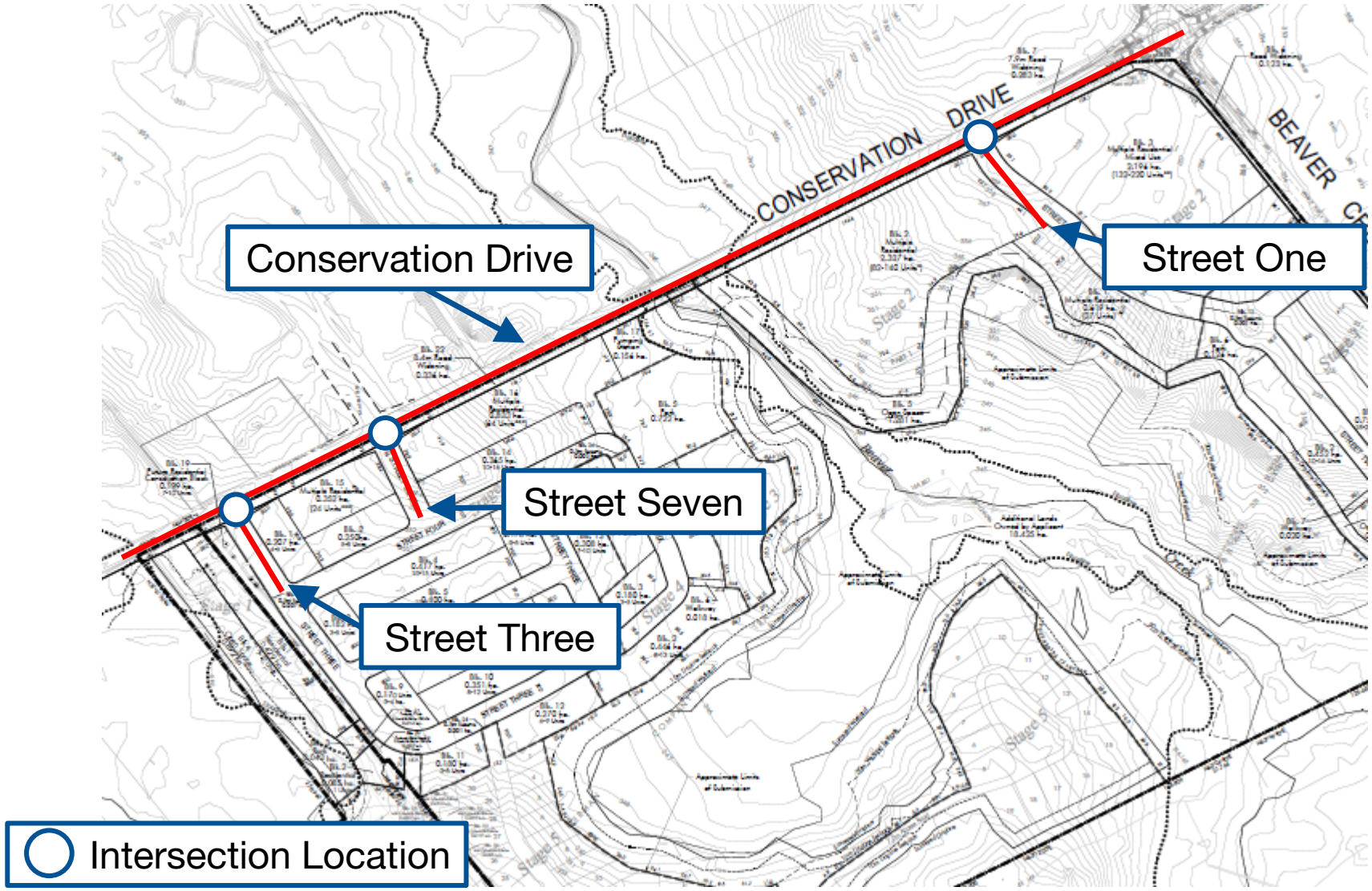
paradigm TRANSPORTATION SOLUTIONS LIMITED

Location D – Roundabout with Pedestrian Crossings



paradigm TRANSPORTATION SOLUTIONS LIMITED

Location E – Raised Median Island with a Pedestrian Crossing, Lane-Narrowing and Speed Cushions



paradigm TRANSPORTATION SOLUTIONS LIMITED

Proposed Intersection Locations
Northgate Land Corporation / Erbsville Kartway Limited

4.2 Additional Community Developments

4.2.1 Creekside Church

The Creekside Church site is located to the north of Conservation Drive, and west of the Creekside Church building. The development is estimated to include 42 single-family detached units and 52 townhouse units.

4.2.2 Brohman Lands

The Brohman Lands site is located to the north of Conservation Drive, and east of the Creekside Church. The development is estimated to include 72 single-family detached units, 28 townhouse units and up to 36 apartment units.

It is noted that the potential access to this development is located approximately 140 metres east of Street 7 of the Northgate development.

4.2.3 Mattamy Homes

The Mattamy Homes site is located to the north of Conservation Drive, and in the middle of the Beaver Creek Road extension. The development is estimated to include 225 single-detach houses, 220 townhouse units and a 669 student school.

4.2.4 Activa Holdings Inc.

The Activa Holdings Inc. site is located to the north of Conservation Drive, and east of the Beaver Creek Road extension. The development is estimated to include 103 single-family detached units and 176 townhouse units.

4.2.5 Martin

The Martin site is located to the south of Conservation Drive, and east of Beaver Creek Road. This development is set to replace the existing Green Acre Park. The development is estimated to include 261 single-family detached units and 329 townhouse units. These unit numbers are based on preliminary concept plans.

4.2.6 Northgate Farms

The Northgate Farms site is located to the north of Conservation Drive, and to the east of Bisch Street. The development is estimated to include 159 single-family detached units and 110 townhouse units. These unit numbers are based on preliminary concept plans.

4.2.7 Other Developments

There are six other parcels that are all assumed to be developed by the horizon year. These sites are located on the east and west side of Erbsville Road from Bisch Street to Forest Gate Crescent, and to the east of the



Creekside Church. These developments are estimated to include 446 single-family detached units and 563 townhouse units.

Table 4.2 summarizes the distribution of units between the parcels of land in the study area, created by MHBC.

TABLE 4.2: DEVLOPMENT DESCRIPTIONS

Neighbourhood (BCMDP)	Property Owner (NWCP)	Number				
		210 (units)	220 (units)	221 (units)	520 (Students)	820 (1000 sqft)
1	Creekside Church Inc. Brohman Lands	42 72	52 15	0 36	0 0	0 0
2	Mattamy Homes	225	220	0	669	0
3	Activa Holdings Inc.	103	176	0	0	0
4	Martin	261	329	0	0	0
5	Northgate Land Corporation	65	275	320	0	23.6
6	Northgate Land Corporation Erbsville Kartway Ltd.	179 17	116 23	0 0	0 0	0 0
7	Northgate Land Corporation	0	21	0	0	0
O.1	Northgate Farms	159	110	0	0	0
O.2	Others	124	157	0	0	0
O.3	Others	104	131	0	0	0
O.4	Others	85	108	0	0	0
O.5	Others	69	86	0	0	0
O.6	Others	64	81	0	0	0
Total		***1569***	***1900***	***356***	***669***	***23.6***

4.3 Development Trip Generation

The Institute of Transportation Engineers (ITE) Trip Generation[11] rates and equations provide methods to forecast the peak hour site-generated traffic volumes. Land uses assumed include:

- **LUC 210 (Single-Family Detached Housing):** Single-family detached housing includes all single-family detached homes on individual lots. A typical site surveyed is a suburban subdivision;
- **LUC 220 (Multifamily Housing (Low-Rise)):** Low-rise multifamily housing includes apartments, townhouses, and condominiums located within the same building with at least three other dwelling units and that have one or two levels (floors);
- **LUC 520 (Elementary School):** An elementary school typically serves students attending kindergarten through the fifth or sixth grade. Elementary schools are usually centrally located in residential communities in order to facilitate student access and have no student drivers. This land use consists of schools where bus service is usually provided to students living beyond a specified distance from the school. Both public and private elementary schools are included in this land use; and
- **LUC 820 (Shopping Center):** A shopping center is an integrated group of commercial establishments that is planned, developed,

[11] Trip Generation Manual, 10th Edition, Institute of Transportation Engineers, 2017.

owned, and managed as a unit. A shopping center's composition is related to its market area in terms of size, location, and type of store. A shopping center also provides on-site parking facilities sufficient to serve its own parking demands. Factory outlet center (Land Use 823) is a related use.

Table 4.3 summarizes the trip generation estimates for the weekday AM peak hour and weekday PM peak hour. With the full-build out of the entire community, 2448 and 2509 trips are forecast to be generated in the AM and PM peak hours, respectively. Based on the comments from the City, pass-by trip reductions were applied to the applicable commercial uses, but no modal split was applied. We note that this is not consistent with the City of Waterloo TMP direction and the Region of Waterloo TMP direction. Therefore, the forecasts, likely over-estimate the future travel demands.

TABLE 4.3: TRIP GENERATION

Land Use Code	Units	AM Peak Hour				PM Peak Hour			
		Rate	In	Out	Total	Rate	In	Out	Total
210: Single-Family Detached Housing	1569 Units	(1)	280	839	1119	(2)	899	528	1427
220: Multifamily Housing (Low-Rise)	1900 Units	(3)	180	602	782	(4)	511	300	811
221: Multifamily Housing (Mid-Rise)	356 Units	(5)	31	88	119	(6)	73	76	149
520: Elementary School - Students	669 Students	0.67	242	206	448	0.17	55	59	114
820: Shopping Center	23.6 1000 Sq. ft	0.94	14	8	22	3.81	43	47	90
	Passby: 820	*n/a*	0	0	0	*34%*	16	16	32
	Total Trips		***747***	***1743***	***2490***		***1565***	***994***	***2559***

(1) Trip = 0.71X + 4.80 *(4) Ln(Trip) = 0.89Ln(X) - 0.02*
(2) Ln(Trip) = 0.96Ln(X) + 0.20 *(5) Ln(Trip) = 0.98Ln(X) - 0.98*
(3) Ln(Trip) = 0.95Ln(X) - 0.51 *(6) Ln(Trip) = 0.96Ln(X) - 0.63*

4.4 Development Trip Distribution and Assignment

The estimated site generated trips were distributed and assigned to the adjacent roadway network based on an analysis of the Transportation Tomorrow Survey (TTS) (Zone 7026, 7027, 7028, 7029, 7238 and 7242), and the distribution methodology is consistent with the BCREA and BCRS completed in this area. **Table 4.4** summarizes the estimated trip distribution for the residential units of the development.

TABLE 4.4: TRIP DISTRIBUTION OF RESIDENTIAL AND COMMERCIAL

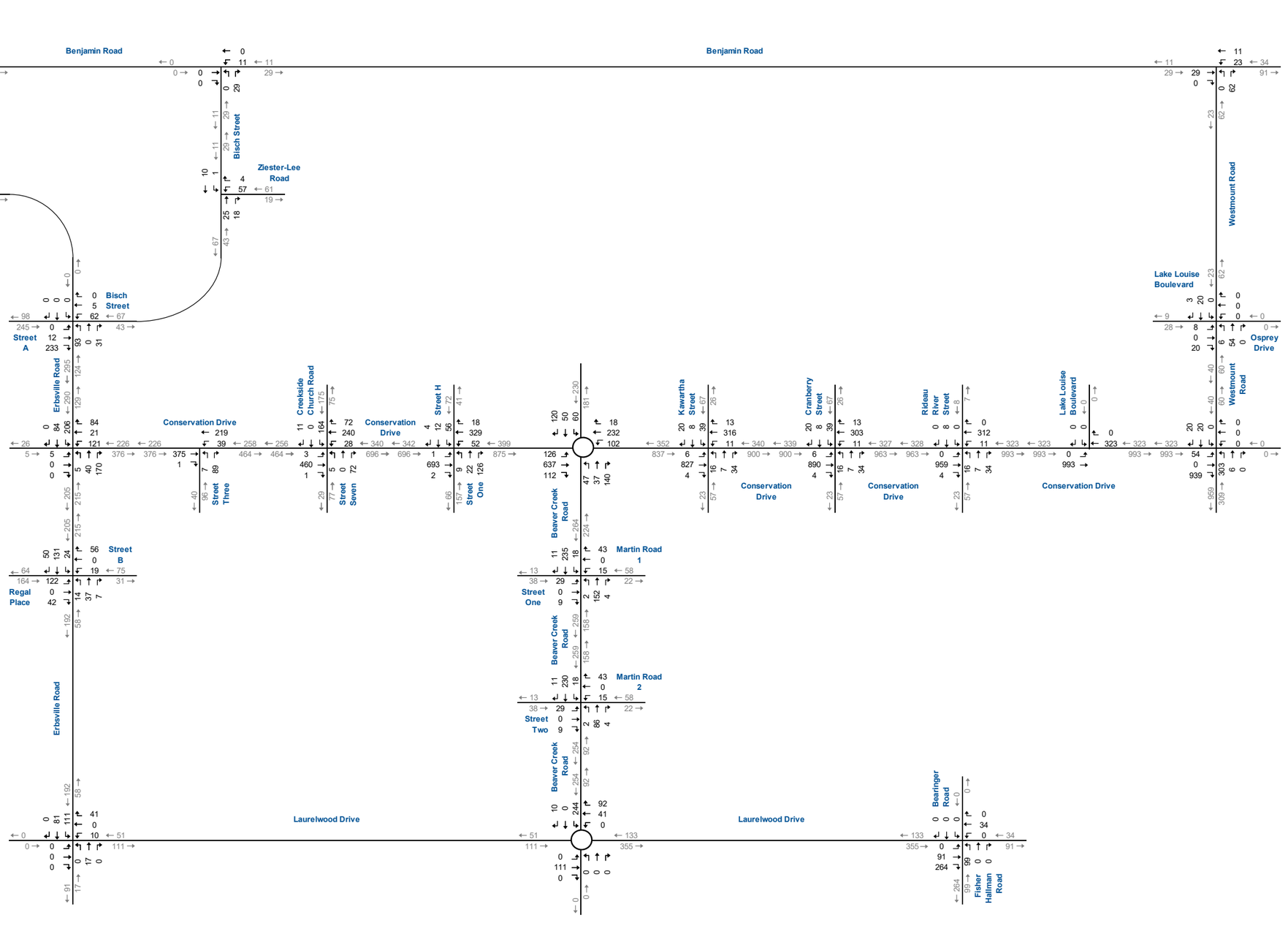
Direction	In	Out
East via Benjamin Road	7%	6%
South via Erbsville Road	5%	6%
South via Fisher Hallman Road	20%	17%
East via Laurelwood Drive	7%	6%
South via Westmount Road	61%	63%
West via Conservation	0%	2%
Total	***100%***	***100%***

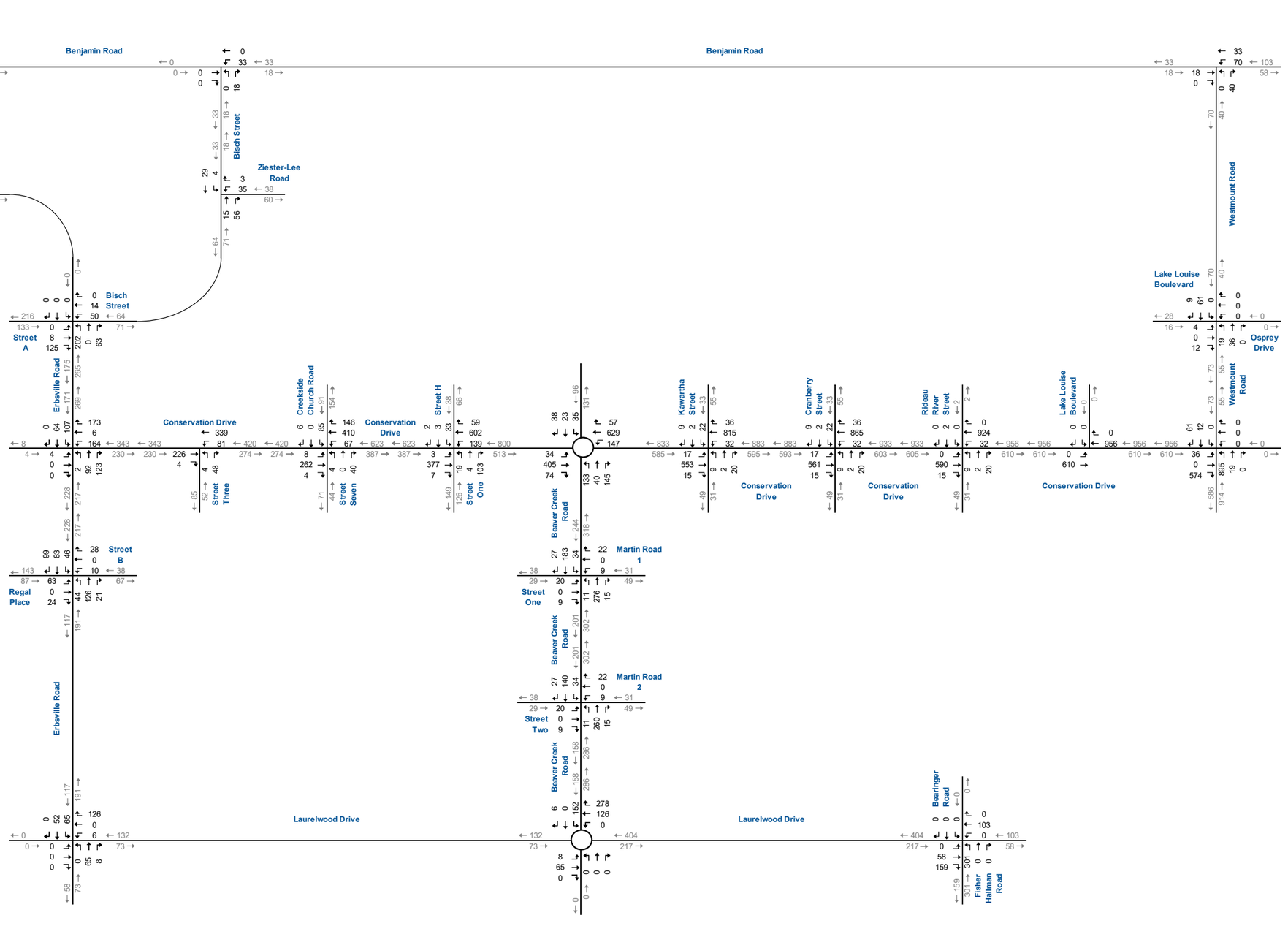
Waterloo Region District Schoolboard policy is such that the catchment area of the elementary school will be contained within the study area. The school trip distribution was then determined using a weighted distribution by residential units in the surrounding developments. **Table 4.6** summarizes the development distribution used to assign trips.

TABLE 4.5: SCHOOL TRIP DISTRIBUTION

Neighbourhood	Property	AM Peak Hour		PM Peak Hour	
		In	Out	In	Out
1	Creekside Church Inc.	2%	3%	3%	3%
	Brohman Lands	3%	3%	4%	3%
2	Mattamy Homes	12%	13%	13%	13%
3	Activa Holdings Inc.	7%	8%	7%	7%
4	Martin Ltd.	16%	17%	16%	17%
5	Northgate Land Corporation	13%	8%	12%	8%
6	Northgate Land Corporation	9%	9%	9%	10%
	Erbsville Kartway Ltd.	1%	1%	1%	1%
7	Northgate Land Corporation	0%	0%	0%	0%
O.1	Northgate Farms	8%	8%	8%	9%
O.2	Others	8%	8%	8%	8%
O.3	Others	6%	7%	6%	7%
O.4	Others	5%	6%	5%	6%
O.5	Others	4%	4%	4%	4%
O.6	Others	4%	4%	4%	4%
Total		***100%***	***100%***	***100%***	***100%***

Figure 4.11 and **Figure 4.12** illustrates the AM and PM peak hour development trip assignment, respectively.


Benjamin Road
Benjamin Road
Kressler Road
Bisch Street
Ziester-Lee Road
Bisch Street
Street A
Erbsville Road
Conservation Drive
Creekside Church Road
Street H
Street Seven
Street Three
Street One
Beaver Creek Road
Kawartha Street
Conservation Drive
Cranberry Street
Conservation Drive
Rideau River Street
Conservation Drive
Lake Louise Boulevard
Westmount Road
Lake Louise Boulevard
Osprey Drive
Westmount Road
Street B
Regal Place
Martin Road 1
Martin Road 2
Street One
Street Two
Erbsville Road
Beaver Creek Road
Beaver Creek Road
Laurelwood Drive
Laurelwood Drive
Bearinger Road
Fisher Hallman Road



Site Generated Traffic Volumes – PM Peak

Figure 4.11

5 Evaluation of Future Traffic Conditions

Future traffic conditions assessed include estimates of future background and total traffic analysis for the 2032 horizon. The future traffic volumes near the development consists of increased non-site traffic volumes (background traffic), and the traffic forecast to be generated by the proposed developments in the study area (development traffic). The background traffic within the study area was determined using generalized traffic growth at a rate of 1.5% per year.

The background traffic forecasts include a 1.5% per year general growth and none of the traffic forecast by the developments listed in Chapter 4.

Appendix C and **Appendix D** include the detailed Synchro 9 reports for the 2022 background and total horizons, respectively.

Appendix E and **Appendix F** include the detailed Synchro 9 reports for the 2025 background and total horizons, respectively.

Appendix G and **Appendix H** include the detailed Synchro 9 reports for the 2027 background and total horizons, respectively.

5.1 2032 Horizon

5.1.1 Background Traffic Operations

Based on the estimated 2032 background traffic volumes, LOS analyses have been conducted using Synchro 9, for the weekday AM and PM peak hour conditions for the intersections in the study area. Signalized intersections were optimized for movement splits, no other improvements were considered.

Figure 5.1 and **Figure 5.2** illustrate the 2032 background traffic volumes for the weekday AM and PM peak hours, respectively.

Figure 5.3 and **Figure 5.4** illustrate the results of the analysis including the levels of service (LOS), volume to capacity ratios (V/C) and 95th percentile queues experienced at the study area intersections. All observed intersections have acceptable operational values with the exceptions of:

- **Conservation Drive and Westmount Road:** southbound movements are forecast to have a LOS F and a v/c > 0.85 during the PM peak hour; and
- **Benjamin Road and Westmount Road:** northbound movements are forecast to have a LOS F and v/c > 0.85 during the PM peak hour. Overall, the intersection is forecast to operate at LOS E during the PM peak hour.

Appendix I includes the detailed Synchro 9 reports.



5.1.2 Total Traffic Operations

The 2032 total traffic volumes include both background traffic and development traffic. **Figure 5.5** and **Figure 5.6** illustrate the 2032 total traffic volumes for the AM and PM peak hours, respectively.

Figure 5.7 and **Figure 5.8** illustrate the results of the analysis are indicating the levels of service (LOS), volume to capacity ratios (V/C) and 95th percentile queues experienced at the study area intersections. As under background traffic conditions, all observed intersections have acceptable operational values, with the exceptions of:

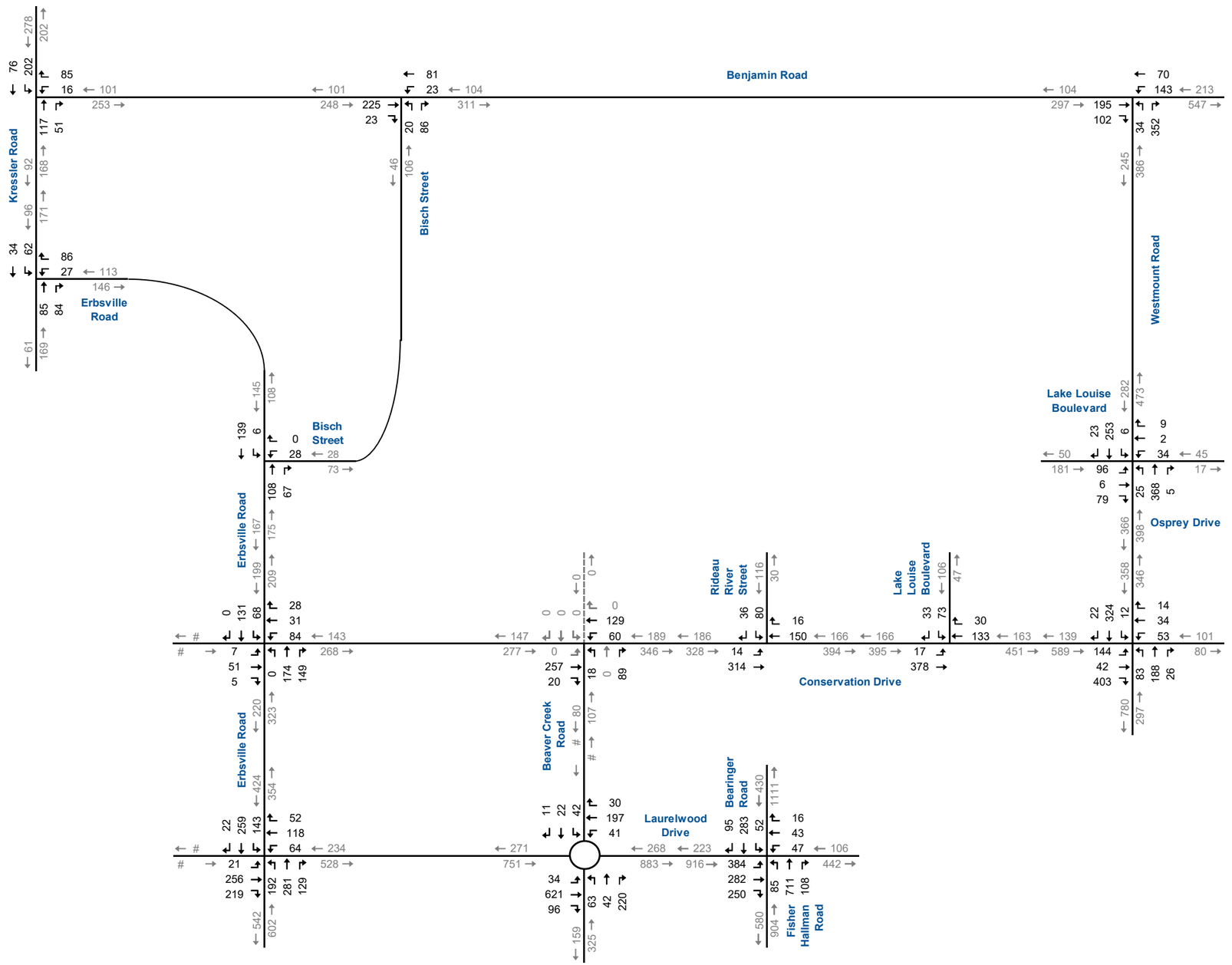
- **Fisher Hallman Road/Bearinger Road and Laurelwood Drive:** eastbound shared through-right movements are forecast to have a LOS E and v/c of approximately 1.0 during the PM peak hour. The northbound left-turn movements are forecast to have a LOS F and v/c > 1.0 during the PM peak hour. Overall, the intersection is forecast to operate at LOS E during the PM peak hour, respectively;
- **Conservation Drive and Westmount Road:** eastbound right-turn movements are forecast to have a LOS F and v/c > 1.0 during the AM and PM peak hour. The northbound left-turn movements are forecast to have a LOS F and v/c > 1.0 during the AM and PM peak hour. The northbound shared through-right movements are forecast to have a LOS F and v/c > 1.0 during the PM peak hour. The southbound movements are forecast to have a LOS F and v/c > 1.0 during the AM and PM peak hour. Overall, the intersection is forecast to operate at LOS F during the AM and PM peak hour; and
- **Benjamin Road and Westmount Road:** northbound movements are forecast to have a LOS F and v/c > 1.0 during the PM peak hour. Overall, the intersection is forecast to operate at LOS F during the AM and PM peak hour;
- **Erbsville Road and Conservation Drive:** eastbound movements are forecast to have a LOS F and LOS E during the AM and PM peak hour. The westbound movements are forecast to have a LOS F and v/c > 1.0 during the AM and PM peak hour. Overall, the intersection is forecast to operate at LOS F during the AM and PM peak hour;
- **Erbsville Road and Laurelwood Drive:** westbound shared through-right movements are forecast to have a LOS E and a v/c of 1.0 during the PM peak hour;
- **Beaver Creek Road and Laurelwood Drive:** eastbound movements are forecast to have a LOS E and v/c > 0.85 during the AM peak hour. The westbound movements are forecast to have a LOS F and v/c > 1.0 during the PM peak hour. The northbound movements are forecast to have a LOS F and v/c > 1.0 during the AM peak hour. Overall, the intersection is forecast to operate at LOS F during the AM and PM peak hour;
- **Erbsville Road and Street A/Bisch Street:** westbound movements are forecast to have a LOS F during the PM peak hour;



- **Conservation Drive and Beaver Creek Road:** eastbound movements are forecast to have a LOS F during the AM peak hour. The westbound movements are forecast to have a LOS F during the PM peak hour. Overall, the intersection is forecast to operate at LOS F during the AM and PM peak hour;
- **Conservation Drive and Rideau River Street:** northbound movements are forecast to have a LOS F during the AM and PM peak hour. The southbound movements are forecast to have a LOS F and v/c > 1.0 during the AM and PM peak hour. Overall, the intersection is forecast to operate at LOS E during the AM peak hour;
- **Conservation Drive and Lake Louise Boulevard:** southbound movements are forecast to have a LOS F during the AM and PM peak hour, and a v/c > 1.0 during the AM peak hour;
- **Conservation Drive and Street Seven/Creekside Church Road:** southbound movements are forecast to have a LOS F during the AM and PM peak hour, and a v/c > 1.0 during the AM peak hour;
- **Conservation Drive and Street One/Street H:** northbound movements are forecast to have a LOS F and v/c > 0.85 during the AM and PM peak hour. The southbound movements are forecast to have a LOS F and v/c > 1.0 during the AM and PM peak hour. Overall, the intersection is forecast to operate at LOS F during the AM peak hour;
- **Conservation Drive and Kawartha Street:** northbound movements are forecast to have a LOS F during the AM and PM peak hour. The southbound movements are forecast to have a LOS F during the AM and PM peak hour, and v/c > 0.85 during the AM peak hour;
- **Conservation Drive and Cranberry Street:** northbound movements are forecast to have a LOS F during the AM and PM peak hour. The southbound movements are forecast to have a LOS F during the AM and PM peak hour, and v/c > 1.0 during the AM peak hour; and
- **Erbsville Road and Regal Place/Street B:** eastbound movements are forecast to have a LOS E and LOS F during the AM and PM peak hour, respectively.

Appendix J includes the detailed Synchro 9 reports.



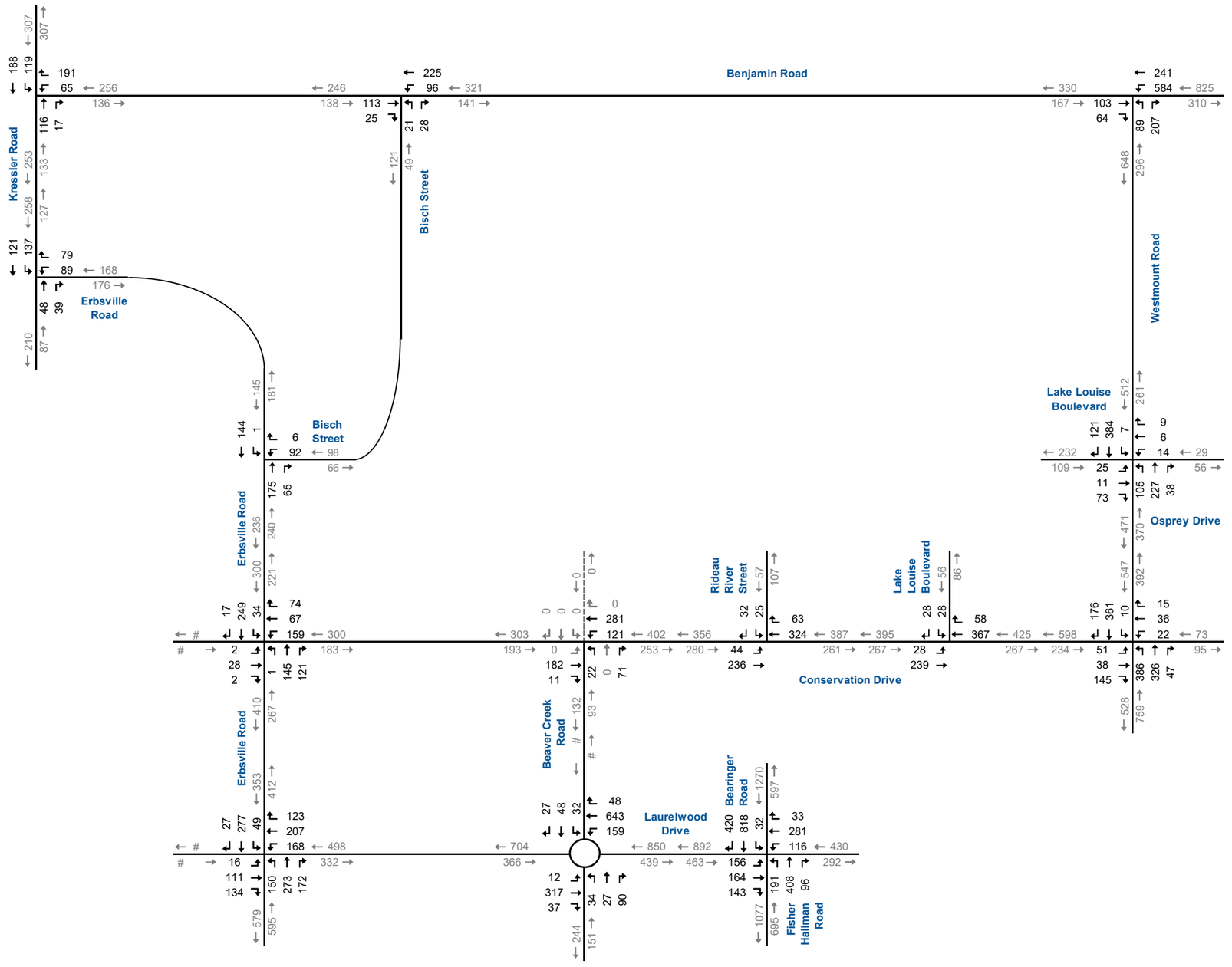


paradigm TRANSPORTATION SOLUTIONS LIMITED

2032 Background Traffic Volumes – AM Peak

Beaver Creek Area TES
170278

Figure 5.1


Benjamin Road
Kressler Road
Bisch Street
Erbsville Road
Westmount Road
Lake Louise Boulevard
Osprey Drive
Conservation Drive
Rideau River Street
Beaver Creek Road
Laurelwood Drive
Bearinger Road
Fisher Halliman Road



paradigm TRANSPORTATION SOLUTIONS LIMITED

2032 Background Traffic Operations – AM Peak

Beaver Creek Area TES
170278

Figure 5.3

1. Laurelwood Drive & Bearinger Road/Fisher Hallman Road
2. Conservation Drive & Westmount Road
3. Benjamin Road & Westmount Road
4. Benjamin Road & Kressler Road
5. Erbsville Road & Kressler Road
6. Erbsville Road & Conservation Drive
7. Erbsville Road & Laurelwood Drive
8. Beaver Creek Road & Laurelwood Drive
9. Benjamin Road & Bisch Street
10. Erbsville Road & Bisch Street/Street A
11. Conservation Drive & Beaver Creek Road
12. Conservation Drive & Rideau River Street
13. Conservation Drive & Lake Louise Boulevard
14. Westmount Road & Lake Louise Boulevard/Osprey Drive

Overall Intersection LOS
- LOS A – D
- LOS E
- LOS F

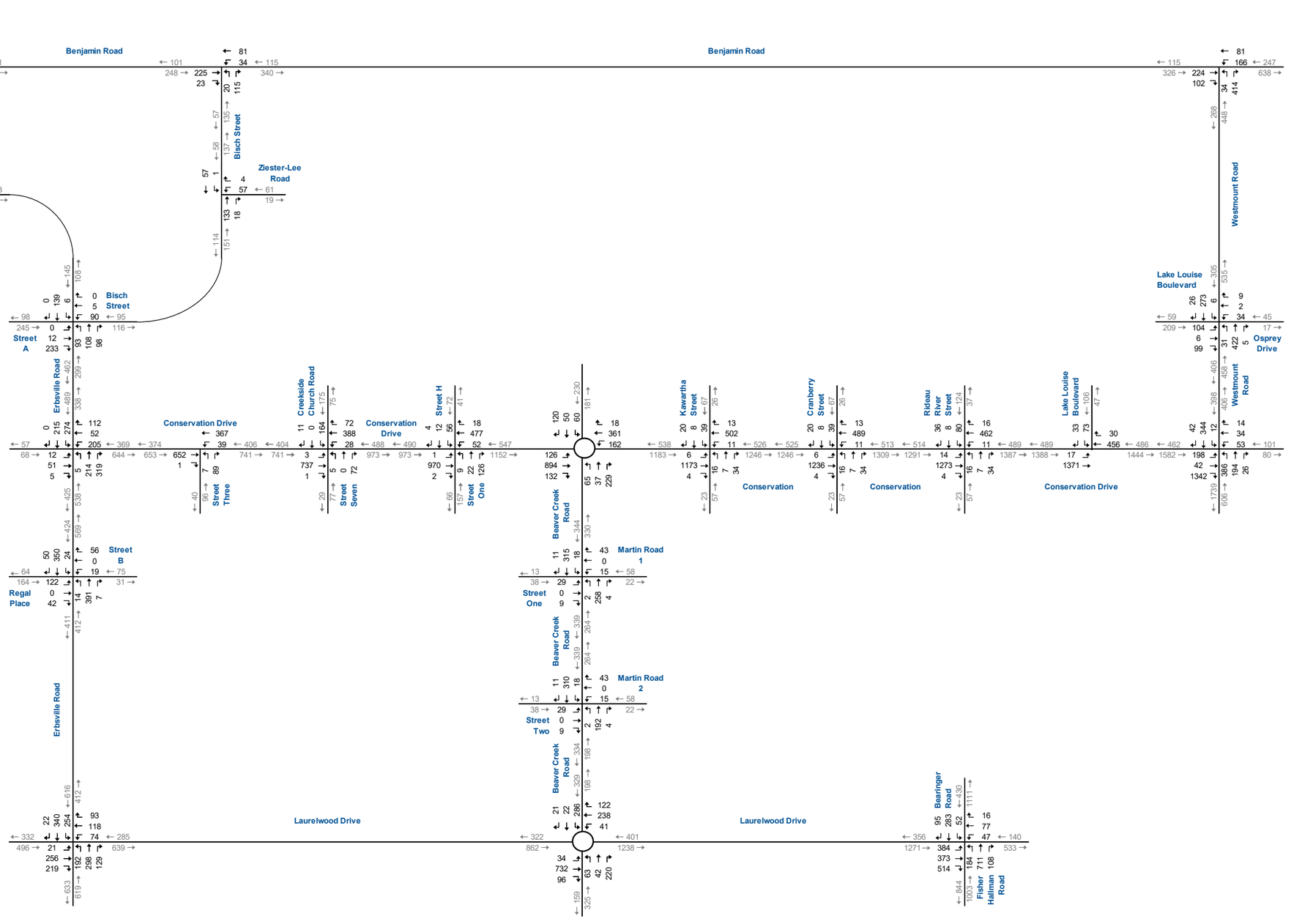
Specific Movement LOS
- LOS E
- LOS F

paradigm TRANSPORTATION SOLUTIONS LIMITED

2032 Background Traffic Operations – PM Peak

Beaver Creek Area TES
170278

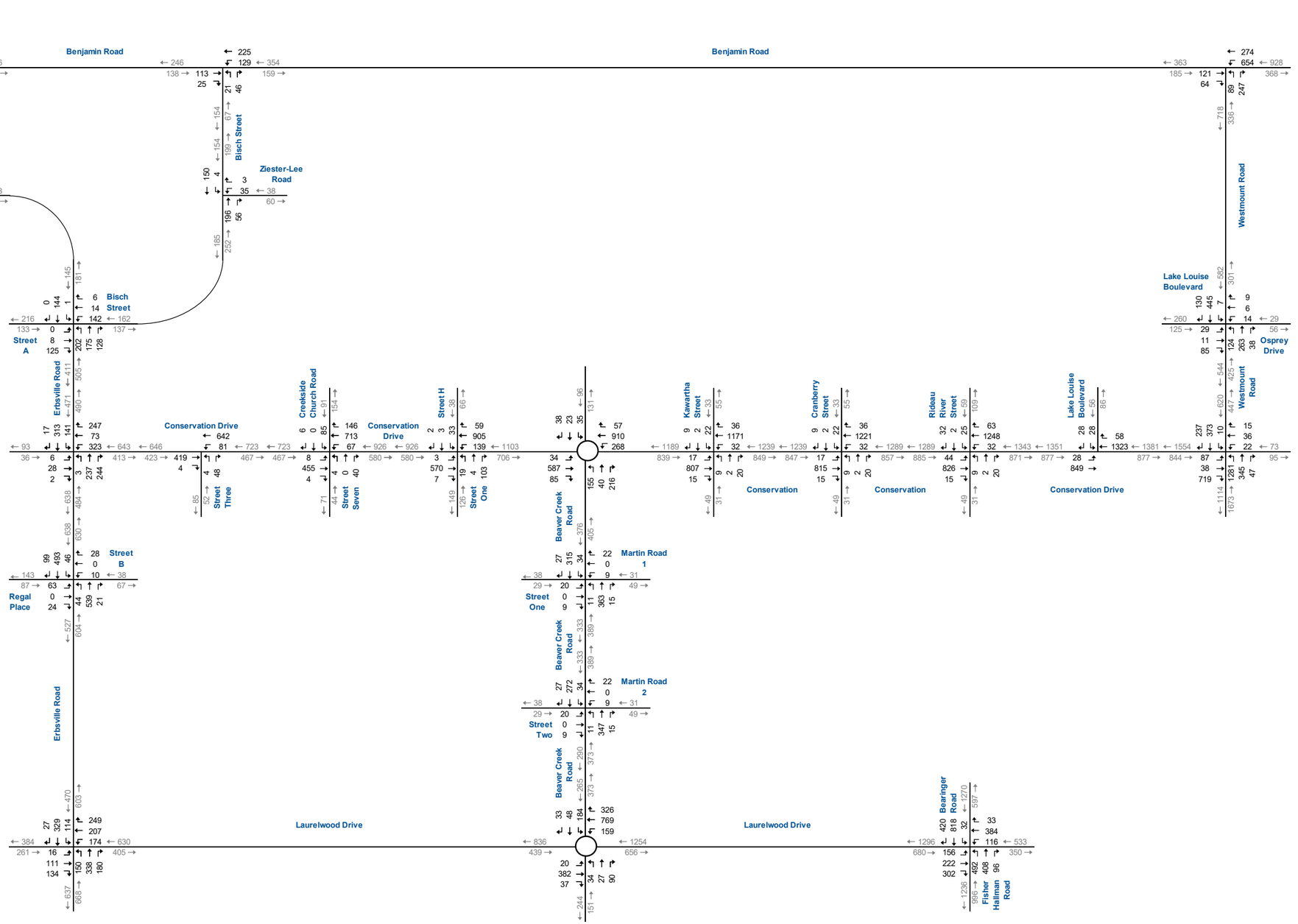
Figure 5.4



2032 Total Traffic Volumes – AM Peak

Figure 5.5

Beaver Creek Area TES
170278



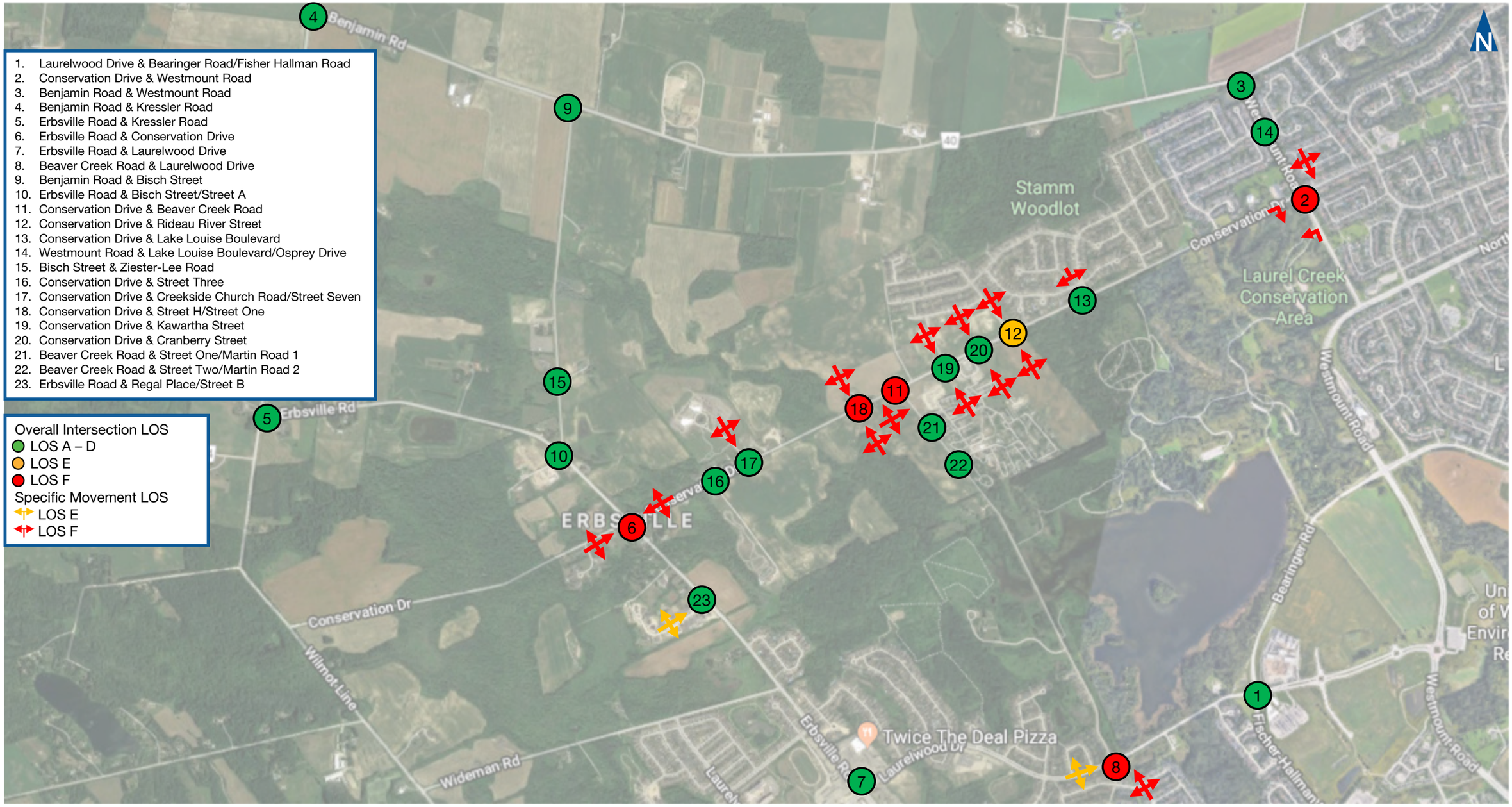
2032 Total Traffic Volumes – PM Peak

Figure 5.6

1. Laurelwood Drive & Bearinger Road/Fisher Hallman Road
2. Conservation Drive & Westmount Road
3. Benjamin Road & Westmount Road
4. Benjamin Road & Kressler Road
5. Erbsville Road & Kressler Road
6. Erbsville Road & Conservation Drive
7. Erbsville Road & Laurelwood Drive
8. Beaver Creek Road & Laurelwood Drive
9. Benjamin Road & Bisch Street
10. Erbsville Road & Bisch Street/Street A
11. Conservation Drive & Beaver Creek Road
12. Conservation Drive & Rideau River Street
13. Conservation Drive & Lake Louise Boulevard
14. Westmount Road & Lake Louise Boulevard/Osprey Drive
15. Bisch Street & Ziester-Lee Road
16. Conservation Drive & Street Three
17. Conservation Drive & Creekside Church Road/Street Seven
18. Conservation Drive & Street H/Street One
19. Conservation Drive & Kawartha Street
20. Conservation Drive & Cranberry Street
21. Beaver Creek Road & Street One/Martin Road 1
22. Beaver Creek Road & Street Two/Martin Road 2
23. Erbsville Road & Regal Place/Street B

Overall Intersection LOS
- LOS A – D
- LOS E
- LOS F

Specific Movement LOS
- LOS E
- LOS F



2032 Total Traffic Operations – AM Peak

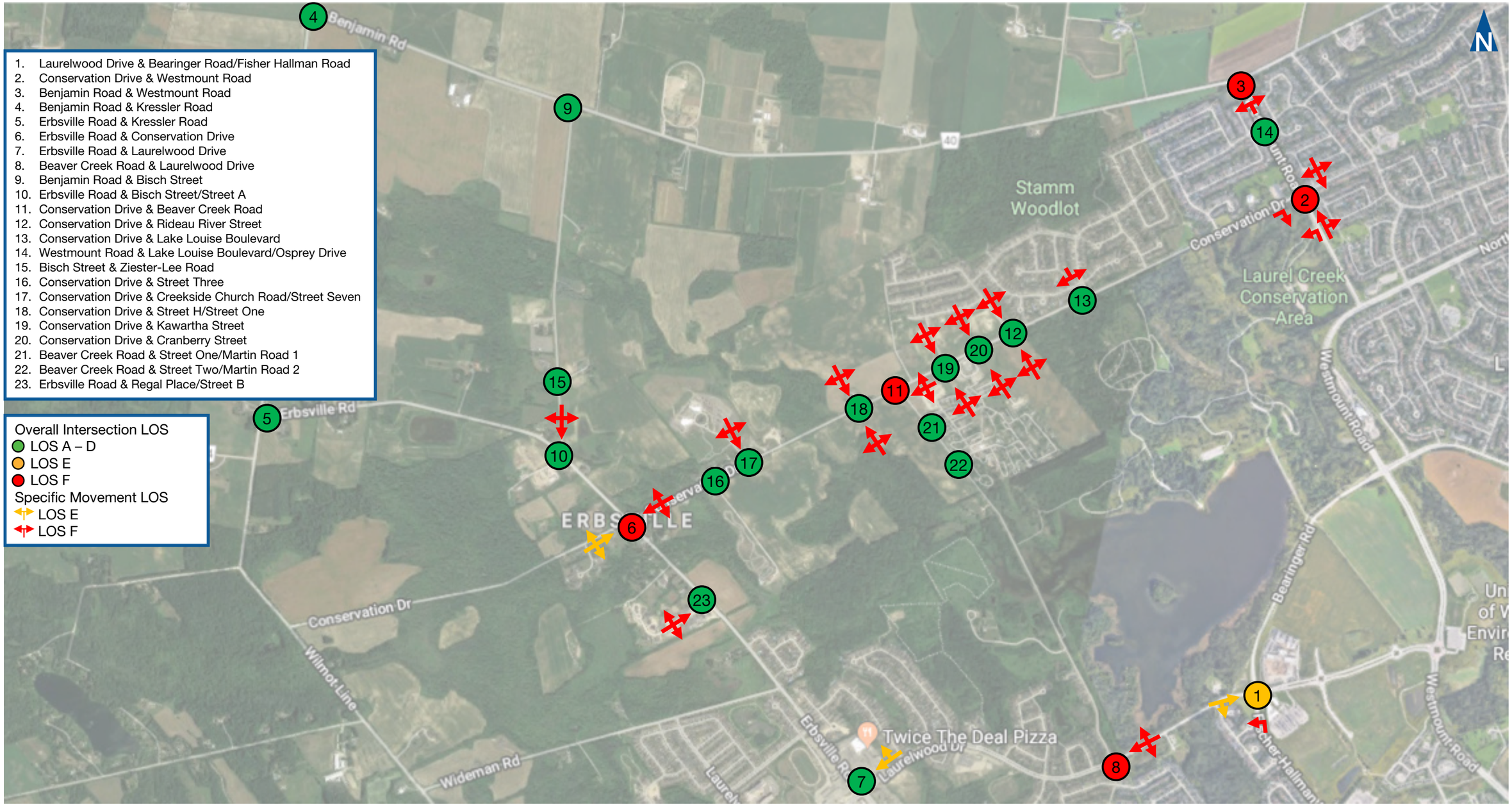
Figure 5.7

Beaver Creek Area TES
170278

1. Laurelwood Drive & Bearinger Road/Fisher Hallman Road
2. Conservation Drive & Westmount Road
3. Benjamin Road & Westmount Road
4. Benjamin Road & Kressler Road
5. Erbsville Road & Kressler Road
6. Erbsville Road & Conservation Drive
7. Erbsville Road & Laurelwood Drive
8. Beaver Creek Road & Laurelwood Drive
9. Benjamin Road & Bisch Street
10. Erbsville Road & Bisch Street/Street A
11. Conservation Drive & Beaver Creek Road
12. Conservation Drive & Rideau River Street
13. Conservation Drive & Lake Louise Boulevard
14. Westmount Road & Lake Louise Boulevard/Osprey Drive
15. Bisch Street & Ziester-Lee Road
16. Conservation Drive & Street Three
17. Conservation Drive & Creekside Church Road/Street Seven
18. Conservation Drive & Street H/Street One
19. Conservation Drive & Kawartha Street
20. Conservation Drive & Cranberry Street
21. Beaver Creek Road & Street One/Martin Road 1
22. Beaver Creek Road & Street Two/Martin Road 2
23. Erbsville Road & Regal Place/Street B

Overall Intersection LOS
- LOS A – D
- LOS E
- LOS F

Specific Movement LOS
- LOS E
- LOS F



6 Remedial Measures

6.1 Left-turn Lanes

The need for designated left turning lanes at intersections within the study area was assessed using MTO procedures detailed in the Geometric Design Manual[12]. With the posted speed limit of 50 km/h, standard practice would consider a design speed of 60 km/h considering the urban characteristics of the immediate area and the restricted flow of traffic. With the posted speed limit of 70 km/h, standard practice would consider a design speed of 80 km/h considering the urban characteristics of the immediate area and the restricted flow of traffic.

Table 6.1 provides a summary of the required storage length of the warranted left-turn lanes.

TABLE 6.1: SUMMARY OF AUXILARY LEFT-TURN LANE WARRANTS

Interesection	Direction	Storage Length (m)			
		2022	2025	2027	2032
Benjamin Road & Westmount Road	WB	40 (PM)	40 (PM)	50 (PM)	55 (PM)
Conservation Drive & Rideau River Street	EB	-	25 (PM)	30 (PM)	30 (PM)
Conservation Drive & Lake Louise Boulevard	EB	-	25 (PM)	30 (PM)	30 (PM)
Westmount Road & Lake Louise Boulevard/Osprey Drive	NB	15 (PM)	25 (PM)	25 (PM)	25 (PM)
Conservation Drive & Street Three	WB	-	15 (PM)	25 (PM)	25 (PM)
Conservation Drive & Creekside Church Road/Street Seven	WB	-	15 (PM)	25 (PM)	25 (PM)
Conservation Drive & Street H/Street One	WB	15 (PM)	30 (PM)	60 (PM)	60 (PM)
Conservation Drive & Kawartha Street	WB	-	-	30 (PM)	30 (PM)
Conservation Drive & Cranberry Street	WB	-	-	30 (PM)	30 (PM)
Beaver Creek Road & Street One/Martin Road 1	NB	-	-	-	-
	SB	-	-	-	-
Beaver Creek Road & Street Two/Martin Road 2	NB	-	-	-	-
	SB	-	-	-	-
Erbsville Road & Regal Place/Street B	NB	-	-	-	-
	SB	-	-	25 (PM)	25 (PM)

All left-turn lanes could be accommodated within current and planned right of ways.

[12] Geometric Design Manual for Ontario Highways, *Ministry of Transportation of Ontario, Queen's Printer for Ontario, 1986*

Appendix K contains **Figure K.1** to **Figure K.13** attached show the turn-warrants.

6.1.1 Conservation Drive Intersection Locations

Intersection locations have been proposed in the draft plan of subdivision. **Figure 6.1** illustrates the proposed intersection locations.

The need for designated left turning lanes at intersections within the study area was assessed using the methods described in the above text. The taper length is determined using the Transportation Association of Canada (TAC) Deign Manual[13] with the assumptions:

- Urban road characteristics;
- 60 km/hr design speed; and
- A lane width of 3.5 metres.

This analysis uses the 2032 total traffic forecasts for the ultimate length requirement.

Table 6.2 provides a summary of the required storage length from the 2032 total traffic, taper length and if there is adequate space available with the existing network or current development plan.

TABLE 6.2: SUMMARY OF NORTHGATE AUXILIARY LEFT-TURN LANE TOTAL LENGTHS

Interesection	Approach	Available Length	Minimum Requirements			Adequate Space?
			Storage Length	Taper Length	Total Length	
Conservation Drive & Street Three	WB	120	25	55	80	Y
Conservation Drive & Creekside Church Road/Street Seven	WB	-	25	55	80	Y
Conservation Drive & Street H/Street One	WB	140	60	55	115	Y

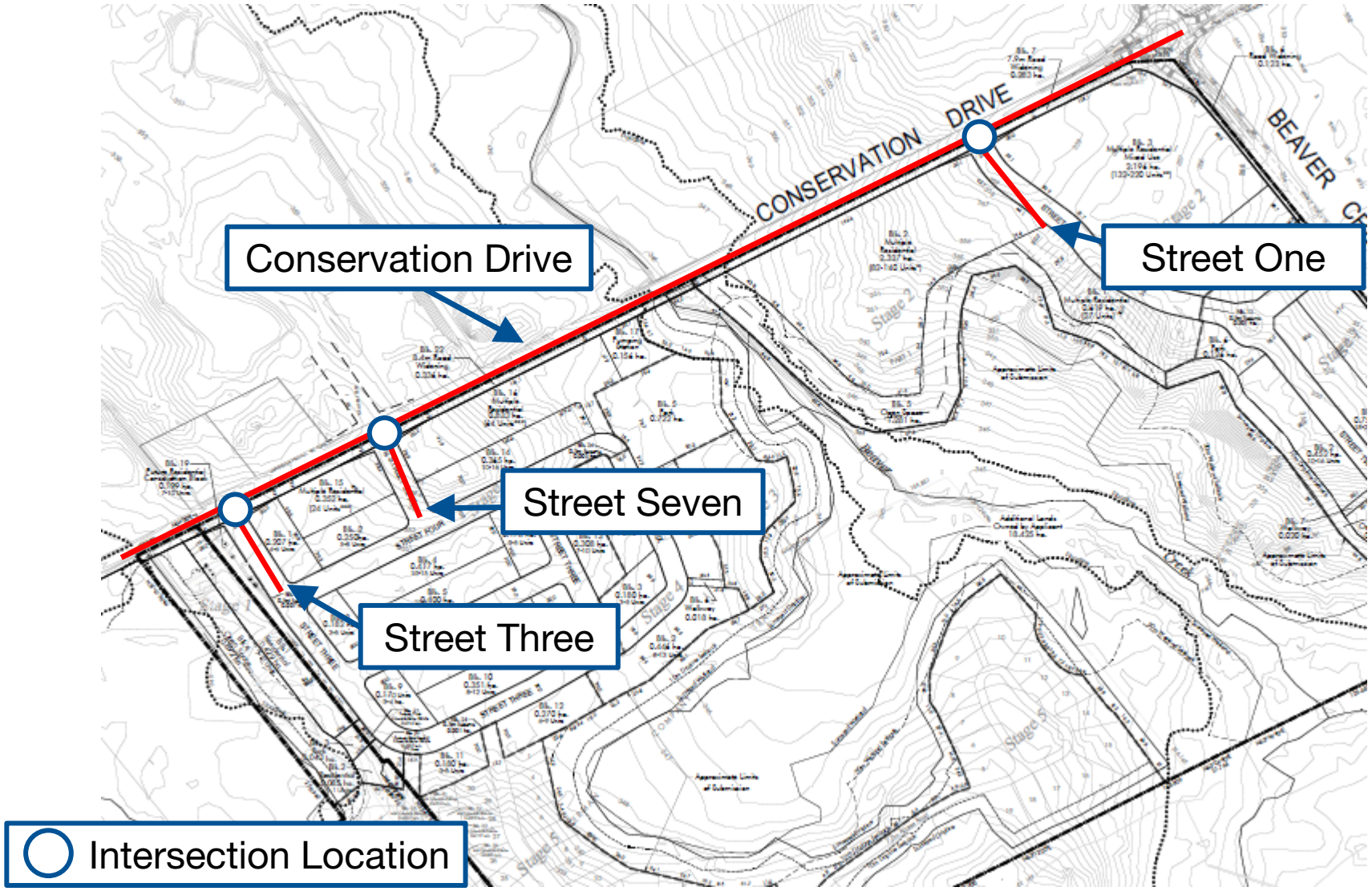
All left-turn lanes noted in the above table can be implemented with the current plans:

- the proposed Street One location will provide adequate space between itself and Beaver Creek Road as to not interfere with the proposed Beaver Creek Road at Conservation Drive roundabout;
- The proposed Street Seven location will provide adequate space to accommodate a left-turn lane between it and a potential access to the Brohman Lands; and

[13] Geometric Design Guide for Canadian Roads, *Transportation Association of Canada*, 2017

- The proposed Street Three location will provide adequate space to accommodate a left-turn lane between it and Street Seven / Creekside Church.





paradigm TRANSPORTATION SOLUTIONS LIMITED

Proposed Intersection Locations
Northgate Land Corporation / Erbsville Kartway Limited

Beaver Creek Area TNS
170278

Figure 6.1

6.2 All-Way Stop Warrants

The intersection of Conservation Drive and Erbsville Road is currently experiencing safety issues related to sight distance limitations impacted by the proximity of structures and foliage to the edge of the road.

The Conservation Drive and Erbsville Road intersection was assessed to determine if an all-way stop control is forecast to be warranted, using the OTM Book 5[14], under all future conditions. The requirements to fulfil an all-way stop warrant are as follows:

- Total vehicle volume on all intersection approaches exceeds 350 for the highest hour recorded; and
- Volume split does not exceed 65/35.

As this intersection completely fulfils this warrant under the existing traffic conditions, it is recommended to implement an all-way stop by 2022.

Appendix L contains the all-way stop warrants.

6.3 Signal Warrants

The Conservation Drive and Westmount Road, Westmount Road and Benjamin Road, Conservation Drive and Erbsville Road, Conservation Drive and Rideau River Street, and Conservation Drive and Street H/Street One intersections were assessed to see if a signal was warranted, using the OTM Book 12 Justification 7[15], under all future conditions. **Table 6.3** summarizes the signal warrant results under each of the horizon conditions.

[14] Book 5: Regulatory Signs, *Ministry of Transportation of Ontario,* March 2000
[15] Book 12: Traffic Signals, *Ministry of Transportation of Ontario,* March 2012

TABLE 6.3: SUMMARY OF SIGNAL WARRANTS

Intersection	Scenario	Horizon Year	Warrant 1	Warrant 2
Conservation Drive & Westmount Road	Background	2022	88.5%	58.6%
		2025	92.5%	61.3%
		2027	95.4%	63.2%
		2032	102.7%	68.1%
	Total	2022	112.6%	69.1%
		2025	139.2%	83.0%
		2027	197.4%	109.6%
		2032	204.8%	114.5%
Benjamin Road & Westmount Road	Background	2032	94.7%	61.5%
	Total	2032	108.9%	62.5%
Erbsville Road & Conservation Drive	Background	2032	56.5%	37.8%
	Total	2032	107.6%	68.8%
Conservation Drive & Rideau River Street	Total	2032	57.8%	47.7%
Conservation Drive & Street H/Street One	Total	2032	39.9%	46.7%

It was found that there was a signal warranted for Conservation Drive and Westmount Road, but no warrant for a signal at all other intersections.

Appendix M contains the OTM Book 7 Signal Warrant worksheets.

While the Westmount Road and Benjamin Road, and Erbsville Road and Conservation Drive intersection did not warrant a signal, it is still recommended to protect for implementation as it is still able to fulfill the warrant by more than 100%, and on the basis of urban design. With a new development of this size, it can be considered that with a new signalized intersection in this location that it would draw traffic away from other routes, allowing other intersections in the area to improve their operations.

6.4 Roundabout Screening Tool

A roundabout screening tool was used for the intersections of:

- Conservation Drive and Westmount Road;
- Westmount Road and Benjamin Road; and
- Erbsville Road and Conservation Drive.

The results show that a roundabout is a feasible method of traffic control at all intersections and an Intersection Control Study should be completed for each intersection.

Appendix N contains the Roundabout Screening Tools used.

6.5 Additional Capacity

As described in **Section 5.1** there are several intersections forecast to operate at an undesirable LOS not addressed by the above sections. While there are intersections with critical movements, most notably at the two-way stop control intersections along Conservation Drive, these critical movement do not always warrant additional capacity as the LOS has been dictated by the delay, not the v/c ratio. However, for intersections with critical movements dictated by the v/c ratio, the addition of turn lanes could improve operations. **Table 6.4** summarizes the intersections that are over capacity, and the proposed additional turn-lanes.

TABLE 6.4: ADDITIONAL TURN-LANE SUMMARY

Intersection	Direction	Lane Type
Laurelwood Drive & Bearinger Road/Fisher Hallman Road	EB	Dedicated Right-Turn
Conservation Drive & Westmount Road	EB	Channelized Right-Turn
	NB	Dual left-turn lane
	SB	Dedicated Right-Turn
Beaver Creek Road & Laurelwood Drive	WB	Right-Turn Bypass
Conservation Drive & Beaver Creek Road	EB	Additional entry lane
	WB	Additional entry lane
Conservation Drive & Rideau River Street	SB	Dedicated Left-Turn
Conservation Drive & Lake Louise Boulevard	SB	Dedicated Left-Turn
Westmount Road & Lake Louise Boulevard/Osprey Drive	NB	Dedicated Left-Turn
Conservation Drive & Creekside Church Road/Street Seven	SB	Dedicated Left-Turn
Conservation Drive & Street H/Street One	SB	Dedicated Left-Turn

To allow for the additional entry lanes at Conservation Drive and Beaver Creek Road, the area required for a two-lane roundabout (a 55-metre diameter circle as per Region of Waterloo geometric standards) should be protected.



6.6 2032 Total Traffic Operations with Improvements

With the above improvements made to the existing intersections, the 2032 total traffic was reassessed.

Figure 6.2 and **Figure 6.3** illustrate the results of the analysis are indicating the levels of service (LOS), volume to capacity ratios (V/C) and 95th percentile queues experienced at the study area intersections. As under the previous analysis, all observed intersections have desirable operational values, with the exceptions of:

- **Fisher Hallman Road/Bearinger Road and Laurelwood Drive:** eastbound left-turn movements are forecast to have a LOS E during the PM peak hour. The northbound left-turn movements are forecast to have a LOS E and v/c of approximately 1.0 during the PM peak hour. The southbound through movements are forecast to have a LOS E during the PM peak hour;
- **Conservation Drive and Westmount Road:** The northbound left-turn movements are forecast to have a LOS E and v/c of approximately 1.0 during the PM peak hour. The southbound through movements are forecast to have a LOS E during the PM peak hour;
- **Erbsville Road and Laurelwood Drive:** westbound shared through-right movements are forecast to have a LOS E and a v/c of 1.0 during the PM peak hour;
- **Beaver Creek Road and Laurelwood Drive:** eastbound movements are forecast to have a LOS E and v/c > 0.85 during the AM peak hour. The northbound movements are forecast to have a LOS F and v/c > 1.0 during the AM peak hour. Overall, the intersection is forecast to operate at LOS F during the AM peak hour;
- **Conservation Drive and Rideau River Street:** northbound movements are forecast to have a LOS F during the AM and PM peak hour. The southbound left-turn movements are forecast to have a LOS F and v/c > 1.0 during the AM and PM peak hour. The southbound shared through-right movements are forecast to have a LOS E during the PM peak hour;
- **Conservation Drive and Lake Louise Boulevard:** southbound left-turn movements are forecast to have a LOS F during the AM and PM peak hour, and a v/c > 1.0 during the AM peak hour;
- **Conservation Drive and Street Seven/Creekside Church Road:** southbound left-turn movements are forecast to have a LOS F during the AM and PM peak hour, and a v/c > 1.0 during the AM peak hour; and
- **Conservation Drive and Street One/Street H:** northbound movements are forecast to have a LOS F and v/c > 0.85 during the AM and PM peak hour. The southbound left-turn movements are forecast to have a LOS F and v/c > 1.0 during the AM and PM peak hour. The southbound shared through-right movements are forecast

to have a LOS F and v/c > 1.0, and a LOS E during the AM and PM peak hour, respectively. Overall, the intersection is forecast to operate at LOS E during the AM peak hour.

Some movements which are not expected to operate at desirable operational values may be considered to not require additional improvements, as some restrictions would make the improvements also undesirable (e.g. unwarranted signals).

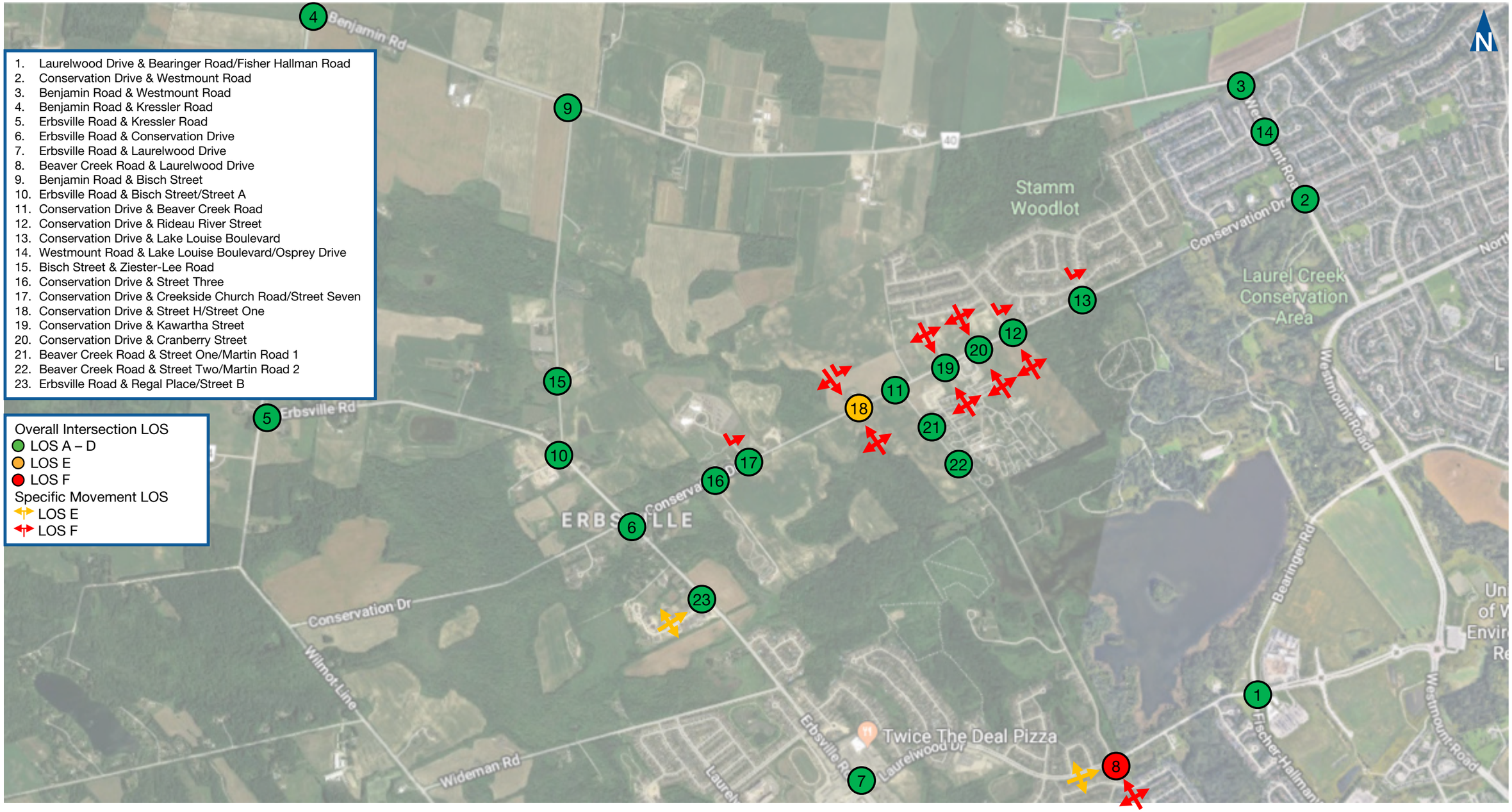
Appendix O includes the detailed Synchro 9 reports.



1. Laurelwood Drive & Bearinger Road/Fisher Hallman Road
2. Conservation Drive & Westmount Road
3. Benjamin Road & Westmount Road
4. Benjamin Road & Kressler Road
5. Erbsville Road & Kressler Road
6. Erbsville Road & Conservation Drive
7. Erbsville Road & Laurelwood Drive
8. Beaver Creek Road & Laurelwood Drive
9. Benjamin Road & Bisch Street
10. Erbsville Road & Bisch Street/Street A
11. Conservation Drive & Beaver Creek Road
12. Conservation Drive & Rideau River Street
13. Conservation Drive & Lake Louise Boulevard
14. Westmount Road & Lake Louise Boulevard/Osprey Drive
15. Bisch Street & Ziester-Lee Road
16. Conservation Drive & Street Three
17. Conservation Drive & Creekside Church Road/Street Seven
18. Conservation Drive & Street H/Street One
19. Conservation Drive & Kawartha Street
20. Conservation Drive & Cranberry Street
21. Beaver Creek Road & Street One/Martin Road 1
22. Beaver Creek Road & Street Two/Martin Road 2
23. Erbsville Road & Regal Place/Street B

Overall Intersection LOS
- LOS A – D
- LOS E
- LOS F

Specific Movement LOS
- LOS E
- LOS F



2032 Total Traffic Operations with Improvements – AM Peak

Figure 6.2

Beaver Creek Area TES
170278

1. Laurelwood Drive & Bearinger Road/Fisher Hallman Road
2. Conservation Drive & Westmount Road
3. Benjamin Road & Westmount Road
4. Benjamin Road & Kressler Road
5. Erbsville Road & Kressler Road
6. Erbsville Road & Conservation Drive
7. Erbsville Road & Laurelwood Drive
8. Beaver Creek Road & Laurelwood Drive
9. Benjamin Road & Bisch Street
10. Erbsville Road & Bisch Street/Street A
11. Conservation Drive & Beaver Creek Road
12. Conservation Drive & Rideau River Street
13. Conservation Drive & Lake Louise Boulevard
14. Westmount Road & Lake Louise Boulevard/Osprey Drive
15. Bisch Street & Ziester-Lee Road
16. Conservation Drive & Street Three
17. Conservation Drive & Creekside Church Road/Street Seven
18. Conservation Drive & Street H/Street One
19. Conservation Drive & Kawartha Street
20. Conservation Drive & Cranberry Street
21. Beaver Creek Road & Street One/Martin Road 1
22. Beaver Creek Road & Street Two/Martin Road 2
23. Erbsville Road & Regal Place/Street B

Overall Intersection LOS
- LOS A – D
- LOS E
- LOS F

Specific Movement LOS
- LOS E
- LOS F

2032 Total Traffic Operations with Improvements – PM Peak

Figure 6.3

7 Conclusions and Recommendations

7.1 Conclusions

- **Existing Traffic Operations:** The analyses indicate that most intersections and individual movements within the study area are currently operating overall at acceptable levels of services with the following critical movements:
  - **Fisher-Hallman/Bearinger Road and Laurelwood:** eastbound through-right movements have a v/c > 0.85 during the AM peak hour; and
  - **Benjamin Road and Westmount Road:** northbound movements have a LOS E during the PM peak hour.
- **Trip Generation:** Future traffic forecasts are based on growth within the study area, including the Northgate Land Corporation and Erbsville Kartway Limited development:
  - **Background Developments Traffic:** Outside the plan but within the study area is the completion of the Creekside Church, Brohman Lands, Mattamy Homes, Activa Holdings Inc., Martin, Erbsville Kartway, Northgate Farms and Other developments forecast to generate 2017 and 1968 trips during the AM and PM peak hours, respectively; and
  - **Site Generated Traffic:** It is estimated that about 473 and 591 trips will be generated during the AM and PM peak hours, respectively.
- **Background Traffic Operations:** The analyses indicate that most intersections and individual movements within the study area are forecast to operate overall at acceptable levels of services with the following critical movements under the 2032 horizon:
  - **Fisher-Hallman/Bearinger Road and Laurelwood:** eastbound through-right movements are forecast to have a v/c > 0.85 during the AM peak hour;
  - **Conservation Drive and Westmount Road:** southbound movements are forecast to have a LOS F and v/c >1.0 during the PM peak hour; and
  - **Benjamin Road and Westmount Road:** northbound movements are forecast to have a LOS F and a v/c > 1.0.
- **Total Traffic Operations:** The analyses indicate that most intersections and individual movements within the study area are forecast to operate overall at acceptable levels of services with the following critical movements under the 2032 horizon:
  - **Fisher-Hallman/Bearinger Road and Laurelwood:** westbound left movements are forecast to have a LOS F and a v/c > 0.85. Eastbound through-right movements are forecast to have a LOS F



during the AM peak hour and v/c > 0.85 during both peak hours. Northbound left movements are forecast to have a LOS F, v/c > 1.0 and a queue that exceeds the available storage length during the PM peak hour;

- **Conservation Drive and Westmount Road:** eastbound right movements are forecast to have a LOS F and a v/c > 0.85 during both peak hours and a queue that exceeds the available storage length during the AM peak hour. Northbound left movements are forecast to have a LOS F and v/c > 0.85 during both peak hours, and a queue that exceeds the available storage length during the PM peak hour. Northbound through/right movements are forecast to have a LOS F and a v/c > 0.85 during the PM peak hour. Southbound movements are forecast to have a LOS F and a v/c > 1.0 during both peak hours;
- **Benjamin Road and Westmount Road:** northbound movements are forecast to have a LOS F and v/c > 1.0;
- **Conservation Drive and Erbsville Road:** eastbound movements are forecast to have a LOS F during the AM peak hour. Westbound movements are forecast to have a LOS F and a v/c > 1.0 during both peak hours;
- **Beaver Creek Road and Laurelwood Drive:** westbound movements are forecast to have a LOS F and a v/c > 1.0 during the PM peak hour;
- **Beaver Creek Road and Conservation Drive:** eastbound movements are forecast to have a LOS F and a v/c > 1.0 during the AM peak hour. Westbound movements are forecast to have a LOS F and a v/c > 1.0 during the PM peak hour;
- **Erbsville Road and Bisch Street/ Street A:** westbound movements are forecast to have a LOS F during the PM peak hour;
- **Conservation Drive and Rideau River Street:** northbound movements are forecast to have a LOS F during both peak hours. Southbound movements are forecast to have a LOS F and v/c > 1.0 during both peak hours;
- **Westmount Road and Lake Louise Boulevard/Osprey Drive:** northbound movements are forecast to have a LOS F during both peak hours;
- **Street Seven/Creekside Church Road and Conservation Drive:** southbound movements are forecast to have a LOS F during both peak hours, and a v/c > 1.0 during the AM peak hour;
- **Street One/Street H and Conservation Drive:** northbound movements are forecast to have a LOS F during the AM peak hour. Southbound movements are forecast to have a LOS F during both peak hours, and a v/c > 1.0 during the AM peak hour;

- **Conservation Drive and Kawartha Street:** northbound movements are forecast to have a LOS F during both peak hours. Southbound movements are forecast to have a LOS F during both peak hours; and
- **Conservation Drive and Cranberry Street:** northbound movements are forecast to have a LOS F during both peak hours. Southbound movements are forecast to have a LOS F during both peak hours.

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

- **Table 7.1** summarizes the left-turn lanes forecast to be warranted;

TABLE 7.1: SUMMARY OF AUXILARY LEFT-TURN LANE WARRANTS

Interesection	Direction	Storage Length (m)
Benjamin Road & Westmount Road	WB	55 (PM)
Conservation Drive & Rideau River Street	EB	30 (PM)
Conservation Drive & Lake Louise Boulevard	EB	30 (PM)
Westmount Road & Lake Louise Boulevard/Osprey Drive	NB	25 (PM)
Conservation Drive & Street Three	WB	25 (PM)
Conservation Drive & Creekside Church Road/Street Seven	WB	25 (PM)
Conservation Drive & Street H/Street One	WB	60 (PM)
Conservation Drive & Kawartha Street	WB	30 (PM)
Conservation Drive & Cranberry Street	WB	30 (PM)
Erbsville Road & Regal Place/Street B	SB	25 (PM)

- The Conservation Drive/Erbsville Road intersection requires intersection control upgrades to all-way stope control by 2022;
- **Table 7.2** summarizes the OTM Book 7 signal warrants:

TABLE 7.2: SUMMARY OF OTM BOOK 7 SIGNAL WARRANTS

Intersection	Warrant 1	Warrant 2
Conservation Drive & Westmount Road	204.8%	114.5%
Benjamin Road & Westmount Road	108.9%	62.5%
Erbsville Road & Conservation Drive	107.6%	68.8%
Conservation Drive & Rideau River Street	57.8%	47.7%
Conservation Drive & Street H/Street One	39.9%	46.7%

- Roundabouts are forecast to be a feasible method of traffic control as per the Region of Waterloo's Roundabout Screening Tool at the intersections of:
  - Conservation Drive and Westmount Road;
  - Westmount Road and Benjamin Road; and
  - Erbsville Road and Conservation Drive.

7.2 Recommendations

Based on the findings of this study, it is recommended that the development be approved. The off-site improvements attributable to projected growth in the broader study area are summarized in **Table 7.3.** It is noted that these recommended improvements are a result of the combined area developments and are not the sole responsibility of the Northgate Land Corporation and Erbsville Kartway Limited. Traffic should be monitored as development proceeds to assist in scheduling the identified improvements.

With the implementation of these recommendations, the traffic growth generated by background growth and the developments within the study area assumed by this study can be mitigated and traffic is forecast to continue to function at reasonably acceptable levels of service through to the 2032 horizon year.



TABLE 7.3: SUMMARY OF RECOMMENDATIONS

Interesection	Recommendations
Laurelwood Drive & Bearinger Road/Fisher Hallman Road	Construction of an eastbound separated right-turn lane.
Conservation Drive & Westmount Road	Completion of an Intersection Control Study. Construction of either: ▶ A signalized intersection with an eastbound channelized right-turn lane, a northbound duel left-turn lane and a southbound right-turn lane; or ▶ A 2-lane roundabout with an eastbound right-turn bypass.
	To construct either of the intersections above it is also recommended that Westmount Road be widened from Conservation Drive to Northfield Drive West
Benjamin Road & Westmount Road	A 40-meter storage westbound left-turn lane.
	A 55-meter storage westbound left-turn lane.
	Completion of an Intersection Control Study. Construction of either: ▶ signalized intersection with an westbound left-turn lane; or ▶ 1-lane roundabout.
Erbsville Road & Conservation Drive	Installation of an all-way stop.
	Construction of westbound left-turn lane, northbound right-turn lane and southbound left-turn lane.
	Completion of an Intersection Control Study. Construction of a: ▶ signalized intersection; or ▶ 1-lane roundabout.
Beaver Creek Road & Laurelwood Drive	Construction of westbound right-turn bypass.
Conservation Drive & Beaver Creek Road	Construction of additional westbound and eastbound entry-lane.
Conservation Drive & Rideau River Street	A 25-meter storage eastbound left-turn lane.
	A 30-meter storage eastbound left-turn lane.
Conservation Drive & Lake Louise Boulevard	A 25-meter storage eastbound left-turn lane.
	A 30-meter storage eastbound left-turn lane.
Westmount Road & Lake Louise Boulevard/Osprey Drive	A 15-meter storage nortbound left-turn lane.
	A 25-meter storage nortbound left-turn lane.
Conservation Drive & Erbsville Kartway Road	A 15-meter storage westbound left-turn lane.
	A 25-meter storage westbound left-turn lane.
Conservation Drive & Creekside Church Road/Street Two	A 15-meter storage westbound left-turn lane.
	A 30-meter storage westbound left-turn lane.
	A 40-meter storage westbound left-turn lane.
	Construction of an southbound separated left-turn lane.
Conservation Drive & Street H/Street One	A 60-meter storage westbound left-turn lane.
	Construction of an southbound separated left-turn lane.
Conservation Drive & Kawartha Street	A 30-meter storage westbound left-turn lane.
Conservation Drive & Cranberry Street	A 30-meter storage westbound left-turn lane.



Appendix A

Existing Count Data

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Erbsville Road & Bisch Street
Site Code:
Start Date: 01/25/2018

Turning Movement Data

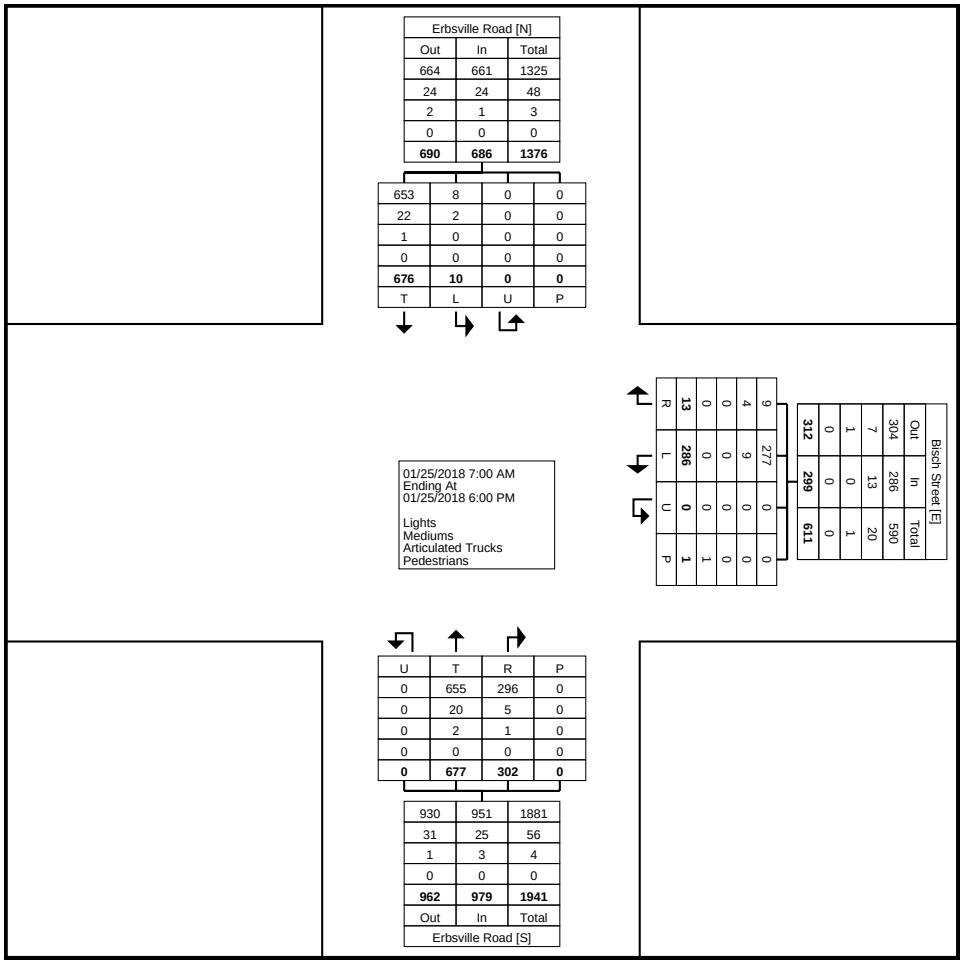
Start Time	Bisch Street Westbound					Erbsville Road Northbound					Erbsville Road Southbound					Int. Total
	Left	Right	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	
7:00 AM	3	0	0	0	3	17	6	0	0	23	0	14	0	0	14	40
7:15 AM	5	1	0	0	6	15	8	0	0	23	0	18	0	0	18	47
7:30 AM	2	0	0	0	2	25	9	0	0	34	1	26	0	0	27	63
7:45 AM	5	0	0	0	5	20	13	0	0	33	0	31	0	0	31	69
Hourly Total	15	1	0	0	16	77	36	0	0	113	1	89	0	0	90	219
8:00 AM	6	0	0	0	6	25	15	0	0	40	2	26	0	0	28	74
8:15 AM	10	0	0	0	10	18	17	0	0	35	2	30	0	0	32	77
8:30 AM	5	0	0	0	5	14	21	0	0	35	0	23	0	0	23	63
8:45 AM	9	0	0	0	9	15	15	0	0	30	0	27	0	0	27	66
Hourly Total	30	0	0	0	30	72	68	0	0	140	4	106	0	0	110	280
9:00 AM	6	1	0	0	7	14	11	0	0	25	1	27	0	0	28	60
9:15 AM	3	0	0	0	3	10	8	0	0	18	0	27	0	0	27	48
9:30 AM	3	0	0	0	3	8	10	0	0	18	0	16	0	0	16	37
9:45 AM	5	0	0	0	5	11	8	0	0	19	0	25	0	0	25	49
Hourly Total	17	1	0	0	18	43	37	0	0	80	1	95	0	0	96	194
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12:00 PM	7	1	0	0	8	17	6	0	0	23	0	16	0	0	16	47
12:15 PM	4	0	0	0	4	15	10	0	0	25	0	6	0	0	6	35
12:30 PM	5	0	0	0	5	10	8	0	0	18	1	13	0	0	14	37
12:45 PM	9	0	0	0	9	11	2	0	0	13	0	15	0	0	15	37
Hourly Total	25	1	0	0	26	53	26	0	0	79	1	50	0	0	51	156
1:00 PM	8	0	0	0	8	18	10	0	0	28	0	17	0	0	17	53
1:15 PM	10	0	0	0	10	11	5	0	0	16	0	19	0	0	19	45
1:30 PM	7	0	0	0	7	21	4	0	0	25	1	9	0	0	10	42
1:45 PM	11	0	0	1	11	10	14	0	0	24	0	17	0	0	17	52
Hourly Total	36	0	0	1	36	60	33	0	0	93	1	62	0	0	63	192
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:00 PM	9	1	0	0	10	20	6	0	0	26	1	21	0	0	22	58
3:15 PM	11	0	0	0	11	29	7	0	0	36	0	14	0	0	14	61
3:30 PM	13	0	0	0	13	30	9	0	0	39	0	24	0	0	24	76
3:45 PM	10	3	0	0	13	27	6	0	0	33	0	14	0	0	14	60
Hourly Total	43	4	0	0	47	106	28	0	0	134	1	73	0	0	74	255
4:00 PM	10	0	0	0	10	34	6	0	0	40	0	20	0	0	20	70
4:15 PM	10	0	0	0	10	38	4	0	0	42	0	19	0	0	19	71
4:30 PM	14	1	0	0	15	29	9	0	0	38	0	23	0	0	23	76
4:45 PM	22	0	0	0	22	37	11	0	0	48	0	32	0	0	32	102
Hourly Total	56	1	0	0	57	138	30	0	0	168	0	94	0	0	94	319
5:00 PM	21	1	0	0	22	31	19	0	0	50	0	24	0	0	24	96

5:15 PM	13	1	0	0	14	46	12	0	0	58	1	32	0	0	33	105
5:30 PM	19	3	0	0	22	28	11	0	0	39	0	29	0	0	29	90
5:45 PM	11	0	0	0	11	23	2	0	0	25	0	22	0	0	22	58
Hourly Total	64	5	0	0	69	128	44	0	0	172	1	107	0	0	108	349
Grand Total	286	13	0	1	299	677	302	0	0	979	10	676	0	0	686	1964
Approach %	95.7	4.3	0.0	-	-	69.2	30.8	0.0	-	-	1.5	98.5	0.0	-	-	-
Total %	14.6	0.7	0.0	-	15.2	34.5	15.4	0.0	-	49.8	0.5	34.4	0.0	-	34.9	-
Lights	277	9	0	-	286	655	296	0	-	951	8	653	0	-	661	1898
% Lights	96.9	69.2	-	-	95.7	96.8	98.0	-	-	97.1	80.0	96.6	-	-	96.4	96.6
Mediums	9	4	0	-	13	20	5	0	-	25	2	22	0	-	24	62
% Mediums	3.1	30.8	-	-	4.3	3.0	1.7	-	-	2.6	20.0	3.3	-	-	3.5	3.2
Articulated Trucks	0	0	0	-	0	2	1	0	-	3	0	1	0	-	1	4
% Articulated Trucks	0.0	0.0	-	-	0.0	0.3	0.3	-	-	0.3	0.0	0.1	-	-	0.1	0.2
Pedestrians	-	-	-	1	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Erbsville Road & Bisch Street
Site Code:
Start Date: 01/25/2018



Turning Movement Data Plot

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Erbsville Road & Bisch Street
Site Code:
Start Date: 01/25/2018

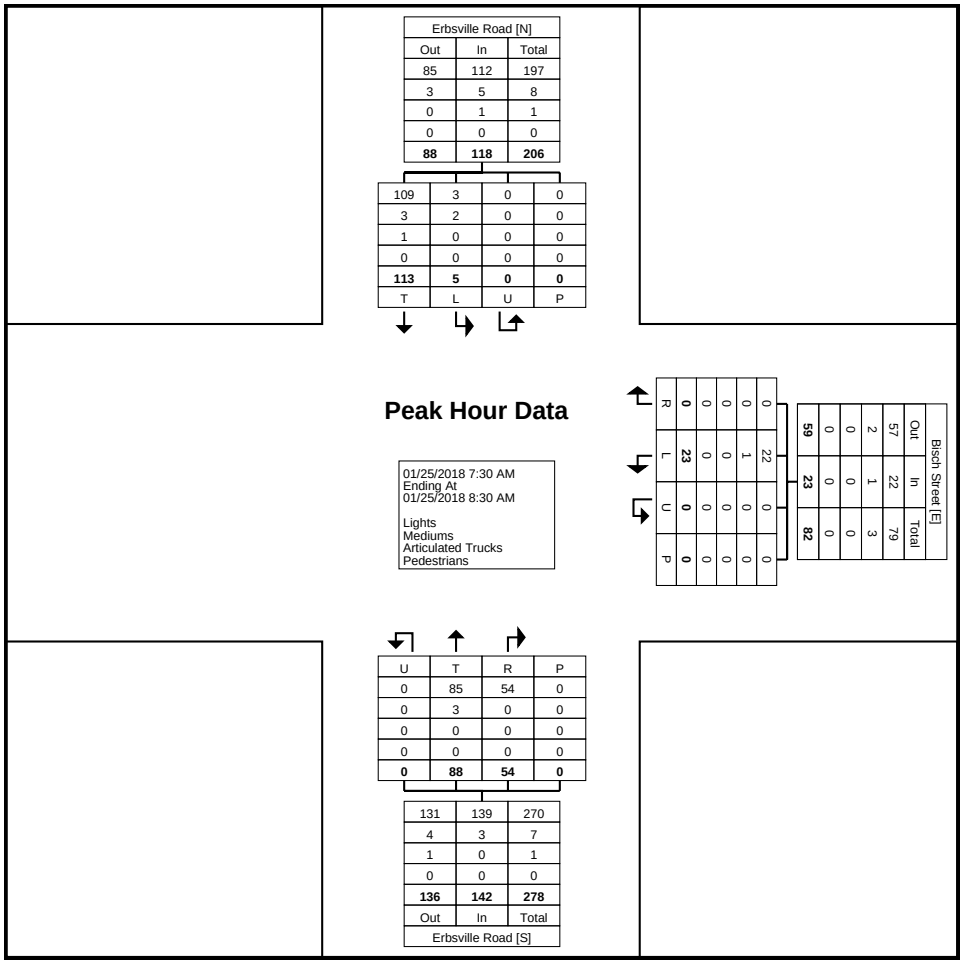
Turning Movement Peak Hour Data (7:30 AM)

Start Time	Bisch Street Westbound					Erbsville Road Northbound					Erbsville Road Southbound					
	Left	Right	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Int. Total
7:30 AM	2	0	0	0	2	25	9	0	0	34	1	26	0	0	27	63
7:45 AM	5	0	0	0	5	20	13	0	0	33	0	31	0	0	31	69
8:00 AM	6	0	0	0	6	25	15	0	0	40	2	26	0	0	28	74
8:15 AM	10	0	0	0	10	18	17	0	0	35	2	30	0	0	32	77
Total	23	0	0	0	23	88	54	0	0	142	5	113	0	0	118	283
Approach %	100.0	0.0	0.0	-	-	62.0	38.0	0.0	-	-	4.2	95.8	0.0	-	-	-
Total %	8.1	0.0	0.0	-	8.1	31.1	19.1	0.0	-	50.2	1.8	39.9	0.0	-	41.7	-
PHF	0.575	0.000	0.000	-	0.575	0.880	0.794	0.000	-	0.888	0.625	0.911	0.000	-	0.922	0.919
Lights	22	0	0	-	22	85	54	0	-	139	3	109	0	-	112	273
% Lights	95.7	-	-	-	95.7	96.6	100.0	-	-	97.9	60.0	96.5	-	-	94.9	96.5
Mediums	1	0	0	-	1	3	0	0	-	3	2	3	0	-	5	9
% Mediums	4.3	-	-	-	4.3	3.4	0.0	-	-	2.1	40.0	2.7	-	-	4.2	3.2
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	0	1	0	-	1	1
% Articulated Trucks	0.0	-	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.9	-	-	0.8	0.4
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Erbsville Road & Bisch Street
Site Code:
Start Date: 01/25/2018



Turning Movement Peak Hour Data Plot (7:30 AM)

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Erbsville Road & Bisch Street
Site Code:
Start Date: 01/25/2018

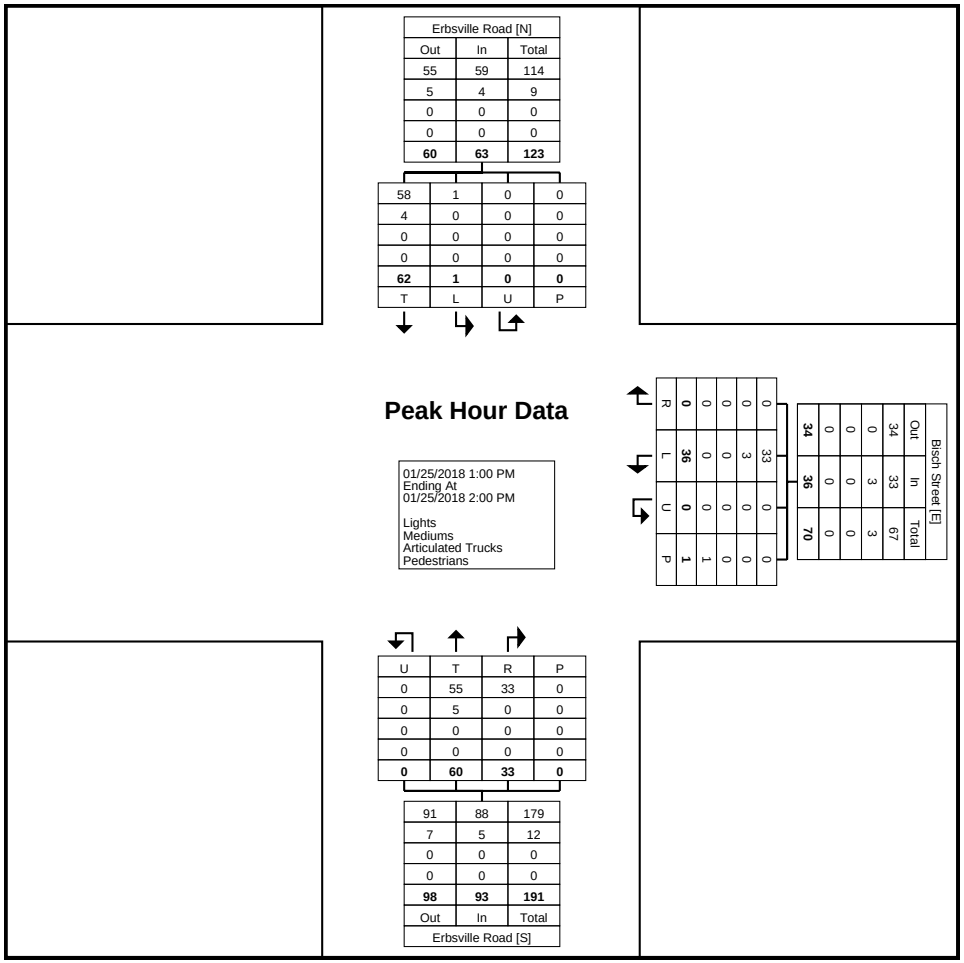
Turning Movement Peak Hour Data (1:00 PM)

Start Time	Bisch Street Westbound					Erbsville Road Northbound					Erbsville Road Southbound					
	Left	Right	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Int. Total
1:00 PM	8	0	0	0	8	18	10	0	0	28	0	17	0	0	17	53
1:15 PM	10	0	0	0	10	11	5	0	0	16	0	19	0	0	19	45
1:30 PM	7	0	0	0	7	21	4	0	0	25	1	9	0	0	10	42
1:45 PM	11	0	0	1	11	10	14	0	0	24	0	17	0	0	17	52
Total	36	0	0	1	36	60	33	0	0	93	1	62	0	0	63	192
Approach %	100.0	0.0	0.0	-	-	64.5	35.5	0.0	-	-	1.6	98.4	0.0	-	-	-
Total %	18.8	0.0	0.0	-	18.8	31.3	17.2	0.0	-	48.4	0.5	32.3	0.0	-	32.8	-
PHF	0.818	0.000	0.000	-	0.818	0.714	0.589	0.000	-	0.830	0.250	0.816	0.000	-	0.829	0.906
Lights	33	0	0	-	33	55	33	0	-	88	1	58	0	-	59	180
% Lights	91.7	-	-	-	91.7	91.7	100.0	-	-	94.6	100.0	93.5	-	-	93.7	93.8
Mediums	3	0	0	-	3	5	0	0	-	5	0	4	0	-	4	12
% Mediums	8.3	-	-	-	8.3	8.3	0.0	-	-	5.4	0.0	6.5	-	-	6.3	6.3
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Articulated Trucks	0.0	-	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Pedestrians	-	-	-	1	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Erbsville Road & Bisch Street
Site Code:
Start Date: 01/25/2018



Turning Movement Peak Hour Data Plot (1:00 PM)

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Erbsville Road & Bisch Street
Site Code:
Start Date: 01/25/2018

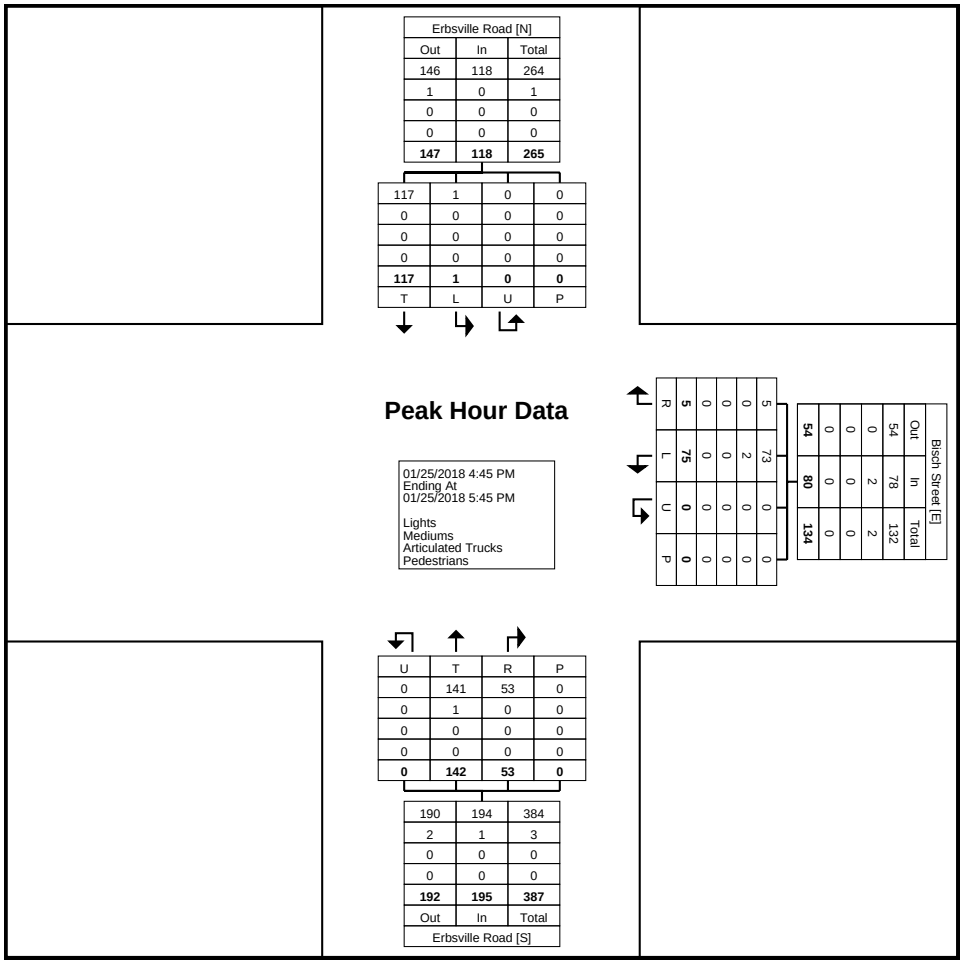
Turning Movement Peak Hour Data (4:45 PM)

Start Time	Bisch Street Westbound					Erbsville Road Northbound					Erbsville Road Southbound					
	Left	Right	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Int. Total
4:45 PM	22	0	0	0	22	37	11	0	0	48	0	32	0	0	32	102
5:00 PM	21	1	0	0	22	31	19	0	0	50	0	24	0	0	24	96
5:15 PM	13	1	0	0	14	46	12	0	0	58	1	32	0	0	33	105
5:30 PM	19	3	0	0	22	28	11	0	0	39	0	29	0	0	29	90
Total	75	5	0	0	80	142	53	0	0	195	1	117	0	0	118	393
Approach %	93.8	6.3	0.0	-	-	72.8	27.2	0.0	-	-	0.8	99.2	0.0	-	-	-
Total %	19.1	1.3	0.0	-	20.4	36.1	13.5	0.0	-	49.6	0.3	29.8	0.0	-	30.0	-
PHF	0.852	0.417	0.000	-	0.909	0.772	0.697	0.000	-	0.841	0.250	0.914	0.000	-	0.894	0.936
Lights	73	5	0	-	78	141	53	0	-	194	1	117	0	-	118	390
% Lights	97.3	100.0	-	-	97.5	99.3	100.0	-	-	99.5	100.0	100.0	-	-	100.0	99.2
Mediums	2	0	0	-	2	1	0	0	-	1	0	0	0	-	0	3
% Mediums	2.7	0.0	-	-	2.5	0.7	0.0	-	-	0.5	0.0	0.0	-	-	0.0	0.8
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Erbsville Road & Bisch Street
Site Code:
Start Date: 01/25/2018



Turning Movement Peak Hour Data Plot (4:45 PM)

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Erbsville Road & Bisch Street
Site Code:
Start Date: 01/25/2018

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Laurelwood Drive & Beaver Creek Road
Site Code:
Start Date: 01/25/2018

Turning Movement Data

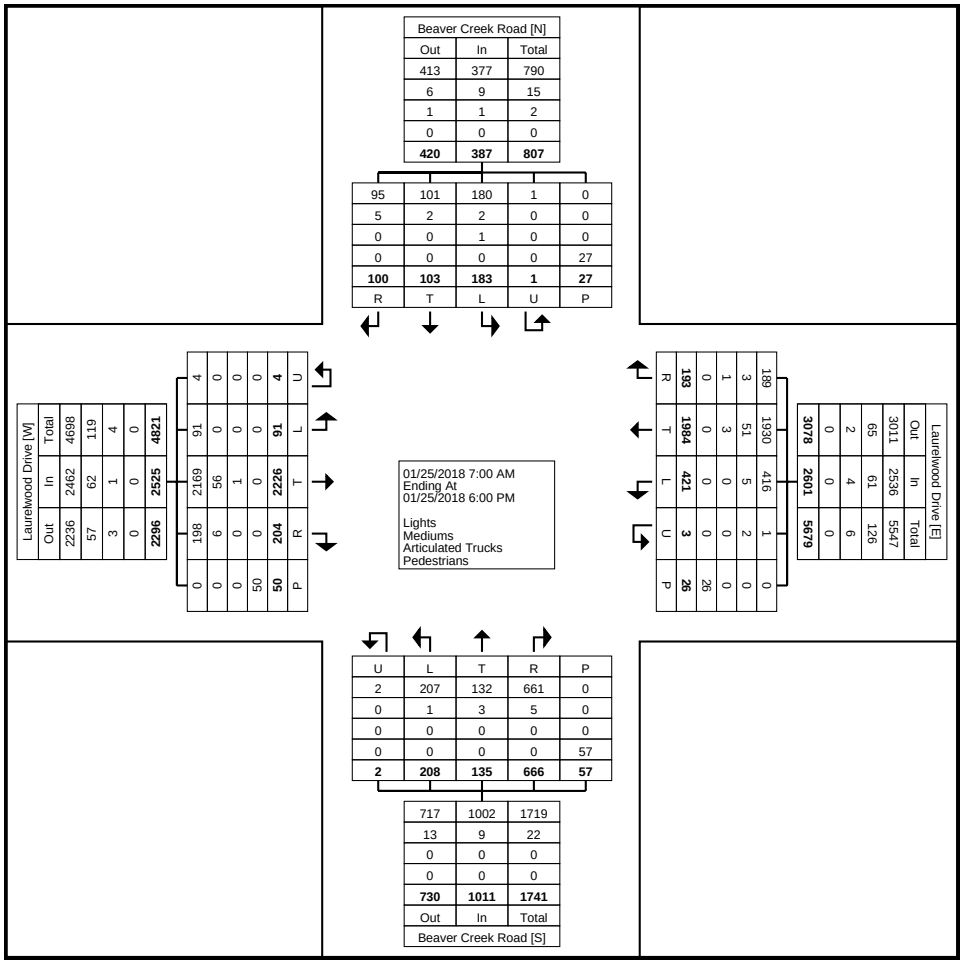
Start Time	Laurelwood Drive Eastbound						Laurelwood Drive Westbound						Beaver Creek Road Northbound						Beaver Creek Road Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:00 AM	1	40	1	1	1	43	2	15	1	0	0	18	2	5	14	1	2	22	4	0	1	0	0	5	88
7:15 AM	1	38	2	0	1	41	6	19	0	0	0	25	1	7	20	0	3	28	4	1	3	0	0	8	102
7:30 AM	1	72	1	0	1	74	1	19	3	1	0	24	4	3	31	0	1	38	6	4	1	0	0	11	147
7:45 AM	3	79	3	0	0	85	4	27	3	1	0	35	4	6	26	0	1	36	7	0	3	0	0	10	166
Hourly Total	6	229	7	1	3	243	13	80	7	2	0	102	11	21	91	1	7	124	21	5	8	0	0	34	503
8:00 AM	6	127	5	0	1	138	7	53	8	0	0	68	10	9	23	0	3	42	8	5	3	0	0	16	264
8:15 AM	7	143	31	0	4	181	6	38	5	0	6	49	15	6	41	0	1	62	8	6	3	0	6	17	309
8:30 AM	6	126	39	0	1	171	15	36	7	0	2	58	5	12	59	0	0	76	8	6	1	0	2	15	320
8:45 AM	9	108	3	0	1	120	5	33	4	0	2	42	21	7	56	0	0	84	10	1	2	0	2	13	259
Hourly Total	28	504	78	0	7	610	33	160	24	0	10	217	51	34	179	0	4	264	34	18	9	0	10	61	1152
9:00 AM	4	123	5	1	0	133	5	30	6	0	0	41	3	6	26	0	2	35	8	2	2	0	0	12	221
9:15 AM	4	114	2	0	1	120	5	26	10	0	0	41	2	3	25	0	0	30	10	1	0	1	1	12	203
9:30 AM	1	71	1	0	0	73	2	31	5	0	0	38	4	1	18	0	0	23	9	2	2	0	0	13	147
9:45 AM	0	78	0	0	1	78	2	34	6	0	0	42	2	1	16	0	0	19	2	1	1	0	0	4	143
Hourly Total	9	386	8	1	2	404	14	121	27	0	0	162	11	11	85	0	2	107	29	6	5	1	1	41	714
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12:00 PM	1	41	3	0	1	45	7	56	5	0	2	68	5	2	14	0	2	21	8	2	4	0	1	14	148
12:15 PM	3	39	3	0	2	45	8	55	4	0	0	67	3	2	10	0	2	15	9	2	0	0	0	11	138
12:30 PM	1	48	3	0	1	52	12	56	4	0	0	72	4	2	12	0	1	18	1	1	4	0	0	6	148
12:45 PM	1	70	7	0	1	78	7	42	5	0	2	54	6	1	14	0	1	21	5	3	2	0	2	10	163
Hourly Total	6	198	16	0	5	220	34	209	18	0	4	261	18	7	50	0	6	75	23	8	10	0	3	41	597
1:00 PM	7	49	7	0	0	63	10	38	4	1	0	53	5	1	14	1	3	21	4	1	3	0	0	8	145
1:15 PM	0	52	6	0	0	58	7	58	5	0	0	70	2	2	14	0	0	18	5	0	1	0	0	6	152
1:30 PM	2	50	1	0	1	53	10	41	5	0	0	56	2	1	12	0	2	15	1	2	0	0	0	3	127
1:45 PM	0	47	2	0	0	49	8	60	7	0	0	75	3	3	10	0	0	16	7	0	4	0	0	11	151
Hourly Total	9	198	16	0	1	223	35	197	21	1	0	254	12	7	50	1	5	70	17	3	8	0	0	28	575
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:00 PM	5	38	5	0	4	48	21	79	7	0	0	107	21	5	23	0	5	49	3	7	5	0	1	15	219
3:15 PM	2	50	5	1	16	58	19	76	7	0	1	102	13	4	16	0	10	33	2	2	8	0	1	12	205
3:30 PM	2	61	9	0	1	72	17	70	4	0	0	91	8	6	13	0	1	27	4	1	5	0	0	10	200
3:45 PM	2	60	5	0	0	67	19	82	10	0	0	111	4	2	10	0	1	16	4	2	1	0	0	7	201
Hourly Total	11	209	24	1	21	245	76	307	28	0	1	411	46	17	62	0	17	125	13	12	19	0	2	44	825
4:00 PM	2	66	3	0	2	71	17	75	9	0	0	101	6	6	13	0	1	25	6	3	4	0	0	13	210
4:15 PM	5	64	8	0	2	77	24	102	5	0	0	131	7	1	20	0	3	28	4	2	2	0	0	8	244
4:30 PM	4	56	6	0	1	66	23	93	9	0	1	125	7	7	17	0	3	31	5	3	6	0	1	14	236
4:45 PM	2	75	5	1	1	83	30	121	7	0	2	158	10	8	21	0	3	39	7	9	4	0	1	20	300
Hourly Total	13	261	22	1	6	297	94	391	30	0	3	515	30	22	71	0	10	123	22	17	16	0	2	55	990

5:00 PM	4	64	8	0	4	76	31	131	12	0	4	174	3	3	15	0	1	21	6	11	6	0	1	23	294
5:15 PM	3	59	7	0	1	69	28	151	10	0	0	189	7	3	15	0	0	25	8	8	7	0	3	23	306
5:30 PM	1	59	10	0	0	70	40	119	10	0	2	169	8	8	22	0	0	38	5	11	5	0	4	21	298
5:45 PM	1	59	8	0	0	68	23	118	6	0	2	147	11	2	26	0	5	39	5	4	7	0	1	16	270
Hourly Total	9	241	33	0	5	283	122	519	38	0	8	679	29	16	78	0	6	123	24	34	25	0	9	83	1168
Grand Total	91	2226	204	4	50	2525	421	1984	193	3	26	2601	208	135	666	2	57	1011	183	103	100	1	27	387	6524
Approach %	3.6	88.2	8.1	0.2	-	-	16.2	76.3	7.4	0.1	-	-	20.6	13.4	65.9	0.2	-	-	47.3	26.6	25.8	0.3	-	-	-
Total %	1.4	34.1	3.1	0.1	-	38.7	6.5	30.4	3.0	0.0	-	39.9	3.2	2.1	10.2	0.0	-	15.5	2.8	1.6	1.5	0.0	-	5.9	-
Lights	91	2169	198	4	-	2462	416	1930	189	1	-	2536	207	132	661	2	-	1002	180	101	95	1	-	377	6377
% Lights	100.0	97.4	97.1	100.0	-	97.5	98.8	97.3	97.9	33.3	-	97.5	99.5	97.8	99.2	100.0	-	99.1	98.4	98.1	95.0	100.0	-	97.4	97.7
Mediums	0	56	6	0	-	62	5	51	3	2	-	61	1	3	5	0	-	9	2	2	5	0	-	9	141
% Mediums	0.0	2.5	2.9	0.0	-	2.5	1.2	2.6	1.6	66.7	-	2.3	0.5	2.2	0.8	0.0	-	0.9	1.1	1.9	5.0	0.0	-	2.3	2.2
Articulated Trucks	0	1	0	0	-	1	0	3	1	0	-	4	0	0	0	0	-	0	1	0	0	0	-	1	6
% Articulated Trucks	0.0	0.0	0.0	0.0	-	0.0	0.0	0.2	0.5	0.0	-	0.2	0.0	0.0	0.0	0.0	-	0.0	0.5	0.0	0.0	0.0	-	0.3	0.1
Pedestrians	-	-	-	-	50	-	-	-	-	-	26	-	-	-	-	-	57	-	-	-	-	-	27	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Laurelwood Drive & Beaver Creek Road
Site Code:
Start Date: 01/25/2018



Turning Movement Data Plot

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Laurelwood Drive & Beaver Creek Road
Site Code:
Start Date: 01/25/2018

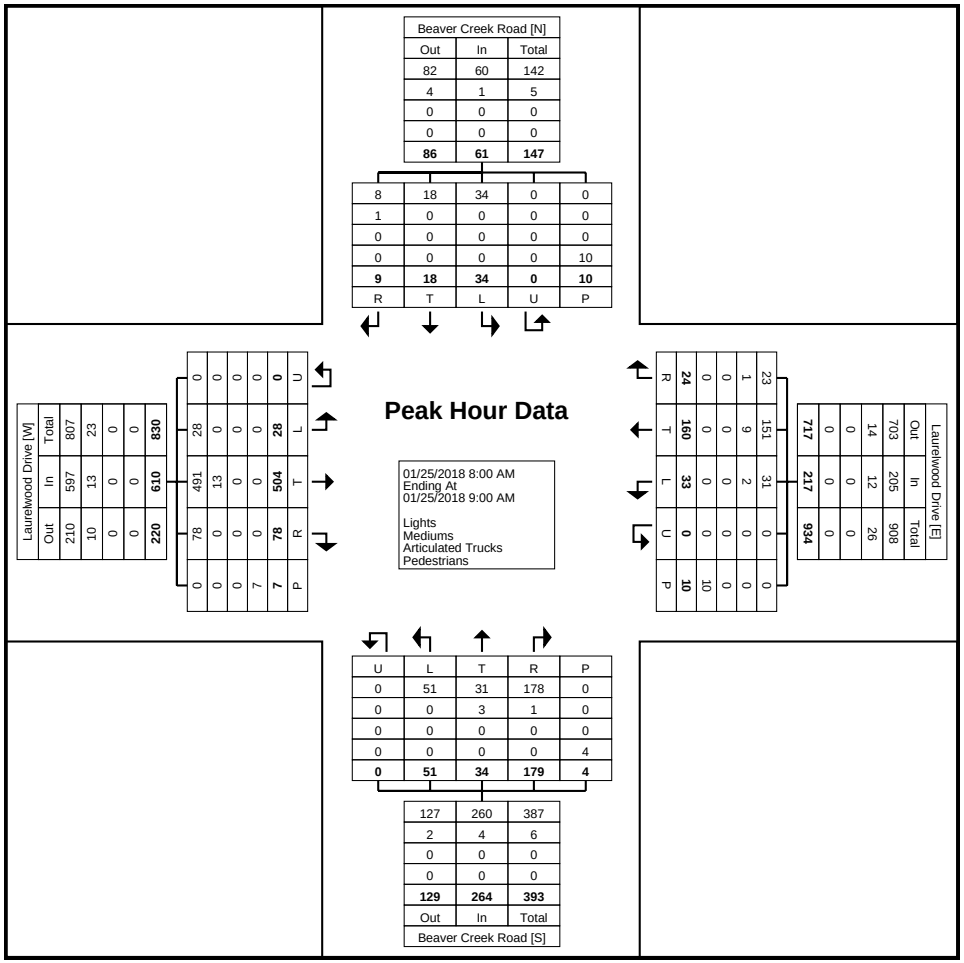
Turning Movement Peak Hour Data (8:00 AM)

Start Time	Laurelwood Drive Eastbound						Laurelwood Drive Westbound						Beaver Creek Road Northbound						Beaver Creek Road 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	6	127	5	0	1	138	7	53	8	0	0	68	10	9	23	0	3	42	8	5	3	0	0	16	264
8:15 AM	7	143	31	0	4	181	6	38	5	0	6	49	15	6	41	0	1	62	8	6	3	0	6	17	309
8:30 AM	6	126	39	0	1	171	15	36	7	0	2	58	5	12	59	0	0	76	8	6	1	0	2	15	320
8:45 AM	9	108	3	0	1	120	5	33	4	0	2	42	21	7	56	0	0	84	10	1	2	0	2	13	259
Total	28	504	78	0	7	610	33	160	24	0	10	217	51	34	179	0	4	264	34	18	9	0	10	61	1152
Approach %	4.6	82.6	12.8	0.0	-	-	15.2	73.7	11.1	0.0	-	-	19.3	12.9	67.8	0.0	-	-	55.7	29.5	14.8	0.0	-	-	-
Total %	2.4	43.8	6.8	0.0	-	53.0	2.9	13.9	2.1	0.0	-	18.8	4.4	3.0	15.5	0.0	-	22.9	3.0	1.6	0.8	0.0	-	5.3	-
PHF	0.778	0.881	0.500	0.000	-	0.843	0.550	0.755	0.750	0.000	-	0.798	0.607	0.708	0.758	0.000	-	0.786	0.850	0.750	0.750	0.000	-	0.897	0.900
Lights	28	491	78	0	-	597	31	151	23	0	-	205	51	31	178	0	-	260	34	18	8	0	-	60	1122
% Lights	100.0	97.4	100.0	-	-	97.9	93.9	94.4	95.8	-	-	94.5	100.0	91.2	99.4	-	-	98.5	100.0	100.0	88.9	-	-	98.4	97.4
Mediums	0	13	0	0	-	13	2	9	1	0	-	12	0	3	1	0	-	4	0	0	1	0	-	1	30
% Mediums	0.0	2.6	0.0	-	-	2.1	6.1	5.6	4.2	-	-	5.5	0.0	8.8	0.6	-	-	1.5	0.0	0.0	11.1	-	-	1.6	2.6
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Pedestrians	-	-	-	-	7	-	-	-	-	-	10	-	-	-	-	-	4	-	-	-	-	-	10	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Laurelwood Drive & Beaver Creek Road
Site Code:
Start Date: 01/25/2018



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

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Laurelwood Drive & Beaver Creek Road
Site Code:
Start Date: 01/25/2018

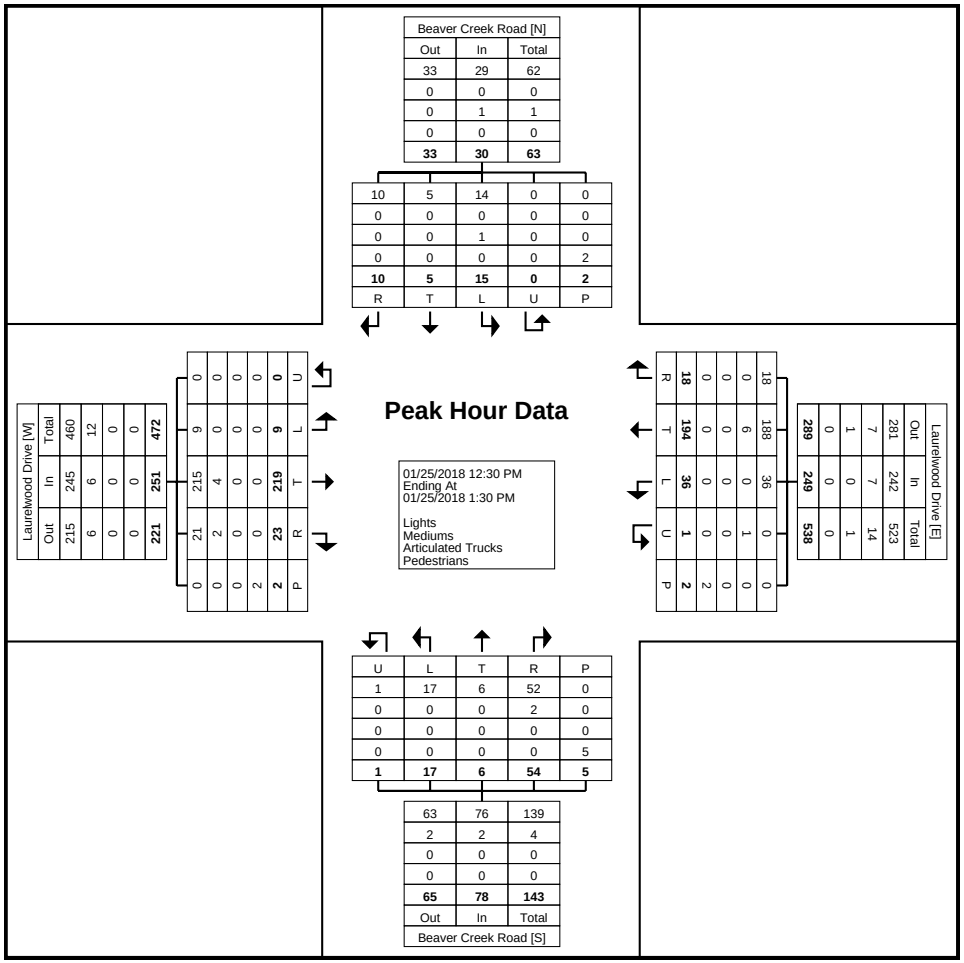
Turning Movement Peak Hour Data (12:30 PM)

Start Time	Laurelwood Drive Eastbound						Laurelwood Drive Westbound						Beaver Creek Road Northbound						Beaver Creek Road 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	
12:30 PM	1	48	3	0	1	52	12	56	4	0	0	72	4	2	12	0	1	18	1	1	4	0	0	6	148
12:45 PM	1	70	7	0	1	78	7	42	5	0	2	54	6	1	14	0	1	21	5	3	2	0	2	10	163
1:00 PM	7	49	7	0	0	63	10	38	4	1	0	53	5	1	14	1	3	21	4	1	3	0	0	8	145
1:15 PM	0	52	6	0	0	58	7	58	5	0	0	70	2	2	14	0	0	18	5	0	1	0	0	6	152
Total	9	219	23	0	2	251	36	194	18	1	2	249	17	6	54	1	5	78	15	5	10	0	2	30	608
Approach %	3.6	87.3	9.2	0.0	-	-	14.5	77.9	7.2	0.4	-	-	21.8	7.7	69.2	1.3	-	-	50.0	16.7	33.3	0.0	-	-	-
Total %	1.5	36.0	3.8	0.0	-	41.3	5.9	31.9	3.0	0.2	-	41.0	2.8	1.0	8.9	0.2	-	12.8	2.5	0.8	1.6	0.0	-	4.9	-
PHF	0.321	0.782	0.821	0.000	-	0.804	0.750	0.836	0.900	0.250	-	0.865	0.708	0.750	0.964	0.250	-	0.929	0.750	0.417	0.625	0.000	-	0.750	0.933
Lights	9	215	21	0	-	245	36	188	18	0	-	242	17	6	52	1	-	76	14	5	10	0	-	29	592
% Lights	100.0	98.2	91.3	-	-	97.6	100.0	96.9	100.0	0.0	-	97.2	100.0	100.0	96.3	100.0	-	97.4	93.3	100.0	100.0	-	-	96.7	97.4
Mediums	0	4	2	0	-	6	0	6	0	1	-	7	0	0	2	0	-	2	0	0	0	0	-	0	15
% Mediums	0.0	1.8	8.7	-	-	2.4	0.0	3.1	0.0	100.0	-	2.8	0.0	0.0	3.7	0.0	-	2.6	0.0	0.0	0.0	-	-	0.0	2.5
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	1	0	0	0	-	1	1
% Articulated Trucks	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	6.7	0.0	0.0	-	-	3.3	0.2
Pedestrians	-	-	-	-	2	-	-	-	-	-	2	-	-	-	-	-	5	-	-	-	-	-	2	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Laurelwood Drive & Beaver Creek Road
Site Code:
Start Date: 01/25/2018



Turning Movement Peak Hour Data Plot (12:30 PM)

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Laurelwood Drive & Beaver Creek Road
Site Code:
Start Date: 01/25/2018

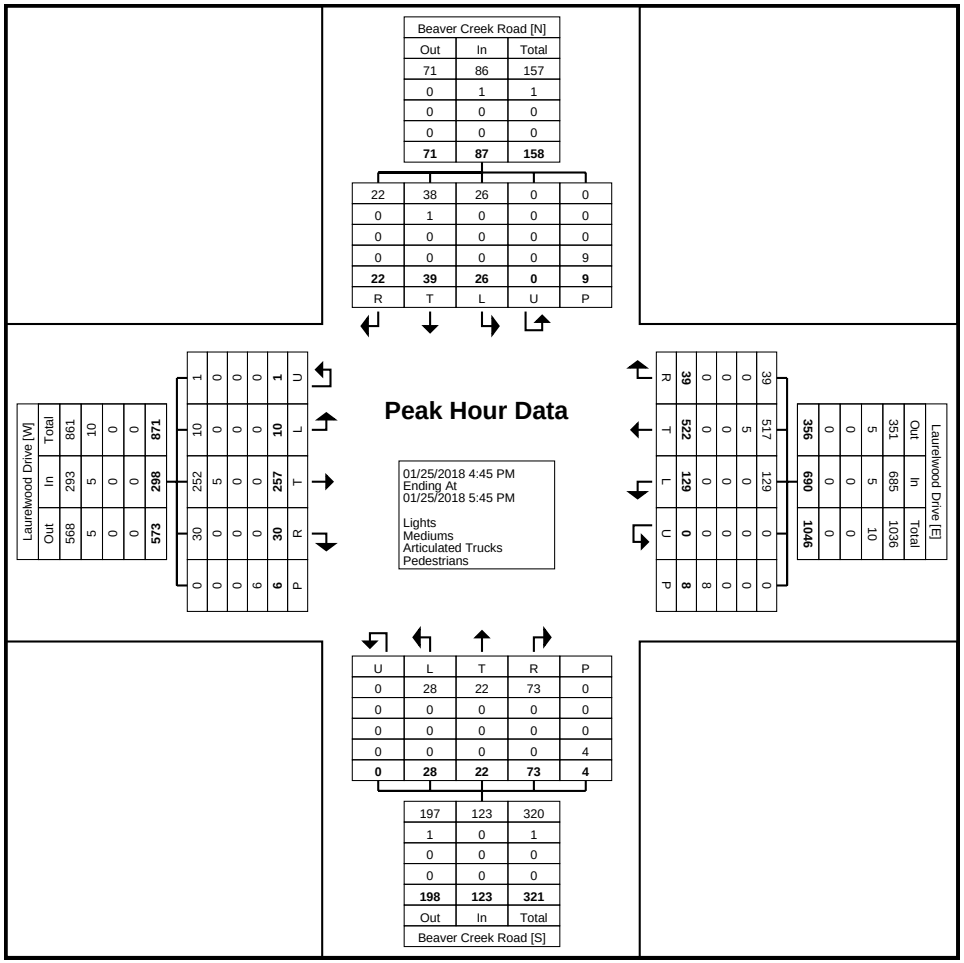
Turning Movement Peak Hour Data (4:45 PM)

Start Time	Laurelwood Drive Eastbound						Laurelwood Drive Westbound						Beaver Creek Road Northbound						Beaver Creek Road 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	
4:45 PM	2	75	5	1	1	83	30	121	7	0	2	158	10	8	21	0	3	39	7	9	4	0	1	20	300
5:00 PM	4	64	8	0	4	76	31	131	12	0	4	174	3	3	15	0	1	21	6	11	6	0	1	23	294
5:15 PM	3	59	7	0	1	69	28	151	10	0	0	189	7	3	15	0	0	25	8	8	7	0	3	23	306
5:30 PM	1	59	10	0	0	70	40	119	10	0	2	169	8	8	22	0	0	38	5	11	5	0	4	21	298
Total	10	257	30	1	6	298	129	522	39	0	8	690	28	22	73	0	4	123	26	39	22	0	9	87	1198
Approach %	3.4	86.2	10.1	0.3	-	-	18.7	75.7	5.7	0.0	-	-	22.8	17.9	59.3	0.0	-	-	29.9	44.8	25.3	0.0	-	-	-
Total %	0.8	21.5	2.5	0.1	-	24.9	10.8	43.6	3.3	0.0	-	57.6	2.3	1.8	6.1	0.0	-	10.3	2.2	3.3	1.8	0.0	-	7.3	-
PHF	0.625	0.857	0.750	0.250	-	0.898	0.806	0.864	0.813	0.000	-	0.913	0.700	0.688	0.830	0.000	-	0.788	0.813	0.886	0.786	0.000	-	0.946	0.979
Lights	10	252	30	1	-	293	129	517	39	0	-	685	28	22	73	0	-	123	26	38	22	0	-	86	1187
% Lights	100.0	98.1	100.0	100.0	-	98.3	100.0	99.0	100.0	-	-	99.3	100.0	100.0	100.0	-	-	100.0	100.0	97.4	100.0	-	-	98.9	99.1
Mediums	0	5	0	0	-	5	0	5	0	0	-	5	0	0	0	0	-	0	0	1	0	0	-	1	11
% Mediums	0.0	1.9	0.0	0.0	-	1.7	0.0	1.0	0.0	-	-	0.7	0.0	0.0	0.0	-	-	0.0	0.0	2.6	0.0	-	-	1.1	0.9
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Pedestrians	-	-	-	-	6	-	-	-	-	-	8	-	-	-	-	-	4	-	-	-	-	-	9	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Laurelwood Drive & Beaver Creek Road
Site Code:
Start Date: 01/25/2018



Turning Movement Peak Hour Data Plot (4:45 PM)

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Laurelwood Drive & Beaver Creek Road
Site Code:
Start Date: 01/25/2018

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Laurelwood Drive & Erbsville Road
Site Code:
Start Date: 01/25/2018

Turning Movement Data

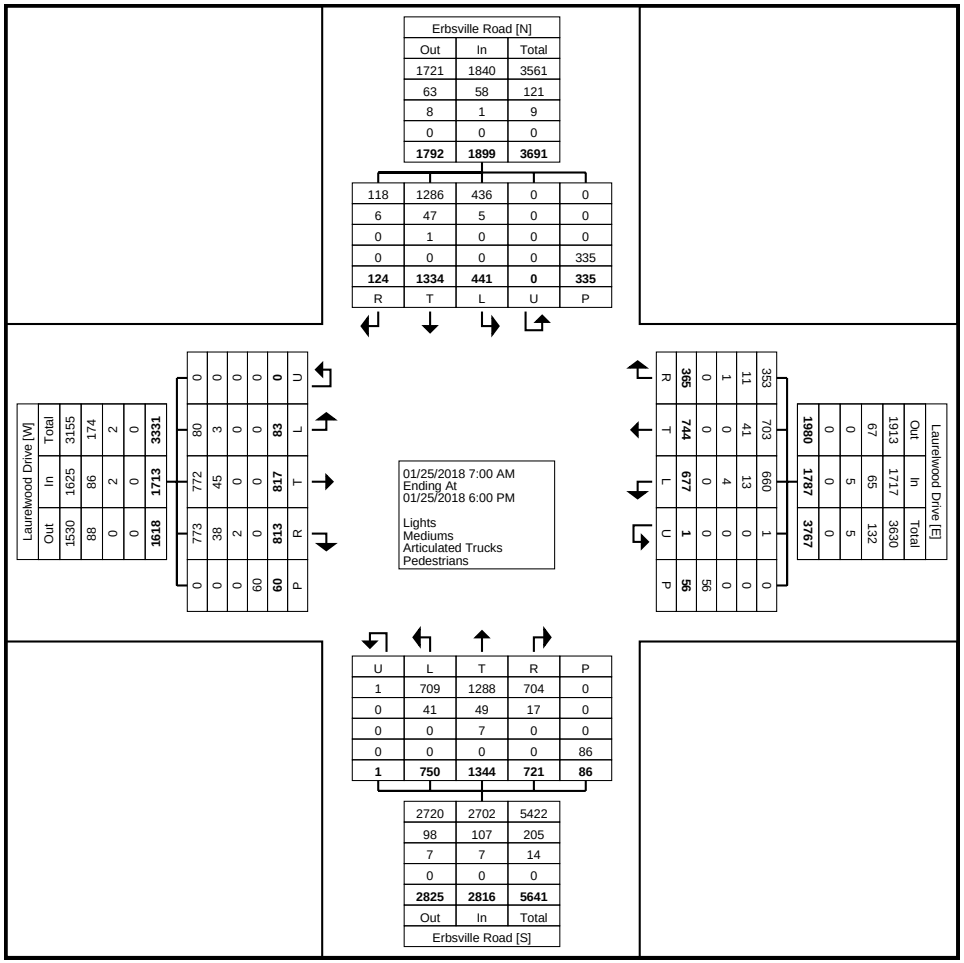
Start Time	Laurelwood Drive Eastbound						Laurelwood Drive Westbound						Erbsville Road Northbound						Erbsville Road Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:00 AM	2	19	14	0	0	35	6	10	3	0	0	19	13	23	5	0	0	41	11	25	1	0	1	37	132
7:15 AM	1	13	20	0	0	34	5	7	7	0	1	19	9	28	8	1	2	46	9	23	2	0	1	34	133
7:30 AM	3	21	21	0	0	45	10	7	7	0	0	24	10	47	6	0	2	63	15	34	1	0	0	50	182
7:45 AM	1	25	36	0	1	62	14	9	8	0	0	31	20	41	11	0	1	72	20	42	4	0	3	66	231
Hourly Total	7	78	91	0	1	176	35	33	25	0	1	93	52	139	30	1	5	222	55	124	8	0	5	187	678
8:00 AM	4	50	42	0	4	96	11	25	16	0	8	52	35	70	30	0	8	135	29	49	4	0	12	82	365
8:15 AM	8	73	64	0	4	145	16	35	12	0	19	63	65	65	35	0	10	165	38	68	11	0	46	117	490
8:30 AM	2	53	41	0	0	96	12	21	6	0	0	39	30	56	18	0	1	104	21	49	1	0	4	71	310
8:45 AM	3	32	31	0	1	66	13	15	8	0	0	36	26	37	22	0	4	85	28	44	2	0	17	74	261
Hourly Total	17	208	178	0	9	403	52	96	42	0	27	190	156	228	105	0	23	489	116	210	18	0	79	344	1426
9:00 AM	2	53	28	0	1	83	19	27	7	0	0	53	22	30	39	0	7	91	31	50	15	0	10	96	323
9:15 AM	1	50	25	0	5	76	22	10	3	0	5	35	17	48	19	0	0	84	18	35	3	0	16	56	251
9:30 AM	2	24	19	0	1	45	12	12	4	0	1	28	13	43	18	0	5	74	14	29	1	0	2	44	191
9:45 AM	1	18	29	0	2	48	13	11	6	0	0	30	11	31	25	0	2	67	16	40	1	0	6	57	202
Hourly Total	6	145	101	0	9	252	66	60	20	0	6	146	63	152	101	0	14	316	79	154	20	0	34	253	967
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12:00 PM	2	20	14	0	9	36	14	17	5	0	1	36	22	32	17	0	5	71	4	31	4	0	38	39	182
12:15 PM	3	11	22	0	1	36	17	26	10	0	4	53	16	35	10	0	5	61	6	21	1	0	10	28	178
12:30 PM	3	26	19	0	0	48	28	22	6	0	1	56	17	37	18	0	3	72	9	27	1	0	26	37	213
12:45 PM	2	17	14	0	0	33	18	14	8	1	0	41	18	28	21	0	2	67	11	48	1	0	23	60	201
Hourly Total	10	74	69	0	10	153	77	79	29	1	6	186	73	132	66	0	15	271	30	127	7	0	97	164	774
1:00 PM	1	9	13	0	5	23	20	11	5	0	0	36	17	38	17	0	2	72	10	37	2	0	7	49	180
1:15 PM	4	18	16	0	4	38	18	15	10	0	0	43	17	25	21	0	0	63	6	38	1	0	15	45	189
1:30 PM	1	11	11	0	3	23	22	10	9	0	0	41	21	34	18	0	0	73	6	28	7	0	13	41	178
1:45 PM	4	18	22	0	1	44	20	16	9	0	0	45	21	35	19	0	0	75	13	38	4	0	8	55	219
Hourly Total	10	56	62	0	13	128	80	52	33	0	0	165	76	132	75	0	2	283	35	141	14	0	43	190	766
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:00 PM	2	10	26	0	1	38	28	19	19	0	2	66	33	38	19	0	6	90	9	45	4	0	5	58	252
3:15 PM	4	15	21	0	1	40	21	43	11	0	1	75	34	42	29	0	1	105	14	50	8	0	5	72	292
3:30 PM	1	31	28	0	0	60	28	26	5	0	1	59	22	47	26	0	1	95	14	46	3	0	23	63	277
3:45 PM	3	22	28	0	1	53	30	27	10	0	0	67	20	42	25	0	5	87	7	36	4	0	9	47	254
Hourly Total	10	78	103	0	3	191	107	115	45	0	4	267	109	169	99	0	13	377	44	177	19	0	42	240	1075
4:00 PM	2	18	30	0	0	50	36	22	16	0	1	74	17	44	26	0	1	87	8	42	5	0	3	55	266
4:15 PM	2	24	28	0	3	54	30	25	17	0	1	72	25	51	31	0	0	107	8	42	2	0	5	52	285
4:30 PM	2	23	28	0	2	53	34	36	21	0	6	91	28	56	28	0	5	112	5	51	4	0	3	60	316
4:45 PM	2	24	30	0	3	56	33	43	26	0	1	102	35	54	41	0	2	130	15	62	7	0	7	84	372
Hourly Total	8	89	116	0	8	213	133	126	80	0	9	339	105	205	126	0	8	436	36	197	18	0	18	251	1239

5:00 PM	6	23	29	0	0	58	40	46	21	0	0	107	25	61	37	0	1	123	9	48	4	0	5	61	349
5:15 PM	3	20	22	0	2	45	29	43	32	0	0	104	34	51	34	0	2	119	11	64	7	0	5	82	350
5:30 PM	3	29	22	0	2	54	31	45	19	0	2	95	26	38	27	0	1	91	13	55	2	0	6	70	310
5:45 PM	3	17	20	0	3	40	27	49	19	0	1	95	31	37	21	0	2	89	13	37	7	0	1	57	281
Hourly Total	15	89	93	0	7	197	127	183	91	0	3	401	116	187	119	0	6	422	46	204	20	0	17	270	1290
Grand Total	83	817	813	0	60	1713	677	744	365	1	56	1787	750	1344	721	1	86	2816	441	1334	124	0	335	1899	8215
Approach %	4.8	47.7	47.5	0.0	-	-	37.9	41.6	20.4	0.1	-	-	26.6	47.7	25.6	0.0	-	-	23.2	70.2	6.5	0.0	-	-	-
Total %	1.0	9.9	9.9	0.0	-	20.9	8.2	9.1	4.4	0.0	-	21.8	9.1	16.4	8.8	0.0	-	34.3	5.4	16.2	1.5	0.0	-	23.1	-
Lights	80	772	773	0	-	1625	660	703	353	1	-	1717	709	1288	704	1	-	2702	436	1286	118	0	-	1840	7884
% Lights	96.4	94.5	95.1	-	-	94.9	97.5	94.5	96.7	100.0	-	96.1	94.5	95.8	97.6	100.0	-	96.0	98.9	96.4	95.2	-	-	96.9	96.0
Mediums	3	45	38	0	-	86	13	41	11	0	-	65	41	49	17	0	-	107	5	47	6	0	-	58	316
% Mediums	3.6	5.5	4.7	-	-	5.0	1.9	5.5	3.0	0.0	-	3.6	5.5	3.6	2.4	0.0	-	3.8	1.1	3.5	4.8	-	-	3.1	3.8
Articulated Trucks	0	0	2	0	-	2	4	0	1	0	-	5	0	7	0	0	-	7	0	1	0	0	-	1	15
% Articulated Trucks	0.0	0.0	0.2	-	-	0.1	0.6	0.0	0.3	0.0	-	0.3	0.0	0.5	0.0	0.0	-	0.2	0.0	0.1	0.0	-	-	0.1	0.2
Pedestrians	-	-	-	-	60	-	-	-	-	-	56	-	-	-	-	-	86	-	-	-	-	-	335	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Laurelwood Drive & Erbsville Road
Site Code:
Start Date: 01/25/2018



Turning Movement Data Plot

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Laurelwood Drive & Erbsville Road
Site Code:
Start Date: 01/25/2018

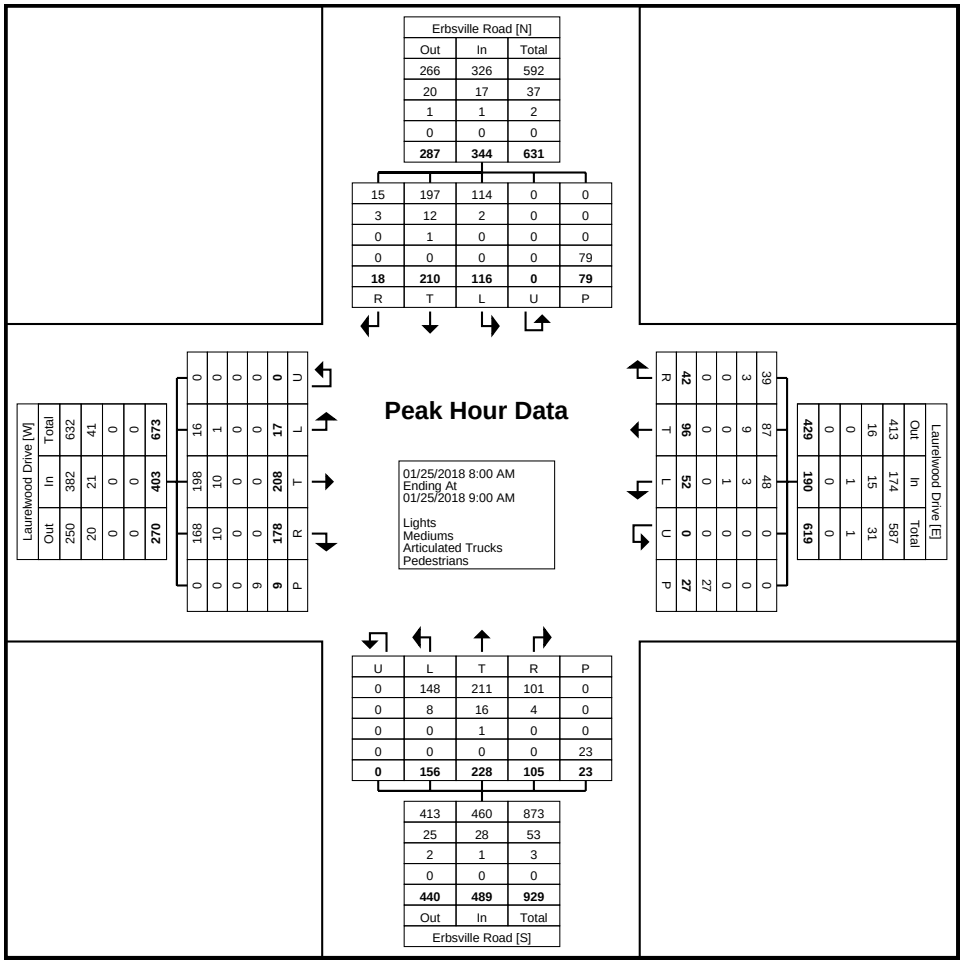
Turning Movement Peak Hour Data (8:00 AM)

Start Time	Laurelwood Drive Eastbound						Laurelwood Drive Westbound						Erbsville Road Northbound						Erbsville Road 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	4	50	42	0	4	96	11	25	16	0	8	52	35	70	30	0	8	135	29	49	4	0	12	82	365
8:15 AM	8	73	64	0	4	145	16	35	12	0	19	63	65	65	35	0	10	165	38	68	11	0	46	117	490
8:30 AM	2	53	41	0	0	96	12	21	6	0	0	39	30	56	18	0	1	104	21	49	1	0	4	71	310
8:45 AM	3	32	31	0	1	66	13	15	8	0	0	36	26	37	22	0	4	85	28	44	2	0	17	74	261
Total	17	208	178	0	9	403	52	96	42	0	27	190	156	228	105	0	23	489	116	210	18	0	79	344	1426
Approach %	4.2	51.6	44.2	0.0	-	-	27.4	50.5	22.1	0.0	-	-	31.9	46.6	21.5	0.0	-	-	33.7	61.0	5.2	0.0	-	-	-
Total %	1.2	14.6	12.5	0.0	-	28.3	3.6	6.7	2.9	0.0	-	13.3	10.9	16.0	7.4	0.0	-	34.3	8.1	14.7	1.3	0.0	-	24.1	-
PHF	0.531	0.712	0.695	0.000	-	0.695	0.813	0.686	0.656	0.000	-	0.754	0.600	0.814	0.750	0.000	-	0.741	0.763	0.772	0.409	0.000	-	0.735	0.728
Lights	16	198	168	0	-	382	48	87	39	0	-	174	148	211	101	0	-	460	114	197	15	0	-	326	1342
% Lights	94.1	95.2	94.4	-	-	94.8	92.3	90.6	92.9	-	-	91.6	94.9	92.5	96.2	-	-	94.1	98.3	93.8	83.3	-	-	94.8	94.1
Mediums	1	10	10	0	-	21	3	9	3	0	-	15	8	16	4	0	-	28	2	12	3	0	-	17	81
% Mediums	5.9	4.8	5.6	-	-	5.2	5.8	9.4	7.1	-	-	7.9	5.1	7.0	3.8	-	-	5.7	1.7	5.7	16.7	-	-	4.9	5.7
Articulated Trucks	0	0	0	0	-	0	1	0	0	0	-	1	0	1	0	0	-	1	0	1	0	0	-	1	3
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	1.9	0.0	0.0	-	-	0.5	0.0	0.4	0.0	-	-	0.2	0.0	0.5	0.0	-	-	0.3	0.2
Pedestrians	-	-	-	-	9	-	-	-	-	-	27	-	-	-	-	-	23	-	-	-	-	-	79	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Laurelwood Drive & Erbsville Road
Site Code:
Start Date: 01/25/2018



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

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Laurelwood Drive & Erbsville Road
Site Code:
Start Date: 01/25/2018

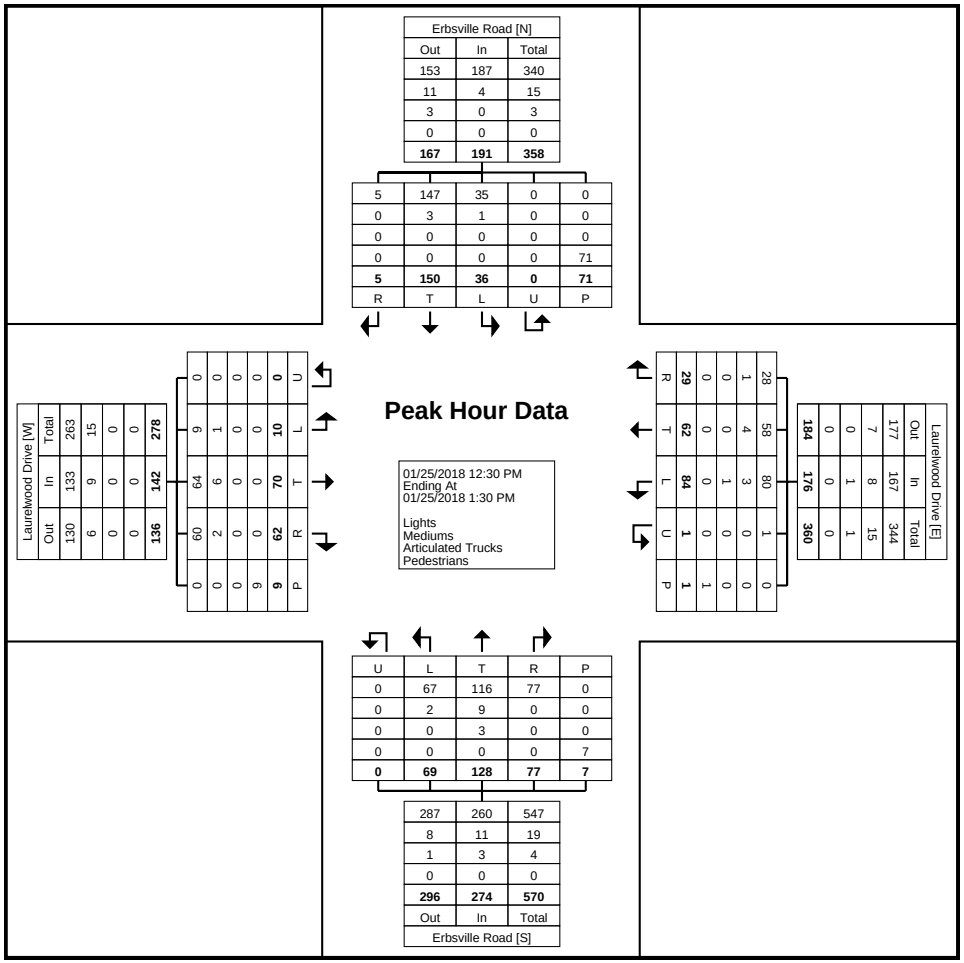
Turning Movement Peak Hour Data (12:30 PM)

Start Time	Laurelwood Drive Eastbound						Laurelwood Drive Westbound						Erbsville Road Northbound						Erbsville Road 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	
12:30 PM	3	26	19	0	0	48	28	22	6	0	1	56	17	37	18	0	3	72	9	27	1	0	26	37	213
12:45 PM	2	17	14	0	0	33	18	14	8	1	0	41	18	28	21	0	2	67	11	48	1	0	23	60	201
1:00 PM	1	9	13	0	5	23	20	11	5	0	0	36	17	38	17	0	2	72	10	37	2	0	7	49	180
1:15 PM	4	18	16	0	4	38	18	15	10	0	0	43	17	25	21	0	0	63	6	38	1	0	15	45	189
Total	10	70	62	0	9	142	84	62	29	1	1	176	69	128	77	0	7	274	36	150	5	0	71	191	783
Approach %	7.0	49.3	43.7	0.0	-	-	47.7	35.2	16.5	0.6	-	-	25.2	46.7	28.1	0.0	-	-	18.8	78.5	2.6	0.0	-	-	-
Total %	1.3	8.9	7.9	0.0	-	18.1	10.7	7.9	3.7	0.1	-	22.5	8.8	16.3	9.8	0.0	-	35.0	4.6	19.2	0.6	0.0	-	24.4	-
PHF	0.625	0.673	0.816	0.000	-	0.740	0.750	0.705	0.725	0.250	-	0.786	0.958	0.842	0.917	0.000	-	0.951	0.818	0.781	0.625	0.000	-	0.796	0.919
Lights	9	64	60	0	-	133	80	58	28	1	-	167	67	116	77	0	-	260	35	147	5	0	-	187	747
% Lights	90.0	91.4	96.8	-	-	93.7	95.2	93.5	96.6	100.0	-	94.9	97.1	90.6	100.0	-	-	94.9	97.2	98.0	100.0	-	-	97.9	95.4
Mediums	1	6	2	0	-	9	3	4	1	0	-	8	2	9	0	0	-	11	1	3	0	0	-	4	32
% Mediums	10.0	8.6	3.2	-	-	6.3	3.6	6.5	3.4	0.0	-	4.5	2.9	7.0	0.0	-	-	4.0	2.8	2.0	0.0	-	-	2.1	4.1
Articulated Trucks	0	0	0	0	-	0	1	0	0	0	-	1	0	3	0	0	-	3	0	0	0	0	-	0	4
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	1.2	0.0	0.0	0.0	-	0.6	0.0	2.3	0.0	-	-	1.1	0.0	0.0	0.0	-	-	0.0	0.5
Pedestrians	-	-	-	-	9	-	-	-	-	-	1	-	-	-	-	-	7	-	-	-	-	-	71	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Laurelwood Drive & Erbsville Road
Site Code:
Start Date: 01/25/2018



Turning Movement Peak Hour Data Plot (12:30 PM)

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Laurelwood Drive & Erbsville Road
Site Code:
Start Date: 01/25/2018

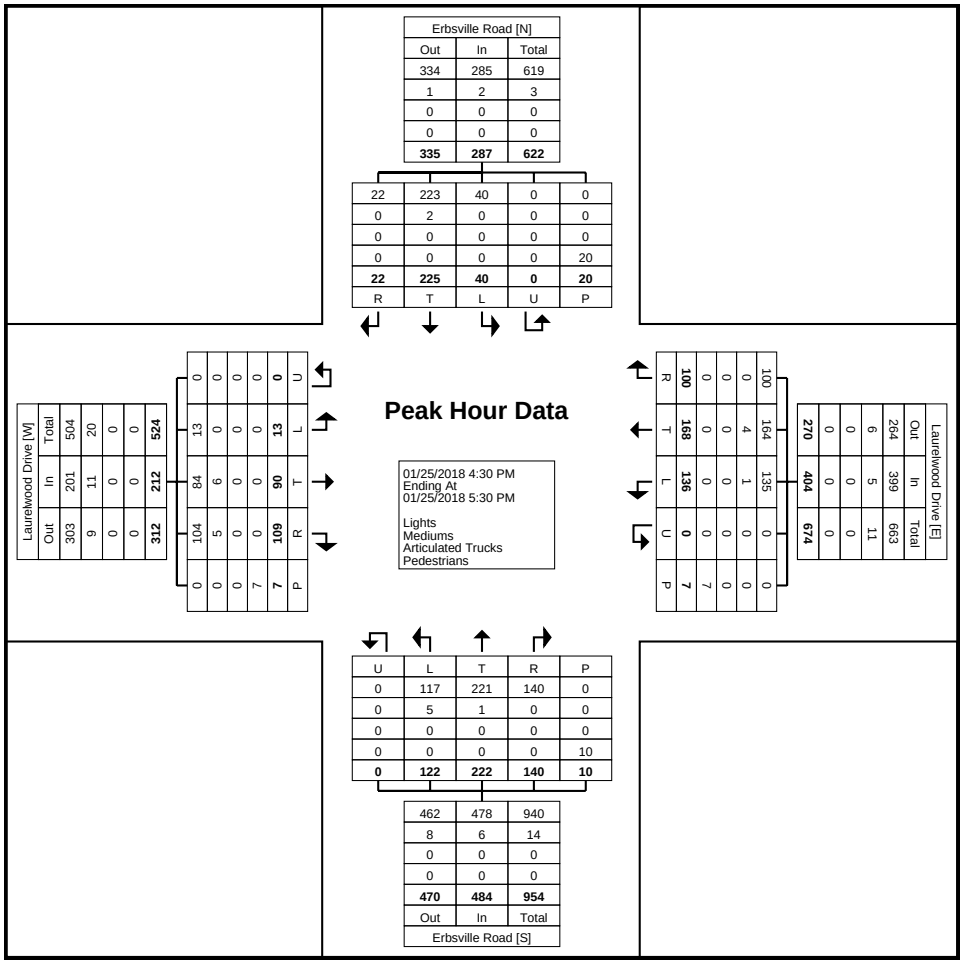
Turning Movement Peak Hour Data (4:30 PM)

Start Time	Laurelwood Drive Eastbound						Laurelwood Drive Westbound						Erbsville Road Northbound						Erbsville Road 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	
4:30 PM	2	23	28	0	2	53	34	36	21	0	6	91	28	56	28	0	5	112	5	51	4	0	3	60	316
4:45 PM	2	24	30	0	3	56	33	43	26	0	1	102	35	54	41	0	2	130	15	62	7	0	7	84	372
5:00 PM	6	23	29	0	0	58	40	46	21	0	0	107	25	61	37	0	1	123	9	48	4	0	5	61	349
5:15 PM	3	20	22	0	2	45	29	43	32	0	0	104	34	51	34	0	2	119	11	64	7	0	5	82	350
Total	13	90	109	0	7	212	136	168	100	0	7	404	122	222	140	0	10	484	40	225	22	0	20	287	1387
Approach %	6.1	42.5	51.4	0.0	-	-	33.7	41.6	24.8	0.0	-	-	25.2	45.9	28.9	0.0	-	-	13.9	78.4	7.7	0.0	-	-	-
Total %	0.9	6.5	7.9	0.0	-	15.3	9.8	12.1	7.2	0.0	-	29.1	8.8	16.0	10.1	0.0	-	34.9	2.9	16.2	1.6	0.0	-	20.7	-
PHF	0.542	0.938	0.908	0.000	-	0.914	0.850	0.913	0.781	0.000	-	0.944	0.871	0.910	0.854	0.000	-	0.931	0.667	0.879	0.786	0.000	-	0.854	0.932
Lights	13	84	104	0	-	201	135	164	100	0	-	399	117	221	140	0	-	478	40	223	22	0	-	285	1363
% Lights	100.0	93.3	95.4	-	-	94.8	99.3	97.6	100.0	-	-	98.8	95.9	99.5	100.0	-	-	98.8	100.0	99.1	100.0	-	-	99.3	98.3
Mediums	0	6	5	0	-	11	1	4	0	0	-	5	5	1	0	0	-	6	0	2	0	0	-	2	24
% Mediums	0.0	6.7	4.6	-	-	5.2	0.7	2.4	0.0	-	-	1.2	4.1	0.5	0.0	-	-	1.2	0.0	0.9	0.0	-	-	0.7	1.7
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Pedestrians	-	-	-	-	7	-	-	-	-	-	7	-	-	-	-	-	10	-	-	-	-	-	20	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Laurelwood Drive & Erbsville Road
Site Code:
Start Date: 01/25/2018



Turning Movement Peak Hour Data Plot (4:30 PM)

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Laurelwood Drive & Erbsville Road
Site Code:
Start Date: 01/25/2018

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Laurelwood Drive & Fisher-Hallman Road
Site Code:
Start Date: 01/25/2018

Turning Movement Data

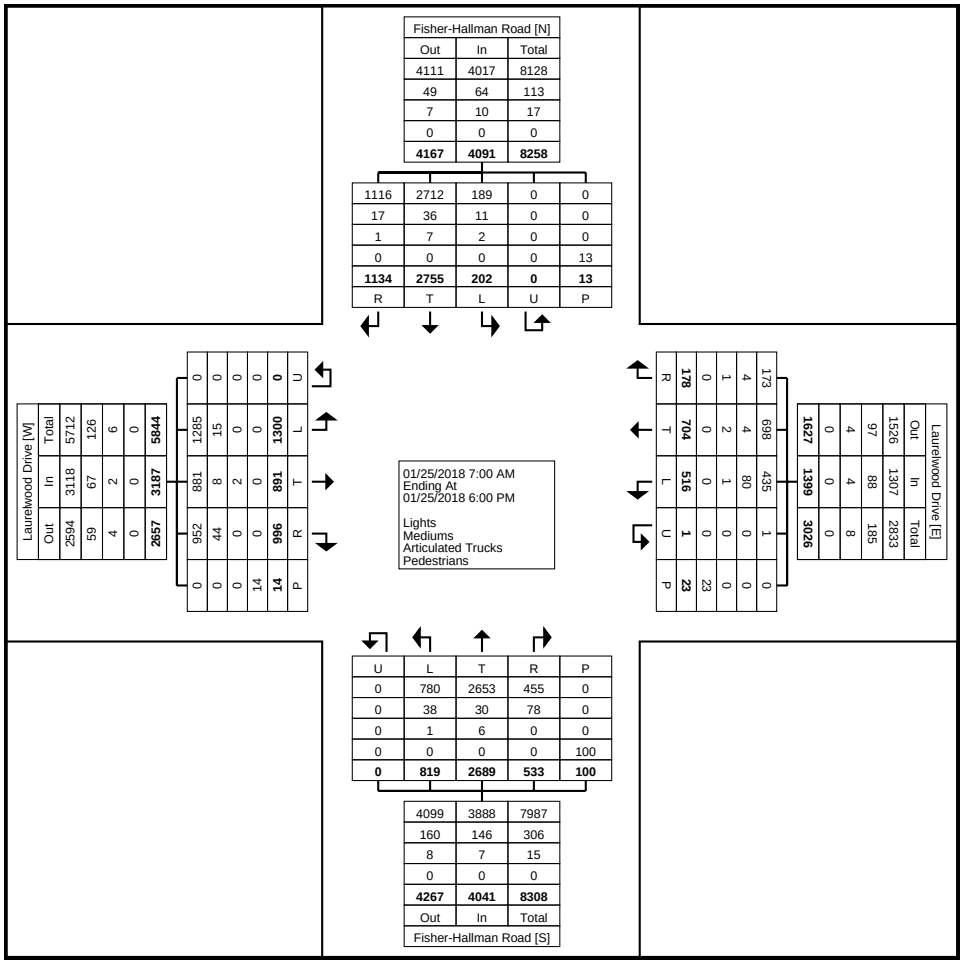
Start Time	Laurelwood Drive Eastbound						Laurelwood Drive Westbound						Fisher-Hallman Road Northbound						Fisher-Hallman Road Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:00 AM	28	17	15	0	0	60	6	8	1	0	0	15	6	75	5	0	0	86	4	31	3	0	0	38	199
7:15 AM	29	14	19	0	0	62	4	6	1	0	0	11	7	88	8	0	0	103	2	41	17	0	0	60	236
7:30 AM	56	25	32	0	0	113	6	4	0	0	1	10	7	101	4	0	0	112	6	47	11	0	0	64	299
7:45 AM	62	25	28	0	0	115	12	3	2	0	0	17	22	134	11	0	0	167	5	47	14	0	0	66	365
Hourly Total	175	81	94	0	0	350	28	21	4	0	1	53	42	398	28	0	0	468	17	166	45	0	0	228	1099
8:00 AM	69	55	47	0	0	171	7	12	1	0	2	20	29	105	7	0	1	141	4	51	21	0	0	76	408
8:15 AM	91	67	47	0	1	205	6	10	4	0	0	20	17	155	12	0	1	184	10	69	18	0	1	97	506
8:30 AM	67	58	60	0	0	185	7	8	3	0	0	18	20	166	23	0	4	209	9	77	25	0	0	111	523
8:45 AM	87	55	52	0	1	194	11	10	5	0	2	26	15	141	25	0	2	181	15	39	20	0	1	74	475
Hourly Total	314	235	206	0	2	755	31	40	13	0	4	84	81	567	67	0	8	715	38	236	84	0	2	358	1912
9:00 AM	67	49	44	0	0	160	14	7	1	0	1	22	17	115	28	0	0	160	8	45	14	0	0	67	409
9:15 AM	71	42	39	0	0	152	8	4	6	0	0	18	26	83	36	0	4	145	11	38	19	0	0	68	383
9:30 AM	38	38	30	0	2	106	14	4	6	0	0	24	20	66	18	0	4	104	5	44	13	0	0	62	296
9:45 AM	44	23	38	0	0	105	14	7	3	0	1	24	21	65	23	0	0	109	5	53	12	0	0	70	308
Hourly Total	220	152	151	0	2	523	50	22	16	0	2	88	84	329	105	0	8	518	29	180	58	0	0	267	1396
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12:00 PM	26	10	27	0	3	63	26	21	7	0	2	54	16	55	20	0	2	91	10	58	25	0	3	93	301
12:15 PM	19	18	19	0	1	56	23	18	10	0	0	51	28	55	11	0	2	94	2	64	25	0	1	91	292
12:30 PM	21	14	28	0	0	63	19	21	3	1	4	44	26	59	10	0	7	95	5	61	26	0	1	92	294
12:45 PM	36	28	32	0	0	96	10	12	6	0	2	28	15	74	18	0	5	107	3	70	26	0	0	99	330
Hourly Total	102	70	106	0	4	278	78	72	26	1	8	177	85	243	59	0	16	387	20	253	102	0	5	375	1217
1:00 PM	26	16	26	0	0	68	23	19	8	0	0	50	19	59	15	0	1	93	6	61	21	0	0	88	299
1:15 PM	35	10	23	0	0	68	10	20	4	0	0	34	26	71	16	0	4	113	3	61	25	0	0	89	304
1:30 PM	28	13	22	0	1	63	25	15	13	0	4	53	22	61	14	0	6	97	7	74	19	0	1	100	313
1:45 PM	23	24	25	0	0	72	17	20	7	0	0	44	24	56	21	0	7	101	8	77	27	0	0	112	329
Hourly Total	112	63	96	0	1	271	75	74	32	0	4	181	91	247	66	0	18	404	24	273	92	0	1	389	1245
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:00 PM	24	15	26	0	1	65	19	23	9	0	0	51	42	63	14	0	2	119	5	97	39	0	1	141	376
3:15 PM	25	15	32	0	0	72	19	22	4	0	0	45	29	72	14	0	3	115	5	129	48	0	0	182	414
3:30 PM	28	21	26	0	0	75	17	23	9	0	1	49	28	78	12	0	5	118	5	105	45	0	0	155	397
3:45 PM	31	20	29	0	1	80	21	30	11	0	1	62	44	80	21	0	3	145	7	123	50	0	1	180	467
Hourly Total	108	71	113	0	2	292	76	98	33	0	2	207	143	293	61	0	13	497	22	454	182	0	2	658	1654
4:00 PM	36	12	36	0	2	84	21	28	6	0	0	55	28	67	22	0	4	117	11	129	44	0	2	184	440
4:15 PM	30	29	30	0	0	89	24	41	10	0	0	75	40	68	21	0	9	129	7	145	59	0	0	211	504
4:30 PM	30	26	21	0	0	77	19	38	4	0	0	61	39	73	17	0	1	129	5	152	53	0	0	210	477
4:45 PM	35	38	37	0	1	110	29	64	8	0	1	101	37	91	26	0	8	154	7	166	74	0	1	247	612
Hourly Total	131	105	124	0	3	360	93	171	28	0	1	292	144	299	86	0	22	529	30	592	230	0	3	852	2033

5:00 PM	24	29	36	0	0	89	31	62	10	0	1	103	33	74	15	0	7	122	11	178	82	0	0	271	585
5:15 PM	30	31	24	0	0	85	22	64	6	0	0	92	40	88	16	0	6	144	5	168	97	0	0	270	591
5:30 PM	38	35	19	0	0	92	12	38	3	0	0	53	45	78	21	0	2	144	3	152	88	0	0	243	532
5:45 PM	46	19	27	0	0	92	20	42	7	0	0	69	31	73	9	0	0	113	3	103	74	0	0	180	454
Hourly Total	138	114	106	0	0	358	85	206	26	0	1	317	149	313	61	0	15	523	22	601	341	0	0	964	2162
Grand Total	1300	891	996	0	14	3187	516	704	178	1	23	1399	819	2689	533	0	100	4041	202	2755	1134	0	13	4091	12718
Approach %	40.8	28.0	31.3	0.0	-	-	36.9	50.3	12.7	0.1	-	-	20.3	66.5	13.2	0.0	-	-	4.9	67.3	27.7	0.0	-	-	-
Total %	10.2	7.0	7.8	0.0	-	25.1	4.1	5.5	1.4	0.0	-	11.0	6.4	21.1	4.2	0.0	-	31.8	1.6	21.7	8.9	0.0	-	32.2	-
Lights	1285	881	952	0	-	3118	435	698	173	1	-	1307	780	2653	455	0	-	3888	189	2712	1116	0	-	4017	12330
% Lights	98.8	98.9	95.6	-	-	97.8	84.3	99.1	97.2	100.0	-	93.4	95.2	98.7	85.4	-	-	96.2	93.6	98.4	98.4	-	-	98.2	96.9
Mediums	15	8	44	0	-	67	80	4	4	0	-	88	38	30	78	0	-	146	11	36	17	0	-	64	365
% Mediums	1.2	0.9	4.4	-	-	2.1	15.5	0.6	2.2	0.0	-	6.3	4.6	1.1	14.6	-	-	3.6	5.4	1.3	1.5	-	-	1.6	2.9
Articulated Trucks	0	2	0	0	-	2	1	2	1	0	-	4	1	6	0	0	-	7	2	7	1	0	-	10	23
% Articulated Trucks	0.0	0.2	0.0	-	-	0.1	0.2	0.3	0.6	0.0	-	0.3	0.1	0.2	0.0	-	-	0.2	1.0	0.3	0.1	-	-	0.2	0.2
Pedestrians	-	-	-	-	14	-	-	-	-	-	23	-	-	-	-	-	100	-	-	-	-	-	13	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Laurelwood Drive & Fisher-Hallman Road
Site Code:
Start Date: 01/25/2018



Turning Movement Data Plot

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Laurelwood Drive & Fisher-Hallman Road
Site Code:
Start Date: 01/25/2018

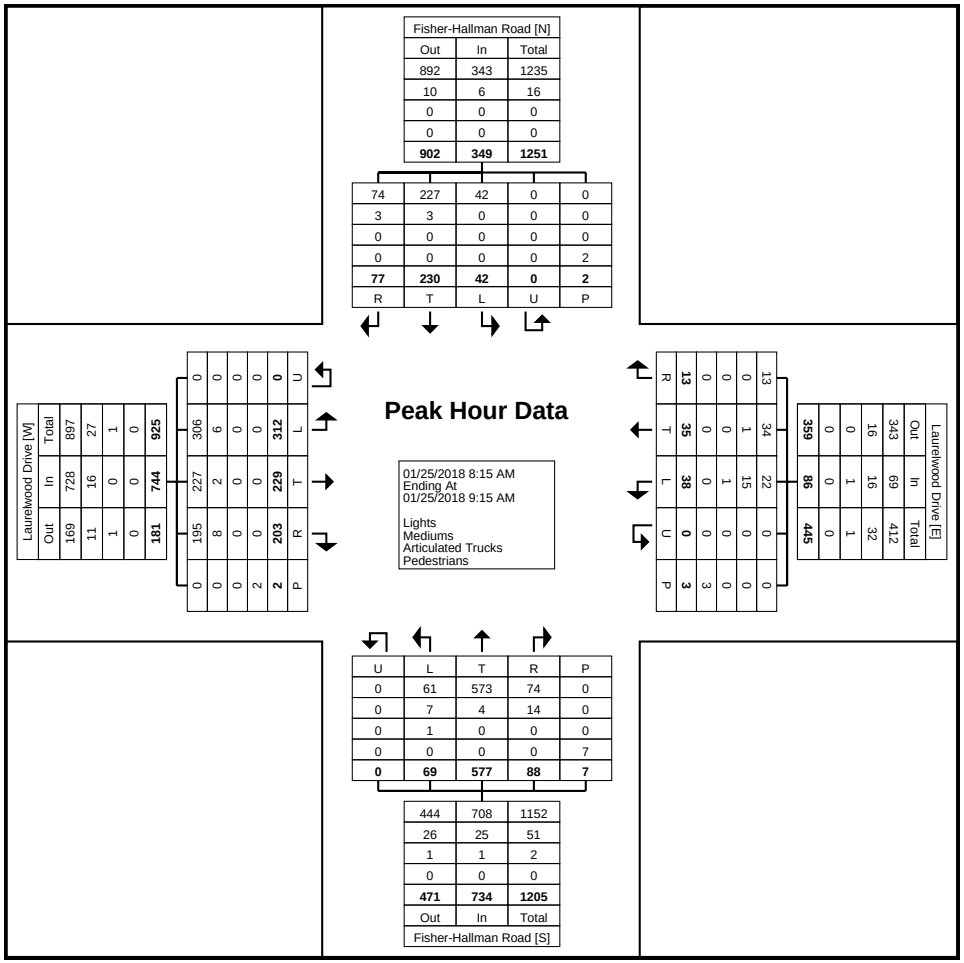
Turning Movement Peak Hour Data (8:15 AM)

Start Time	Laurelwood Drive Eastbound						Laurelwood Drive Westbound						Fisher-Hallman Road Northbound						Fisher-Hallman Road 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	
8:15 AM	91	67	47	0	1	205	6	10	4	0	0	20	17	155	12	0	1	184	10	69	18	0	1	97	506
8:30 AM	67	58	60	0	0	185	7	8	3	0	0	18	20	166	23	0	4	209	9	77	25	0	0	111	523
8:45 AM	87	55	52	0	1	194	11	10	5	0	2	26	15	141	25	0	2	181	15	39	20	0	1	74	475
9:00 AM	67	49	44	0	0	160	14	7	1	0	1	22	17	115	28	0	0	160	8	45	14	0	0	67	409
Total	312	229	203	0	2	744	38	35	13	0	3	86	69	577	88	0	7	734	42	230	77	0	2	349	1913
Approach %	41.9	30.8	27.3	0.0	-	-	44.2	40.7	15.1	0.0	-	-	9.4	78.6	12.0	0.0	-	-	12.0	65.9	22.1	0.0	-	-	-
Total %	16.3	12.0	10.6	0.0	-	38.9	2.0	1.8	0.7	0.0	-	4.5	3.6	30.2	4.6	0.0	-	38.4	2.2	12.0	4.0	0.0	-	18.2	-
PHF	0.857	0.854	0.846	0.000	-	0.907	0.679	0.875	0.650	0.000	-	0.827	0.863	0.869	0.786	0.000	-	0.878	0.700	0.747	0.770	0.000	-	0.786	0.914
Lights	306	227	195	0	-	728	22	34	13	0	-	69	61	573	74	0	-	708	42	227	74	0	-	343	1848
% Lights	98.1	99.1	96.1	-	-	97.8	57.9	97.1	100.0	-	-	80.2	88.4	99.3	84.1	-	-	96.5	100.0	98.7	96.1	-	-	98.3	96.6
Mediums	6	2	8	0	-	16	15	1	0	0	-	16	7	4	14	0	-	25	0	3	3	0	-	6	63
% Mediums	1.9	0.9	3.9	-	-	2.2	39.5	2.9	0.0	-	-	18.6	10.1	0.7	15.9	-	-	3.4	0.0	1.3	3.9	-	-	1.7	3.3
Articulated Trucks	0	0	0	0	-	0	1	0	0	0	-	1	1	0	0	0	-	1	0	0	0	0	-	0	2
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	2.6	0.0	0.0	-	-	1.2	1.4	0.0	0.0	-	-	0.1	0.0	0.0	0.0	-	-	0.0	0.1
Pedestrians	-	-	-	-	2	-	-	-	-	-	3	-	-	-	-	-	7	-	-	-	-	-	2	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Laurelwood Drive & Fisher-Hallman Road
Site Code:
Start Date: 01/25/2018



Turning Movement Peak Hour Data Plot (8:15 AM)

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Laurelwood Drive & Fisher-Hallman Road
Site Code:
Start Date: 01/25/2018

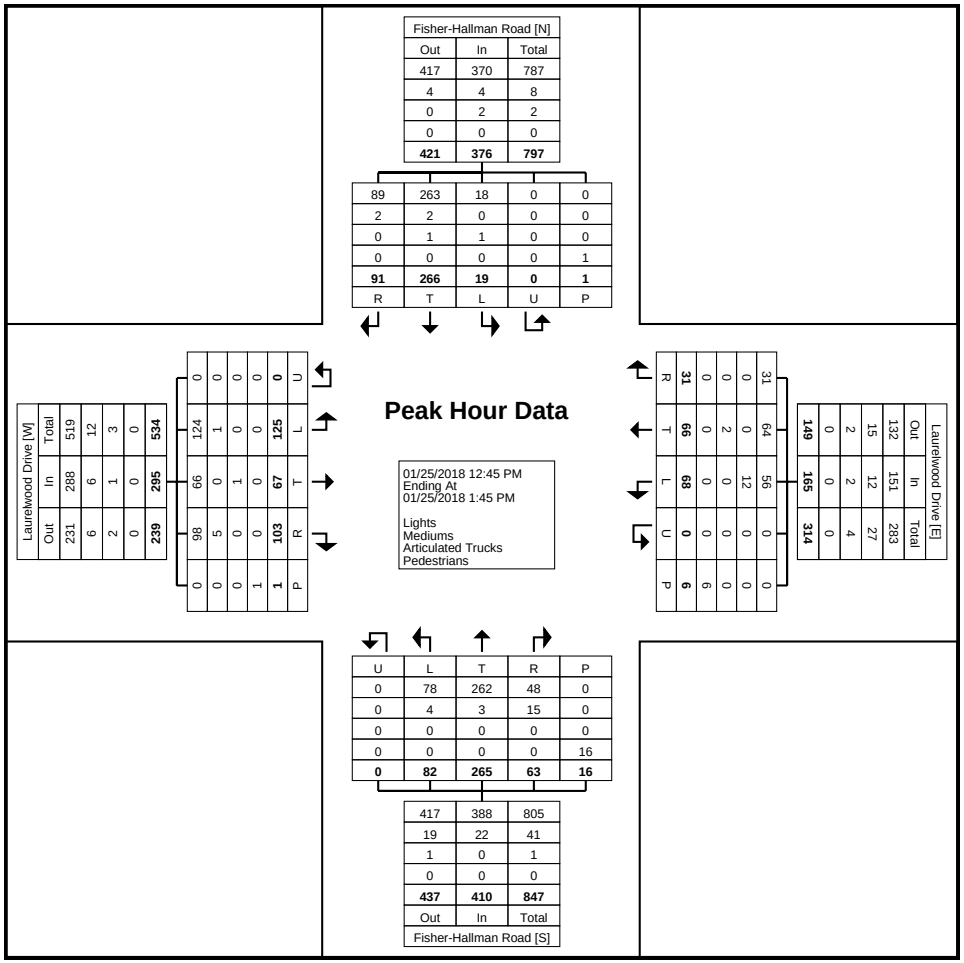
Turning Movement Peak Hour Data (12:45 PM)

Start Time	Laurelwood Drive Eastbound						Laurelwood Drive Westbound						Fisher-Hallman Road Northbound						Fisher-Hallman Road 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	
12:45 PM	36	28	32	0	0	96	10	12	6	0	2	28	15	74	18	0	5	107	3	70	26	0	0	99	330
1:00 PM	26	16	26	0	0	68	23	19	8	0	0	50	19	59	15	0	1	93	6	61	21	0	0	88	299
1:15 PM	35	10	23	0	0	68	10	20	4	0	0	34	26	71	16	0	4	113	3	61	25	0	0	89	304
1:30 PM	28	13	22	0	1	63	25	15	13	0	4	53	22	61	14	0	6	97	7	74	19	0	1	100	313
Total	125	67	103	0	1	295	68	66	31	0	6	165	82	265	63	0	16	410	19	266	91	0	1	376	1246
Approach %	42.4	22.7	34.9	0.0	-	-	41.2	40.0	18.8	0.0	-	-	20.0	64.6	15.4	0.0	-	-	5.1	70.7	24.2	0.0	-	-	-
Total %	10.0	5.4	8.3	0.0	-	23.7	5.5	5.3	2.5	0.0	-	13.2	6.6	21.3	5.1	0.0	-	32.9	1.5	21.3	7.3	0.0	-	30.2	-
PHF	0.868	0.598	0.805	0.000	-	0.768	0.680	0.825	0.596	0.000	-	0.778	0.788	0.895	0.875	0.000	-	0.907	0.679	0.899	0.875	0.000	-	0.940	0.944
Lights	124	66	98	0	-	288	56	64	31	0	-	151	78	262	48	0	-	388	18	263	89	0	-	370	1197
% Lights	99.2	98.5	95.1	-	-	97.6	82.4	97.0	100.0	-	-	91.5	95.1	98.9	76.2	-	-	94.6	94.7	98.9	97.8	-	-	98.4	96.1
Mediums	1	0	5	0	-	6	12	0	0	0	-	12	4	3	15	0	-	22	0	2	2	0	-	4	44
% Mediums	0.8	0.0	4.9	-	-	2.0	17.6	0.0	0.0	-	-	7.3	4.9	1.1	23.8	-	-	5.4	0.0	0.8	2.2	-	-	1.1	3.5
Articulated Trucks	0	1	0	0	-	1	0	2	0	0	-	2	0	0	0	0	-	0	1	1	0	0	-	2	5
% Articulated Trucks	0.0	1.5	0.0	-	-	0.3	0.0	3.0	0.0	-	-	1.2	0.0	0.0	0.0	-	-	0.0	5.3	0.4	0.0	-	-	0.5	0.4
Pedestrians	-	-	-	-	1	-	-	-	-	-	6	-	-	-	-	-	16	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Laurelwood Drive & Fisher-Hallman Road
Site Code:
Start Date: 01/25/2018



Turning Movement Peak Hour Data Plot (12:45 PM)

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

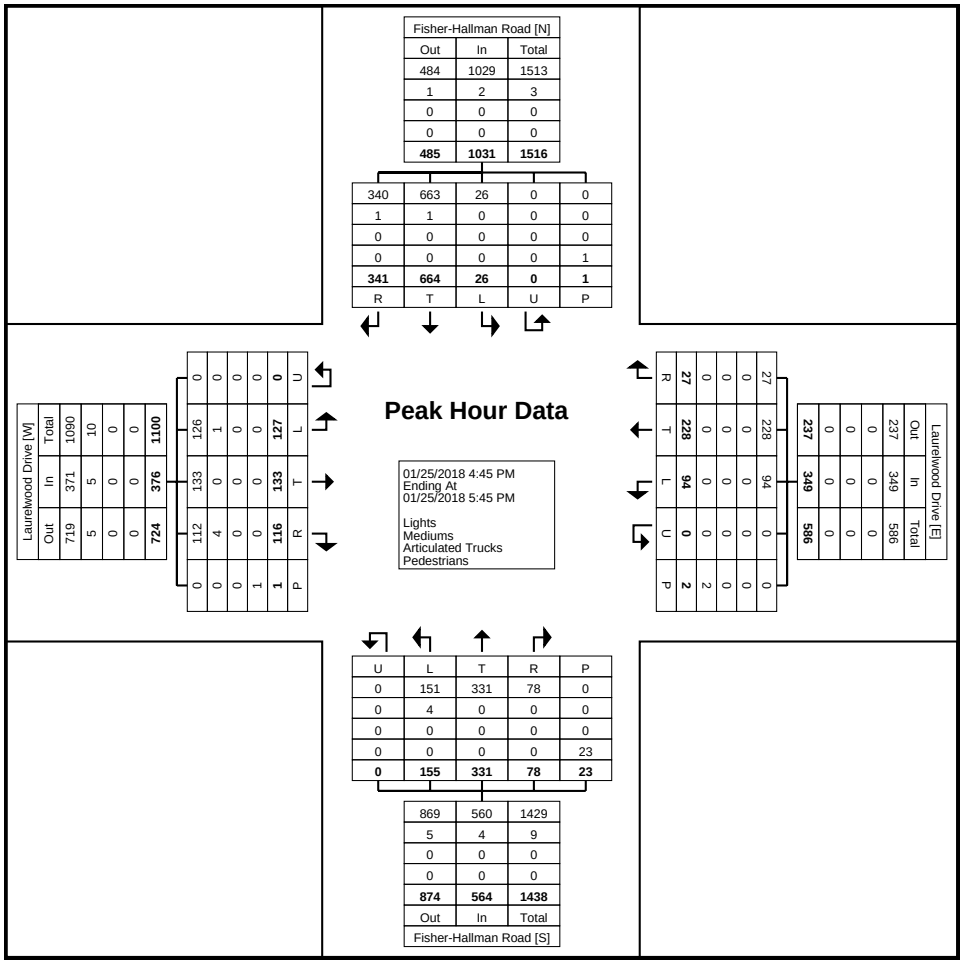
Count Name: Laurelwood Drive & Fisher-Hallman Road
Site Code:
Start Date: 01/25/2018

Turning Movement Peak Hour Data (4:45 PM)

Start Time	Laurelwood Drive Eastbound						Laurelwood Drive Westbound						Fisher-Hallman Road Northbound						Fisher-Hallman Road 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	
4:45 PM	35	38	37	0	1	110	29	64	8	0	1	101	37	91	26	0	8	154	7	166	74	0	1	247	612
5:00 PM	24	29	36	0	0	89	31	62	10	0	1	103	33	74	15	0	7	122	11	178	82	0	0	271	585
5:15 PM	30	31	24	0	0	85	22	64	6	0	0	92	40	88	16	0	6	144	5	168	97	0	0	270	591
5:30 PM	38	35	19	0	0	92	12	38	3	0	0	53	45	78	21	0	2	144	3	152	88	0	0	243	532
Total	127	133	116	0	1	376	94	228	27	0	2	349	155	331	78	0	23	564	26	664	341	0	1	1031	2320
Approach %	33.8	35.4	30.9	0.0	-	-	26.9	65.3	7.7	0.0	-	-	27.5	58.7	13.8	0.0	-	-	2.5	64.4	33.1	0.0	-	-	-
Total %	5.5	5.7	5.0	0.0	-	16.2	4.1	9.8	1.2	0.0	-	15.0	6.7	14.3	3.4	0.0	-	24.3	1.1	28.6	14.7	0.0	-	44.4	-
PHF	0.836	0.875	0.784	0.000	-	0.855	0.758	0.891	0.675	0.000	-	0.847	0.861	0.909	0.750	0.000	-	0.916	0.591	0.933	0.879	0.000	-	0.951	0.948
Lights	126	133	112	0	-	371	94	228	27	0	-	349	151	331	78	0	-	560	26	663	340	0	-	1029	2309
% Lights	99.2	100.0	96.6	-	-	98.7	100.0	100.0	100.0	-	-	100.0	97.4	100.0	100.0	-	-	99.3	100.0	99.8	99.7	-	-	99.8	99.5
Mediums	1	0	4	0	-	5	0	0	0	0	-	0	4	0	0	0	-	4	0	1	1	0	-	2	11
% Mediums	0.8	0.0	3.4	-	-	1.3	0.0	0.0	0.0	-	-	0.0	2.6	0.0	0.0	-	-	0.7	0.0	0.2	0.3	-	-	0.2	0.5
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Pedestrians	-	-	-	-	1	-	-	-	-	-	2	-	-	-	-	-	23	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com



Turning Movement Peak Hour Data Plot (4:45 PM)

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Laurelwood Drive & Fisher-Hallman Road
Site Code:
Start Date: 01/25/2018

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Conservation Drive & Lake Louise Blvd
Site Code:
Start Date: 07/05/2018

Turning Movement Data

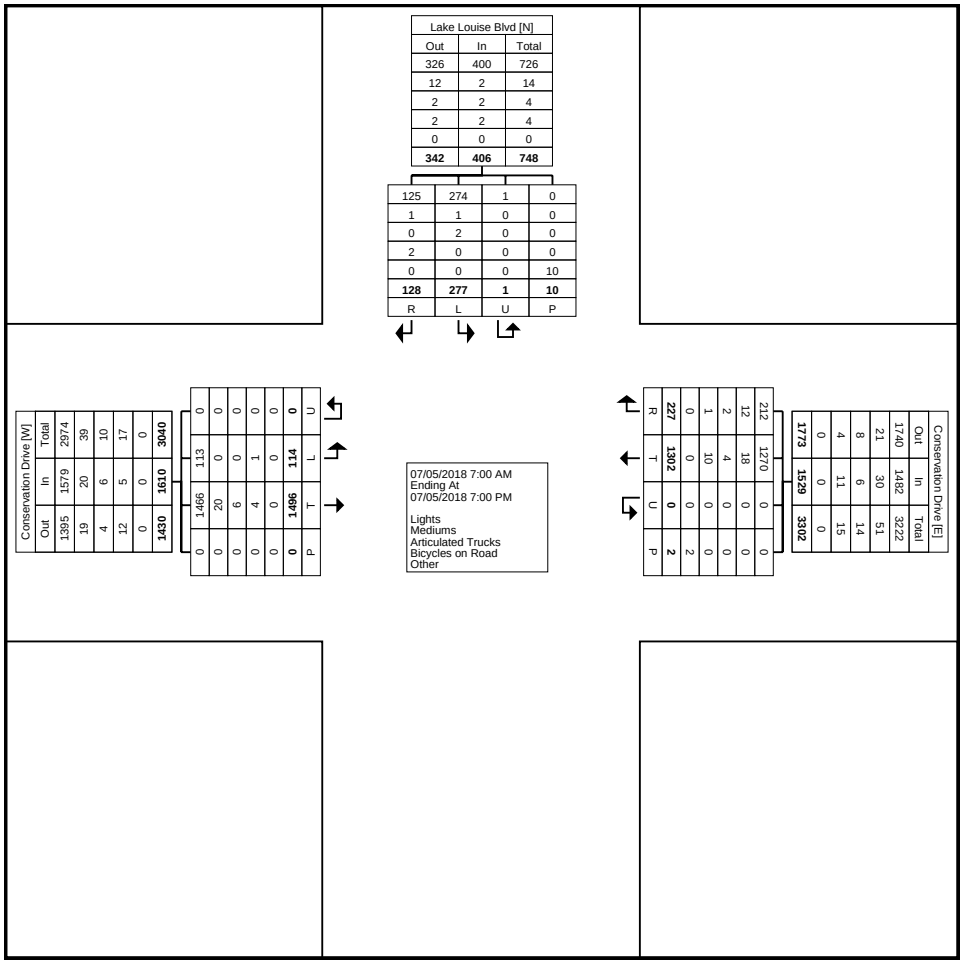
Start Time	Conservation Drive Eastbound					Conservation Drive Westbound					Lake Louise Blvd Southbound					Int. Total
	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	
7:00 AM	1	26	0	0	27	16	2	0	0	18	9	1	0	0	10	55
7:15 AM	0	43	0	0	43	15	0	0	0	15	7	0	0	0	7	65
7:30 AM	1	60	0	0	61	16	1	0	0	17	10	2	0	2	12	90
7:45 AM	0	68	0	0	68	23	2	0	0	25	13	6	0	1	19	112
Hourly Total	2	197	0	0	199	70	5	0	0	75	39	9	0	3	48	322
8:00 AM	2	71	0	0	73	31	7	0	0	38	13	5	0	0	18	129
8:15 AM	5	79	0	0	84	29	2	0	0	31	10	6	0	0	16	131
8:30 AM	5	81	0	0	86	21	5	0	0	26	16	8	0	0	24	136
8:45 AM	2	76	0	0	78	27	10	0	0	37	20	8	0	0	28	143
Hourly Total	14	307	0	0	321	108	24	0	0	132	59	27	0	0	86	539
9:00 AM	2	48	0	0	50	24	6	0	0	30	13	4	0	0	17	97
9:15 AM	2	63	0	0	65	32	8	0	0	40	20	1	0	2	21	126
9:30 AM	1	54	0	0	55	42	4	0	0	46	5	5	0	1	10	111
9:45 AM	2	39	0	0	41	19	4	0	0	23	10	3	0	1	13	77
Hourly Total	7	204	0	0	211	117	22	0	0	139	48	13	0	4	61	411
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:30 AM	4	40	0	0	44	35	8	0	1	43	8	1	1	0	10	97
11:45 AM	5	49	0	0	54	50	5	0	0	55	10	8	0	0	18	127
Hourly Total	9	89	0	0	98	85	13	0	1	98	18	9	1	0	28	224
12:00 PM	6	40	0	0	46	47	4	0	1	51	5	0	0	0	5	102
12:15 PM	4	45	0	0	49	39	10	0	0	49	7	6	0	0	13	111
12:30 PM	4	33	0	0	37	43	7	0	0	50	4	5	0	0	9	96
12:45 PM	2	36	0	0	38	41	4	0	0	45	9	3	0	0	12	95
Hourly Total	16	154	0	0	170	170	25	0	1	195	25	14	0	0	39	404
1:00 PM	3	36	0	0	39	37	2	0	0	39	3	5	0	0	8	86
1:15 PM	3	45	0	0	48	28	2	0	0	30	6	4	0	0	10	88
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	6	81	0	0	87	65	4	0	0	69	9	9	0	0	18	174
4:00 PM	4	37	0	0	41	46	10	0	0	56	5	3	0	0	8	105
4:15 PM	3	35	0	0	38	58	18	0	0	76	8	3	0	0	11	125
4:30 PM	4	39	0	0	43	53	14	0	0	67	10	3	0	0	13	123
4:45 PM	4	58	0	0	62	86	8	0	0	94	8	6	0	0	14	170
Hourly Total	15	169	0	0	184	243	50	0	0	293	31	15	0	0	46	523
5:00 PM	8	32	0	0	40	66	9	0	0	75	2	6	0	0	8	123
5:15 PM	5	50	0	0	55	72	19	0	0	91	4	6	0	0	10	156
5:30 PM	6	54	0	0	60	74	11	0	0	85	9	5	0	0	14	159
5:45 PM	6	34	0	0	40	74	8	0	0	82	7	3	0	0	10	132
Hourly Total	25	170	0	0	195	286	47	0	0	333	22	20	0	0	42	570

6:00 PM	5	29	0	0	34	50	10	0	0	60	6	4	0	0	10	104
6:15 PM	3	33	0	0	36	34	7	0	0	41	5	2	0	0	7	84
6:30 PM	5	34	0	0	39	38	16	0	0	54	8	4	0	2	12	105
6:45 PM	7	29	0	0	36	36	4	0	0	40	7	2	0	1	9	85
Hourly Total	20	125	0	0	145	158	37	0	0	195	26	12	0	3	38	378
Grand Total	114	1496	0	0	1610	1302	227	0	2	1529	277	128	1	10	406	3545
Approach %	7.1	92.9	0.0	-	-	85.2	14.8	0.0	-	-	68.2	31.5	0.2	-	-	-
Total %	3.2	42.2	0.0	-	45.4	36.7	6.4	0.0	-	43.1	7.8	3.6	0.0	-	11.5	-
Lights	113	1466	0	-	1579	1270	212	0	-	1482	274	125	1	-	400	3461
% Lights	99.1	98.0	-	-	98.1	97.5	93.4	-	-	96.9	98.9	97.7	100.0	-	98.5	97.6
Mediums	0	20	0	-	20	18	12	0	-	30	1	1	0	-	2	52
% Mediums	0.0	1.3	-	-	1.2	1.4	5.3	-	-	2.0	0.4	0.8	0.0	-	0.5	1.5
Articulated Trucks	0	6	0	-	6	4	2	0	-	6	2	0	0	-	2	14
% Articulated Trucks	0.0	0.4	-	-	0.4	0.3	0.9	-	-	0.4	0.7	0.0	0.0	-	0.5	0.4
Bicycles on Road	1	4	0	-	5	10	1	0	-	11	0	2	0	-	2	18
% Bicycles on Road	0.9	0.3	-	-	0.3	0.8	0.4	-	-	0.7	0.0	1.6	0.0	-	0.5	0.5
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	0.0	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	0	-	-	-	-	2	-	-	-	-	10	-	-
% Pedestrians	-	-	-	-	-	-	-	-	100.0	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Conservation Drive & Lake Louise Blvd
Site Code:
Start Date: 07/05/2018



Turning Movement Data Plot

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Conservation Drive & Lake Louise Blvd
Site Code:
Start Date: 07/05/2018

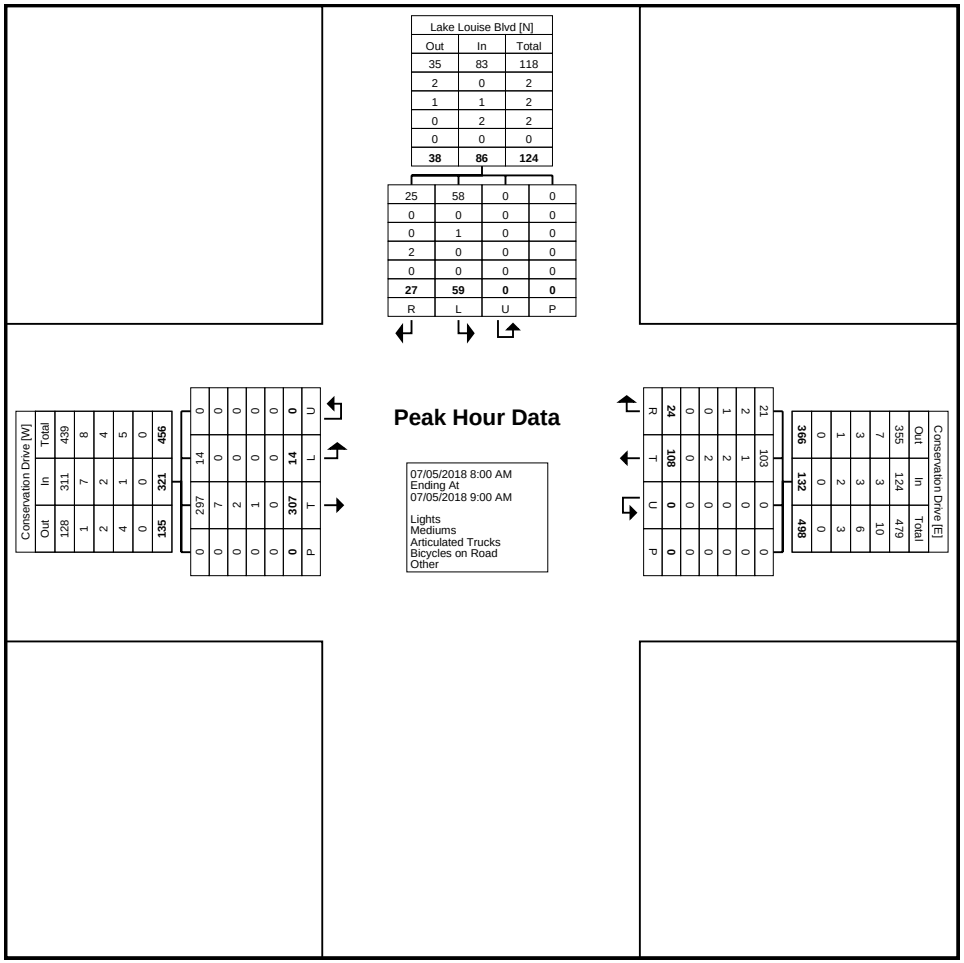
Turning Movement Peak Hour Data (8:00 AM)

Start Time	Conservation Drive Eastbound					Conservation Drive Westbound					Lake Louise Blvd Southbound					
	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	Int. Total
8:00 AM	2	71	0	0	73	31	7	0	0	38	13	5	0	0	18	129
8:15 AM	5	79	0	0	84	29	2	0	0	31	10	6	0	0	16	131
8:30 AM	5	81	0	0	86	21	5	0	0	26	16	8	0	0	24	136
8:45 AM	2	76	0	0	78	27	10	0	0	37	20	8	0	0	28	143
Total	14	307	0	0	321	108	24	0	0	132	59	27	0	0	86	539
Approach %	4.4	95.6	0.0	-	-	81.8	18.2	0.0	-	-	68.6	31.4	0.0	-	-	-
Total %	2.6	57.0	0.0	-	59.6	20.0	4.5	0.0	-	24.5	10.9	5.0	0.0	-	16.0	-
PHF	0.700	0.948	0.000	-	0.933	0.871	0.600	0.000	-	0.868	0.738	0.844	0.000	-	0.768	0.942
Lights	14	297	0	-	311	103	21	0	-	124	58	25	0	-	83	518
% Lights	100.0	96.7	-	-	96.9	95.4	87.5	-	-	93.9	98.3	92.6	-	-	96.5	96.1
Mediums	0	7	0	-	7	1	2	0	-	3	0	0	0	-	0	10
% Mediums	0.0	2.3	-	-	2.2	0.9	8.3	-	-	2.3	0.0	0.0	-	-	0.0	1.9
Articulated Trucks	0	2	0	-	2	2	1	0	-	3	1	0	0	-	1	6
% Articulated Trucks	0.0	0.7	-	-	0.6	1.9	4.2	-	-	2.3	1.7	0.0	-	-	1.2	1.1
Bicycles on Road	0	1	0	-	1	2	0	0	-	2	0	2	0	-	2	5
% Bicycles on Road	0.0	0.3	-	-	0.3	1.9	0.0	-	-	1.5	0.0	7.4	-	-	2.3	0.9
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Conservation Drive & Lake Louise Blvd
Site Code:
Start Date: 07/05/2018



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

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Conservation Drive & Lake Louise Blvd
Site Code:
Start Date: 07/05/2018

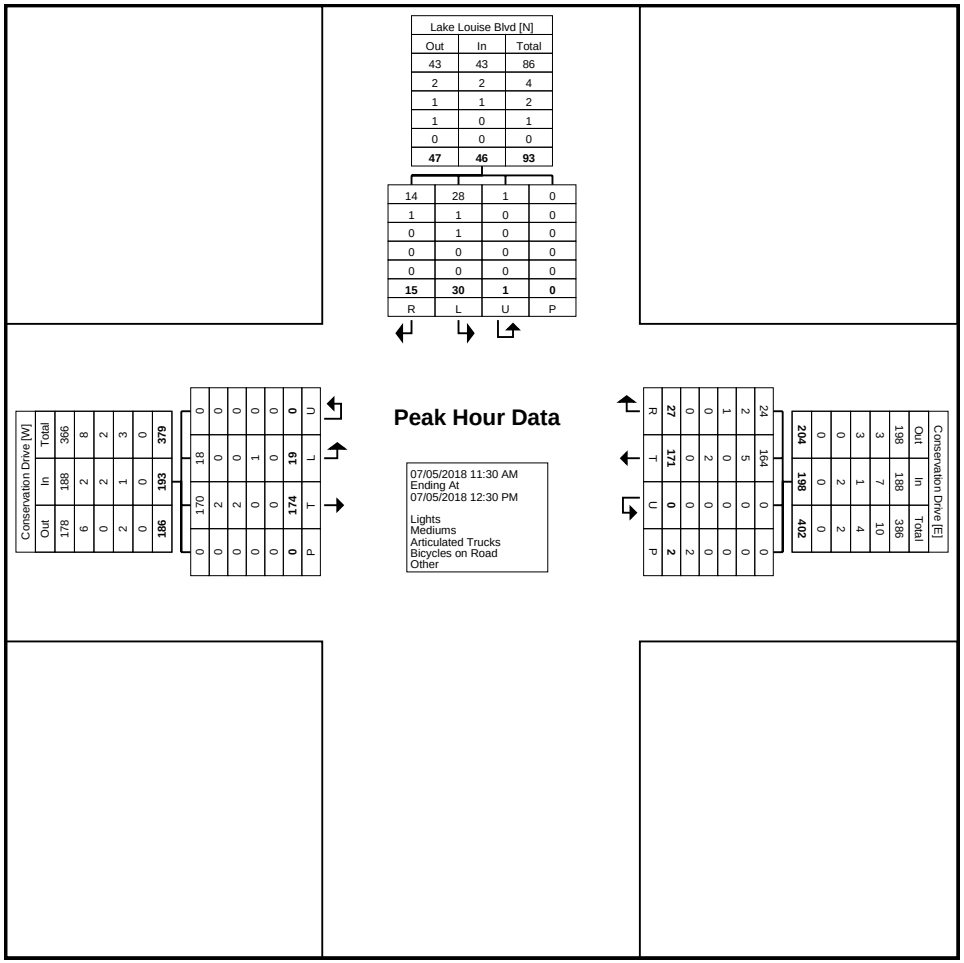
Turning Movement Peak Hour Data (11:30 AM)

Start Time	Conservation Drive Eastbound					Conservation Drive Westbound					Lake Louise Blvd Southbound					
	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	Int. Total
11:30 AM	4	40	0	0	44	35	8	0	1	43	8	1	1	0	10	97
11:45 AM	5	49	0	0	54	50	5	0	0	55	10	8	0	0	18	127
12:00 PM	6	40	0	0	46	47	4	0	1	51	5	0	0	0	5	102
12:15 PM	4	45	0	0	49	39	10	0	0	49	7	6	0	0	13	111
Total	19	174	0	0	193	171	27	0	2	198	30	15	1	0	46	437
Approach %	9.8	90.2	0.0	-	-	86.4	13.6	0.0	-	-	65.2	32.6	2.2	-	-	-
Total %	4.3	39.8	0.0	-	44.2	39.1	6.2	0.0	-	45.3	6.9	3.4	0.2	-	10.5	-
PHF	0.792	0.888	0.000	-	0.894	0.855	0.675	0.000	-	0.900	0.750	0.469	0.250	-	0.639	0.860
Lights	18	170	0	-	188	164	24	0	-	188	28	14	1	-	43	419
% Lights	94.7	97.7	-	-	97.4	95.9	88.9	-	-	94.9	93.3	93.3	100.0	-	93.5	95.9
Mediums	0	2	0	-	2	5	2	0	-	7	1	1	0	-	2	11
% Mediums	0.0	1.1	-	-	1.0	2.9	7.4	-	-	3.5	3.3	6.7	0.0	-	4.3	2.5
Articulated Trucks	0	2	0	-	2	0	1	0	-	1	1	0	0	-	1	4
% Articulated Trucks	0.0	1.1	-	-	1.0	0.0	3.7	-	-	0.5	3.3	0.0	0.0	-	2.2	0.9
Bicycles on Road	1	0	0	-	1	2	0	0	-	2	0	0	0	-	0	3
% Bicycles on Road	5.3	0.0	-	-	0.5	1.2	0.0	-	-	1.0	0.0	0.0	0.0	-	0.0	0.7
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	2	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Conservation Drive & Lake Louise Blvd
Site Code:
Start Date: 07/05/2018



Turning Movement Peak Hour Data Plot (11:30 AM)

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Conservation Drive & Lake Louise Blvd
Site Code:
Start Date: 07/05/2018

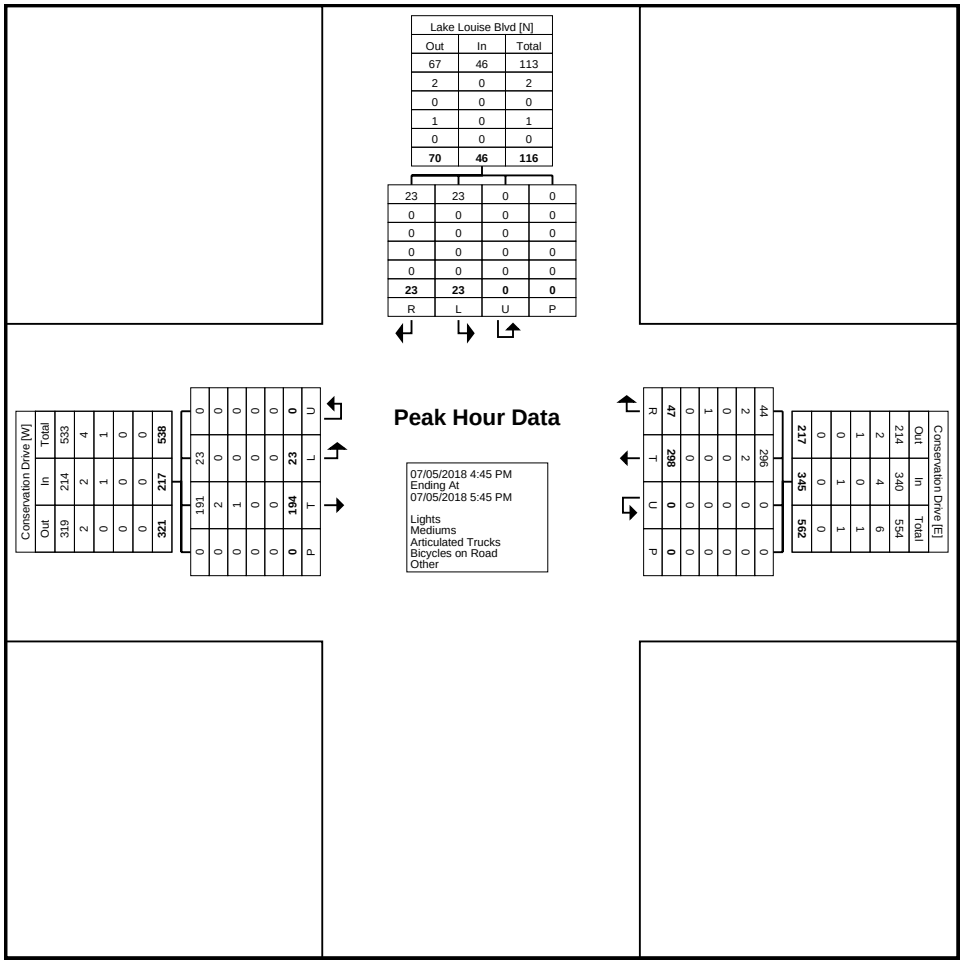
Turning Movement Peak Hour Data (4:45 PM)

Start Time	Conservation Drive Eastbound					Conservation Drive Westbound					Lake Louise Blvd Southbound					
	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	Int. Total
4:45 PM	4	58	0	0	62	86	8	0	0	94	8	6	0	0	14	170
5:00 PM	8	32	0	0	40	66	9	0	0	75	2	6	0	0	8	123
5:15 PM	5	50	0	0	55	72	19	0	0	91	4	6	0	0	10	156
5:30 PM	6	54	0	0	60	74	11	0	0	85	9	5	0	0	14	159
Total	23	194	0	0	217	298	47	0	0	345	23	23	0	0	46	608
Approach %	10.6	89.4	0.0	-	-	86.4	13.6	0.0	-	-	50.0	50.0	0.0	-	-	-
Total %	3.8	31.9	0.0	-	35.7	49.0	7.7	0.0	-	56.7	3.8	3.8	0.0	-	7.6	-
PHF	0.719	0.836	0.000	-	0.875	0.866	0.618	0.000	-	0.918	0.639	0.958	0.000	-	0.821	0.894
Lights	23	191	0	-	214	296	44	0	-	340	23	23	0	-	46	600
% Lights	100.0	98.5	-	-	98.6	99.3	93.6	-	-	98.6	100.0	100.0	-	-	100.0	98.7
Mediums	0	2	0	-	2	2	2	0	-	4	0	0	0	-	0	6
% Mediums	0.0	1.0	-	-	0.9	0.7	4.3	-	-	1.2	0.0	0.0	-	-	0.0	1.0
Articulated Trucks	0	1	0	-	1	0	0	0	-	0	0	0	0	-	0	1
% Articulated Trucks	0.0	0.5	-	-	0.5	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.2
Bicycles on Road	0	0	0	-	0	0	1	0	-	1	0	0	0	-	0	1
% Bicycles on Road	0.0	0.0	-	-	0.0	0.0	2.1	-	-	0.3	0.0	0.0	-	-	0.0	0.2
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Conservation Drive & Lake Louise Blvd
Site Code:
Start Date: 07/05/2018



Turning Movement Peak Hour Data Plot (4:45 PM)

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Conservation Drive & Lake Louise Blvd
Site Code:
Start Date: 07/05/2018

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Conservation Drive & Rideau River Street
Site Code:
Start Date: 07/05/2018

Turning Movement Data

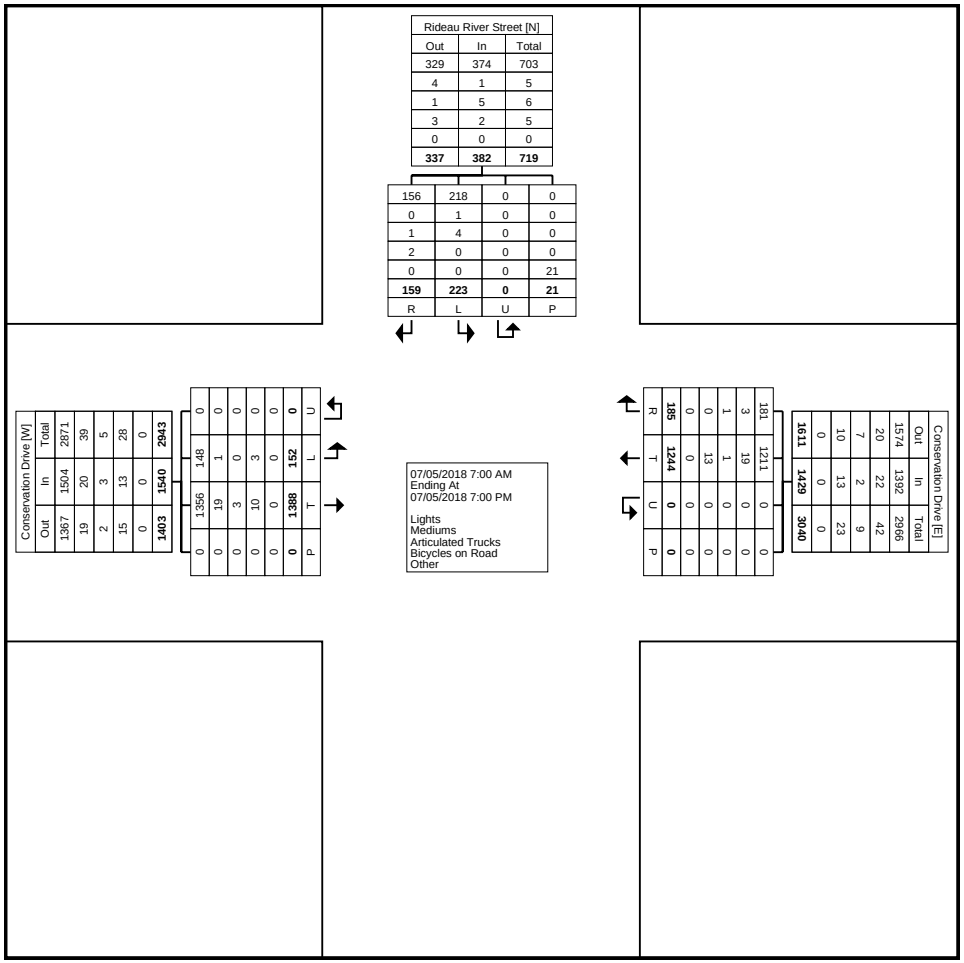
Start Time	Conservation Drive Eastbound					Conservation Drive Westbound					Rideau River Street Southbound					
	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	Int. Total
7:00 AM	2	23	0	0	25	15	1	0	0	16	3	4	0	1	7	48
7:15 AM	0	32	0	0	32	15	1	0	0	16	9	3	0	2	12	60
7:30 AM	2	53	0	0	55	16	1	0	0	17	10	3	0	1	13	85
7:45 AM	2	59	0	0	61	26	1	0	0	27	11	4	0	3	15	103
Hourly Total	6	167	0	0	173	72	4	0	0	76	33	14	0	7	47	296
8:00 AM	2	53	0	0	55	30	6	0	0	36	17	7	0	10	24	115
8:15 AM	5	73	0	0	78	32	2	0	0	34	10	7	0	0	17	129
8:30 AM	2	72	0	0	74	27	2	0	0	29	14	5	0	0	19	122
8:45 AM	2	57	0	0	59	33	3	0	0	36	24	10	0	0	34	129
Hourly Total	11	255	0	0	266	122	13	0	0	135	65	29	0	10	94	495
9:00 AM	2	46	0	0	48	21	4	0	0	25	6	8	0	1	14	87
9:15 AM	4	56	0	0	60	31	7	0	0	38	10	7	0	0	17	115
9:30 AM	4	45	0	0	49	42	3	0	0	45	11	6	0	0	17	111
9:45 AM	3	35	0	0	38	21	3	0	0	24	5	6	0	0	11	73
Hourly Total	13	182	0	0	195	115	17	0	0	132	32	27	0	1	59	386
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:30 AM	6	38	0	0	44	32	5	0	0	37	5	1	0	0	6	87
11:45 AM	4	49	0	0	53	52	7	0	0	59	7	2	0	0	9	121
Hourly Total	10	87	0	0	97	84	12	0	0	96	12	3	0	0	15	208
12:00 PM	6	41	0	0	47	43	7	0	0	50	5	4	0	0	9	106
12:15 PM	5	44	0	0	49	36	5	0	0	41	4	1	0	0	5	95
12:30 PM	2	34	0	0	36	40	7	0	0	47	4	5	0	0	9	92
12:45 PM	1	34	0	0	35	40	8	0	0	48	6	5	0	1	11	94
Hourly Total	14	153	0	0	167	159	27	0	0	186	19	15	0	1	34	387
1:00 PM	6	31	0	0	37	33	6	0	0	39	8	6	0	0	14	90
1:15 PM	8	40	0	0	48	33	3	0	0	36	7	5	0	0	12	96
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	14	71	0	0	85	66	9	0	0	75	15	11	0	0	26	186
4:00 PM	1	36	0	0	37	41	5	0	0	46	2	0	0	0	2	85
4:15 PM	5	37	0	0	42	56	6	0	0	62	2	5	0	0	7	111
4:30 PM	7	44	0	0	51	51	7	0	0	58	1	5	0	0	6	115
4:45 PM	3	52	0	0	55	71	16	0	0	87	9	7	0	0	16	158
Hourly Total	16	169	0	0	185	219	34	0	0	253	14	17	0	0	31	469
5:00 PM	11	39	0	0	50	58	11	0	0	69	1	8	0	0	9	128
5:15 PM	12	49	0	0	61	73	8	0	0	81	4	4	0	1	8	150
5:30 PM	10	52	0	0	62	61	16	0	0	77	6	7	0	0	13	152
5:45 PM	9	38	0	0	47	68	10	0	0	78	3	0	0	0	3	128
Hourly Total	42	178	0	0	220	260	45	0	0	305	14	19	0	1	33	558

6:00 PM	8	31	0	0	39	47	9	0	0	56	3	7	0	0	10	105
6:15 PM	6	27	0	0	33	35	2	0	0	37	7	5	0	0	12	82
6:30 PM	4	36	0	0	40	32	7	0	0	39	6	2	0	0	8	87
6:45 PM	8	32	0	0	40	33	6	0	0	39	3	10	0	1	13	92
Hourly Total	26	126	0	0	152	147	24	0	0	171	19	24	0	1	43	366
Grand Total	152	1388	0	0	1540	1244	185	0	0	1429	223	159	0	21	382	3351
Approach %	9.9	90.1	0.0	-	-	87.1	12.9	0.0	-	-	58.4	41.6	0.0	-	-	-
Total %	4.5	41.4	0.0	-	46.0	37.1	5.5	0.0	-	42.6	6.7	4.7	0.0	-	11.4	-
Lights	148	1356	0	-	1504	1211	181	0	-	1392	218	156	0	-	374	3270
% Lights	97.4	97.7	-	-	97.7	97.3	97.8	-	-	97.4	97.8	98.1	-	-	97.9	97.6
Mediums	1	19	0	-	20	19	3	0	-	22	1	0	0	-	1	43
% Mediums	0.7	1.4	-	-	1.3	1.5	1.6	-	-	1.5	0.4	0.0	-	-	0.3	1.3
Articulated Trucks	0	3	0	-	3	1	1	0	-	2	4	1	0	-	5	10
% Articulated Trucks	0.0	0.2	-	-	0.2	0.1	0.5	-	-	0.1	1.8	0.6	-	-	1.3	0.3
Bicycles on Road	3	10	0	-	13	13	0	0	-	13	0	2	0	-	2	28
% Bicycles on Road	2.0	0.7	-	-	0.8	1.0	0.0	-	-	0.9	0.0	1.3	-	-	0.5	0.8
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	21	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Conservation Drive & Rideau River Street
Site Code:
Start Date: 07/05/2018



Turning Movement Data Plot

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Conservation Drive & Rideau River Street
Site Code:
Start Date: 07/05/2018

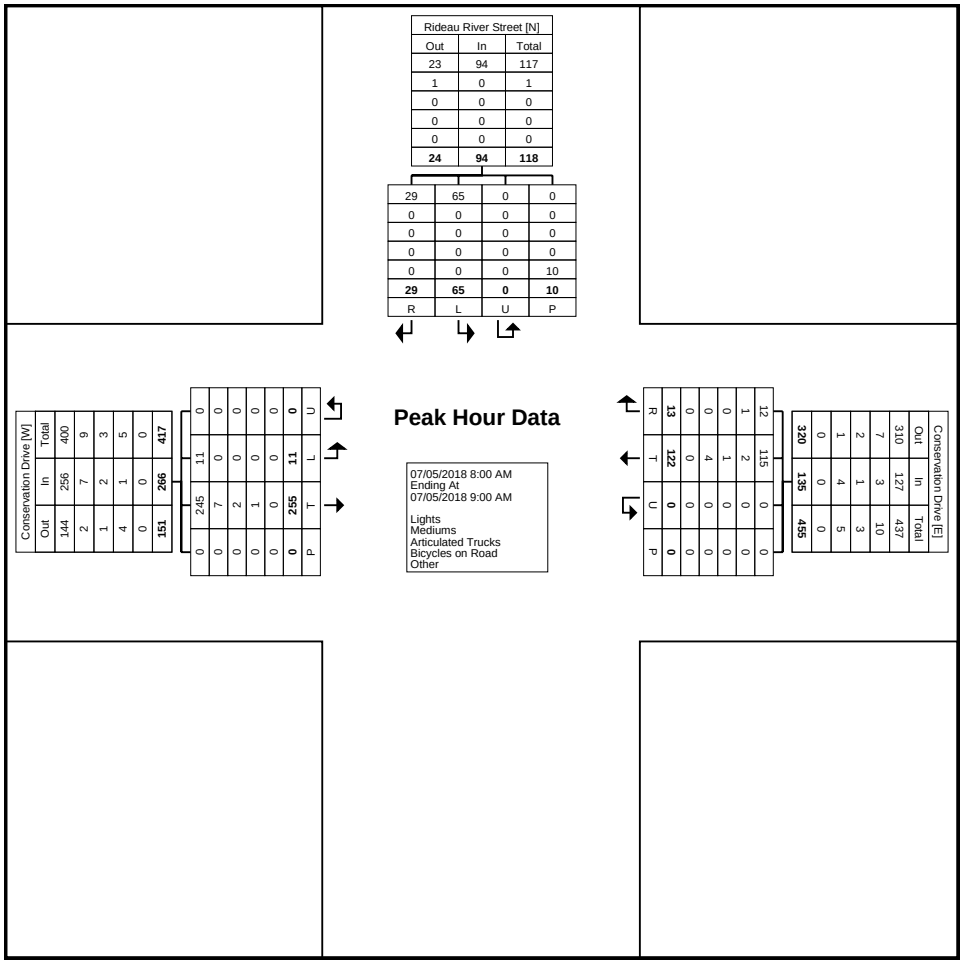
Turning Movement Peak Hour Data (8:00 AM)

Start Time	Conservation Drive Eastbound					Conservation Drive Westbound					Rideau River Street Southbound					
	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	Int. Total
8:00 AM	2	53	0	0	55	30	6	0	0	36	17	7	0	10	24	115
8:15 AM	5	73	0	0	78	32	2	0	0	34	10	7	0	0	17	129
8:30 AM	2	72	0	0	74	27	2	0	0	29	14	5	0	0	19	122
8:45 AM	2	57	0	0	59	33	3	0	0	36	24	10	0	0	34	129
Total	11	255	0	0	266	122	13	0	0	135	65	29	0	10	94	495
Approach %	4.1	95.9	0.0	-	-	90.4	9.6	0.0	-	-	69.1	30.9	0.0	-	-	-
Total %	2.2	51.5	0.0	-	53.7	24.6	2.6	0.0	-	27.3	13.1	5.9	0.0	-	19.0	-
PHF	0.550	0.873	0.000	-	0.853	0.924	0.542	0.000	-	0.938	0.677	0.725	0.000	-	0.691	0.959
Lights	11	245	0	-	256	115	12	0	-	127	65	29	0	-	94	477
% Lights	100.0	96.1	-	-	96.2	94.3	92.3	-	-	94.1	100.0	100.0	-	-	100.0	96.4
Mediums	0	7	0	-	7	2	1	0	-	3	0	0	0	-	0	10
% Mediums	0.0	2.7	-	-	2.6	1.6	7.7	-	-	2.2	0.0	0.0	-	-	0.0	2.0
Articulated Trucks	0	2	0	-	2	1	0	0	-	1	0	0	0	-	0	3
% Articulated Trucks	0.0	0.8	-	-	0.8	0.8	0.0	-	-	0.7	0.0	0.0	-	-	0.0	0.6
Bicycles on Road	0	1	0	-	1	4	0	0	-	4	0	0	0	-	0	5
% Bicycles on Road	0.0	0.4	-	-	0.4	3.3	0.0	-	-	3.0	0.0	0.0	-	-	0.0	1.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	10	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Conservation Drive & Rideau River Street
Site Code:
Start Date: 07/05/2018



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

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Conservation Drive & Rideau River Street
Site Code:
Start Date: 07/05/2018

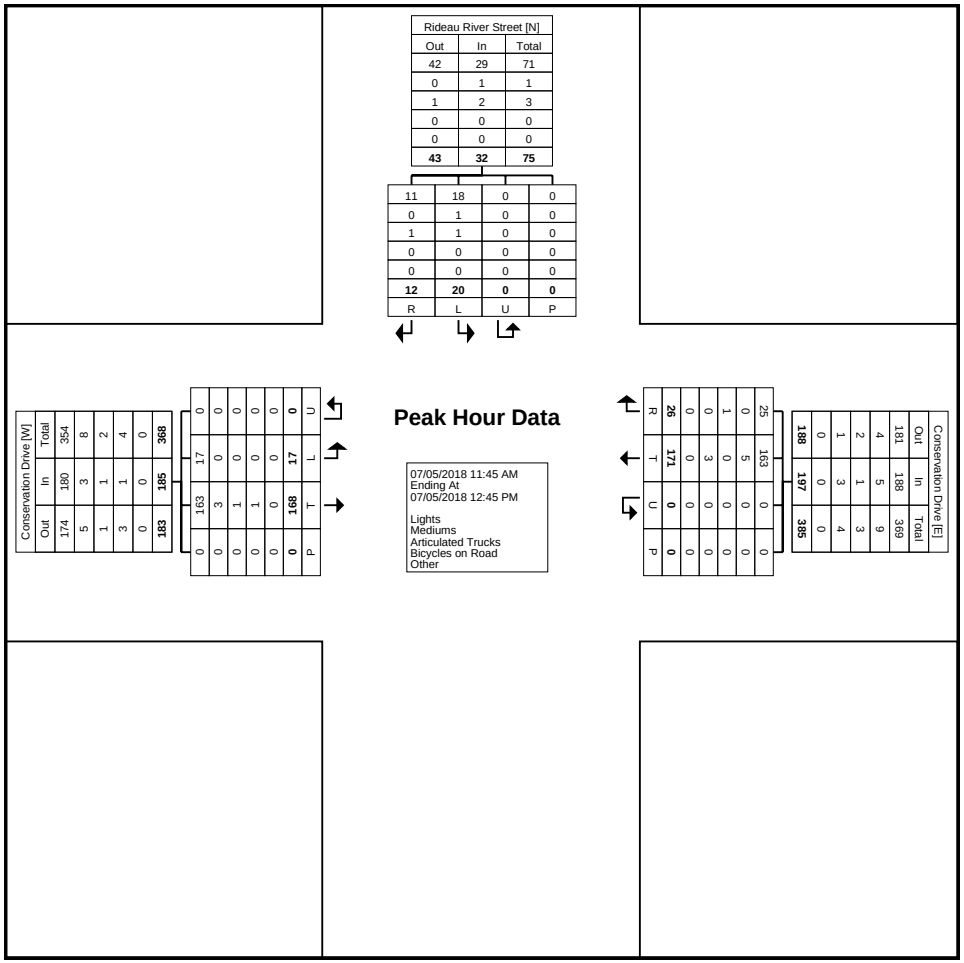
Turning Movement Peak Hour Data (11:45 AM)

Start Time	Conservation Drive Eastbound					Conservation Drive Westbound					Rideau River Street Southbound					
	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	Int. Total
11:45 AM	4	49	0	0	53	52	7	0	0	59	7	2	0	0	9	121
12:00 PM	6	41	0	0	47	43	7	0	0	50	5	4	0	0	9	106
12:15 PM	5	44	0	0	49	36	5	0	0	41	4	1	0	0	5	95
12:30 PM	2	34	0	0	36	40	7	0	0	47	4	5	0	0	9	92
Total	17	168	0	0	185	171	26	0	0	197	20	12	0	0	32	414
Approach %	9.2	90.8	0.0	-	-	86.8	13.2	0.0	-	-	62.5	37.5	0.0	-	-	-
Total %	4.1	40.6	0.0	-	44.7	41.3	6.3	0.0	-	47.6	4.8	2.9	0.0	-	7.7	-
PHF	0.708	0.857	0.000	-	0.873	0.822	0.929	0.000	-	0.835	0.714	0.600	0.000	-	0.889	0.855
Lights	17	163	0	-	180	163	25	0	-	188	18	11	0	-	29	397
% Lights	100.0	97.0	-	-	97.3	95.3	96.2	-	-	95.4	90.0	91.7	-	-	90.6	95.9
Mediums	0	3	0	-	3	5	0	0	-	5	1	0	0	-	1	9
% Mediums	0.0	1.8	-	-	1.6	2.9	0.0	-	-	2.5	5.0	0.0	-	-	3.1	2.2
Articulated Trucks	0	1	0	-	1	0	1	0	-	1	1	1	0	-	2	4
% Articulated Trucks	0.0	0.6	-	-	0.5	0.0	3.8	-	-	0.5	5.0	8.3	-	-	6.3	1.0
Bicycles on Road	0	1	0	-	1	3	0	0	-	3	0	0	0	-	0	4
% Bicycles on Road	0.0	0.6	-	-	0.5	1.8	0.0	-	-	1.5	0.0	0.0	-	-	0.0	1.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Conservation Drive & Rideau River Street
Site Code:
Start Date: 07/05/2018



Turning Movement Peak Hour Data Plot (11:45 AM)

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Conservation Drive & Rideau River Street
Site Code:
Start Date: 07/05/2018

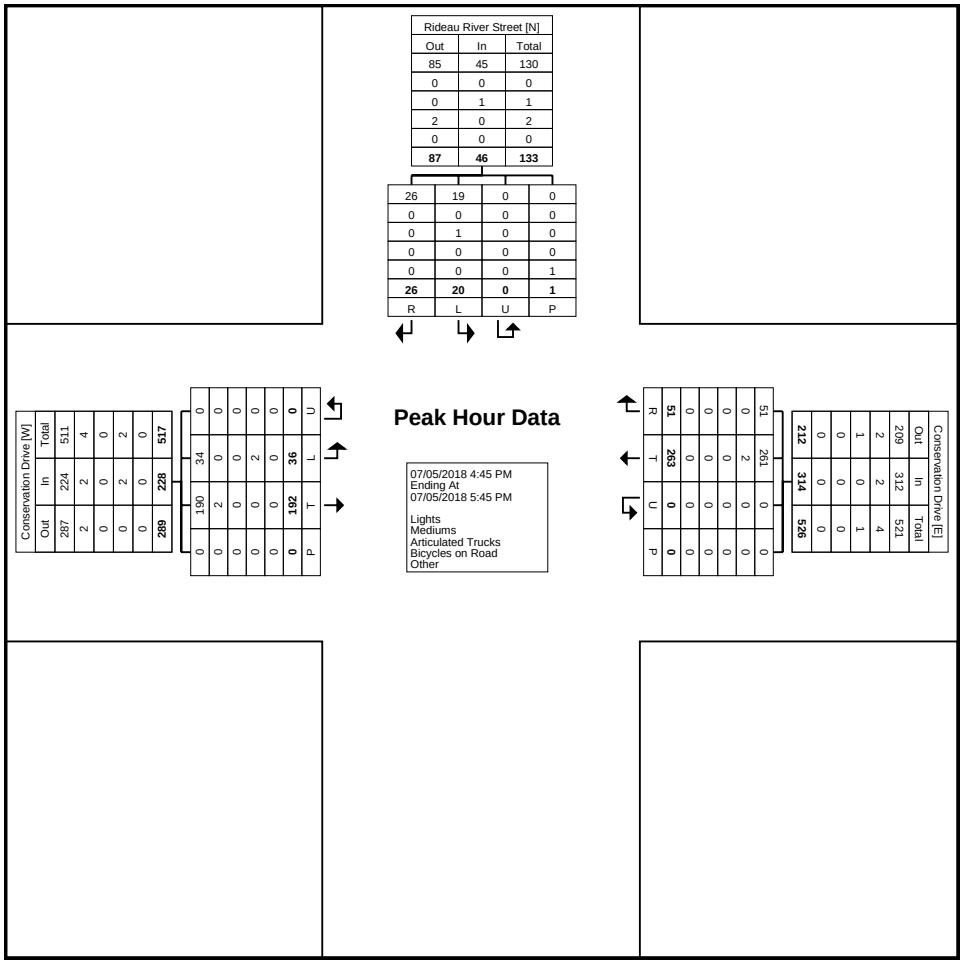
Turning Movement Peak Hour Data (4:45 PM)

Start Time	Conservation Drive Eastbound					Conservation Drive Westbound					Rideau River Street Southbound					
	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	Int. Total
4:45 PM	3	52	0	0	55	71	16	0	0	87	9	7	0	0	16	158
5:00 PM	11	39	0	0	50	58	11	0	0	69	1	8	0	0	9	128
5:15 PM	12	49	0	0	61	73	8	0	0	81	4	4	0	1	8	150
5:30 PM	10	52	0	0	62	61	16	0	0	77	6	7	0	0	13	152
Total	36	192	0	0	228	263	51	0	0	314	20	26	0	1	46	588
Approach %	15.8	84.2	0.0	-	-	83.8	16.2	0.0	-	-	43.5	56.5	0.0	-	-	-
Total %	6.1	32.7	0.0	-	38.8	44.7	8.7	0.0	-	53.4	3.4	4.4	0.0	-	7.8	-
PHF	0.750	0.923	0.000	-	0.919	0.901	0.797	0.000	-	0.902	0.556	0.813	0.000	-	0.719	0.930
Lights	34	190	0	-	224	261	51	0	-	312	19	26	0	-	45	581
% Lights	94.4	99.0	-	-	98.2	99.2	100.0	-	-	99.4	95.0	100.0	-	-	97.8	98.8
Mediums	0	2	0	-	2	2	0	0	-	2	0	0	0	-	0	4
% Mediums	0.0	1.0	-	-	0.9	0.8	0.0	-	-	0.6	0.0	0.0	-	-	0.0	0.7
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	1	0	0	-	1	1
% Articulated Trucks	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	5.0	0.0	-	-	2.2	0.2
Bicycles on Road	2	0	0	-	2	0	0	0	-	0	0	0	0	-	0	2
% Bicycles on Road	5.6	0.0	-	-	0.9	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.3
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Conservation Drive & Rideau River Street
Site Code:
Start Date: 07/05/2018



Turning Movement Peak Hour Data Plot (4:45 PM)

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Conservation Drive & Rideau River Street
Site Code:
Start Date: 07/05/2018

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Lake Louise Blvd & Westmount Road North
Site Code:
Start Date: 07/05/2018

Turning Movement Data

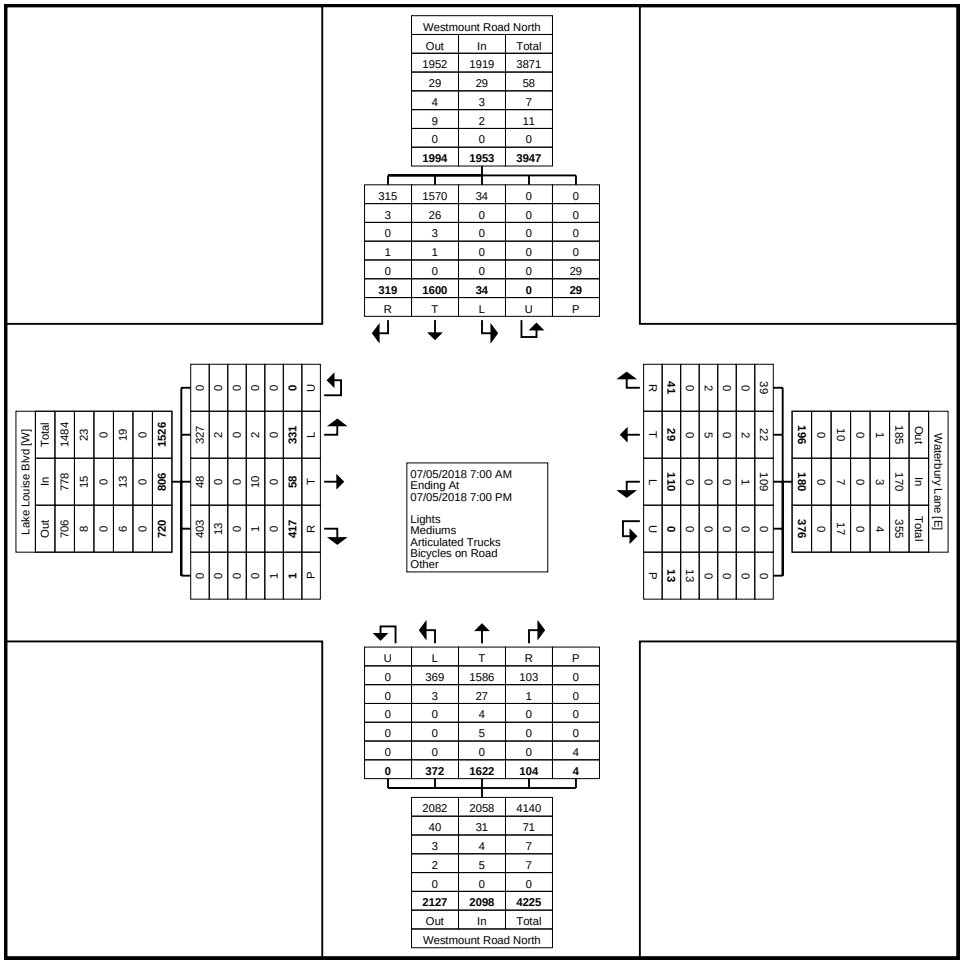
Start Time	Lake Louise Blvd Eastbound						Waterbury Lane Westbound						Westmount Road North Northbound						Westmount Road North Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:00 AM	12	1	9	0	0	22	7	2	3	0	0	12	0	48	2	0	0	50	1	28	5	0	1	34	118
7:15 AM	12	4	18	0	0	34	2	1	2	0	2	5	3	47	0	0	0	50	0	28	6	0	2	34	123
7:30 AM	16	0	21	0	1	37	7	1	0	0	1	8	4	70	0	0	1	74	0	27	1	0	2	28	147
7:45 AM	13	2	30	0	0	45	3	0	4	0	0	7	1	65	0	0	0	66	0	41	6	0	0	47	165
Hourly Total	53	7	78	0	1	138	19	4	9	0	3	32	8	230	2	0	1	240	1	124	18	0	5	143	553
8:00 AM	17	2	13	0	0	32	11	1	3	0	0	15	5	63	1	0	0	69	1	49	4	0	1	54	170
8:15 AM	20	3	20	0	0	43	7	0	0	0	2	7	7	75	0	0	0	82	0	59	6	0	1	65	197
8:30 AM	27	0	22	0	0	49	6	0	0	0	2	6	3	82	1	0	1	86	2	46	5	0	2	53	194
8:45 AM	14	0	9	0	0	23	4	1	4	0	1	9	5	79	2	0	0	86	2	51	4	0	3	57	175
Hourly Total	78	5	64	0	0	147	28	2	7	0	5	37	20	299	4	0	1	323	5	205	19	0	7	229	736
9:00 AM	11	2	13	0	0	26	2	0	0	0	0	2	5	68	0	0	0	73	1	37	7	0	1	45	146
9:15 AM	5	3	16	0	0	24	3	1	3	0	0	7	10	70	4	0	1	84	1	31	8	0	2	40	155
9:30 AM	12	3	11	0	0	26	0	2	1	0	0	3	7	52	2	0	0	61	1	46	2	0	0	49	139
9:45 AM	9	2	10	0	0	21	9	0	0	0	1	9	7	66	1	0	0	74	0	36	1	0	1	37	141
Hourly Total	37	10	50	0	0	97	14	3	4	0	1	21	29	256	7	0	1	292	3	150	18	0	4	171	581
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:30 AM	6	1	8	0	0	15	2	0	0	0	0	2	5	35	3	0	0	43	0	49	6	0	0	55	115
11:45 AM	7	2	8	0	0	17	1	0	2	0	0	3	9	49	2	0	0	60	0	50	3	0	0	53	133
Hourly Total	13	3	16	0	0	32	3	0	2	0	0	5	14	84	5	0	0	103	0	99	9	0	0	108	248
12:00 PM	11	0	12	0	0	23	2	0	0	0	0	2	7	46	0	0	0	53	0	56	8	0	0	64	142
12:15 PM	6	1	7	0	0	14	0	2	1	0	1	3	12	52	3	0	0	67	2	54	5	0	0	61	145
12:30 PM	10	0	7	0	0	17	2	0	3	0	0	5	16	42	4	0	0	62	2	50	10	0	0	62	146
12:45 PM	7	0	7	0	0	14	5	0	1	0	0	6	10	50	3	0	0	63	0	69	7	0	0	76	159
Hourly Total	34	1	33	0	0	68	9	2	5	0	1	16	45	190	10	0	0	245	4	229	30	0	0	263	592
1:00 PM	8	0	14	0	0	22	5	2	0	0	0	7	10	49	2	0	0	61	2	41	8	0	2	51	141
1:15 PM	10	2	5	0	0	17	3	5	0	0	0	8	10	54	5	0	0	69	0	49	8	0	1	57	151
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	18	2	19	0	0	39	8	7	0	0	0	15	20	103	7	0	0	130	2	90	16	0	3	108	292
4:00 PM	11	3	9	0	0	23	1	1	0	0	1	2	19	41	2	0	0	62	1	70	11	0	0	82	169
4:15 PM	10	3	13	0	0	26	3	1	1	0	0	5	28	51	10	0	0	89	4	61	15	0	0	80	200
4:30 PM	7	2	12	0	0	21	2	0	1	0	0	3	15	45	6	0	0	66	1	74	18	0	0	93	183
4:45 PM	6	3	21	0	0	30	2	3	0	0	0	5	19	66	7	0	0	92	1	74	19	0	3	94	221
Hourly Total	34	11	55	0	0	100	8	5	2	0	1	15	81	203	25	0	0	309	7	279	63	0	3	349	773
5:00 PM	3	1	7	0	0	11	3	1	2	0	1	6	21	38	11	0	0	70	2	89	33	0	1	124	211
5:15 PM	4	3	19	0	0	26	4	1	4	0	0	9	30	35	7	0	0	72	2	75	28	0	0	105	212
5:30 PM	8	2	15	0	0	25	5	0	1	0	0	6	24	39	3	0	0	66	4	57	22	0	0	83	180
5:45 PM	9	7	13	0	0	29	3	1	2	0	0	6	16	35	7	0	0	58	0	72	22	0	2	94	187

Hourly Total	24	13	54	0	0	91	15	3	9	0	1	27	91	147	28	0	0	266	8	293	105	0	3	406	790
6:00 PM	6	0	12	0	0	18	2	1	0	0	0	3	19	28	5	0	0	52	1	30	17	0	0	48	121
6:15 PM	13	2	11	0	0	26	2	0	0	0	0	2	11	23	4	0	0	38	2	39	13	0	1	54	120
6:30 PM	9	1	16	0	0	26	1	0	0	0	0	1	19	31	3	0	0	53	0	32	4	0	2	36	116
6:45 PM	12	3	9	0	0	24	1	2	3	0	1	6	15	28	4	0	1	47	1	30	7	0	1	38	115
Hourly Total	40	6	48	0	0	94	6	3	3	0	1	12	64	110	16	0	1	190	4	131	41	0	4	176	472
Grand Total	331	58	417	0	1	806	110	29	41	0	13	180	372	1622	104	0	4	2098	34	1600	319	0	29	1953	5037
Approach %	41.1	7.2	51.7	0.0	-	-	61.1	16.1	22.8	0.0	-	-	17.7	77.3	5.0	0.0	-	-	1.7	81.9	16.3	0.0	-	-	-
Total %	6.6	1.2	8.3	0.0	-	16.0	2.2	0.6	0.8	0.0	-	3.6	7.4	32.2	2.1	0.0	-	41.7	0.7	31.8	6.3	0.0	-	38.8	-
Lights	327	48	403	0	-	778	109	22	39	0	-	170	369	1586	103	0	-	2058	34	1570	315	0	-	1919	4925
% Lights	98.8	82.8	96.6	-	-	96.5	99.1	75.9	95.1	-	-	94.4	99.2	97.8	99.0	-	-	98.1	100.0	98.1	98.7	-	-	98.3	97.8
Mediums	2	0	13	0	-	15	1	2	0	0	-	3	3	27	1	0	-	31	0	26	3	0	-	29	78
% Mediums	0.6	0.0	3.1	-	-	1.9	0.9	6.9	0.0	-	-	1.7	0.8	1.7	1.0	-	-	1.5	0.0	1.6	0.9	-	-	1.5	1.5
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	4	0	0	-	4	0	3	0	0	-	3	7
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.2	0.0	-	-	0.2	0.0	0.2	0.0	-	-	0.2	0.1
Bicycles on Road	2	10	1	0	-	13	0	5	2	0	-	7	0	5	0	0	-	5	0	1	1	0	-	2	27
% Bicycles on Road	0.6	17.2	0.2	-	-	1.6	0.0	17.2	4.9	-	-	3.9	0.0	0.3	0.0	-	-	0.2	0.0	0.1	0.3	-	-	0.1	0.5
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	-	4	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	15.4	-	-	-	-	-	0.0	-	-	-	-	-	13.8	-	-
Pedestrians	-	-	-	-	1	-	-	-	-	-	11	-	-	-	-	-	4	-	-	-	-	-	25	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	84.6	-	-	-	-	-	100.0	-	-	-	-	-	86.2	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Lake Louise Blvd & Westmount Road North
Site Code:
Start Date: 07/05/2018



Turning Movement Data Plot

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Lake Louise Blvd & Westmount Road North
Site Code:
Start Date: 07/05/2018

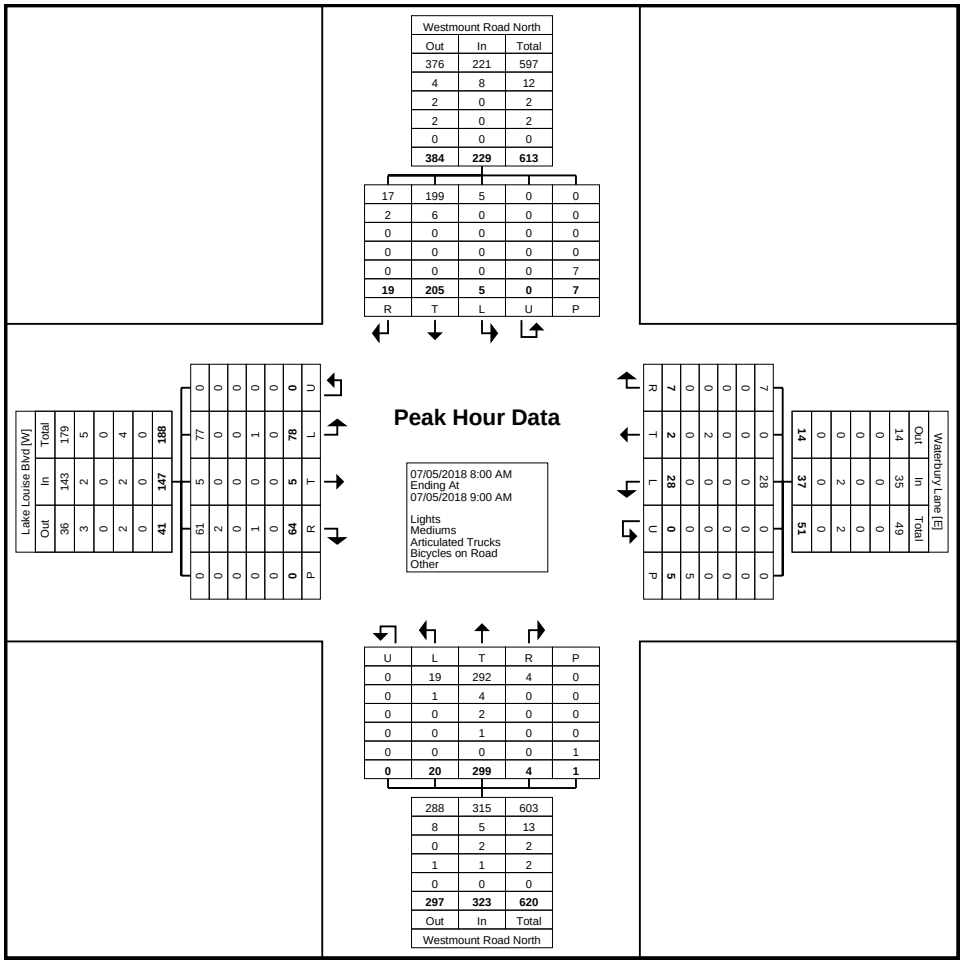
Turning Movement Peak Hour Data (8:00 AM)

Start Time	Lake Louise Blvd Eastbound						Waterbury Lane Westbound						Westmount Road North Northbound						Westmount Road North 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	17	2	13	0	0	32	11	1	3	0	0	15	5	63	1	0	0	69	1	49	4	0	1	54	170
8:15 AM	20	3	20	0	0	43	7	0	0	0	2	7	7	75	0	0	0	82	0	59	6	0	1	65	197
8:30 AM	27	0	22	0	0	49	6	0	0	0	2	6	3	82	1	0	1	86	2	46	5	0	2	53	194
8:45 AM	14	0	9	0	0	23	4	1	4	0	1	9	5	79	2	0	0	86	2	51	4	0	3	57	175
Total	78	5	64	0	0	147	28	2	7	0	5	37	20	299	4	0	1	323	5	205	19	0	7	229	736
Approach %	53.1	3.4	43.5	0.0	-	-	75.7	5.4	18.9	0.0	-	-	6.2	92.6	1.2	0.0	-	-	2.2	89.5	8.3	0.0	-	-	-
Total %	10.6	0.7	8.7	0.0	-	20.0	3.8	0.3	1.0	0.0	-	5.0	2.7	40.6	0.5	0.0	-	43.9	0.7	27.9	2.6	0.0	-	31.1	-
PHF	0.722	0.417	0.727	0.000	-	0.750	0.636	0.500	0.438	0.000	-	0.617	0.714	0.912	0.500	0.000	-	0.939	0.625	0.869	0.792	0.000	-	0.881	0.934
Lights	77	5	61	0	-	143	28	0	7	0	-	35	19	292	4	0	-	315	5	199	17	0	-	221	714
% Lights	98.7	100.0	95.3	-	-	97.3	100.0	0.0	100.0	-	-	94.6	95.0	97.7	100.0	-	-	97.5	100.0	97.1	89.5	-	-	96.5	97.0
Mediums	0	0	2	0	-	2	0	0	0	0	-	0	1	4	0	0	-	5	0	6	2	0	-	8	15
% Mediums	0.0	0.0	3.1	-	-	1.4	0.0	0.0	0.0	-	-	0.0	5.0	1.3	0.0	-	-	1.5	0.0	2.9	10.5	-	-	3.5	2.0
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	2	0	0	-	2	0	0	0	0	-	0	2
% Articulated Trucks	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	0.0	0.0	-	-	0.0	0.3
Bicycles on Road	1	0	1	0	-	2	0	2	0	0	-	2	0	1	0	0	-	1	0	0	0	0	-	0	5
% Bicycles on Road	1.3	0.0	1.6	-	-	1.4	0.0	100.0	0.0	-	-	5.4	0.0	0.3	0.0	-	-	0.3	0.0	0.0	0.0	-	-	0.0	0.7
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	5	-	-	-	-	-	1	-	-	-	-	-	7	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Lake Louise Blvd & Westmount Road North
Site Code:
Start Date: 07/05/2018



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

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Lake Louise Blvd & Westmount Road North
Site Code:
Start Date: 07/05/2018

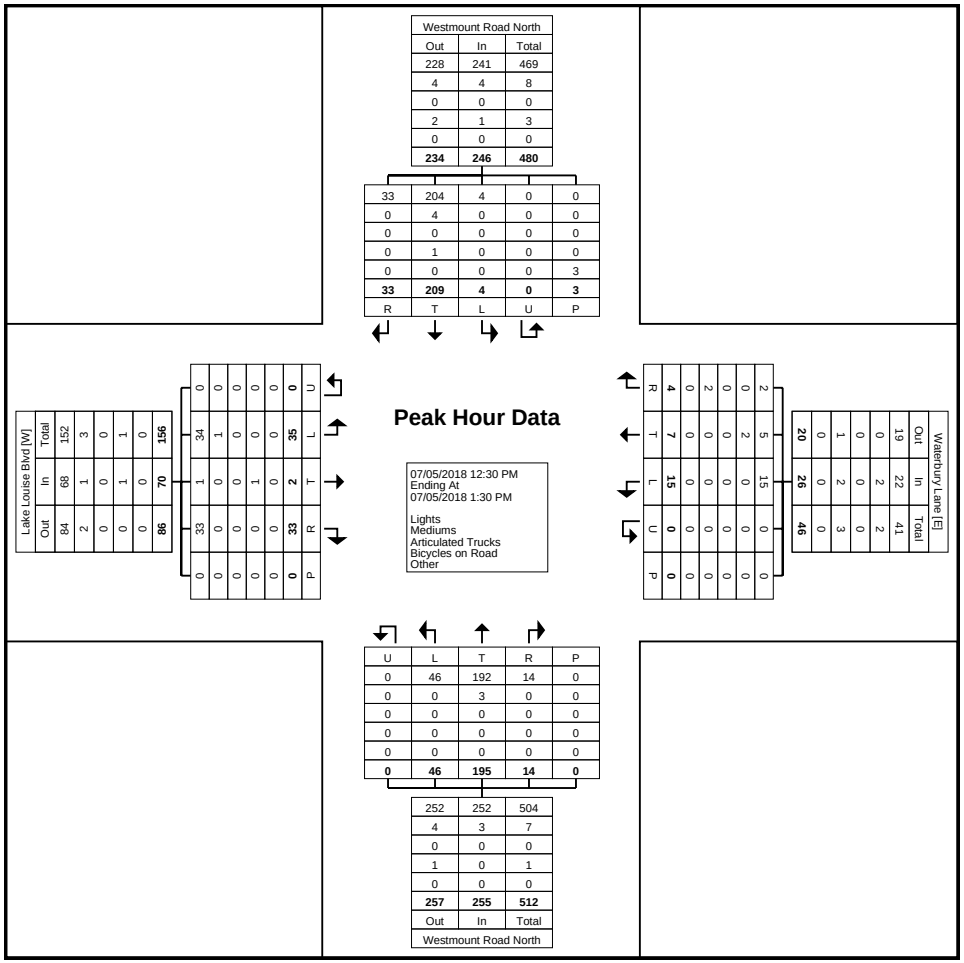
Turning Movement Peak Hour Data (12:30 PM)

Start Time	Lake Louise Blvd Eastbound						Waterbury Lane Westbound						Westmount Road North Northbound						Westmount Road North 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	
12:30 PM	10	0	7	0	0	17	2	0	3	0	0	5	16	42	4	0	0	62	2	50	10	0	0	62	146
12:45 PM	7	0	7	0	0	14	5	0	1	0	0	6	10	50	3	0	0	63	0	69	7	0	0	76	159
1:00 PM	8	0	14	0	0	22	5	2	0	0	0	7	10	49	2	0	0	61	2	41	8	0	2	51	141
1:15 PM	10	2	5	0	0	17	3	5	0	0	0	8	10	54	5	0	0	69	0	49	8	0	1	57	151
Total	35	2	33	0	0	70	15	7	4	0	0	26	46	195	14	0	0	255	4	209	33	0	3	246	597
Approach %	50.0	2.9	47.1	0.0	-	-	57.7	26.9	15.4	0.0	-	-	18.0	76.5	5.5	0.0	-	-	1.6	85.0	13.4	0.0	-	-	-
Total %	5.9	0.3	5.5	0.0	-	11.7	2.5	1.2	0.7	0.0	-	4.4	7.7	32.7	2.3	0.0	-	42.7	0.7	35.0	5.5	0.0	-	41.2	-
PHF	0.875	0.250	0.589	0.000	-	0.795	0.750	0.350	0.333	0.000	-	0.813	0.719	0.903	0.700	0.000	-	0.924	0.500	0.757	0.825	0.000	-	0.809	0.939
Lights	34	1	33	0	-	68	15	5	2	0	-	22	46	192	14	0	-	252	4	204	33	0	-	241	583
% Lights	97.1	50.0	100.0	-	-	97.1	100.0	71.4	50.0	-	-	84.6	100.0	98.5	100.0	-	-	98.8	100.0	97.6	100.0	-	-	98.0	97.7
Mediums	1	0	0	0	-	1	0	2	0	0	-	2	0	3	0	0	-	3	0	4	0	0	-	4	10
% Mediums	2.9	0.0	0.0	-	-	1.4	0.0	28.6	0.0	-	-	7.7	0.0	1.5	0.0	-	-	1.2	0.0	1.9	0.0	-	-	1.6	1.7
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Road	0	1	0	0	-	1	0	0	2	0	-	2	0	0	0	0	-	0	0	1	0	0	-	1	4
% Bicycles on Road	0.0	50.0	0.0	-	-	1.4	0.0	0.0	50.0	-	-	7.7	0.0	0.0	0.0	-	-	0.0	0.0	0.5	0.0	-	-	0.4	0.7
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	3	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Lake Louise Blvd & Westmount Road North
Site Code:
Start Date: 07/05/2018



Turning Movement Peak Hour Data Plot (12:30 PM)

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Lake Louise Blvd & Westmount Road North
Site Code:
Start Date: 07/05/2018

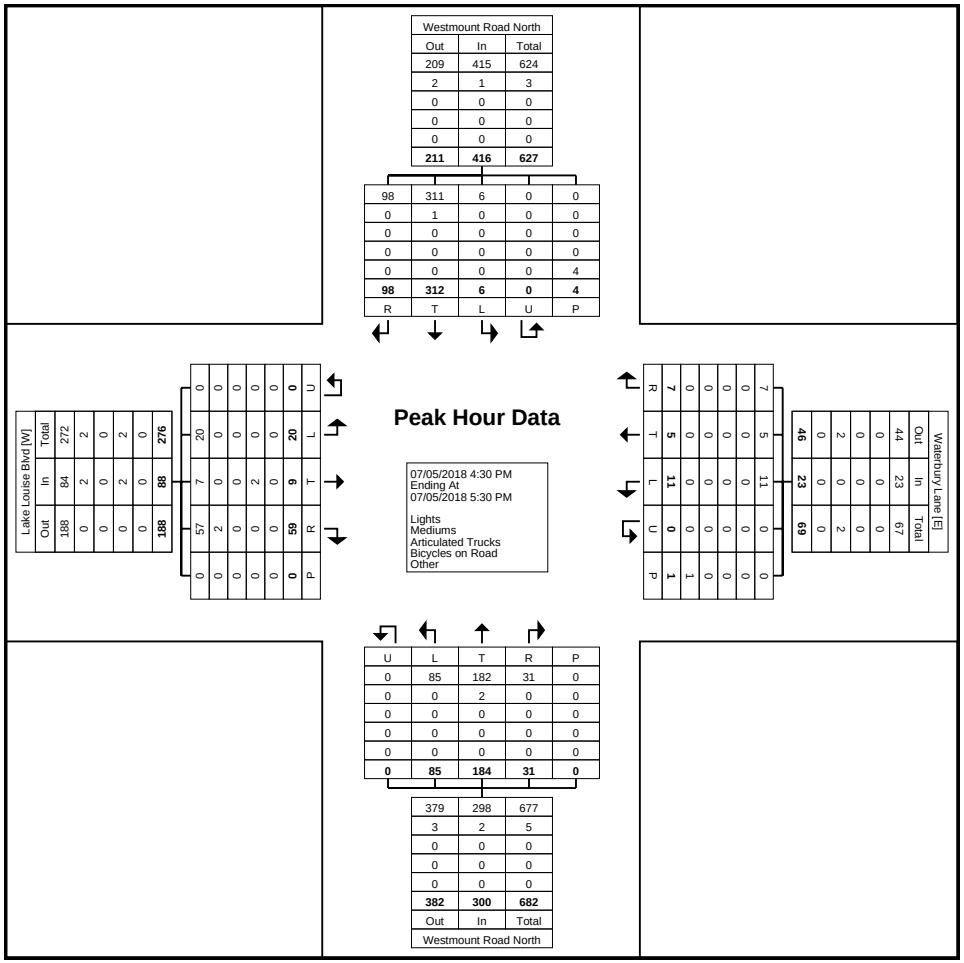
Turning Movement Peak Hour Data (4:30 PM)

Start Time	Lake Louise Blvd Eastbound						Waterbury Lane Westbound						Westmount Road North Northbound						Westmount Road North 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	
4:30 PM	7	2	12	0	0	21	2	0	1	0	0	3	15	45	6	0	0	66	1	74	18	0	0	93	183
4:45 PM	6	3	21	0	0	30	2	3	0	0	0	5	19	66	7	0	0	92	1	74	19	0	3	94	221
5:00 PM	3	1	7	0	0	11	3	1	2	0	1	6	21	38	11	0	0	70	2	89	33	0	1	124	211
5:15 PM	4	3	19	0	0	26	4	1	4	0	0	9	30	35	7	0	0	72	2	75	28	0	0	105	212
Total	20	9	59	0	0	88	11	5	7	0	1	23	85	184	31	0	0	300	6	312	98	0	4	416	827
Approach %	22.7	10.2	67.0	0.0	-	-	47.8	21.7	30.4	0.0	-	-	28.3	61.3	10.3	0.0	-	-	1.4	75.0	23.6	0.0	-	-	-
Total %	2.4	1.1	7.1	0.0	-	10.6	1.3	0.6	0.8	0.0	-	2.8	10.3	22.2	3.7	0.0	-	36.3	0.7	37.7	11.9	0.0	-	50.3	-
PHF	0.714	0.750	0.702	0.000	-	0.733	0.688	0.417	0.438	0.000	-	0.639	0.708	0.697	0.705	0.000	-	0.815	0.750	0.876	0.742	0.000	-	0.839	0.936
Lights	20	7	57	0	-	84	11	5	7	0	-	23	85	182	31	0	-	298	6	311	98	0	-	415	820
% Lights	100.0	77.8	96.6	-	-	95.5	100.0	100.0	100.0	-	-	100.0	100.0	98.9	100.0	-	-	99.3	100.0	99.7	100.0	-	-	99.8	99.2
Mediums	0	0	2	0	-	2	0	0	0	0	-	0	0	2	0	0	-	2	0	1	0	0	-	1	5
% Mediums	0.0	0.0	3.4	-	-	2.3	0.0	0.0	0.0	-	-	0.0	0.0	1.1	0.0	-	-	0.7	0.0	0.3	0.0	-	-	0.2	0.6
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Road	0	2	0	0	-	2	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	2
% Bicycles on Road	0.0	22.2	0.0	-	-	2.3	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
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	2	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	50.0	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	2	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	50.0	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Lake Louise Blvd & Westmount Road North
Site Code:
Start Date: 07/05/2018



Turning Movement Peak Hour Data Plot (4:30 PM)

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Lake Louise Blvd & Westmount Road North
Site Code:
Start Date: 07/05/2018

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Benjamin Road & Bisch Street
Site Code:
Start Date: 11/01/2017

Turning Movement Data

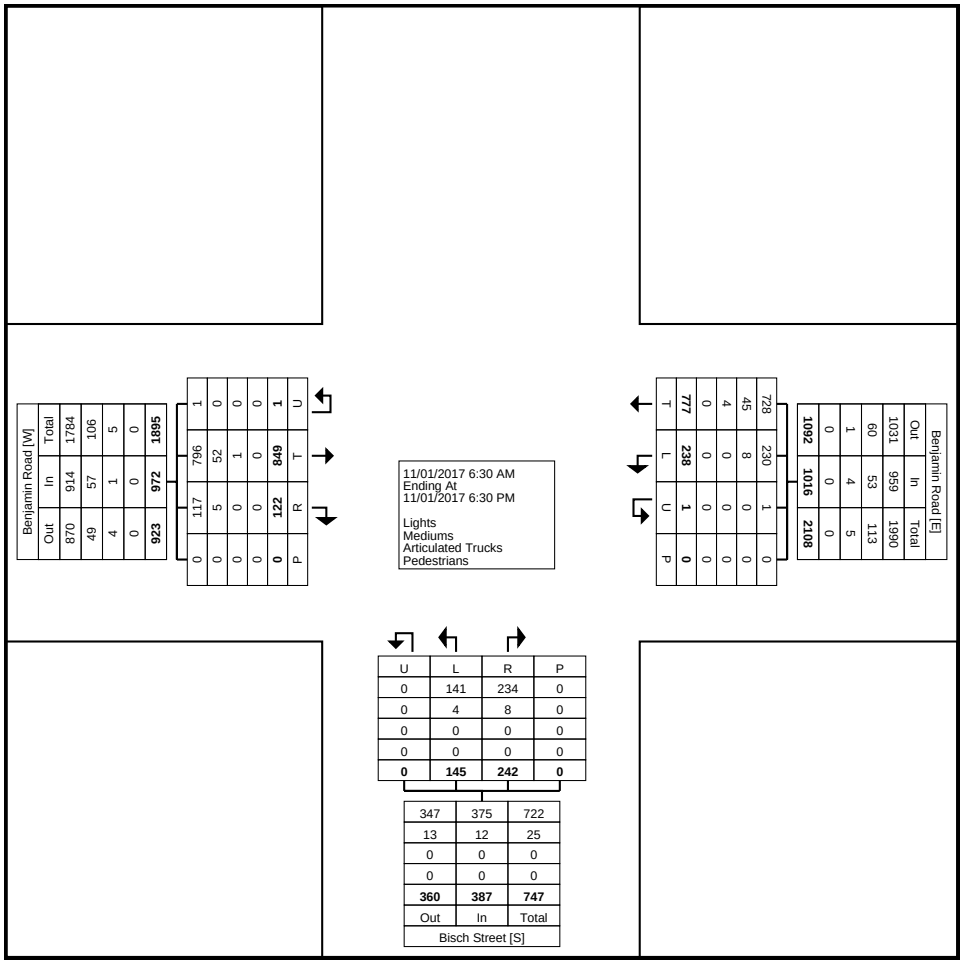
Start Time	Benjamin Road Eastbound					Benjamin Road Westbound					Bisch Street Northbound					Int. Total
	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	
6:30 AM	23	1	0	0	24	2	11	0	0	13	3	5	0	0	8	45
6:45 AM	23	0	0	0	23	3	14	0	0	17	9	4	0	0	13	53
Hourly Total	46	1	0	0	47	5	25	0	0	30	12	9	0	0	21	98
7:00 AM	16	2	0	0	18	2	13	0	0	15	5	4	0	0	9	42
7:15 AM	36	2	0	0	38	3	7	0	0	10	5	5	0	0	10	58
7:30 AM	39	2	0	0	41	2	8	0	0	10	3	11	0	0	14	65
7:45 AM	48	3	0	0	51	5	19	0	0	24	6	16	0	0	22	97
Hourly Total	139	9	0	0	148	12	47	0	0	59	19	36	0	0	55	262
8:00 AM	44	4	0	0	48	4	18	0	0	22	2	16	0	0	18	88
8:15 AM	45	6	0	0	51	6	13	0	0	19	4	22	0	0	26	96
8:30 AM	46	6	0	0	52	4	16	0	0	20	4	16	0	0	20	92
8:45 AM	45	2	0	0	47	4	16	0	0	20	6	11	0	0	17	84
Hourly Total	180	18	0	0	198	18	63	0	0	81	16	65	0	0	81	360
9:00 AM	30	3	0	0	33	4	10	0	0	14	7	12	0	0	19	66
9:15 AM	22	5	0	0	27	1	6	0	0	7	4	5	0	0	9	43
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	52	8	0	0	60	5	16	0	0	21	11	17	0	0	28	109
11:00 AM	19	3	0	0	22	4	16	0	0	20	1	7	0	0	8	50
11:15 AM	10	1	0	0	11	5	16	0	0	21	2	3	0	0	5	37
11:30 AM	22	6	0	0	28	1	16	0	0	17	3	2	0	0	5	50
11:45 AM	15	1	0	0	16	5	10	0	0	15	4	6	0	0	10	41
Hourly Total	66	11	0	0	77	15	58	0	0	73	10	18	0	0	28	178
12:00 PM	11	3	0	0	14	3	22	0	0	25	4	6	0	0	10	49
12:15 PM	14	1	0	0	15	4	17	0	0	21	0	7	0	0	7	43
12:30 PM	19	2	0	0	21	3	15	0	0	18	4	8	0	0	12	51
12:45 PM	32	5	0	0	37	2	19	0	0	21	3	1	0	0	4	62
Hourly Total	76	11	0	0	87	12	73	0	0	85	11	22	0	0	33	205
1:00 PM	21	3	0	0	24	4	13	0	0	17	3	4	0	0	7	48
1:15 PM	11	3	0	0	14	6	16	0	0	22	6	2	0	0	8	44
1:30 PM	12	5	0	0	17	6	17	0	0	23	5	7	0	0	12	52
1:45 PM	14	5	0	0	19	3	15	0	0	18	7	2	0	0	9	46
Hourly Total	58	16	0	0	74	19	61	0	0	80	21	15	0	0	36	190
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:30 PM	14	5	0	0	19	5	20	0	0	25	5	3	0	0	8	52
3:45 PM	18	2	0	0	20	6	30	0	0	36	3	3	0	0	6	62
Hourly Total	32	7	0	0	39	11	50	0	0	61	8	6	0	0	14	114
4:00 PM	24	4	0	0	28	9	29	0	0	38	4	3	0	0	7	73
4:15 PM	18	3	0	0	21	9	48	0	0	57	8	9	0	0	17	95

4:30 PM	16	3	0	0	19	11	33	0	0	44	1	8	0	0	9	72
4:45 PM	17	7	0	0	24	15	34	0	0	49	3	4	0	0	7	80
Hourly Total	75	17	0	0	92	44	144	0	0	188	16	24	0	0	40	320
5:00 PM	31	2	0	0	33	18	39	1	0	58	7	7	0	0	14	105
5:15 PM	30	7	0	0	37	22	60	0	0	82	4	5	0	0	9	128
5:30 PM	20	3	0	0	23	16	52	0	0	68	5	4	0	0	9	100
5:45 PM	11	8	0	0	19	22	32	0	0	54	1	7	0	0	8	81
Hourly Total	92	20	0	0	112	78	183	1	0	262	17	23	0	0	40	414
6:00 PM	18	4	1	0	23	13	26	0	0	39	2	2	0	0	4	66
6:15 PM	15	0	0	0	15	6	31	0	0	37	2	5	0	0	7	59
Grand Total	849	122	1	0	972	238	777	1	0	1016	145	242	0	0	387	2375
Approach %	87.3	12.6	0.1	-	-	23.4	76.5	0.1	-	-	37.5	62.5	0.0	-	-	-
Total %	35.7	5.1	0.0	-	40.9	10.0	32.7	0.0	-	42.8	6.1	10.2	0.0	-	16.3	-
Lights	796	117	1	-	914	230	728	1	-	959	141	234	0	-	375	2248
% Lights	93.8	95.9	100.0	-	94.0	96.6	93.7	100.0	-	94.4	97.2	96.7	-	-	96.9	94.7
Mediums	52	5	0	-	57	8	45	0	-	53	4	8	0	-	12	122
% Mediums	6.1	4.1	0.0	-	5.9	3.4	5.8	0.0	-	5.2	2.8	3.3	-	-	3.1	5.1
Articulated Trucks	1	0	0	-	1	0	4	0	-	4	0	0	0	-	0	5
% Articulated Trucks	0.1	0.0	0.0	-	0.1	0.0	0.5	0.0	-	0.4	0.0	0.0	-	-	0.0	0.2
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Benjamin Road & Bisch Street
Site Code:
Start Date: 11/01/2017



Turning Movement Data Plot

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Benjamin Road & Bisch Street
Site Code:
Start Date: 11/01/2017

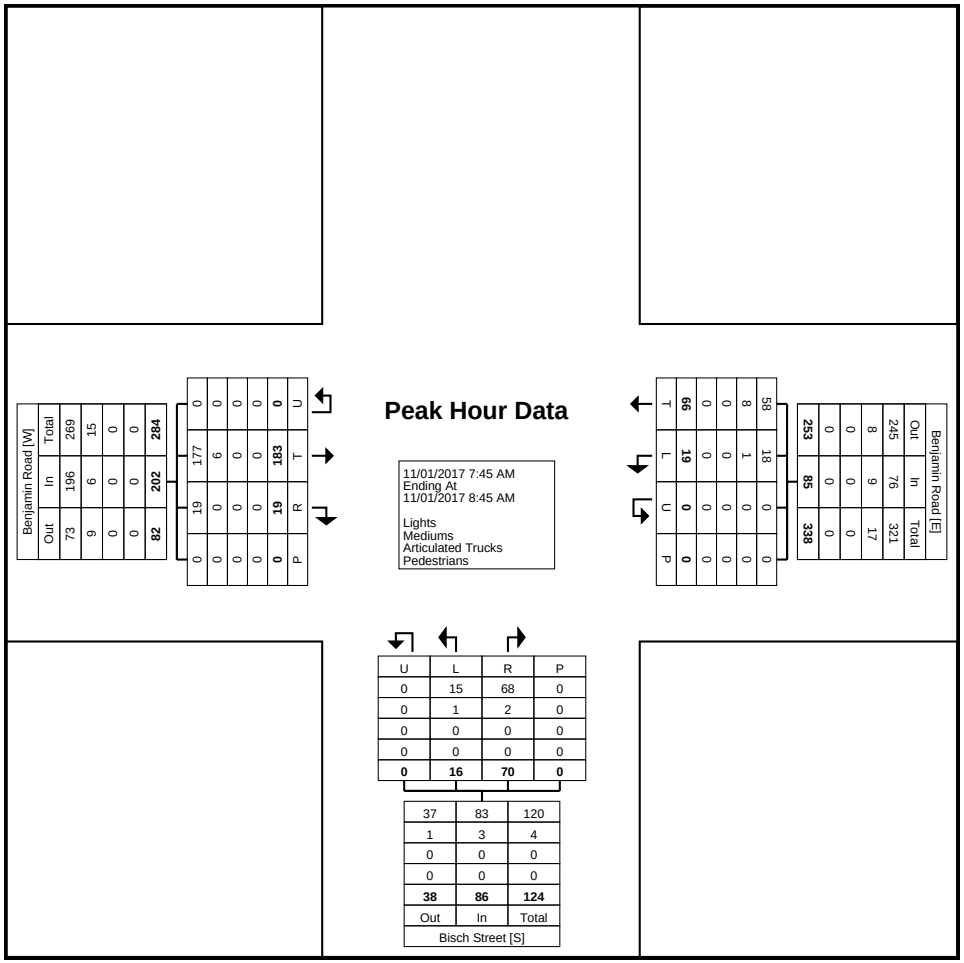
Turning Movement Peak Hour Data (7:45 AM)

Start Time	Benjamin Road Eastbound					Benjamin Road Westbound					Bisch Street Northbound					
	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	Int. Total
7:45 AM	48	3	0	0	51	5	19	0	0	24	6	16	0	0	22	97
8:00 AM	44	4	0	0	48	4	18	0	0	22	2	16	0	0	18	88
8:15 AM	45	6	0	0	51	6	13	0	0	19	4	22	0	0	26	96
8:30 AM	46	6	0	0	52	4	16	0	0	20	4	16	0	0	20	92
Total	183	19	0	0	202	19	66	0	0	85	16	70	0	0	86	373
Approach %	90.6	9.4	0.0	-	-	22.4	77.6	0.0	-	-	18.6	81.4	0.0	-	-	-
Total %	49.1	5.1	0.0	-	54.2	5.1	17.7	0.0	-	22.8	4.3	18.8	0.0	-	23.1	-
PHF	0.953	0.792	0.000	-	0.971	0.792	0.868	0.000	-	0.885	0.667	0.795	0.000	-	0.827	0.961
Lights	177	19	0	-	196	18	58	0	-	76	15	68	0	-	83	355
% Lights	96.7	100.0	-	-	97.0	94.7	87.9	-	-	89.4	93.8	97.1	-	-	96.5	95.2
Mediums	6	0	0	-	6	1	8	0	-	9	1	2	0	-	3	18
% Mediums	3.3	0.0	-	-	3.0	5.3	12.1	-	-	10.6	6.3	2.9	-	-	3.5	4.8
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Benjamin Road & Bisch Street
Site Code:
Start Date: 11/01/2017



Turning Movement Peak Hour Data Plot (7:45 AM)

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Benjamin Road & Bisch Street
Site Code:
Start Date: 11/01/2017

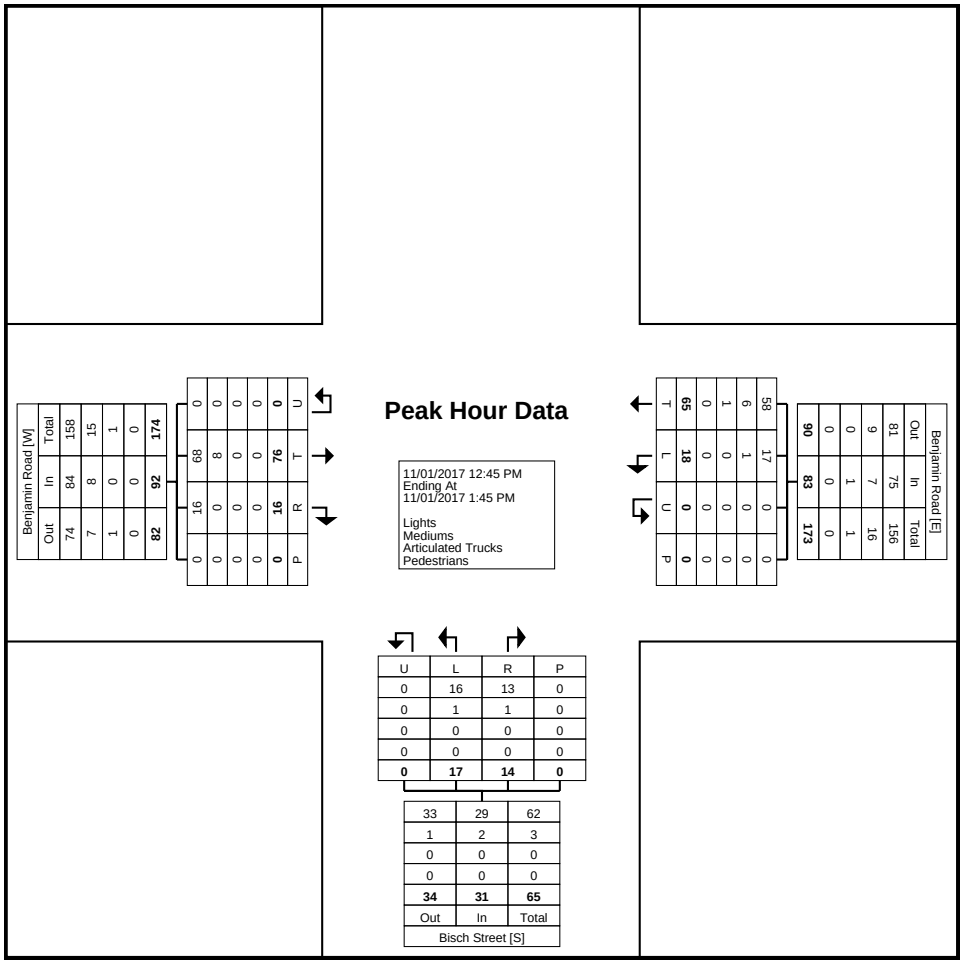
Turning Movement Peak Hour Data (12:45 PM)

Start Time	Benjamin Road Eastbound					Benjamin Road Westbound					Bisch Street Northbound					
	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	Int. Total
12:45 PM	32	5	0	0	37	2	19	0	0	21	3	1	0	0	4	62
1:00 PM	21	3	0	0	24	4	13	0	0	17	3	4	0	0	7	48
1:15 PM	11	3	0	0	14	6	16	0	0	22	6	2	0	0	8	44
1:30 PM	12	5	0	0	17	6	17	0	0	23	5	7	0	0	12	52
Total	76	16	0	0	92	18	65	0	0	83	17	14	0	0	31	206
Approach %	82.6	17.4	0.0	-	-	21.7	78.3	0.0	-	-	54.8	45.2	0.0	-	-	-
Total %	36.9	7.8	0.0	-	44.7	8.7	31.6	0.0	-	40.3	8.3	6.8	0.0	-	15.0	-
PHF	0.594	0.800	0.000	-	0.622	0.750	0.855	0.000	-	0.902	0.708	0.500	0.000	-	0.646	0.831
Lights	68	16	0	-	84	17	58	0	-	75	16	13	0	-	29	188
% Lights	89.5	100.0	-	-	91.3	94.4	89.2	-	-	90.4	94.1	92.9	-	-	93.5	91.3
Mediums	8	0	0	-	8	1	6	0	-	7	1	1	0	-	2	17
% Mediums	10.5	0.0	-	-	8.7	5.6	9.2	-	-	8.4	5.9	7.1	-	-	6.5	8.3
Articulated Trucks	0	0	0	-	0	0	1	0	-	1	0	0	0	-	0	1
% Articulated Trucks	0.0	0.0	-	-	0.0	0.0	1.5	-	-	1.2	0.0	0.0	-	-	0.0	0.5
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Benjamin Road & Bisch Street
Site Code:
Start Date: 11/01/2017



Turning Movement Peak Hour Data Plot (12:45 PM)

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Benjamin Road & Bisch Street
Site Code:
Start Date: 11/01/2017

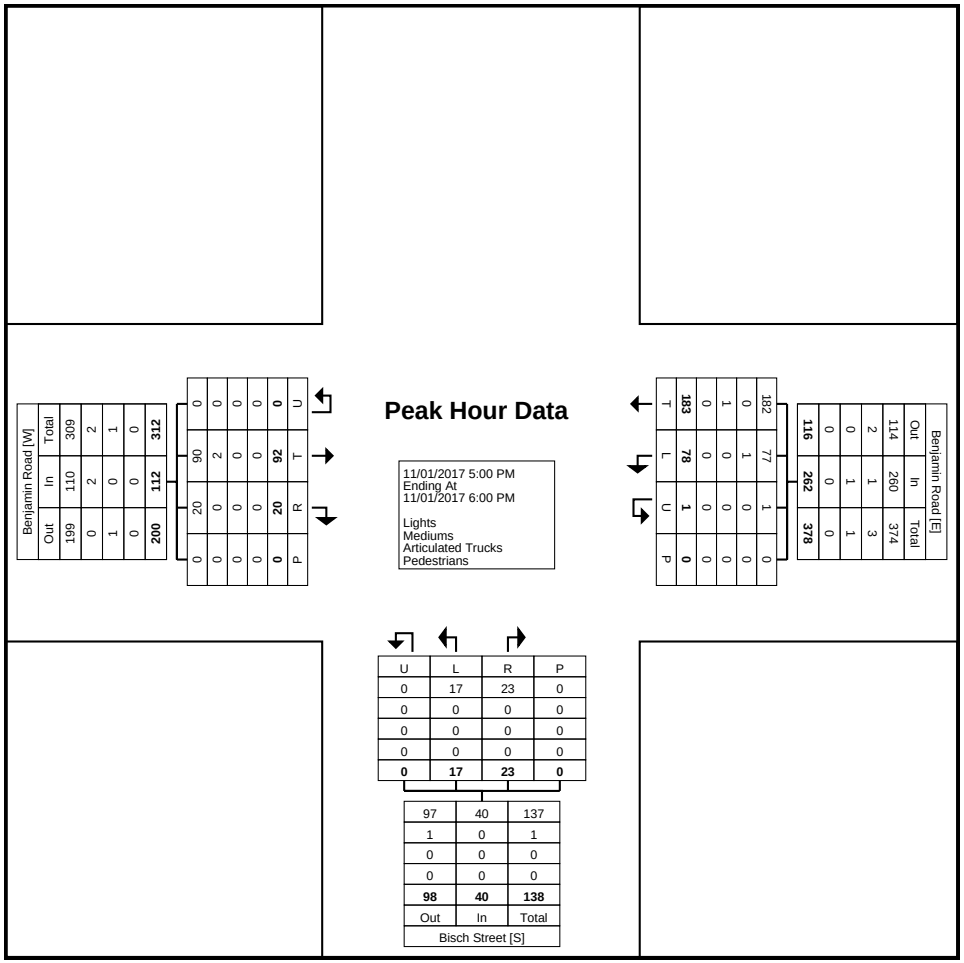
Turning Movement Peak Hour Data (5:00 PM)

Start Time	Benjamin Road Eastbound					Benjamin Road Westbound					Bisch Street Northbound					
	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	Int. Total
5:00 PM	31	2	0	0	33	18	39	1	0	58	7	7	0	0	14	105
5:15 PM	30	7	0	0	37	22	60	0	0	82	4	5	0	0	9	128
5:30 PM	20	3	0	0	23	16	52	0	0	68	5	4	0	0	9	100
5:45 PM	11	8	0	0	19	22	32	0	0	54	1	7	0	0	8	81
Total	92	20	0	0	112	78	183	1	0	262	17	23	0	0	40	414
Approach %	82.1	17.9	0.0	-	-	29.8	69.8	0.4	-	-	42.5	57.5	0.0	-	-	-
Total %	22.2	4.8	0.0	-	27.1	18.8	44.2	0.2	-	63.3	4.1	5.6	0.0	-	9.7	-
PHF	0.742	0.625	0.000	-	0.757	0.886	0.763	0.250	-	0.799	0.607	0.821	0.000	-	0.714	0.809
Lights	90	20	0	-	110	77	182	1	-	260	17	23	0	-	40	410
% Lights	97.8	100.0	-	-	98.2	98.7	99.5	100.0	-	99.2	100.0	100.0	-	-	100.0	99.0
Mediums	2	0	0	-	2	1	0	0	-	1	0	0	0	-	0	3
% Mediums	2.2	0.0	-	-	1.8	1.3	0.0	0.0	-	0.4	0.0	0.0	-	-	0.0	0.7
Articulated Trucks	0	0	0	-	0	0	1	0	-	1	0	0	0	-	0	1
% Articulated Trucks	0.0	0.0	-	-	0.0	0.0	0.5	0.0	-	0.4	0.0	0.0	-	-	0.0	0.2
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Benjamin Road & Bisch Street
Site Code:
Start Date: 11/01/2017



Turning Movement Peak Hour Data Plot (5:00 PM)

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Benjamin Road & Bisch Street
Site Code:
Start Date: 11/01/2017

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Benjamin Road & Kressler Road
Site Code:
Start Date: 11/01/2017

Turning Movement Data

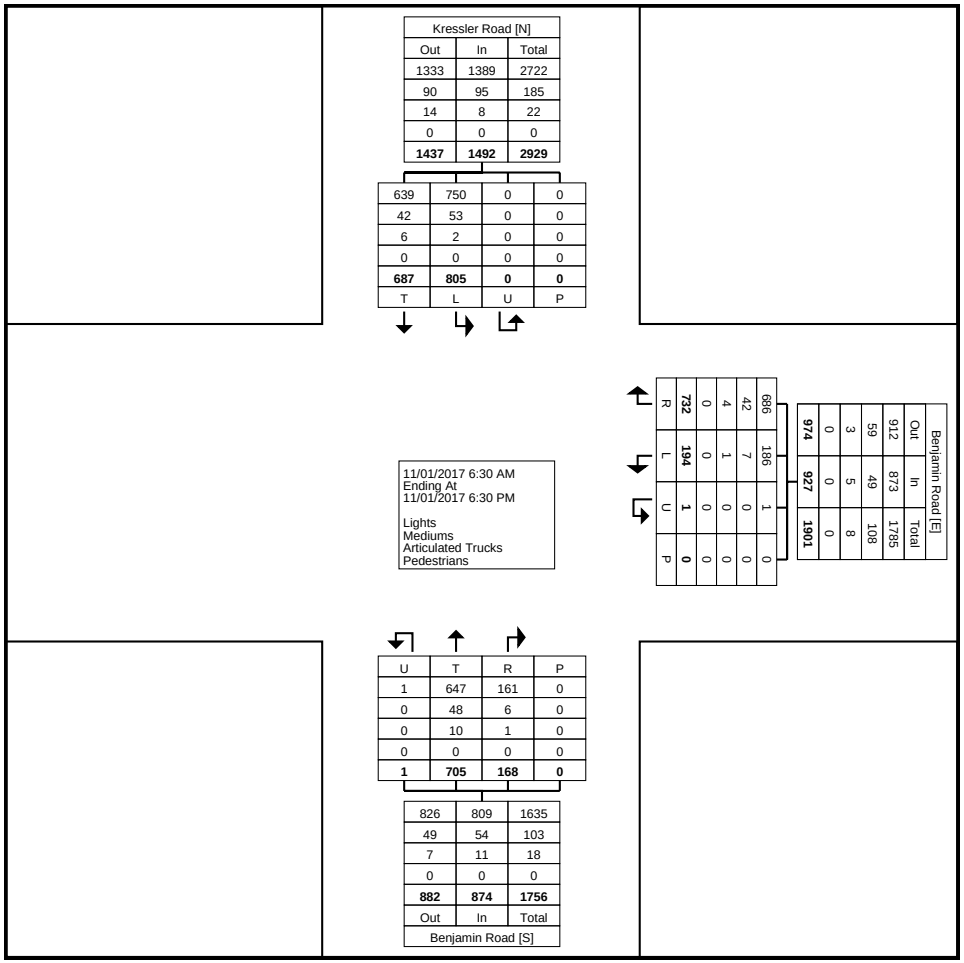
Start Time	Benjamin Road Westbound					Benjamin Road Northbound					Kressler Road Southbound					
	Left	Right	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Int. Total
6:30 AM	2	13	0	0	15	18	8	0	0	26	15	10	0	0	25	66
6:45 AM	3	21	0	0	24	14	8	0	0	22	14	13	0	0	27	73
Hourly Total	5	34	0	0	39	32	16	0	0	48	29	23	0	0	52	139
7:00 AM	2	13	0	0	15	27	5	0	0	32	17	14	0	0	31	78
7:15 AM	1	11	0	0	12	22	8	0	0	30	30	13	0	0	43	85
7:30 AM	3	10	0	0	13	28	8	0	0	36	31	17	0	0	48	97
7:45 AM	3	23	1	0	27	21	13	1	0	35	39	13	0	0	52	114
Hourly Total	9	57	1	0	67	98	34	1	0	133	117	57	0	0	174	374
8:00 AM	3	14	0	0	17	19	10	0	0	29	41	11	0	0	52	98
8:15 AM	4	15	0	0	19	22	13	0	0	35	38	27	0	0	65	119
8:30 AM	3	17	0	0	20	33	5	0	0	38	46	11	0	0	57	115
8:45 AM	1	20	0	0	21	22	14	0	0	36	34	14	0	0	48	105
Hourly Total	11	66	0	0	77	96	42	0	0	138	159	63	0	0	222	437
9:00 AM	2	14	0	0	16	16	9	0	0	25	24	12	0	0	36	77
9:15 AM	1	12	0	0	13	14	1	0	0	15	23	13	0	0	36	64
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	3	26	0	0	29	30	10	0	0	40	47	25	0	0	72	141
11:00 AM	5	12	0	0	17	10	3	0	0	13	20	9	0	0	29	59
11:15 AM	2	18	0	0	20	13	1	0	0	14	9	20	0	0	29	63
11:30 AM	4	15	0	0	19	18	2	0	0	20	27	11	0	0	38	77
11:45 AM	4	8	0	0	12	23	4	0	0	27	13	10	0	0	23	62
Hourly Total	15	53	0	0	68	64	10	0	0	74	69	50	0	0	119	261
12:00 PM	2	25	0	0	27	16	2	0	0	18	14	12	0	0	26	71
12:15 PM	3	16	0	0	19	9	1	0	0	10	12	14	0	0	26	55
12:30 PM	4	12	0	0	16	17	4	0	0	21	21	23	0	0	44	81
12:45 PM	6	17	0	0	23	15	5	0	0	20	35	15	0	0	50	93
Hourly Total	15	70	0	0	85	57	12	0	0	69	82	64	0	0	146	300
1:00 PM	1	16	0	0	17	6	4	0	0	10	18	23	0	0	41	68
1:15 PM	3	18	0	0	21	20	0	0	0	20	12	18	0	0	30	71
1:30 PM	5	17	0	0	22	21	1	0	0	22	16	7	0	0	23	67
1:45 PM	6	18	0	0	24	17	2	0	0	19	19	13	0	0	32	75
Hourly Total	15	69	0	0	84	64	7	0	0	71	65	61	0	0	126	281
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:30 PM	7	18	0	0	25	20	1	0	0	21	20	24	0	0	44	90
3:45 PM	7	27	0	0	34	20	8	0	0	28	12	18	0	0	30	92
Hourly Total	14	45	0	0	59	40	9	0	0	49	32	42	0	0	74	182
4:00 PM	4	29	0	0	33	33	1	0	0	34	25	23	0	0	48	115
4:15 PM	8	44	0	0	52	22	4	0	0	26	16	29	0	0	45	123

4:30 PM	11	25	0	0	36	18	3	0	0	21	18	39	0	0	57	114
4:45 PM	7	32	0	0	39	25	2	0	0	27	21	41	0	0	62	128
Hourly Total	30	130	0	0	160	98	10	0	0	108	80	132	0	0	212	480
5:00 PM	8	36	0	0	44	29	5	0	0	34	29	47	0	0	76	154
5:15 PM	17	50	0	0	67	17	6	0	0	23	25	34	0	0	59	149
5:30 PM	21	37	0	0	58	23	1	0	0	24	22	31	0	0	53	135
5:45 PM	9	24	0	0	33	26	0	0	0	26	18	29	0	0	47	106
Hourly Total	55	147	0	0	202	95	12	0	0	107	94	141	0	0	235	544
6:00 PM	10	16	0	0	26	18	3	0	0	21	20	15	0	0	35	82
6:15 PM	12	19	0	0	31	13	3	0	0	16	11	14	0	0	25	72
Grand Total	194	732	1	0	927	705	168	1	0	874	805	687	0	0	1492	3293
Approach %	20.9	79.0	0.1	-	-	80.7	19.2	0.1	-	-	54.0	46.0	0.0	-	-	-
Total %	5.9	22.2	0.0	-	28.2	21.4	5.1	0.0	-	26.5	24.4	20.9	0.0	-	45.3	-
Lights	186	686	1	-	873	647	161	1	-	809	750	639	0	-	1389	3071
% Lights	95.9	93.7	100.0	-	94.2	91.8	95.8	100.0	-	92.6	93.2	93.0	-	-	93.1	93.3
Mediums	7	42	0	-	49	48	6	0	-	54	53	42	0	-	95	198
% Mediums	3.6	5.7	0.0	-	5.3	6.8	3.6	0.0	-	6.2	6.6	6.1	-	-	6.4	6.0
Articulated Trucks	1	4	0	-	5	10	1	0	-	11	2	6	0	-	8	24
% Articulated Trucks	0.5	0.5	0.0	-	0.5	1.4	0.6	0.0	-	1.3	0.2	0.9	-	-	0.5	0.7
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Benjamin Road & Kressler Road
Site Code:
Start Date: 11/01/2017



Turning Movement Data Plot

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Benjamin Road & Kressler Road
Site Code:
Start Date: 11/01/2017

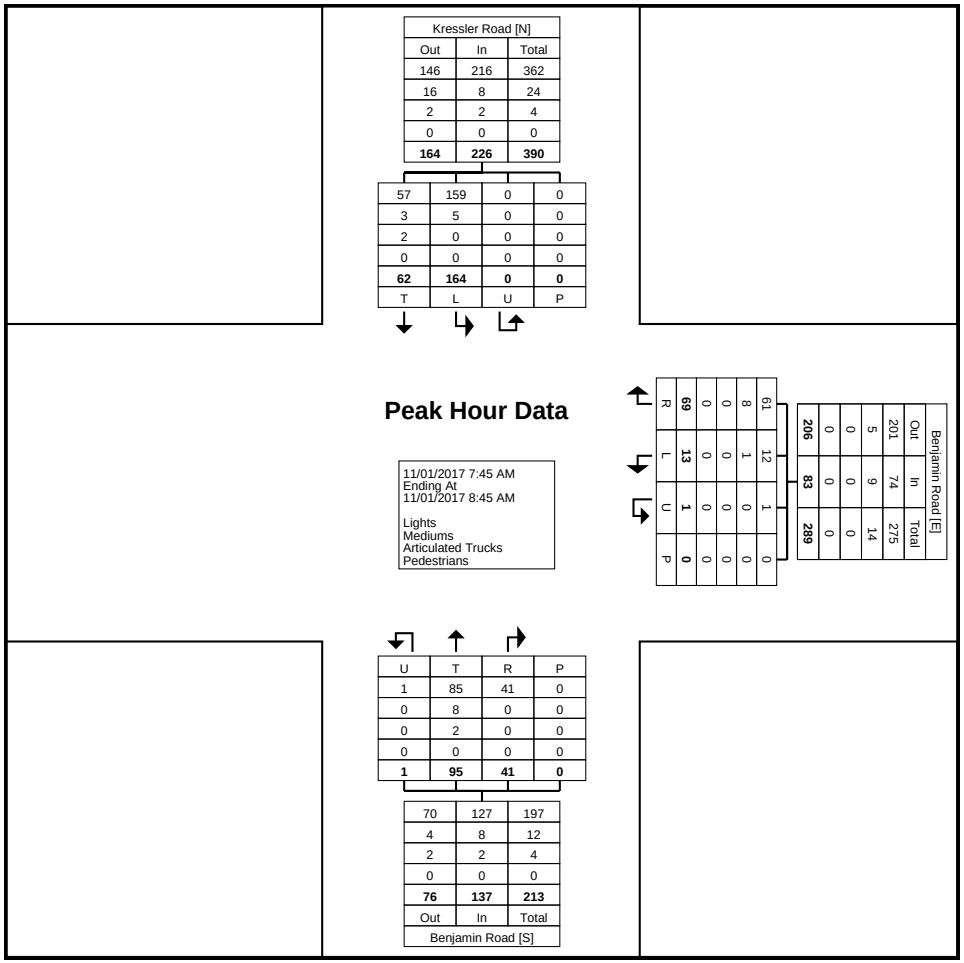
Turning Movement Peak Hour Data (7:45 AM)

Start Time	Benjamin Road Westbound					Benjamin Road Northbound					Kressler Road Southbound					
	Left	Right	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Int. Total
7:45 AM	3	23	1	0	27	21	13	1	0	35	39	13	0	0	52	114
8:00 AM	3	14	0	0	17	19	10	0	0	29	41	11	0	0	52	98
8:15 AM	4	15	0	0	19	22	13	0	0	35	38	27	0	0	65	119
8:30 AM	3	17	0	0	20	33	5	0	0	38	46	11	0	0	57	115
Total	13	69	1	0	83	95	41	1	0	137	164	62	0	0	226	446
Approach %	15.7	83.1	1.2	-	-	69.3	29.9	0.7	-	-	72.6	27.4	0.0	-	-	-
Total %	2.9	15.5	0.2	-	18.6	21.3	9.2	0.2	-	30.7	36.8	13.9	0.0	-	50.7	-
PHF	0.813	0.750	0.250	-	0.769	0.720	0.788	0.250	-	0.901	0.891	0.574	0.000	-	0.869	0.937
Lights	12	61	1	-	74	85	41	1	-	127	159	57	0	-	216	417
% Lights	92.3	88.4	100.0	-	89.2	89.5	100.0	100.0	-	92.7	97.0	91.9	-	-	95.6	93.5
Mediums	1	8	0	-	9	8	0	0	-	8	5	3	0	-	8	25
% Mediums	7.7	11.6	0.0	-	10.8	8.4	0.0	0.0	-	5.8	3.0	4.8	-	-	3.5	5.6
Articulated Trucks	0	0	0	-	0	2	0	0	-	2	0	2	0	-	2	4
% Articulated Trucks	0.0	0.0	0.0	-	0.0	2.1	0.0	0.0	-	1.5	0.0	3.2	-	-	0.9	0.9
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Benjamin Road & Kressler Road
Site Code:
Start Date: 11/01/2017



Turning Movement Peak Hour Data Plot (7:45 AM)

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Benjamin Road & Kressler Road
Site Code:
Start Date: 11/01/2017

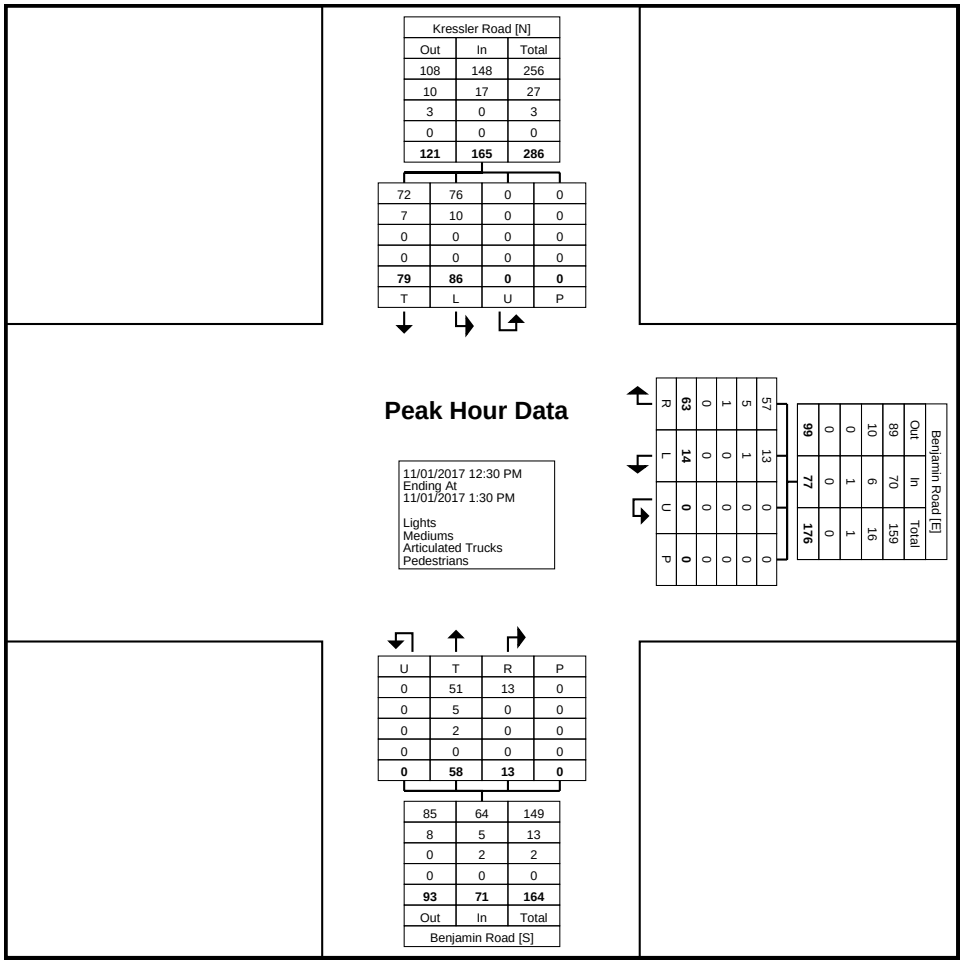
Turning Movement Peak Hour Data (12:30 PM)

Start Time	Benjamin Road Westbound					Benjamin Road Northbound					Kressler Road Southbound					
	Left	Right	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Int. Total
12:30 PM	4	12	0	0	16	17	4	0	0	21	21	23	0	0	44	81
12:45 PM	6	17	0	0	23	15	5	0	0	20	35	15	0	0	50	93
1:00 PM	1	16	0	0	17	6	4	0	0	10	18	23	0	0	41	68
1:15 PM	3	18	0	0	21	20	0	0	0	20	12	18	0	0	30	71
Total	14	63	0	0	77	58	13	0	0	71	86	79	0	0	165	313
Approach %	18.2	81.8	0.0	-	-	81.7	18.3	0.0	-	-	52.1	47.9	0.0	-	-	-
Total %	4.5	20.1	0.0	-	24.6	18.5	4.2	0.0	-	22.7	27.5	25.2	0.0	-	52.7	-
PHF	0.583	0.875	0.000	-	0.837	0.725	0.650	0.000	-	0.845	0.614	0.859	0.000	-	0.825	0.841
Lights	13	57	0	-	70	51	13	0	-	64	76	72	0	-	148	282
% Lights	92.9	90.5	-	-	90.9	87.9	100.0	-	-	90.1	88.4	91.1	-	-	89.7	90.1
Mediums	1	5	0	-	6	5	0	0	-	5	10	7	0	-	17	28
% Mediums	7.1	7.9	-	-	7.8	8.6	0.0	-	-	7.0	11.6	8.9	-	-	10.3	8.9
Articulated Trucks	0	1	0	-	1	2	0	0	-	2	0	0	0	-	0	3
% Articulated Trucks	0.0	1.6	-	-	1.3	3.4	0.0	-	-	2.8	0.0	0.0	-	-	0.0	1.0
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Benjamin Road & Kressler Road
Site Code:
Start Date: 11/01/2017



Turning Movement Peak Hour Data Plot (12:30 PM)

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Benjamin Road & Kressler Road
Site Code:
Start Date: 11/01/2017

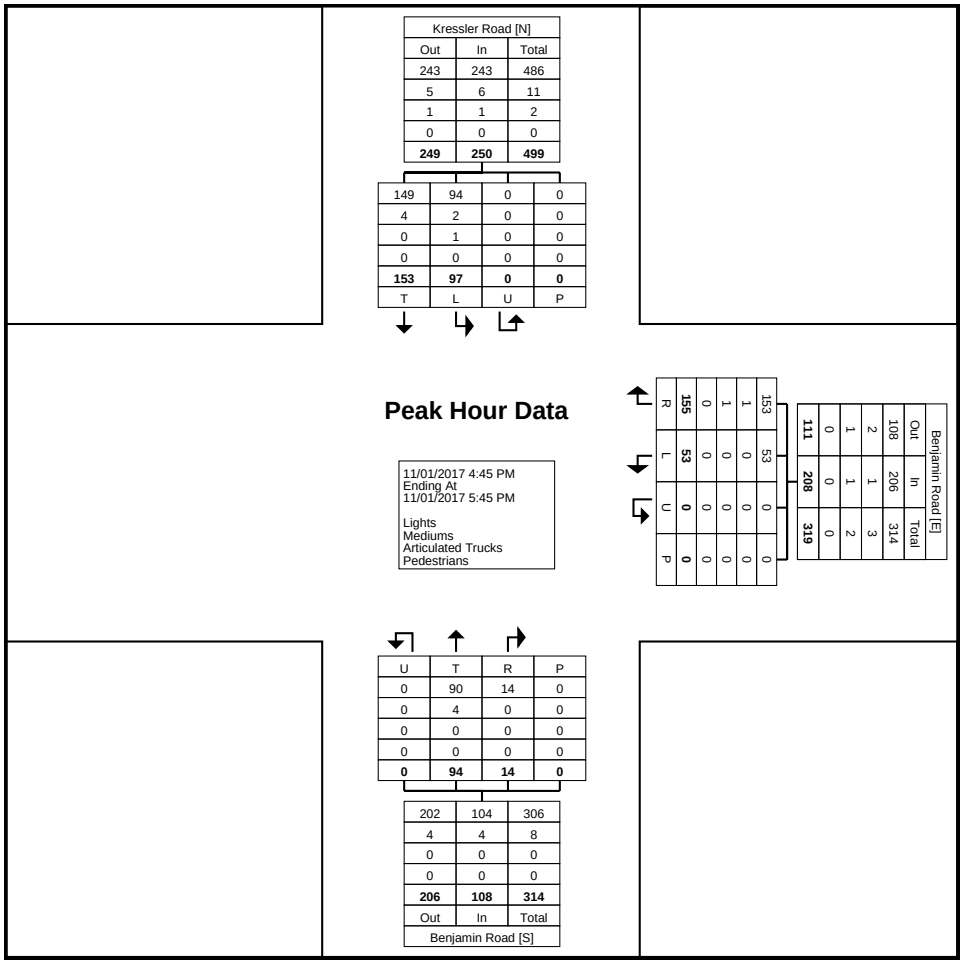
Turning Movement Peak Hour Data (4:45 PM)

Start Time	Benjamin Road Westbound					Benjamin Road Northbound					Kressler Road Southbound					
	Left	Right	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Int. Total
4:45 PM	7	32	0	0	39	25	2	0	0	27	21	41	0	0	62	128
5:00 PM	8	36	0	0	44	29	5	0	0	34	29	47	0	0	76	154
5:15 PM	17	50	0	0	67	17	6	0	0	23	25	34	0	0	59	149
5:30 PM	21	37	0	0	58	23	1	0	0	24	22	31	0	0	53	135
Total	53	155	0	0	208	94	14	0	0	108	97	153	0	0	250	566
Approach %	25.5	74.5	0.0	-	-	87.0	13.0	0.0	-	-	38.8	61.2	0.0	-	-	-
Total %	9.4	27.4	0.0	-	36.7	16.6	2.5	0.0	-	19.1	17.1	27.0	0.0	-	44.2	-
PHF	0.631	0.775	0.000	-	0.776	0.810	0.583	0.000	-	0.794	0.836	0.814	0.000	-	0.822	0.919
Lights	53	153	0	-	206	90	14	0	-	104	94	149	0	-	243	553
% Lights	100.0	98.7	-	-	99.0	95.7	100.0	-	-	96.3	96.9	97.4	-	-	97.2	97.7
Mediums	0	1	0	-	1	4	0	0	-	4	2	4	0	-	6	11
% Mediums	0.0	0.6	-	-	0.5	4.3	0.0	-	-	3.7	2.1	2.6	-	-	2.4	1.9
Articulated Trucks	0	1	0	-	1	0	0	0	-	0	1	0	0	-	1	2
% Articulated Trucks	0.0	0.6	-	-	0.5	0.0	0.0	-	-	0.0	1.0	0.0	-	-	0.4	0.4
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Benjamin Road & Kressler Road
Site Code:
Start Date: 11/01/2017



Turning Movement Peak Hour Data Plot (4:45 PM)

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Benjamin Road & Kressler Road
Site Code:
Start Date: 11/01/2017

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Benjamin Road & Westmount Road North
Site Code:
Start Date: 11/01/2017

Turning Movement Data

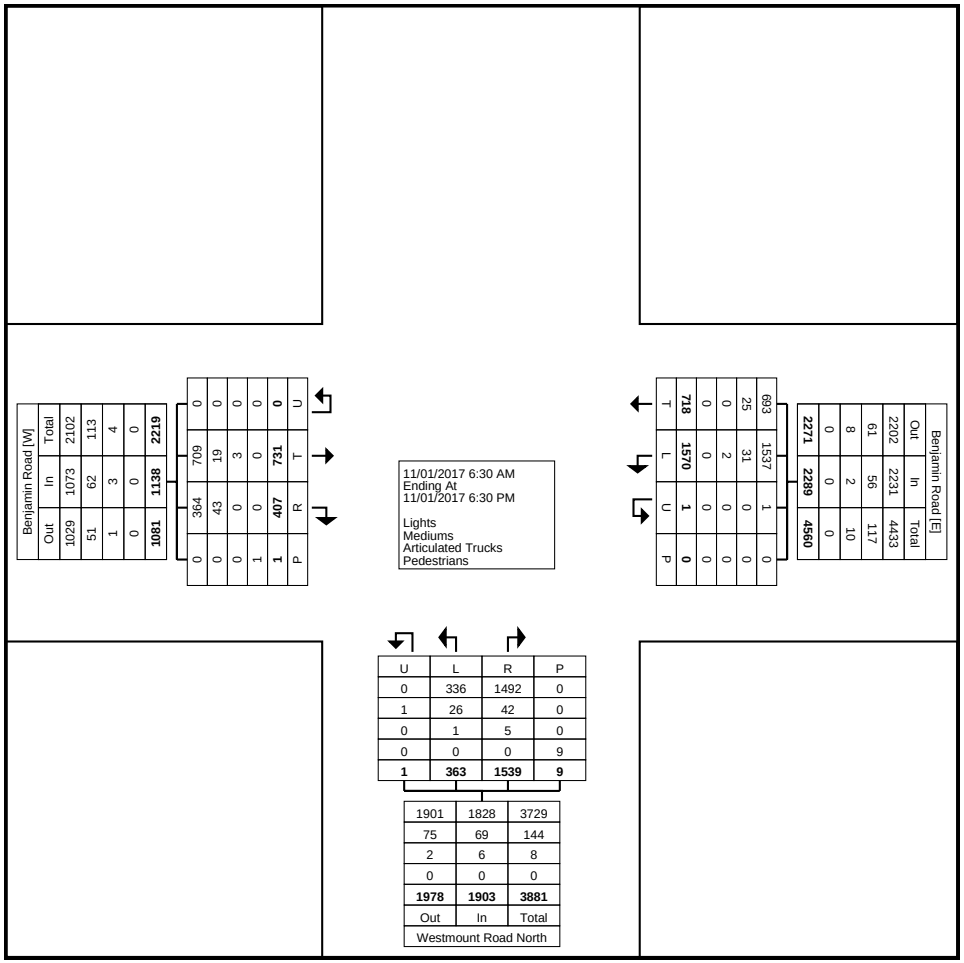
Start Time	Benjamin Road Eastbound					Benjamin Road Westbound					Westmount Road North Northbound					
	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	Int. Total
6:30 AM	21	5	0	0	26	7	6	0	0	13	5	34	0	0	39	78
6:45 AM	22	8	0	0	30	11	8	0	0	19	10	38	0	1	48	97
Hourly Total	43	13	0	0	56	18	14	0	0	32	15	72	0	1	87	175
7:00 AM	12	5	0	0	17	19	9	0	0	28	8	31	0	1	39	84
7:15 AM	23	14	0	0	37	19	8	0	0	27	2	43	0	0	45	109
7:30 AM	23	15	0	0	38	26	8	0	0	34	5	43	0	0	48	120
7:45 AM	47	26	0	0	73	21	20	0	0	41	15	66	0	0	81	195
Hourly Total	105	60	0	0	165	85	45	0	0	130	30	183	0	1	213	508
8:00 AM	29	18	0	0	47	23	17	0	0	40	8	56	0	0	64	151
8:15 AM	51	24	0	0	75	33	16	0	0	49	4	72	0	1	76	200
8:30 AM	36	17	0	0	53	27	8	0	0	35	12	80	0	0	92	180
8:45 AM	42	24	0	0	66	33	16	0	0	49	4	78	0	0	82	197
Hourly Total	158	83	0	0	241	116	57	0	0	173	28	286	0	1	314	728
9:00 AM	31	13	0	0	44	13	8	0	0	21	4	55	0	1	59	124
9:15 AM	13	12	0	0	25	18	5	0	0	23	3	71	0	0	74	122
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	44	25	0	0	69	31	13	0	0	44	7	126	0	1	133	246
11:00 AM	20	8	0	0	28	26	8	0	0	34	11	26	0	0	37	99
11:15 AM	10	9	0	0	19	22	14	0	0	36	12	24	0	0	36	91
11:30 AM	17	9	0	0	26	33	10	0	0	43	8	31	0	1	39	108
11:45 AM	14	5	0	0	19	41	9	0	0	50	5	50	0	0	55	124
Hourly Total	61	31	0	0	92	122	41	0	0	163	36	131	0	1	167	422
12:00 PM	13	6	0	0	19	19	15	0	0	34	14	39	0	0	53	106
12:15 PM	19	2	0	0	21	38	11	0	0	49	9	40	0	0	49	119
12:30 PM	21	4	0	0	25	38	11	0	0	49	7	23	0	0	30	104
12:45 PM	18	14	0	1	32	33	17	0	0	50	6	26	0	0	32	114
Hourly Total	71	26	0	1	97	128	54	0	0	182	36	128	0	0	164	443
1:00 PM	22	12	0	0	34	35	19	0	0	54	6	33	0	0	39	127
1:15 PM	7	6	0	0	13	24	15	0	0	39	13	44	1	0	58	110
1:30 PM	9	7	0	0	16	38	18	0	0	56	11	43	0	0	54	126
1:45 PM	9	7	0	0	16	29	12	1	0	42	5	28	0	0	33	91
Hourly Total	47	32	0	0	79	126	64	1	0	191	35	148	1	0	184	454
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:30 PM	10	8	0	0	18	51	18	0	0	69	9	34	0	0	43	130
3:45 PM	18	7	0	0	25	59	24	0	0	83	14	41	0	1	55	163
Hourly Total	28	15	0	0	43	110	42	0	0	152	23	75	0	1	98	293
4:00 PM	15	16	0	0	31	68	34	0	0	102	11	29	0	0	40	173
4:15 PM	19	9	0	0	28	63	36	0	0	99	17	47	0	0	64	191

4:30 PM	17	14	0	0	31	75	31	0	0	106	19	55	0	1	74	211
4:45 PM	20	9	0	0	29	99	34	0	0	133	18	38	0	0	56	218
Hourly Total	71	48	0	0	119	305	135	0	0	440	65	169	0	1	234	793
5:00 PM	24	11	0	0	35	123	48	0	0	171	13	50	0	1	63	269
5:15 PM	23	17	0	0	40	139	58	0	0	197	22	50	0	0	72	309
5:30 PM	17	15	0	0	32	113	56	0	0	169	19	30	0	0	49	250
5:45 PM	12	10	0	0	22	73	38	0	0	111	14	34	0	0	48	181
Hourly Total	76	53	0	0	129	448	200	0	0	648	68	164	0	1	232	1009
6:00 PM	11	11	0	0	22	37	33	0	0	70	7	25	0	0	32	124
6:15 PM	16	10	0	0	26	44	20	0	0	64	13	32	0	1	45	135
Grand Total	731	407	0	1	1138	1570	718	1	0	2289	363	1539	1	9	1903	5330
Approach %	64.2	35.8	0.0	-	-	68.6	31.4	0.0	-	-	19.1	80.9	0.1	-	-	-
Total %	13.7	7.6	0.0	-	21.4	29.5	13.5	0.0	-	42.9	6.8	28.9	0.0	-	35.7	-
Lights	709	364	0	-	1073	1537	693	1	-	2231	336	1492	0	-	1828	5132
% Lights	97.0	89.4	-	-	94.3	97.9	96.5	100.0	-	97.5	92.6	96.9	0.0	-	96.1	96.3
Mediums	19	43	0	-	62	31	25	0	-	56	26	42	1	-	69	187
% Mediums	2.6	10.6	-	-	5.4	2.0	3.5	0.0	-	2.4	7.2	2.7	100.0	-	3.6	3.5
Articulated Trucks	3	0	0	-	3	2	0	0	-	2	1	5	0	-	6	11
% Articulated Trucks	0.4	0.0	-	-	0.3	0.1	0.0	0.0	-	0.1	0.3	0.3	0.0	-	0.3	0.2
Pedestrians	-	-	-	1	-	-	-	-	0	-	-	-	-	9	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	-	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Benjamin Road & Westmount Road North
Site Code:
Start Date: 11/01/2017
Page No: 3



Turning Movement Data Plot

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Benjamin Road & Westmount Road North
Site Code:
Start Date: 11/01/2017

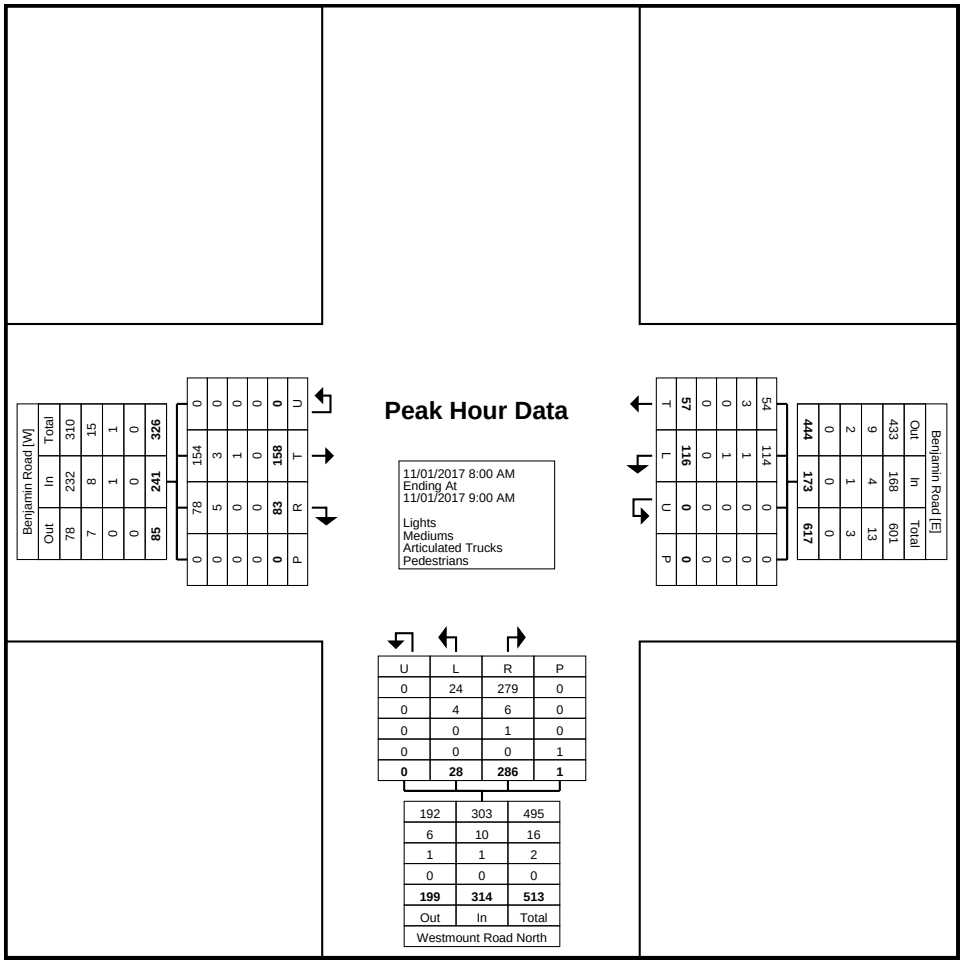
Turning Movement Peak Hour Data (8:00 AM)

Start Time	Benjamin Road Eastbound					Benjamin Road Westbound					Westmount Road North Northbound					
	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	Int. Total
8:00 AM	29	18	0	0	47	23	17	0	0	40	8	56	0	0	64	151
8:15 AM	51	24	0	0	75	33	16	0	0	49	4	72	0	1	76	200
8:30 AM	36	17	0	0	53	27	8	0	0	35	12	80	0	0	92	180
8:45 AM	42	24	0	0	66	33	16	0	0	49	4	78	0	0	82	197
Total	158	83	0	0	241	116	57	0	0	173	28	286	0	1	314	728
Approach %	65.6	34.4	0.0	-	-	67.1	32.9	0.0	-	-	8.9	91.1	0.0	-	-	-
Total %	21.7	11.4	0.0	-	33.1	15.9	7.8	0.0	-	23.8	3.8	39.3	0.0	-	43.1	-
PHF	0.775	0.865	0.000	-	0.803	0.879	0.838	0.000	-	0.883	0.583	0.894	0.000	-	0.853	0.910
Lights	154	78	0	-	232	114	54	0	-	168	24	279	0	-	303	703
% Lights	97.5	94.0	-	-	96.3	98.3	94.7	-	-	97.1	85.7	97.6	-	-	96.5	96.6
Mediums	3	5	0	-	8	1	3	0	-	4	4	6	0	-	10	22
% Mediums	1.9	6.0	-	-	3.3	0.9	5.3	-	-	2.3	14.3	2.1	-	-	3.2	3.0
Articulated Trucks	1	0	0	-	1	1	0	0	-	1	0	1	0	-	1	3
% Articulated Trucks	0.6	0.0	-	-	0.4	0.9	0.0	-	-	0.6	0.0	0.3	-	-	0.3	0.4
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Benjamin Road & Westmount Road North
Site Code:
Start Date: 11/01/2017



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

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Benjamin Road & Westmount Road North
Site Code:
Start Date: 11/01/2017

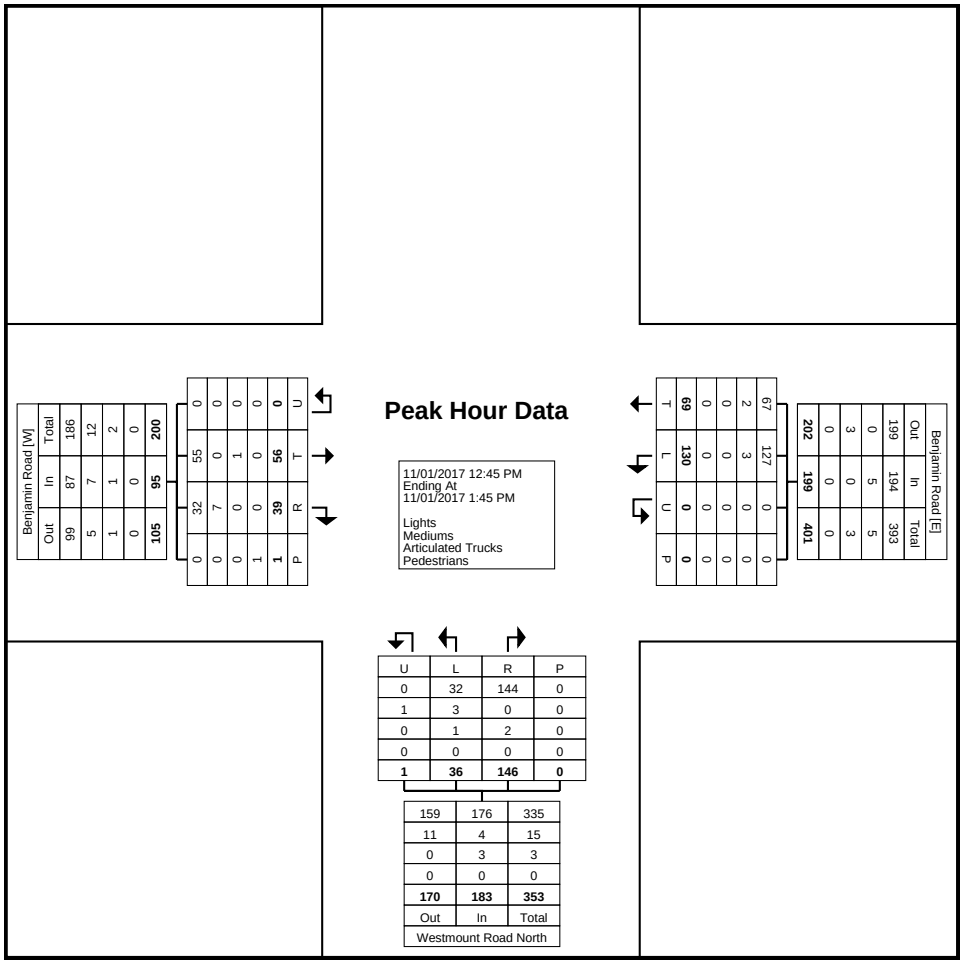
Turning Movement Peak Hour Data (12:45 PM)

Start Time	Benjamin Road Eastbound					Benjamin Road Westbound					Westmount Road North Northbound					
	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	Int. Total
12:45 PM	18	14	0	1	32	33	17	0	0	50	6	26	0	0	32	114
1:00 PM	22	12	0	0	34	35	19	0	0	54	6	33	0	0	39	127
1:15 PM	7	6	0	0	13	24	15	0	0	39	13	44	1	0	58	110
1:30 PM	9	7	0	0	16	38	18	0	0	56	11	43	0	0	54	126
Total	56	39	0	1	95	130	69	0	0	199	36	146	1	0	183	477
Approach %	58.9	41.1	0.0	-	-	65.3	34.7	0.0	-	-	19.7	79.8	0.5	-	-	-
Total %	11.7	8.2	0.0	-	19.9	27.3	14.5	0.0	-	41.7	7.5	30.6	0.2	-	38.4	-
PHF	0.636	0.696	0.000	-	0.699	0.855	0.908	0.000	-	0.888	0.692	0.830	0.250	-	0.789	0.939
Lights	55	32	0	-	87	127	67	0	-	194	32	144	0	-	176	457
% Lights	98.2	82.1	-	-	91.6	97.7	97.1	-	-	97.5	88.9	98.6	0.0	-	96.2	95.8
Mediums	0	7	0	-	7	3	2	0	-	5	3	0	1	-	4	16
% Mediums	0.0	17.9	-	-	7.4	2.3	2.9	-	-	2.5	8.3	0.0	100.0	-	2.2	3.4
Articulated Trucks	1	0	0	-	1	0	0	0	-	0	1	2	0	-	3	4
% Articulated Trucks	1.8	0.0	-	-	1.1	0.0	0.0	-	-	0.0	2.8	1.4	0.0	-	1.6	0.8
Pedestrians	-	-	-	1	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Benjamin Road & Westmount Road North
Site Code:
Start Date: 11/01/2017



Turning Movement Peak Hour Data Plot (12:45 PM)

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

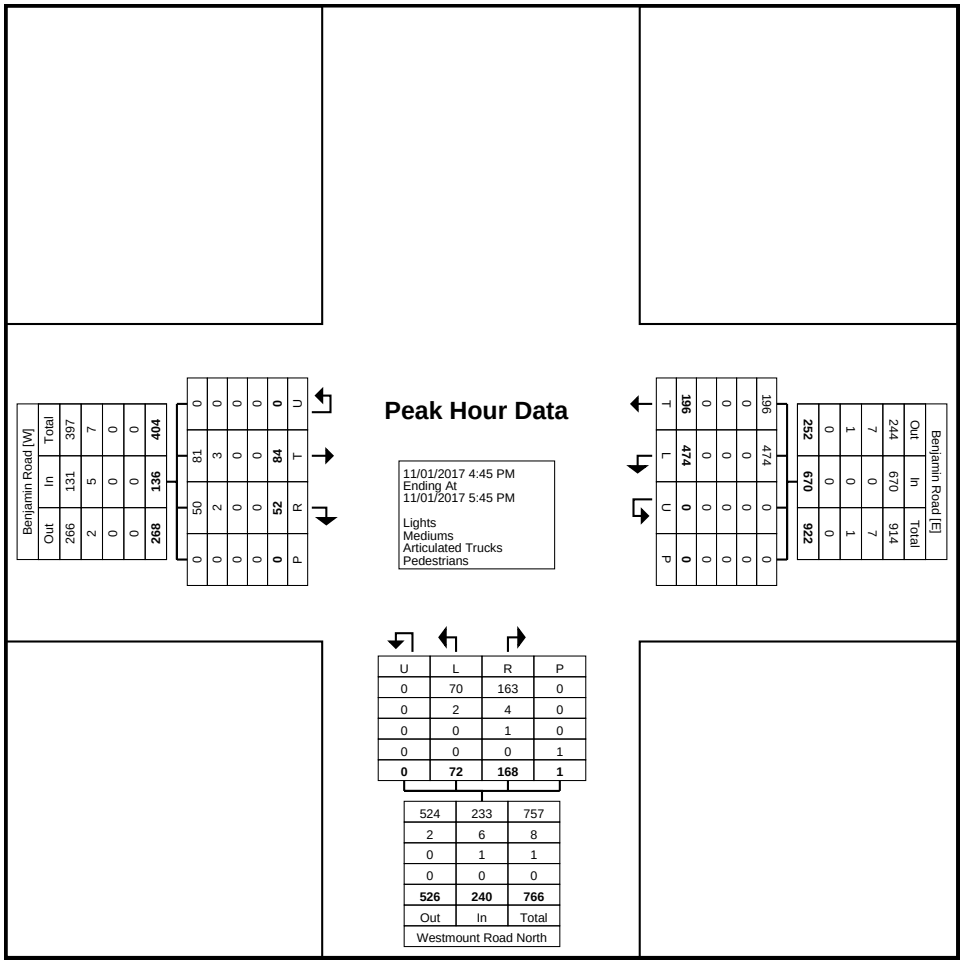
Count Name: Benjamin Road & Westmount Road North
Site Code:
Start Date: 11/01/2017

Turning Movement Peak Hour Data (4:45 PM)

Start Time	Benjamin Road Eastbound					Benjamin Road Westbound					Westmount Road North Northbound					
	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	Int. Total
4:45 PM	20	9	0	0	29	99	34	0	0	133	18	38	0	0	56	218
5:00 PM	24	11	0	0	35	123	48	0	0	171	13	50	0	1	63	269
5:15 PM	23	17	0	0	40	139	58	0	0	197	22	50	0	0	72	309
5:30 PM	17	15	0	0	32	113	56	0	0	169	19	30	0	0	49	250
Total	84	52	0	0	136	474	196	0	0	670	72	168	0	1	240	1046
Approach %	61.8	38.2	0.0	-	-	70.7	29.3	0.0	-	-	30.0	70.0	0.0	-	-	-
Total %	8.0	5.0	0.0	-	13.0	45.3	18.7	0.0	-	64.1	6.9	16.1	0.0	-	22.9	-
PHF	0.875	0.765	0.000	-	0.850	0.853	0.845	0.000	-	0.850	0.818	0.840	0.000	-	0.833	0.846
Lights	81	50	0	-	131	474	196	0	-	670	70	163	0	-	233	1034
% Lights	96.4	96.2	-	-	96.3	100.0	100.0	-	-	100.0	97.2	97.0	-	-	97.1	98.9
Mediums	3	2	0	-	5	0	0	0	-	0	2	4	0	-	6	11
% Mediums	3.6	3.8	-	-	3.7	0.0	0.0	-	-	0.0	2.8	2.4	-	-	2.5	1.1
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	0	1	0	-	1	1
% Articulated Trucks	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.6	-	-	0.4	0.1
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com



Turning Movement Peak Hour Data Plot (4:45 PM)

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Benjamin Road & Westmount Road North
Site Code:
Start Date: 11/01/2017

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Conservation Drive & Beaver Creek Road
Site Code:
Start Date: 11/01/2017

Turning Movement Data

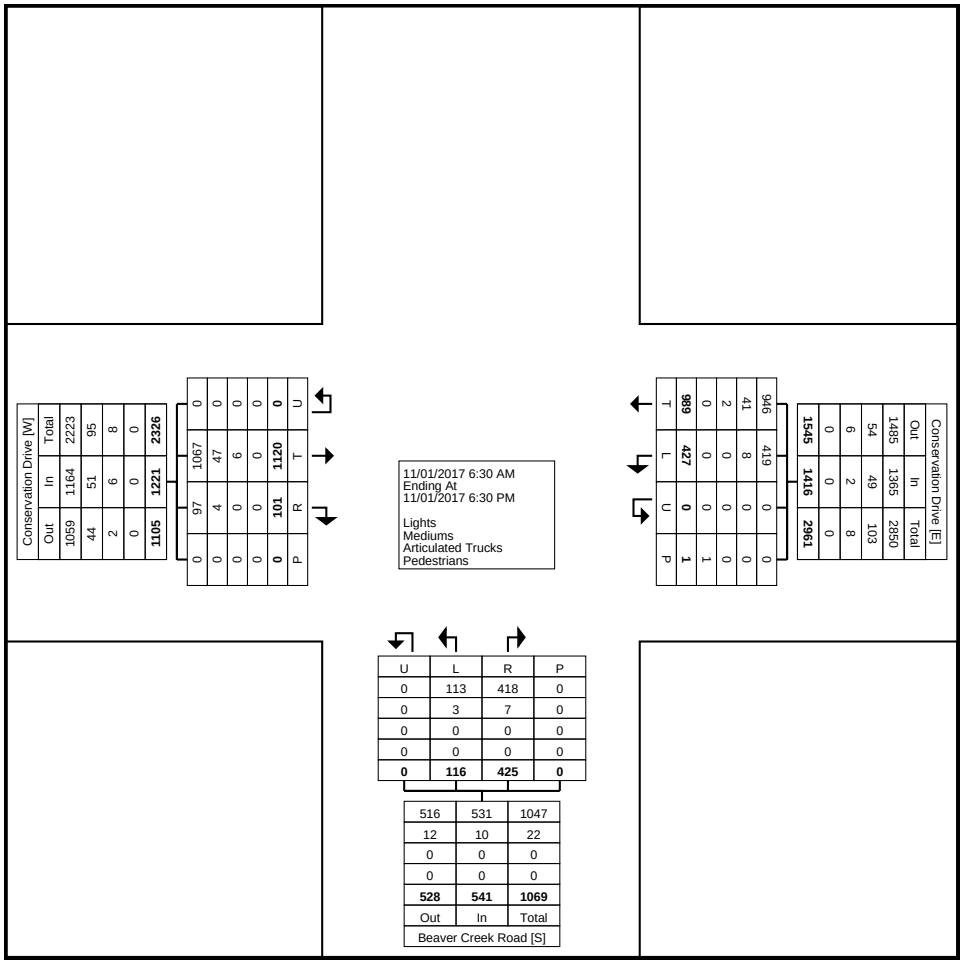
Start Time	Conservation Drive Eastbound					Conservation Drive Westbound					Beaver Creek Road Northbound					Int. Total
	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	
6:30 AM	26	0	0	0	26	1	19	0	0	20	1	7	0	0	8	54
6:45 AM	15	1	0	0	16	0	25	0	0	25	0	4	0	0	4	45
Hourly Total	41	1	0	0	42	1	44	0	0	45	1	11	0	0	12	99
7:00 AM	19	2	0	0	21	4	10	0	0	14	2	3	0	0	5	40
7:15 AM	33	2	0	0	35	3	16	0	0	19	4	11	0	0	15	69
7:30 AM	24	7	0	0	31	9	18	0	0	27	1	6	0	0	7	65
7:45 AM	36	0	0	0	36	9	24	0	0	33	3	14	0	0	17	86
Hourly Total	112	11	0	0	123	25	68	0	0	93	10	34	0	0	44	260
8:00 AM	36	2	0	0	38	7	29	0	0	36	2	14	0	0	16	90
8:15 AM	56	4	0	0	60	9	30	0	0	39	4	20	0	0	24	123
8:30 AM	61	7	0	0	68	17	22	0	0	39	4	21	0	0	25	132
8:45 AM	56	3	0	0	59	16	24	0	0	40	5	17	0	0	22	121
Hourly Total	209	16	0	0	225	49	105	0	0	154	15	72	0	0	87	466
9:00 AM	31	0	0	0	31	9	17	0	0	26	4	13	0	0	17	74
9:15 AM	51	5	0	0	56	8	12	0	0	20	1	14	0	0	15	91
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	82	5	0	0	87	17	29	0	0	46	5	27	0	0	32	165
11:00 AM	22	1	0	0	23	4	20	0	0	24	4	6	0	0	10	57
11:15 AM	19	4	0	0	23	8	17	0	0	25	3	10	0	0	13	61
11:30 AM	32	8	0	0	40	18	22	0	0	40	0	13	0	0	13	93
11:45 AM	32	5	0	0	37	10	15	0	0	25	3	9	0	0	12	74
Hourly Total	105	18	0	0	123	40	74	0	0	114	10	38	0	0	48	285
12:00 PM	30	2	0	0	32	11	11	0	0	22	2	9	0	0	11	65
12:15 PM	19	0	0	0	19	10	9	0	0	19	0	10	0	0	10	48
12:30 PM	14	1	0	0	15	11	15	0	0	26	7	6	0	0	13	54
12:45 PM	23	2	0	0	25	11	22	0	0	33	2	12	0	0	14	72
Hourly Total	86	5	0	0	91	43	57	0	0	100	11	37	0	0	48	239
1:00 PM	25	2	0	0	27	9	20	0	0	29	2	8	0	0	10	66
1:15 PM	26	3	0	0	29	7	23	0	0	30	7	6	0	0	13	72
1:30 PM	24	3	0	0	27	6	21	0	0	27	4	12	0	0	16	70
1:45 PM	16	4	0	0	20	11	25	0	0	36	4	11	0	0	15	71
Hourly Total	91	12	0	0	103	33	89	0	0	122	17	37	0	0	54	279
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:30 PM	34	2	0	0	36	20	28	0	0	48	2	12	0	0	14	98
3:45 PM	34	4	0	0	38	15	27	0	0	42	4	18	0	0	22	102
Hourly Total	68	6	0	0	74	35	55	0	0	90	6	30	0	0	36	200
4:00 PM	30	3	0	0	33	21	41	0	0	62	8	19	0	0	27	122
4:15 PM	22	5	0	0	27	16	32	0	1	48	3	14	0	0	17	92

4:30 PM	28	5	0	0	33	7	52	0	0	59	6	11	0	0	17	109
4:45 PM	35	0	0	0	35	17	53	0	0	70	4	11	0	0	15	120
Hourly Total	115	13	0	0	128	61	178	0	1	239	21	55	0	0	76	443
5:00 PM	46	2	0	0	48	26	52	0	0	78	4	14	0	0	18	144
5:15 PM	32	4	0	0	36	25	75	0	0	100	4	13	0	0	17	153
5:30 PM	29	1	0	0	30	26	49	0	0	75	6	16	0	0	22	127
5:45 PM	41	2	0	0	43	21	52	0	0	73	4	15	0	0	19	135
Hourly Total	148	9	0	0	157	98	228	0	0	326	18	58	0	0	76	559
6:00 PM	34	2	0	0	36	10	31	0	0	41	2	14	0	0	16	93
6:15 PM	29	3	0	0	32	15	31	0	0	46	0	12	0	0	12	90
Grand Total	1120	101	0	0	1221	427	989	0	1	1416	116	425	0	0	541	3178
Approach %	91.7	8.3	0.0	-	-	30.2	69.8	0.0	-	-	21.4	78.6	0.0	-	-	-
Total %	35.2	3.2	0.0	-	38.4	13.4	31.1	0.0	-	44.6	3.7	13.4	0.0	-	17.0	-
Lights	1067	97	0	-	1164	419	946	0	-	1365	113	418	0	-	531	3060
% Lights	95.3	96.0	-	-	95.3	98.1	95.7	-	-	96.4	97.4	98.4	-	-	98.2	96.3
Mediums	47	4	0	-	51	8	41	0	-	49	3	7	0	-	10	110
% Mediums	4.2	4.0	-	-	4.2	1.9	4.1	-	-	3.5	2.6	1.6	-	-	1.8	3.5
Articulated Trucks	6	0	0	-	6	0	2	0	-	2	0	0	0	-	0	8
% Articulated Trucks	0.5	0.0	-	-	0.5	0.0	0.2	-	-	0.1	0.0	0.0	-	-	0.0	0.3
Pedestrians	-	-	-	0	-	-	-	-	1	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Conservation Drive & Beaver Creek Road
Site Code:
Start Date: 11/01/2017



Turning Movement Data Plot

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Conservation Drive & Beaver Creek Road
Site Code:
Start Date: 11/01/2017

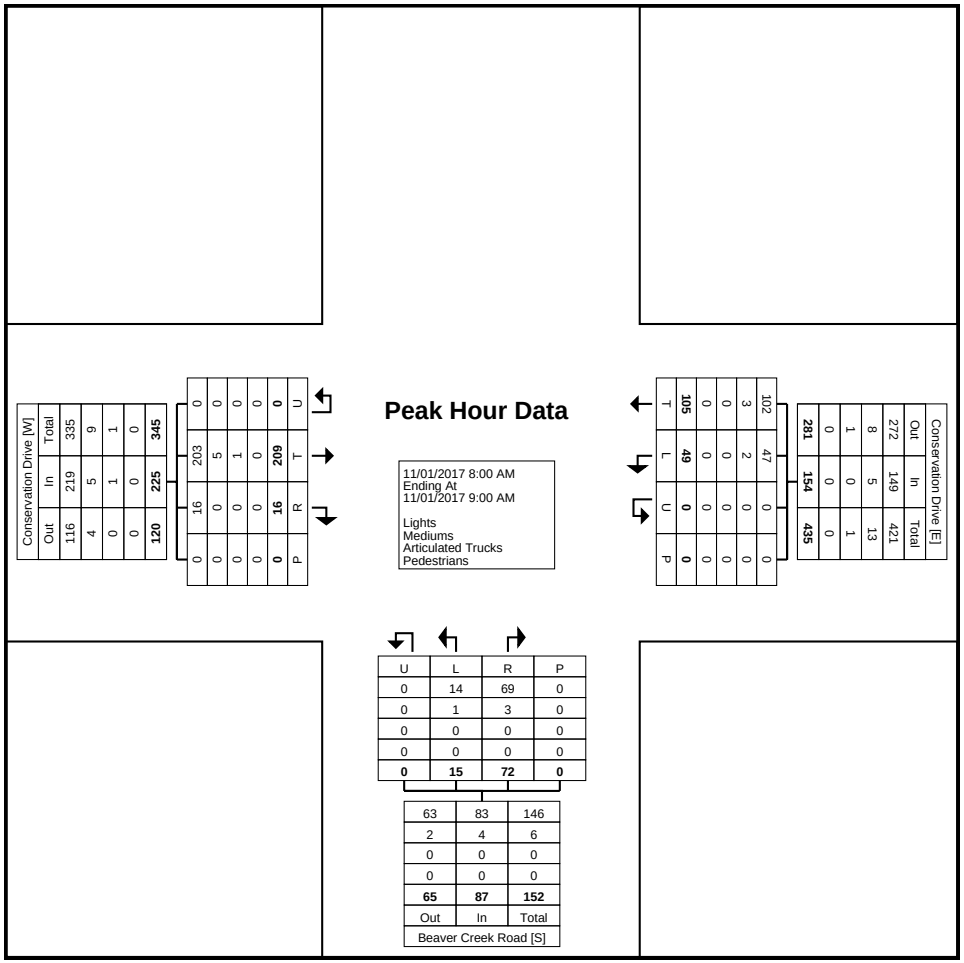
Turning Movement Peak Hour Data (8:00 AM)

Start Time	Conservation Drive Eastbound					Conservation Drive Westbound					Beaver Creek Road Northbound					
	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	Int. Total
8:00 AM	36	2	0	0	38	7	29	0	0	36	2	14	0	0	16	90
8:15 AM	56	4	0	0	60	9	30	0	0	39	4	20	0	0	24	123
8:30 AM	61	7	0	0	68	17	22	0	0	39	4	21	0	0	25	132
8:45 AM	56	3	0	0	59	16	24	0	0	40	5	17	0	0	22	121
Total	209	16	0	0	225	49	105	0	0	154	15	72	0	0	87	466
Approach %	92.9	7.1	0.0	-	-	31.8	68.2	0.0	-	-	17.2	82.8	0.0	-	-	-
Total %	44.8	3.4	0.0	-	48.3	10.5	22.5	0.0	-	33.0	3.2	15.5	0.0	-	18.7	-
PHF	0.857	0.571	0.000	-	0.827	0.721	0.875	0.000	-	0.963	0.750	0.857	0.000	-	0.870	0.883
Lights	203	16	0	-	219	47	102	0	-	149	14	69	0	-	83	451
% Lights	97.1	100.0	-	-	97.3	95.9	97.1	-	-	96.8	93.3	95.8	-	-	95.4	96.8
Mediums	5	0	0	-	5	2	3	0	-	5	1	3	0	-	4	14
% Mediums	2.4	0.0	-	-	2.2	4.1	2.9	-	-	3.2	6.7	4.2	-	-	4.6	3.0
Articulated Trucks	1	0	0	-	1	0	0	0	-	0	0	0	0	-	0	1
% Articulated Trucks	0.5	0.0	-	-	0.4	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.2
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Conservation Drive & Beaver Creek Road
Site Code:
Start Date: 11/01/2017



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

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Conservation Drive & Beaver Creek Road
Site Code:
Start Date: 11/01/2017

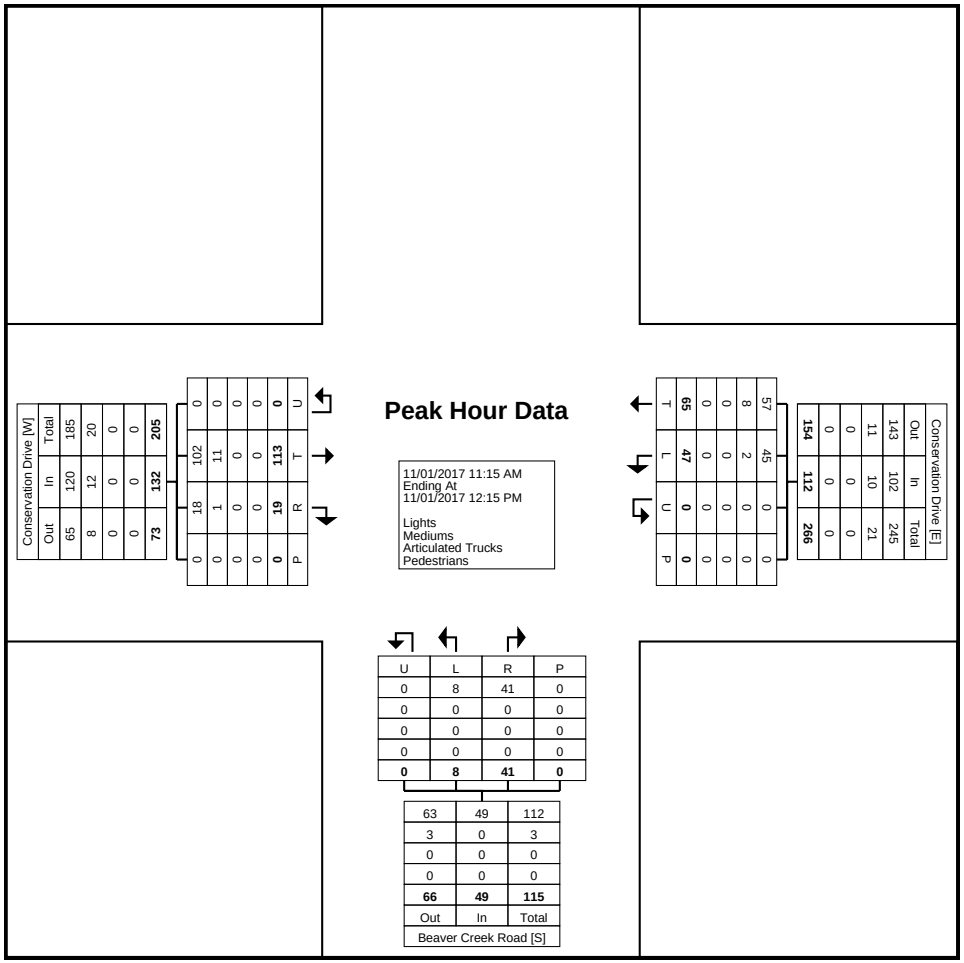
Turning Movement Peak Hour Data (11:15 AM)

Start Time	Conservation Drive Eastbound					Conservation Drive Westbound					Beaver Creek Road Northbound					
	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	Int. Total
11:15 AM	19	4	0	0	23	8	17	0	0	25	3	10	0	0	13	61
11:30 AM	32	8	0	0	40	18	22	0	0	40	0	13	0	0	13	93
11:45 AM	32	5	0	0	37	10	15	0	0	25	3	9	0	0	12	74
12:00 PM	30	2	0	0	32	11	11	0	0	22	2	9	0	0	11	65
Total	113	19	0	0	132	47	65	0	0	112	8	41	0	0	49	293
Approach %	85.6	14.4	0.0	-	-	42.0	58.0	0.0	-	-	16.3	83.7	0.0	-	-	-
Total %	38.6	6.5	0.0	-	45.1	16.0	22.2	0.0	-	38.2	2.7	14.0	0.0	-	16.7	-
PHF	0.883	0.594	0.000	-	0.825	0.653	0.739	0.000	-	0.700	0.667	0.788	0.000	-	0.942	0.788
Lights	102	18	0	-	120	45	57	0	-	102	8	41	0	-	49	271
% Lights	90.3	94.7	-	-	90.9	95.7	87.7	-	-	91.1	100.0	100.0	-	-	100.0	92.5
Mediums	11	1	0	-	12	2	8	0	-	10	0	0	0	-	0	22
% Mediums	9.7	5.3	-	-	9.1	4.3	12.3	-	-	8.9	0.0	0.0	-	-	0.0	7.5
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Conservation Drive & Beaver Creek Road
Site Code:
Start Date: 11/01/2017



Turning Movement Peak Hour Data Plot (11:15 AM)

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

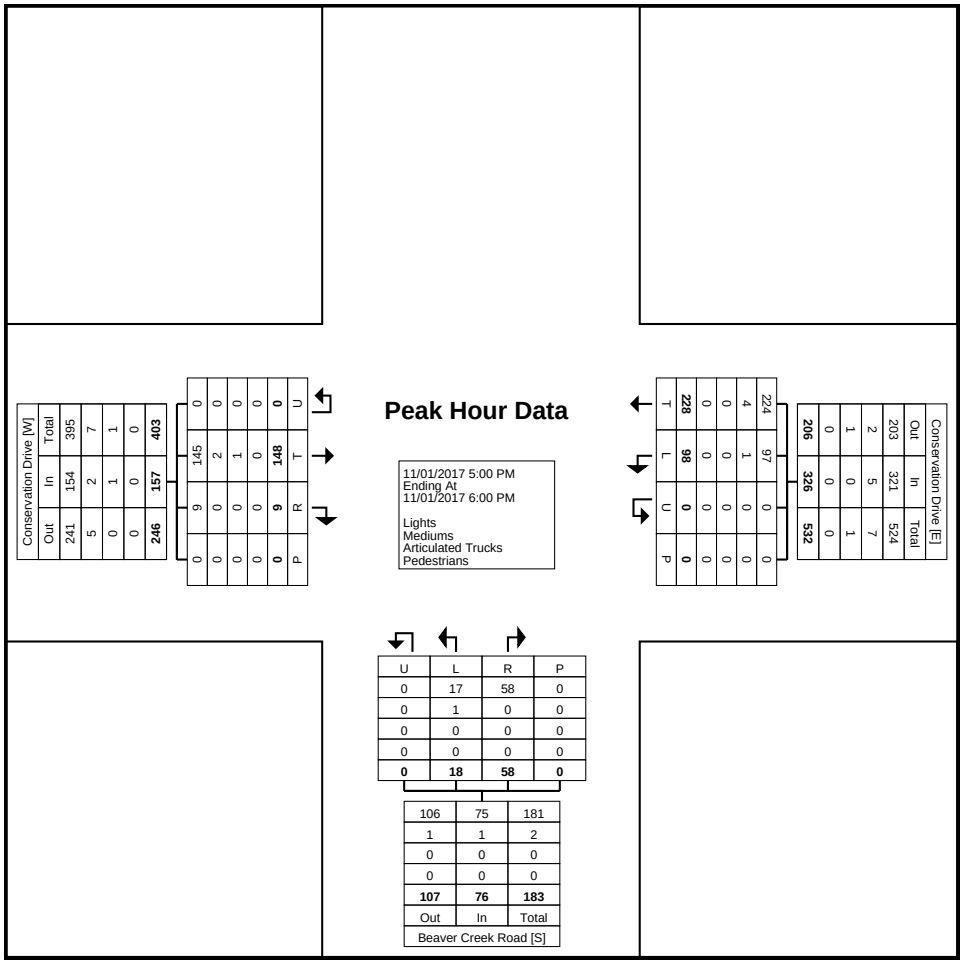
Count Name: Conservation Drive & Beaver Creek Road
Site Code:
Start Date: 11/01/2017

Turning Movement Peak Hour Data (5:00 PM)

Start Time	Conservation Drive Eastbound					Conservation Drive Westbound					Beaver Creek Road Northbound					
	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	Int. Total
5:00 PM	46	2	0	0	48	26	52	0	0	78	4	14	0	0	18	144
5:15 PM	32	4	0	0	36	25	75	0	0	100	4	13	0	0	17	153
5:30 PM	29	1	0	0	30	26	49	0	0	75	6	16	0	0	22	127
5:45 PM	41	2	0	0	43	21	52	0	0	73	4	15	0	0	19	135
Total	148	9	0	0	157	98	228	0	0	326	18	58	0	0	76	559
Approach %	94.3	5.7	0.0	-	-	30.1	69.9	0.0	-	-	23.7	76.3	0.0	-	-	-
Total %	26.5	1.6	0.0	-	28.1	17.5	40.8	0.0	-	58.3	3.2	10.4	0.0	-	13.6	-
PHF	0.804	0.563	0.000	-	0.818	0.942	0.760	0.000	-	0.815	0.750	0.906	0.000	-	0.864	0.913
Lights	145	9	0	-	154	97	224	0	-	321	17	58	0	-	75	550
% Lights	98.0	100.0	-	-	98.1	99.0	98.2	-	-	98.5	94.4	100.0	-	-	98.7	98.4
Mediums	2	0	0	-	2	1	4	0	-	5	1	0	0	-	1	8
% Mediums	1.4	0.0	-	-	1.3	1.0	1.8	-	-	1.5	5.6	0.0	-	-	1.3	1.4
Articulated Trucks	1	0	0	-	1	0	0	0	-	0	0	0	0	-	0	1
% Articulated Trucks	0.7	0.0	-	-	0.6	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.2
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com



Turning Movement Peak Hour Data Plot (5:00 PM)

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Conservation Drive & Beaver Creek Road
Site Code:
Start Date: 11/01/2017

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Conservation Drive & Erbsville Road
Site Code:
Start Date: 11/01/2017

Turning Movement Data

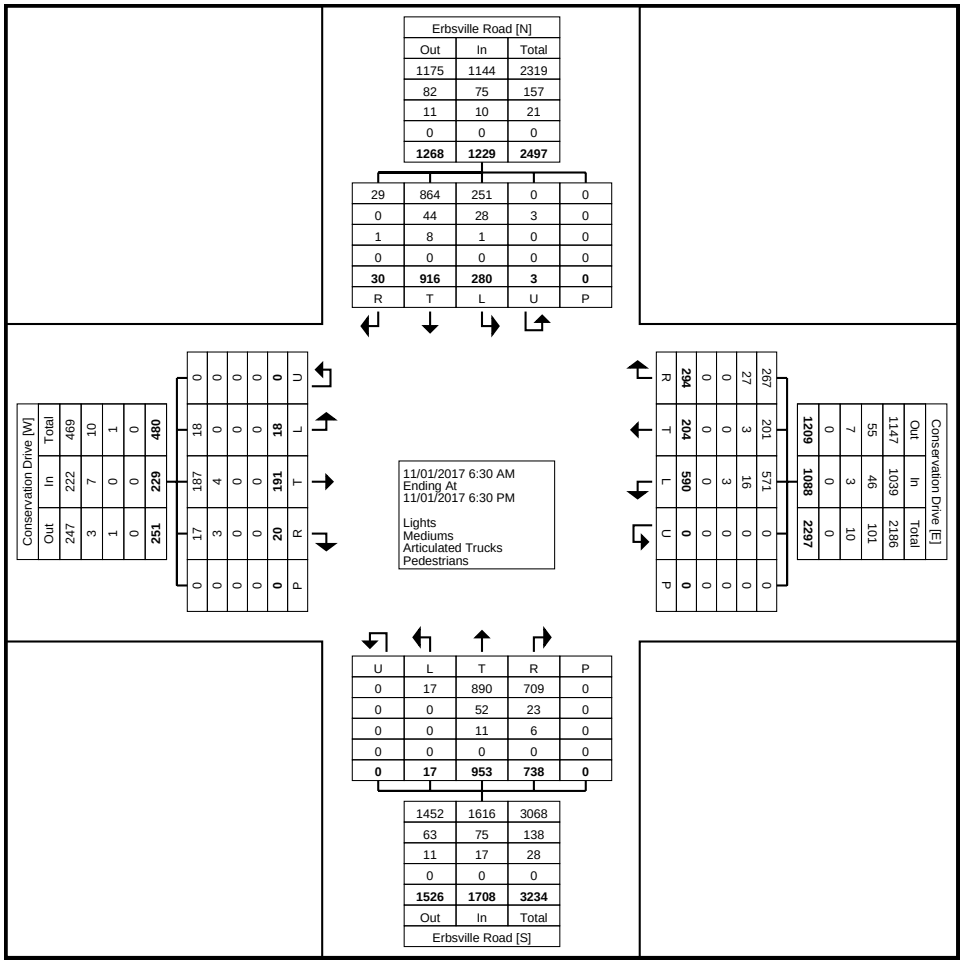
Start Time	Conservation Drive Eastbound						Conservation Drive Westbound						Erbsville Road Northbound						Erbsville Road Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
6:30 AM	1	5	0	0	0	6	8	1	8	0	0	17	1	18	12	0	0	31	7	7	0	0	0	14	68
6:45 AM	2	5	1	0	0	8	12	3	9	0	0	24	0	22	4	0	0	26	4	12	0	0	0	16	74
Hourly Total	3	10	1	0	0	14	20	4	17	0	0	41	1	40	16	0	0	57	11	19	0	0	0	30	142
7:00 AM	0	5	0	0	0	5	7	2	8	0	0	17	0	19	10	0	0	29	9	17	0	0	0	26	77
7:15 AM	1	5	1	0	0	7	7	4	8	0	0	19	0	25	15	0	0	40	14	18	0	0	0	32	98
7:30 AM	0	8	0	0	0	8	10	4	3	0	0	17	0	36	13	0	0	49	12	10	0	0	0	22	96
7:45 AM	1	6	0	0	0	7	14	6	5	0	0	25	0	32	19	0	0	51	10	27	0	0	0	37	120
Hourly Total	2	24	1	0	0	27	38	16	24	0	0	78	0	112	57	0	0	169	45	72	0	0	0	117	391
8:00 AM	2	10	0	0	0	12	21	5	5	0	0	31	0	31	20	0	0	51	9	27	0	0	0	36	130
8:15 AM	2	11	0	0	0	13	19	7	9	0	0	35	0	36	34	0	0	70	11	34	0	0	0	45	163
8:30 AM	2	9	3	0	0	14	11	7	5	0	0	23	0	43	36	0	0	79	21	24	0	0	0	45	161
8:45 AM	0	11	1	0	0	12	17	6	4	0	0	27	0	31	31	0	0	62	14	21	0	0	0	35	136
Hourly Total	6	41	4	0	0	51	68	25	23	0	0	116	0	141	121	0	0	262	55	106	0	0	0	161	590
9:00 AM	1	12	0	0	0	13	6	1	11	0	0	18	0	33	23	0	0	56	6	23	0	0	0	29	116
9:15 AM	0	6	1	0	0	7	9	3	2	0	0	14	0	22	34	0	0	56	11	13	0	0	0	24	101
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	1	18	1	0	0	20	15	4	13	0	0	32	0	55	57	0	0	112	17	36	0	0	0	53	217
11:00 AM	0	4	3	0	0	7	18	3	6	0	0	27	0	17	12	0	0	29	3	13	0	0	0	16	79
11:15 AM	0	0	0	0	0	0	15	1	6	0	0	22	0	16	15	0	0	31	5	19	3	2	0	29	82
11:30 AM	0	5	1	0	0	6	27	5	4	0	0	36	1	27	20	0	0	48	14	17	1	1	0	33	123
11:45 AM	0	1	0	0	0	1	8	4	7	0	0	19	0	27	24	0	0	51	8	19	0	0	0	27	98
Hourly Total	0	10	4	0	0	14	68	13	23	0	0	104	1	87	71	0	0	159	30	68	4	3	0	105	382
12:00 PM	0	7	1	0	0	8	7	4	3	0	0	14	0	23	20	0	0	43	7	15	0	0	0	22	87
12:15 PM	1	2	0	0	0	3	5	2	4	0	0	11	0	21	12	0	0	33	1	18	0	0	0	19	66
12:30 PM	0	4	0	0	0	4	8	5	7	0	0	20	1	21	10	0	0	32	3	22	1	0	0	26	82
12:45 PM	0	3	1	0	0	4	13	5	4	0	0	22	2	19	18	0	0	39	5	18	1	0	0	24	89
Hourly Total	1	16	2	0	0	19	33	16	18	0	0	67	3	84	60	0	0	147	16	73	2	0	0	91	324
1:00 PM	0	3	1	0	0	4	12	1	6	0	0	19	0	16	21	0	0	37	5	25	0	0	0	30	90
1:15 PM	0	3	0	0	0	3	16	5	6	0	0	27	1	25	20	0	0	46	5	28	1	0	0	34	110
1:30 PM	0	4	0	0	0	4	20	0	7	0	0	27	2	26	17	0	0	45	5	19	2	0	0	26	102
1:45 PM	0	5	0	0	0	5	17	2	10	0	0	29	1	25	13	0	0	39	6	22	1	0	0	29	102
Hourly Total	0	15	1	0	0	16	65	8	29	0	0	102	4	92	71	0	0	167	21	94	4	0	0	119	404
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:30 PM	0	7	0	0	0	7	12	5	10	0	0	27	0	25	24	0	0	49	5	24	0	0	0	29	112
3:45 PM	1	5	1	0	0	7	16	6	8	0	0	30	1	29	26	0	0	56	5	22	1	0	0	28	121
Hourly Total	1	12	1	0	0	14	28	11	18	0	0	57	1	54	50	0	0	105	10	46	1	0	0	57	233
4:00 PM	2	2	1	0	0	5	19	10	16	0	0	45	2	30	22	0	0	54	6	31	1	0	0	38	142

4:15 PM	0	5	1	0	0	6	18	8	20	0	0	46	0	40	14	0	0	54	8	35	0	0	0	43	149
4:30 PM	0	2	0	0	0	2	32	12	9	0	0	53	3	32	21	0	0	56	9	28	2	0	0	39	150
4:45 PM	0	7	1	0	0	8	32	13	17	0	0	62	0	33	25	0	0	58	5	54	4	0	0	63	191
Hourly Total	2	16	3	0	0	21	101	43	62	0	0	206	5	135	82	0	0	222	28	148	7	0	0	183	632
5:00 PM	0	7	1	0	0	8	33	11	7	0	0	51	0	34	28	0	0	62	9	45	2	0	0	56	177
5:15 PM	0	7	0	0	0	7	37	18	22	0	0	77	0	28	20	0	0	48	10	56	5	0	0	71	203
5:30 PM	2	2	0	0	0	4	27	12	14	0	0	53	1	23	25	0	0	49	4	47	3	0	0	54	160
5:45 PM	0	2	1	0	0	3	25	8	14	0	0	47	0	27	32	0	0	59	9	52	2	0	0	63	172
Hourly Total	2	18	2	0	0	22	122	49	57	0	0	228	1	112	105	0	0	218	32	200	12	0	0	244	712
6:00 PM	0	9	0	0	0	9	19	13	5	0	0	37	1	21	24	0	0	46	5	31	0	0	0	36	128
6:15 PM	0	2	0	0	0	2	13	2	5	0	0	20	0	20	24	0	0	44	10	23	0	0	0	33	99
Grand Total	18	191	20	0	0	229	590	204	294	0	0	1088	17	953	738	0	0	1708	280	916	30	3	0	1229	4254
Approach %	7.9	83.4	8.7	0.0	-	-	54.2	18.8	27.0	0.0	-	-	1.0	55.8	43.2	0.0	-	-	22.8	74.5	2.4	0.2	-	-	-
Total %	0.4	4.5	0.5	0.0	-	5.4	13.9	4.8	6.9	0.0	-	25.6	0.4	22.4	17.3	0.0	-	40.2	6.6	21.5	0.7	0.1	-	28.9	-
Lights	18	187	17	0	-	222	571	201	267	0	-	1039	17	890	709	0	-	1616	251	864	29	0	-	1144	4021
% Lights	100.0	97.9	85.0	-	-	96.9	96.8	98.5	90.8	-	-	95.5	100.0	93.4	96.1	-	-	94.6	89.6	94.3	96.7	0.0	-	93.1	94.5
Mediums	0	4	3	0	-	7	16	3	27	0	-	46	0	52	23	0	-	75	28	44	0	3	-	75	203
% Mediums	0.0	2.1	15.0	-	-	3.1	2.7	1.5	9.2	-	-	4.2	0.0	5.5	3.1	-	-	4.4	10.0	4.8	0.0	100.0	-	6.1	4.8
Articulated Trucks	0	0	0	0	-	0	3	0	0	0	-	3	0	11	6	0	-	17	1	8	1	0	-	10	30
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.5	0.0	0.0	-	-	0.3	0.0	1.2	0.8	-	-	1.0	0.4	0.9	3.3	0.0	-	0.8	0.7
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Conservation Drive & Erbsville Road
Site Code:
Start Date: 11/01/2017



Turning Movement Data Plot

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Conservation Drive & Erbsville Road
Site Code:
Start Date: 11/01/2017

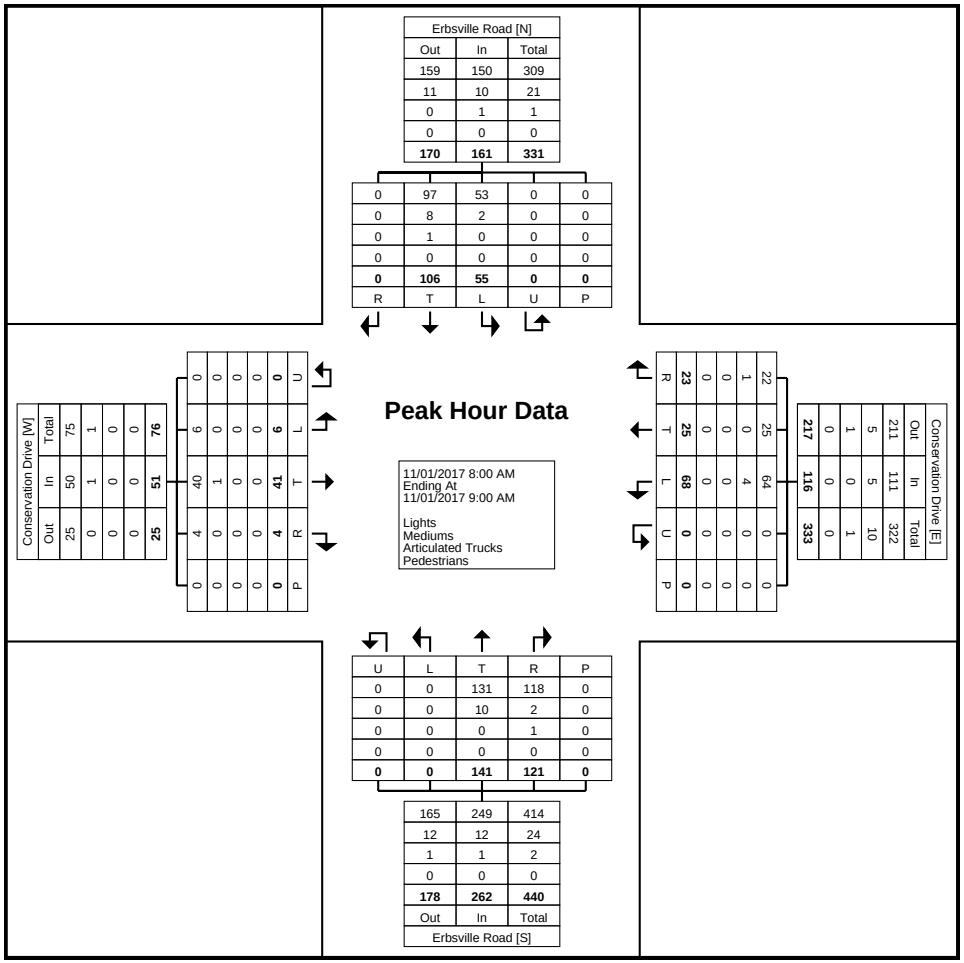
Turning Movement Peak Hour Data (8:00 AM)

Start Time	Conservation Drive Eastbound						Conservation Drive Westbound						Erbsville Road Northbound						Erbsville Road Southbound						
	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	Int. Total
8:00 AM	2	10	0	0	0	12	21	5	5	0	0	31	0	31	20	0	0	51	9	27	0	0	0	36	130
8:15 AM	2	11	0	0	0	13	19	7	9	0	0	35	0	36	34	0	0	70	11	34	0	0	0	45	163
8:30 AM	2	9	3	0	0	14	11	7	5	0	0	23	0	43	36	0	0	79	21	24	0	0	0	45	161
8:45 AM	0	11	1	0	0	12	17	6	4	0	0	27	0	31	31	0	0	62	14	21	0	0	0	35	136
Total	6	41	4	0	0	51	68	25	23	0	0	116	0	141	121	0	0	262	55	106	0	0	0	161	590
Approach %	11.8	80.4	7.8	0.0	-	-	58.6	21.6	19.8	0.0	-	-	0.0	53.8	46.2	0.0	-	-	34.2	65.8	0.0	0.0	-	-	-
Total %	1.0	6.9	0.7	0.0	-	8.6	11.5	4.2	3.9	0.0	-	19.7	0.0	23.9	20.5	0.0	-	44.4	9.3	18.0	0.0	0.0	-	27.3	-
PHF	0.750	0.932	0.333	0.000	-	0.911	0.810	0.893	0.639	0.000	-	0.829	0.000	0.820	0.840	0.000	-	0.829	0.655	0.779	0.000	0.000	-	0.894	0.905
Lights	6	40	4	0	-	50	64	25	22	0	-	111	0	131	118	0	-	249	53	97	0	0	-	150	560
% Lights	100.0	97.6	100.0	-	-	98.0	94.1	100.0	95.7	-	-	95.7	-	92.9	97.5	-	-	95.0	96.4	91.5	-	-	-	93.2	94.9
Mediums	0	1	0	0	-	1	4	0	1	0	-	5	0	10	2	0	-	12	2	8	0	0	-	10	28
% Mediums	0.0	2.4	0.0	-	-	2.0	5.9	0.0	4.3	-	-	4.3	-	7.1	1.7	-	-	4.6	3.6	7.5	-	-	-	6.2	4.7
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	1	0	-	1	0	1	0	0	-	1	2
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	-	0.0	0.8	-	-	0.4	0.0	0.9	-	-	-	0.6	0.3
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Conservation Drive & Erbsville Road
Site Code:
Start Date: 11/01/2017



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

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Conservation Drive & Erbsville Road
Site Code:
Start Date: 11/01/2017

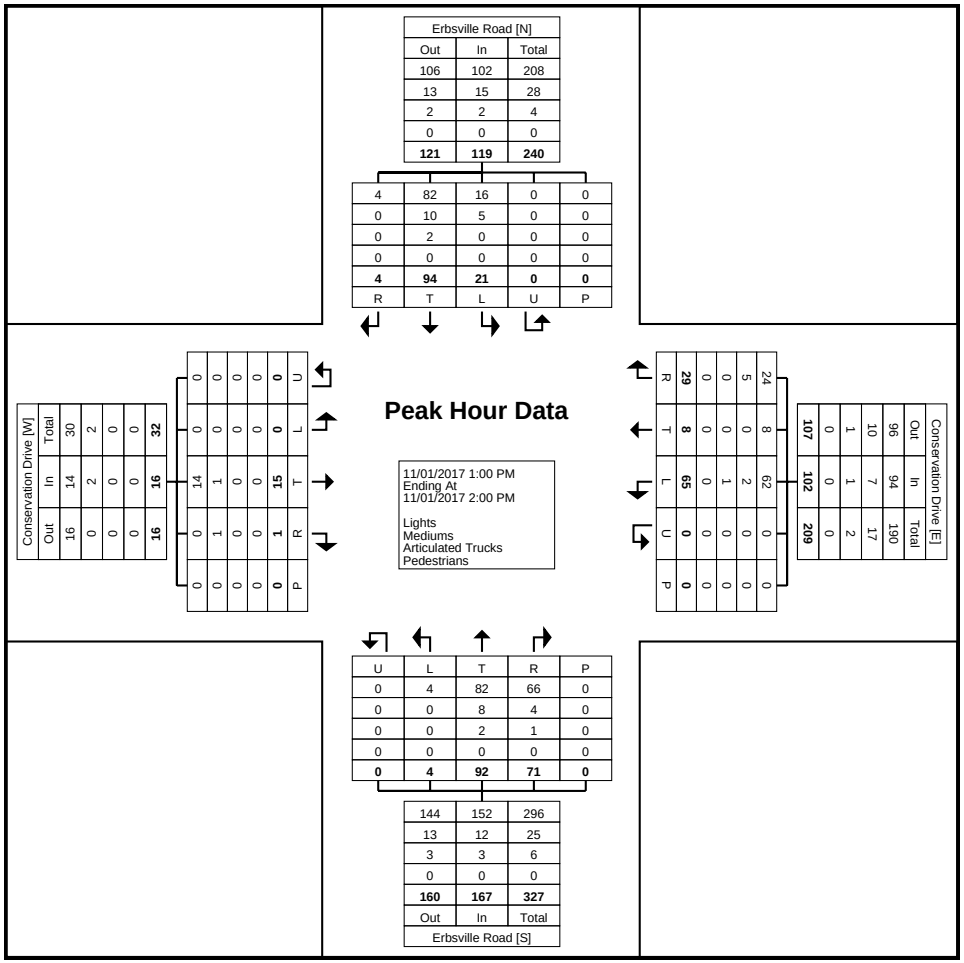
Turning Movement Peak Hour Data (1:00 PM)

Start Time	Conservation Drive Eastbound						Conservation Drive Westbound						Erbsville Road Northbound						Erbsville Road Southbound						
	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	Int. Total
1:00 PM	0	3	1	0	0	4	12	1	6	0	0	19	0	16	21	0	0	37	5	25	0	0	0	30	90
1:15 PM	0	3	0	0	0	3	16	5	6	0	0	27	1	25	20	0	0	46	5	28	1	0	0	34	110
1:30 PM	0	4	0	0	0	4	20	0	7	0	0	27	2	26	17	0	0	45	5	19	2	0	0	26	102
1:45 PM	0	5	0	0	0	5	17	2	10	0	0	29	1	25	13	0	0	39	6	22	1	0	0	29	102
Total	0	15	1	0	0	16	65	8	29	0	0	102	4	92	71	0	0	167	21	94	4	0	0	119	404
Approach %	0.0	93.8	6.3	0.0	-	-	63.7	7.8	28.4	0.0	-	-	2.4	55.1	42.5	0.0	-	-	17.6	79.0	3.4	0.0	-	-	-
Total %	0.0	3.7	0.2	0.0	-	4.0	16.1	2.0	7.2	0.0	-	25.2	1.0	22.8	17.6	0.0	-	41.3	5.2	23.3	1.0	0.0	-	29.5	-
PHF	0.000	0.750	0.250	0.000	-	0.800	0.813	0.400	0.725	0.000	-	0.879	0.500	0.885	0.845	0.000	-	0.908	0.875	0.839	0.500	0.000	-	0.875	0.918
Lights	0	14	0	0	-	14	62	8	24	0	-	94	4	82	66	0	-	152	16	82	4	0	-	102	362
% Lights	-	93.3	0.0	-	-	87.5	95.4	100.0	82.8	-	-	92.2	100.0	89.1	93.0	-	-	91.0	76.2	87.2	100.0	-	-	85.7	89.6
Mediums	0	1	1	0	-	2	2	0	5	0	-	7	0	8	4	0	-	12	5	10	0	0	-	15	36
% Mediums	-	6.7	100.0	-	-	12.5	3.1	0.0	17.2	-	-	6.9	0.0	8.7	5.6	-	-	7.2	23.8	10.6	0.0	-	-	12.6	8.9
Articulated Trucks	0	0	0	0	-	0	1	0	0	0	-	1	0	2	1	0	-	3	0	2	0	0	-	2	6
% Articulated Trucks	-	0.0	0.0	-	-	0.0	1.5	0.0	0.0	-	-	1.0	0.0	2.2	1.4	-	-	1.8	0.0	2.1	0.0	-	-	1.7	1.5
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Conservation Drive & Erbsville Road
Site Code:
Start Date: 11/01/2017



Turning Movement Peak Hour Data Plot (1:00 PM)

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Conservation Drive & Erbsville Road
Site Code:
Start Date: 11/01/2017

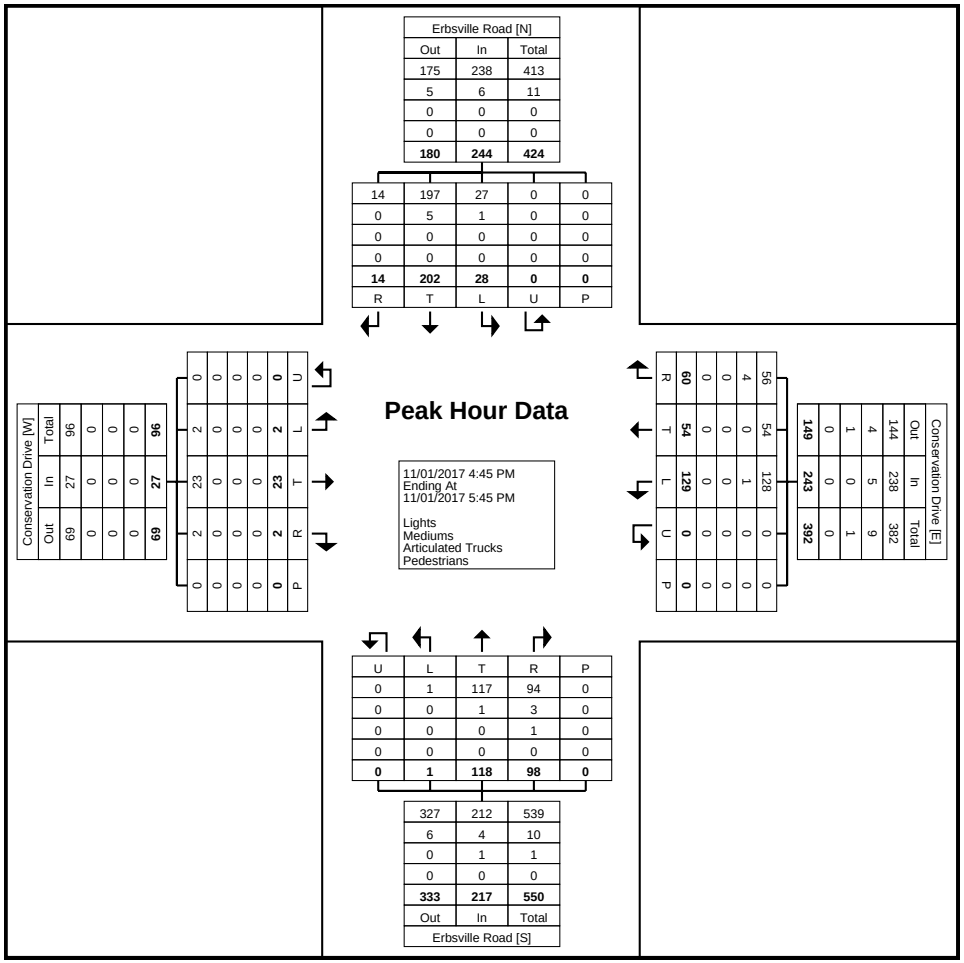
Turning Movement Peak Hour Data (4:45 PM)

Start Time	Conservation Drive Eastbound						Conservation Drive Westbound						Erbsville Road Northbound						Erbsville Road Southbound						
	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	Int. Total
4:45 PM	0	7	1	0	0	8	32	13	17	0	0	62	0	33	25	0	0	58	5	54	4	0	0	63	191
5:00 PM	0	7	1	0	0	8	33	11	7	0	0	51	0	34	28	0	0	62	9	45	2	0	0	56	177
5:15 PM	0	7	0	0	0	7	37	18	22	0	0	77	0	28	20	0	0	48	10	56	5	0	0	71	203
5:30 PM	2	2	0	0	0	4	27	12	14	0	0	53	1	23	25	0	0	49	4	47	3	0	0	54	160
Total	2	23	2	0	0	27	129	54	60	0	0	243	1	118	98	0	0	217	28	202	14	0	0	244	731
Approach %	7.4	85.2	7.4	0.0	-	-	53.1	22.2	24.7	0.0	-	-	0.5	54.4	45.2	0.0	-	-	11.5	82.8	5.7	0.0	-	-	-
Total %	0.3	3.1	0.3	0.0	-	3.7	17.6	7.4	8.2	0.0	-	33.2	0.1	16.1	13.4	0.0	-	29.7	3.8	27.6	1.9	0.0	-	33.4	-
PHF	0.250	0.821	0.500	0.000	-	0.844	0.872	0.750	0.682	0.000	-	0.789	0.250	0.868	0.875	0.000	-	0.875	0.700	0.902	0.700	0.000	-	0.859	0.900
Lights	2	23	2	0	-	27	128	54	56	0	-	238	1	117	94	0	-	212	27	197	14	0	-	238	715
% Lights	100.0	100.0	100.0	-	-	100.0	99.2	100.0	93.3	-	-	97.9	100.0	99.2	95.9	-	-	97.7	96.4	97.5	100.0	-	-	97.5	97.8
Mediums	0	0	0	0	-	0	1	0	4	0	-	5	0	1	3	0	-	4	1	5	0	0	-	6	15
% Mediums	0.0	0.0	0.0	-	-	0.0	0.8	0.0	6.7	-	-	2.1	0.0	0.8	3.1	-	-	1.8	3.6	2.5	0.0	-	-	2.5	2.1
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	1	0	-	1	0	0	0	0	-	0	1
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	1.0	-	-	0.5	0.0	0.0	0.0	-	-	0.0	0.1
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Conservation Drive & Erbsville Road
Site Code:
Start Date: 11/01/2017



Turning Movement Peak Hour Data Plot (4:45 PM)

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Conservation Drive & Erbsville Road
Site Code:
Start Date: 11/01/2017

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Conservation Drive & Westmount Road North
Site Code:
Start Date: 11/01/2017

Turning Movement Data

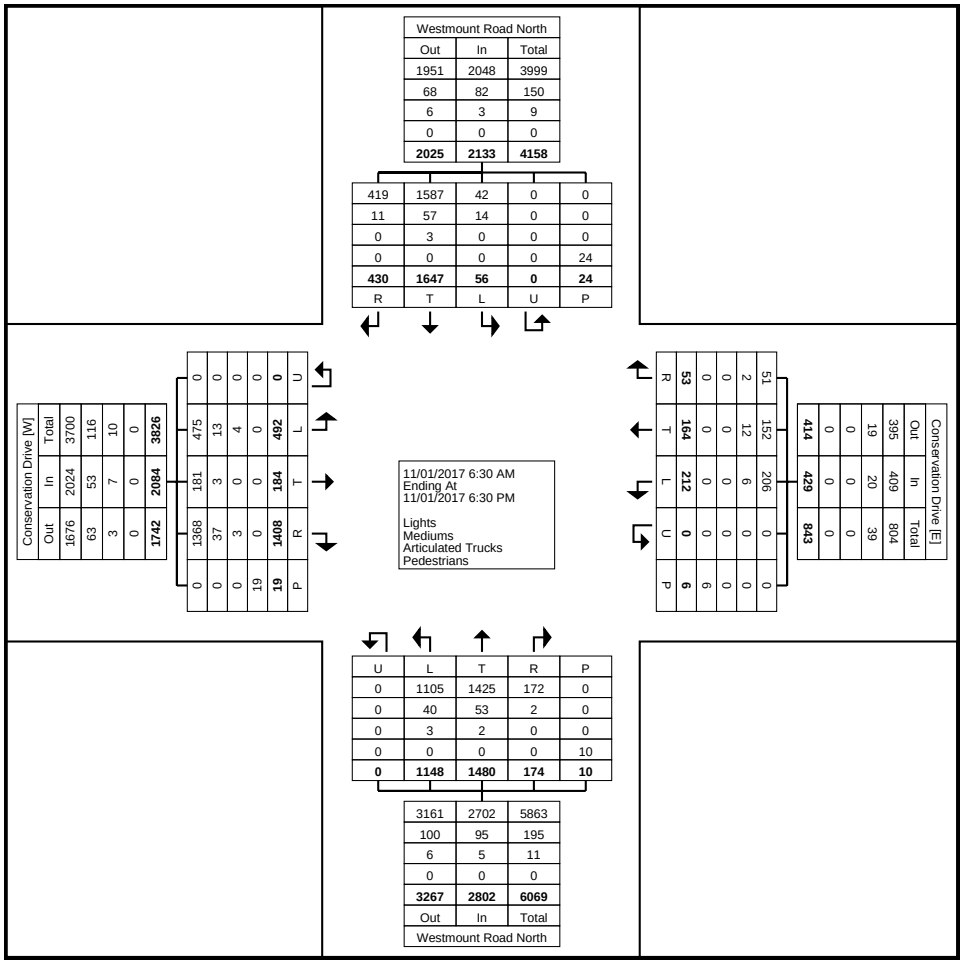
Start Time	Conservation Drive Eastbound						Conservation Drive Westbound						Westmount Road North Northbound						Westmount Road North Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
6:30 AM	15	3	28	0	0	46	6	2	0	0	0	8	10	17	1	0	0	28	0	20	5	0	0	25	107
6:45 AM	9	3	29	0	0	41	1	2	2	0	0	5	18	23	3	0	0	44	1	31	7	0	0	39	129
Hourly Total	24	6	57	0	0	87	7	4	2	0	0	13	28	40	4	0	0	72	1	51	12	0	0	64	236
7:00 AM	6	2	25	0	1	33	4	6	4	0	0	14	8	20	0	0	1	28	1	36	2	0	1	39	114
7:15 AM	17	1	39	0	1	57	5	6	2	0	0	13	7	20	2	0	1	29	3	48	2	0	2	53	152
7:30 AM	16	4	55	0	0	75	8	5	1	0	0	14	12	33	2	0	0	47	1	51	1	0	0	53	189
7:45 AM	21	0	73	0	0	94	12	6	2	0	0	20	8	39	2	0	0	49	2	71	3	0	2	76	239
Hourly Total	60	7	192	0	2	259	29	23	9	0	0	61	35	112	6	0	2	153	7	206	8	0	5	221	694
8:00 AM	19	10	69	0	0	98	11	4	1	0	0	16	21	27	9	0	1	57	2	62	4	0	1	68	239
8:15 AM	33	16	98	0	1	147	8	9	1	0	1	18	25	49	7	0	0	81	5	84	4	0	0	93	339
8:30 AM	29	5	89	0	1	123	16	10	8	0	0	34	14	38	1	0	0	53	1	52	6	0	2	59	269
8:45 AM	36	3	71	0	1	110	8	5	1	0	0	14	7	39	4	0	0	50	2	65	4	0	0	71	245
Hourly Total	117	34	327	0	3	478	43	28	11	0	1	82	67	153	21	0	1	241	10	263	18	0	3	291	1092
9:00 AM	20	8	63	0	1	91	12	0	0	0	1	12	21	28	3	0	2	52	0	44	2	0	2	46	201
9:15 AM	23	2	57	0	0	82	6	3	0	0	0	9	11	45	4	0	0	60	1	42	4	0	1	47	198
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	43	10	120	0	1	173	18	3	0	0	1	21	32	73	7	0	2	112	1	86	6	0	3	93	399
11:00 AM	6	1	36	0	0	43	6	2	0	0	0	8	18	40	4	0	1	62	1	31	5	0	0	37	150
11:15 AM	8	0	18	0	0	26	7	4	0	0	0	11	16	30	5	0	0	51	0	32	7	0	0	39	127
11:30 AM	10	5	36	0	1	51	3	4	0	0	0	7	18	36	5	0	1	59	2	24	11	0	0	37	154
11:45 AM	11	4	39	0	0	54	3	1	1	0	0	5	30	36	1	0	0	67	0	35	11	0	0	46	172
Hourly Total	35	10	129	0	1	174	19	11	1	0	0	31	82	142	15	0	2	239	3	122	34	0	0	159	603
12:00 PM	10	5	28	0	1	43	3	2	1	0	1	6	22	42	5	0	1	69	1	21	5	0	0	27	145
12:15 PM	11	3	25	0	0	39	6	2	0	0	1	8	30	38	2	0	0	70	1	27	8	0	1	36	153
12:30 PM	8	3	17	0	1	28	5	1	0	0	0	6	20	36	5	0	0	61	2	29	13	0	0	44	139
12:45 PM	7	6	27	0	0	40	5	4	2	0	0	11	26	18	3	0	0	47	0	42	7	0	0	49	147
Hourly Total	36	17	97	0	2	150	19	9	3	0	2	31	98	134	15	0	1	247	4	119	33	0	1	156	584
1:00 PM	11	2	24	0	0	37	10	5	1	0	0	16	22	33	9	0	1	64	4	40	9	0	0	53	170
1:15 PM	12	3	28	0	0	43	6	4	1	0	0	11	22	38	6	0	0	66	0	22	8	0	1	30	150
1:30 PM	13	1	24	0	1	38	2	1	0	0	1	3	30	43	1	0	0	74	0	40	13	0	0	53	168
1:45 PM	6	6	22	0	2	34	5	2	2	0	0	9	23	26	5	0	0	54	2	22	11	0	0	35	132
Hourly Total	42	12	98	0	3	152	23	12	4	0	1	39	97	140	21	0	1	258	6	124	41	0	1	171	620
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:30 PM	13	4	32	0	1	49	6	4	2	0	0	12	29	44	7	0	1	80	3	42	15	0	1	60	201
3:45 PM	16	7	36	0	0	59	5	7	2	0	0	14	38	48	3	0	0	89	0	47	13	0	1	60	222
Hourly Total	29	11	68	0	1	108	11	11	4	0	0	26	67	92	10	0	1	169	3	89	28	0	2	120	423
4:00 PM	7	8	29	0	1	44	3	6	1	0	0	10	52	57	7	0	0	116	1	53	20	0	0	74	244

4:15 PM	11	5	38	0	1	54	4	4	1	0	0	9	69	63	5	0	0	137	0	47	16	0	2	63	263
4:30 PM	11	9	32	0	3	52	6	5	1	0	0	12	57	75	10	0	0	142	3	64	21	0	0	88	294
4:45 PM	8	9	34	0	0	51	3	5	2	0	0	10	72	75	9	0	0	156	0	68	23	0	0	91	308
Hourly Total	37	31	133	0	5	201	16	20	5	0	0	41	250	270	31	0	0	551	4	232	80	0	2	316	1109
5:00 PM	13	10	25	0	0	48	4	6	3	0	0	13	81	67	7	0	0	155	5	68	38	0	1	111	327
5:15 PM	15	3	27	0	0	45	4	6	1	0	0	11	87	73	9	0	0	169	2	86	43	0	0	131	356
5:30 PM	5	9	32	0	0	46	7	12	6	0	0	25	73	50	13	0	0	136	1	71	39	0	0	111	318
5:45 PM	13	8	35	0	0	56	5	9	1	0	0	15	53	48	2	0	0	103	1	51	26	0	0	78	252
Hourly Total	46	30	119	0	0	195	20	33	11	0	0	64	294	238	31	0	0	563	9	276	146	0	1	431	1253
6:00 PM	12	11	26	0	1	49	2	1	2	0	1	5	54	44	7	0	0	105	4	31	12	0	1	47	206
6:15 PM	11	5	42	0	0	58	5	9	1	0	0	15	44	42	6	0	0	92	4	48	12	0	5	64	229
Grand Total	492	184	1408	0	19	2084	212	164	53	0	6	429	1148	1480	174	0	10	2802	56	1647	430	0	24	2133	7448
Approach %	23.6	8.8	67.6	0.0	-	-	49.4	38.2	12.4	0.0	-	-	41.0	52.8	6.2	0.0	-	-	2.6	77.2	20.2	0.0	-	-	-
Total %	6.6	2.5	18.9	0.0	-	28.0	2.8	2.2	0.7	0.0	-	5.8	15.4	19.9	2.3	0.0	-	37.6	0.8	22.1	5.8	0.0	-	28.6	-
Lights	475	181	1368	0	-	2024	206	152	51	0	-	409	1105	1425	172	0	-	2702	42	1587	419	0	-	2048	7183
% Lights	96.5	98.4	97.2	-	-	97.1	97.2	92.7	96.2	-	-	95.3	96.3	96.3	98.9	-	-	96.4	75.0	96.4	97.4	-	-	96.0	96.4
Mediums	13	3	37	0	-	53	6	12	2	0	-	20	40	53	2	0	-	95	14	57	11	0	-	82	250
% Mediums	2.6	1.6	2.6	-	-	2.5	2.8	7.3	3.8	-	-	4.7	3.5	3.6	1.1	-	-	3.4	25.0	3.5	2.6	-	-	3.8	3.4
Articulated Trucks	4	0	3	0	-	7	0	0	0	0	-	0	3	2	0	0	-	5	0	3	0	0	-	3	15
% Articulated Trucks	0.8	0.0	0.2	-	-	0.3	0.0	0.0	0.0	-	-	0.0	0.3	0.1	0.0	-	-	0.2	0.0	0.2	0.0	-	-	0.1	0.2
Pedestrians	-	-	-	-	19	-	-	-	-	-	6	-	-	-	-	-	10	-	-	-	-	-	24	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Conservation Drive & Westmount Road North
Site Code:
Start Date: 11/01/2017



Turning Movement Data Plot

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

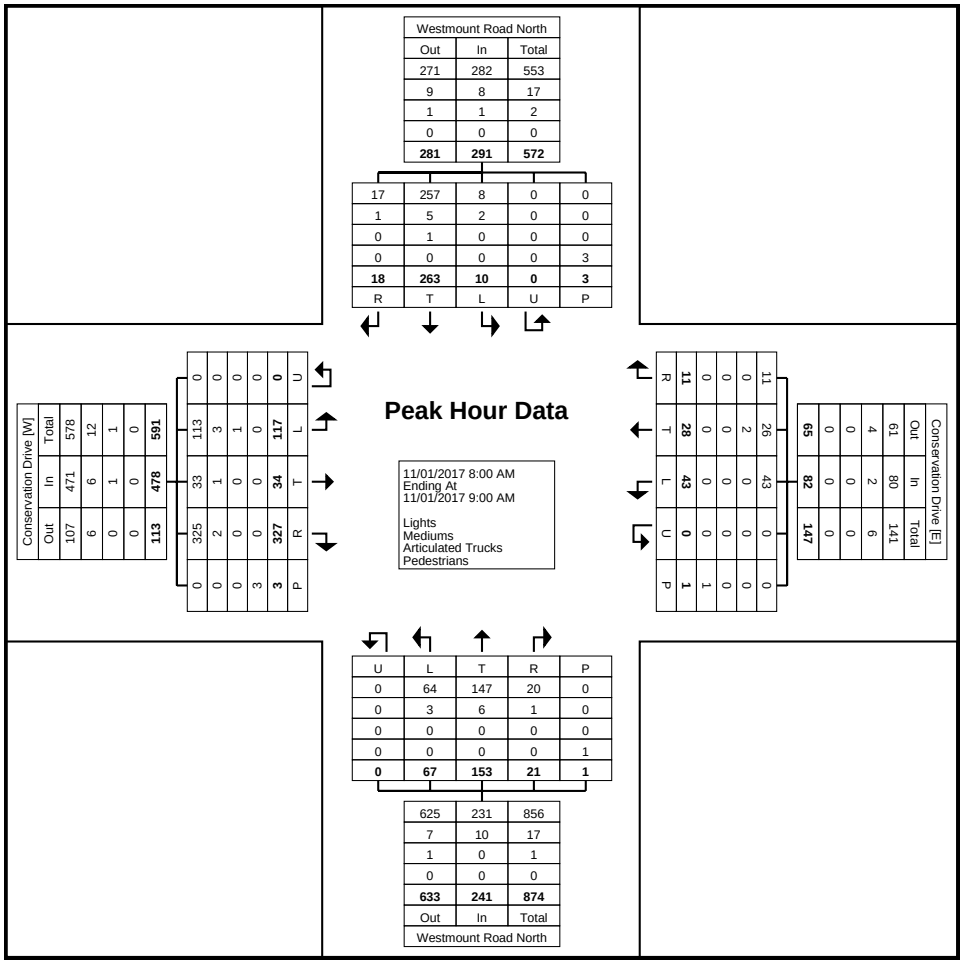
Count Name: Conservation Drive & Westmount Road North
Site Code:
Start Date: 11/01/2017

Turning Movement Peak Hour Data (8:00 AM)

Start Time	Conservation Drive Eastbound						Conservation Drive Westbound						Westmount Road North Northbound						Westmount Road North 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	19	10	69	0	0	98	11	4	1	0	0	16	21	27	9	0	1	57	2	62	4	0	1	68	239
8:15 AM	33	16	98	0	1	147	8	9	1	0	1	18	25	49	7	0	0	81	5	84	4	0	0	93	339
8:30 AM	29	5	89	0	1	123	16	10	8	0	0	34	14	38	1	0	0	53	1	52	6	0	2	59	269
8:45 AM	36	3	71	0	1	110	8	5	1	0	0	14	7	39	4	0	0	50	2	65	4	0	0	71	245
Total	117	34	327	0	3	478	43	28	11	0	1	82	67	153	21	0	1	241	10	263	18	0	3	291	1092
Approach %	24.5	7.1	68.4	0.0	-	-	52.4	34.1	13.4	0.0	-	-	27.8	63.5	8.7	0.0	-	-	3.4	90.4	6.2	0.0	-	-	-
Total %	10.7	3.1	29.9	0.0	-	43.8	3.9	2.6	1.0	0.0	-	7.5	6.1	14.0	1.9	0.0	-	22.1	0.9	24.1	1.6	0.0	-	26.6	-
PHF	0.813	0.531	0.834	0.000	-	0.813	0.672	0.700	0.344	0.000	-	0.603	0.670	0.781	0.583	0.000	-	0.744	0.500	0.783	0.750	0.000	-	0.782	0.805
Lights	113	33	325	0	-	471	43	26	11	0	-	80	64	147	20	0	-	231	8	257	17	0	-	282	1064
% Lights	96.6	97.1	99.4	-	-	98.5	100.0	92.9	100.0	-	-	97.6	95.5	96.1	95.2	-	-	95.9	80.0	97.7	94.4	-	-	96.9	97.4
Mediums	3	1	2	0	-	6	0	2	0	0	-	2	3	6	1	0	-	10	2	5	1	0	-	8	26
% Mediums	2.6	2.9	0.6	-	-	1.3	0.0	7.1	0.0	-	-	2.4	4.5	3.9	4.8	-	-	4.1	20.0	1.9	5.6	-	-	2.7	2.4
Articulated Trucks	1	0	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	1	2
% Articulated Trucks	0.9	0.0	0.0	-	-	0.2	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.4	0.0	-	-	0.3	0.2
Pedestrians	-	-	-	-	3	-	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	3	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com



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

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Conservation Drive & Westmount Road North
Site Code:
Start Date: 11/01/2017

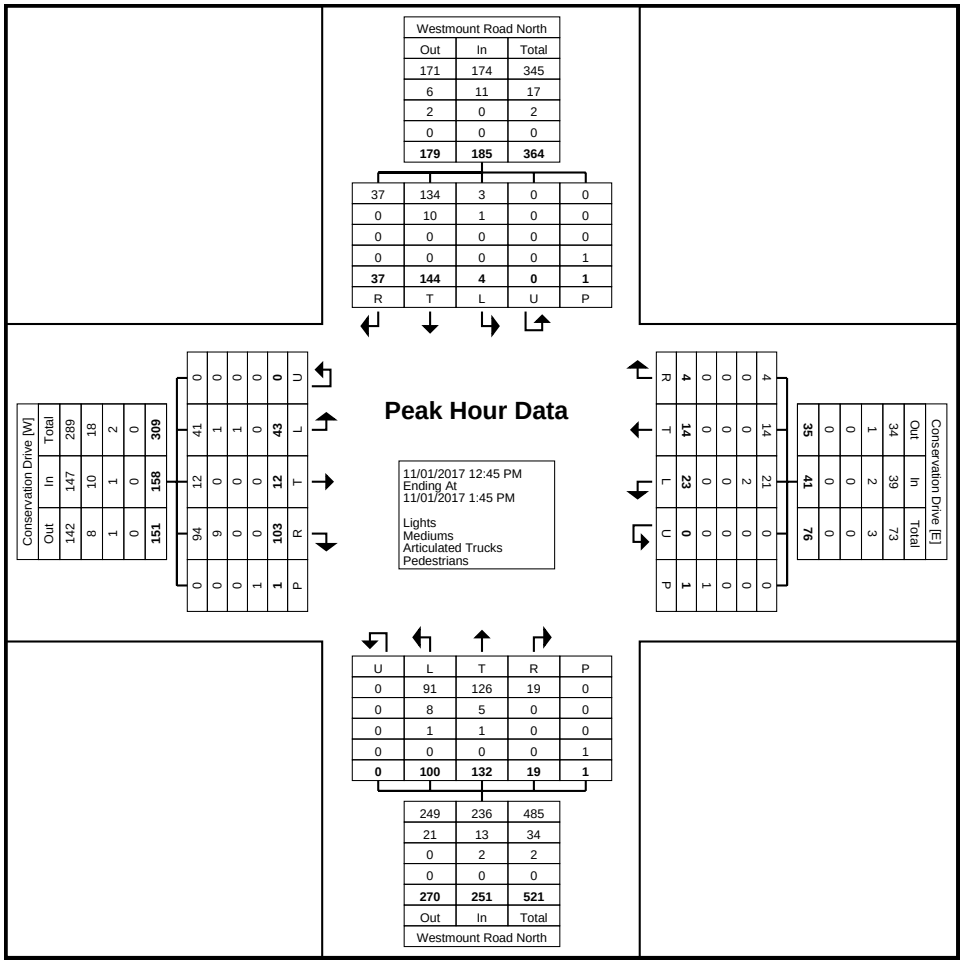
Turning Movement Peak Hour Data (12:45 PM)

Start Time	Conservation Drive Eastbound						Conservation Drive Westbound						Westmount Road North Northbound						Westmount Road North 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	
12:45 PM	7	6	27	0	0	40	5	4	2	0	0	11	26	18	3	0	0	47	0	42	7	0	0	49	147
1:00 PM	11	2	24	0	0	37	10	5	1	0	0	16	22	33	9	0	1	64	4	40	9	0	0	53	170
1:15 PM	12	3	28	0	0	43	6	4	1	0	0	11	22	38	6	0	0	66	0	22	8	0	1	30	150
1:30 PM	13	1	24	0	1	38	2	1	0	0	1	3	30	43	1	0	0	74	0	40	13	0	0	53	168
Total	43	12	103	0	1	158	23	14	4	0	1	41	100	132	19	0	1	251	4	144	37	0	1	185	635
Approach %	27.2	7.6	65.2	0.0	-	-	56.1	34.1	9.8	0.0	-	-	39.8	52.6	7.6	0.0	-	-	2.2	77.8	20.0	0.0	-	-	-
Total %	6.8	1.9	16.2	0.0	-	24.9	3.6	2.2	0.6	0.0	-	6.5	15.7	20.8	3.0	0.0	-	39.5	0.6	22.7	5.8	0.0	-	29.1	-
PHF	0.827	0.500	0.920	0.000	-	0.919	0.575	0.700	0.500	0.000	-	0.641	0.833	0.767	0.528	0.000	-	0.848	0.250	0.857	0.712	0.000	-	0.873	0.934
Lights	41	12	94	0	-	147	21	14	4	0	-	39	91	126	19	0	-	236	3	134	37	0	-	174	596
% Lights	95.3	100.0	91.3	-	-	93.0	91.3	100.0	100.0	-	-	95.1	91.0	95.5	100.0	-	-	94.0	75.0	93.1	100.0	-	-	94.1	93.9
Mediums	1	0	9	0	-	10	2	0	0	0	-	2	8	5	0	0	-	13	1	10	0	0	-	11	36
% Mediums	2.3	0.0	8.7	-	-	6.3	8.7	0.0	0.0	-	-	4.9	8.0	3.8	0.0	-	-	5.2	25.0	6.9	0.0	-	-	5.9	5.7
Articulated Trucks	1	0	0	0	-	1	0	0	0	0	-	0	1	1	0	0	-	2	0	0	0	0	-	0	3
% Articulated Trucks	2.3	0.0	0.0	-	-	0.6	0.0	0.0	0.0	-	-	0.0	1.0	0.8	0.0	-	-	0.8	0.0	0.0	0.0	-	-	0.0	0.5
Pedestrians	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Conservation Drive & Westmount Road North
Site Code:
Start Date: 11/01/2017



Turning Movement Peak Hour Data Plot (12:45 PM)

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

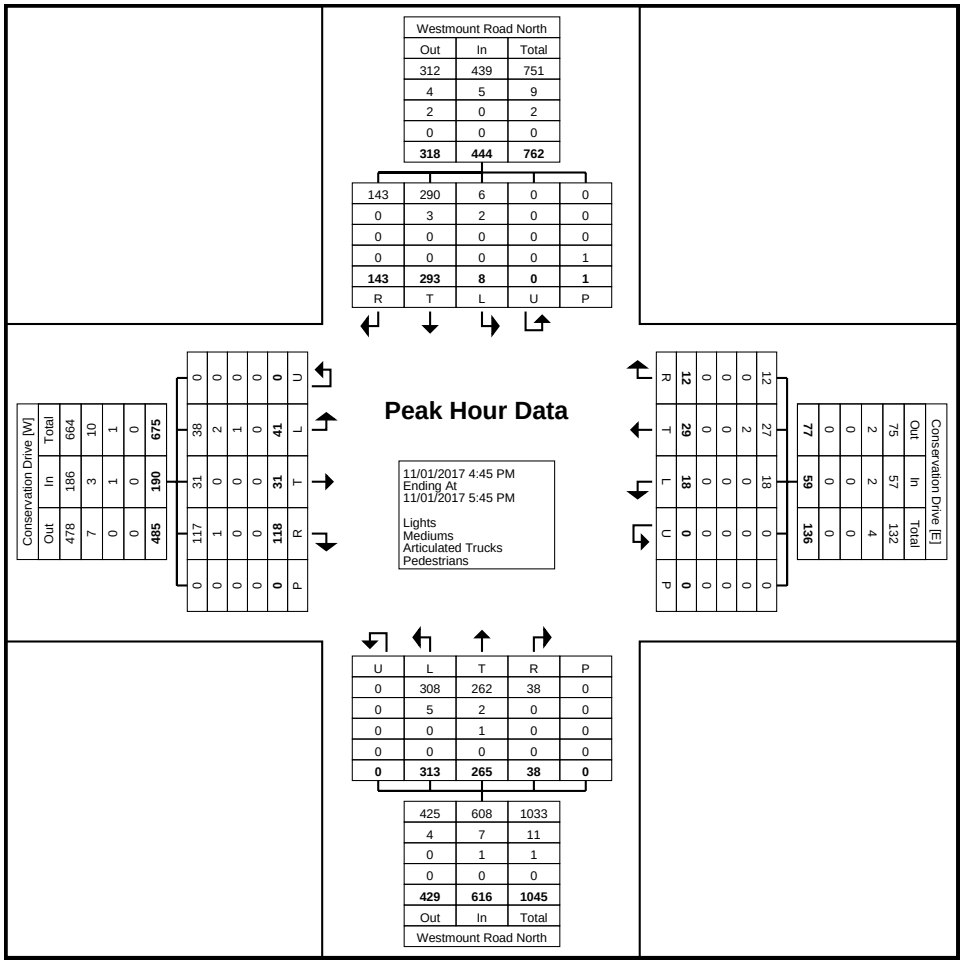
Count Name: Conservation Drive & Westmount Road North
Site Code:
Start Date: 11/01/2017

Turning Movement Peak Hour Data (4:45 PM)

Start Time	Conservation Drive Eastbound						Conservation Drive Westbound						Westmount Road North Northbound						Westmount Road North 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	
4:45 PM	8	9	34	0	0	51	3	5	2	0	0	10	72	75	9	0	0	156	0	68	23	0	0	91	308
5:00 PM	13	10	25	0	0	48	4	6	3	0	0	13	81	67	7	0	0	155	5	68	38	0	1	111	327
5:15 PM	15	3	27	0	0	45	4	6	1	0	0	11	87	73	9	0	0	169	2	86	43	0	0	131	356
5:30 PM	5	9	32	0	0	46	7	12	6	0	0	25	73	50	13	0	0	136	1	71	39	0	0	111	318
Total	41	31	118	0	0	190	18	29	12	0	0	59	313	265	38	0	0	616	8	293	143	0	1	444	1309
Approach %	21.6	16.3	62.1	0.0	-	-	30.5	49.2	20.3	0.0	-	-	50.8	43.0	6.2	0.0	-	-	1.8	66.0	32.2	0.0	-	-	-
Total %	3.1	2.4	9.0	0.0	-	14.5	1.4	2.2	0.9	0.0	-	4.5	23.9	20.2	2.9	0.0	-	47.1	0.6	22.4	10.9	0.0	-	33.9	-
PHF	0.683	0.775	0.868	0.000	-	0.931	0.643	0.604	0.500	0.000	-	0.590	0.899	0.883	0.731	0.000	-	0.911	0.400	0.852	0.831	0.000	-	0.847	0.919
Lights	38	31	117	0	-	186	18	27	12	0	-	57	308	262	38	0	-	608	6	290	143	0	-	439	1290
% Lights	92.7	100.0	99.2	-	-	97.9	100.0	93.1	100.0	-	-	96.6	98.4	98.9	100.0	-	-	98.7	75.0	99.0	100.0	-	-	98.9	98.5
Mediums	2	0	1	0	-	3	0	2	0	0	-	2	5	2	0	0	-	7	2	3	0	0	-	5	17
% Mediums	4.9	0.0	0.8	-	-	1.6	0.0	6.9	0.0	-	-	3.4	1.6	0.8	0.0	-	-	1.1	25.0	1.0	0.0	-	-	1.1	1.3
Articulated Trucks	1	0	0	0	-	1	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	2
% Articulated Trucks	2.4	0.0	0.0	-	-	0.5	0.0	0.0	0.0	-	-	0.0	0.0	0.4	0.0	-	-	0.2	0.0	0.0	0.0	-	-	0.0	0.2
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com



Turning Movement Peak Hour Data Plot (4:45 PM)

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Conservation Drive & Westmount Road North
Site Code:
Start Date: 11/01/2017

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Erbsville Road & Kressler Road
Site Code:
Start Date: 11/01/2017

Turning Movement Data

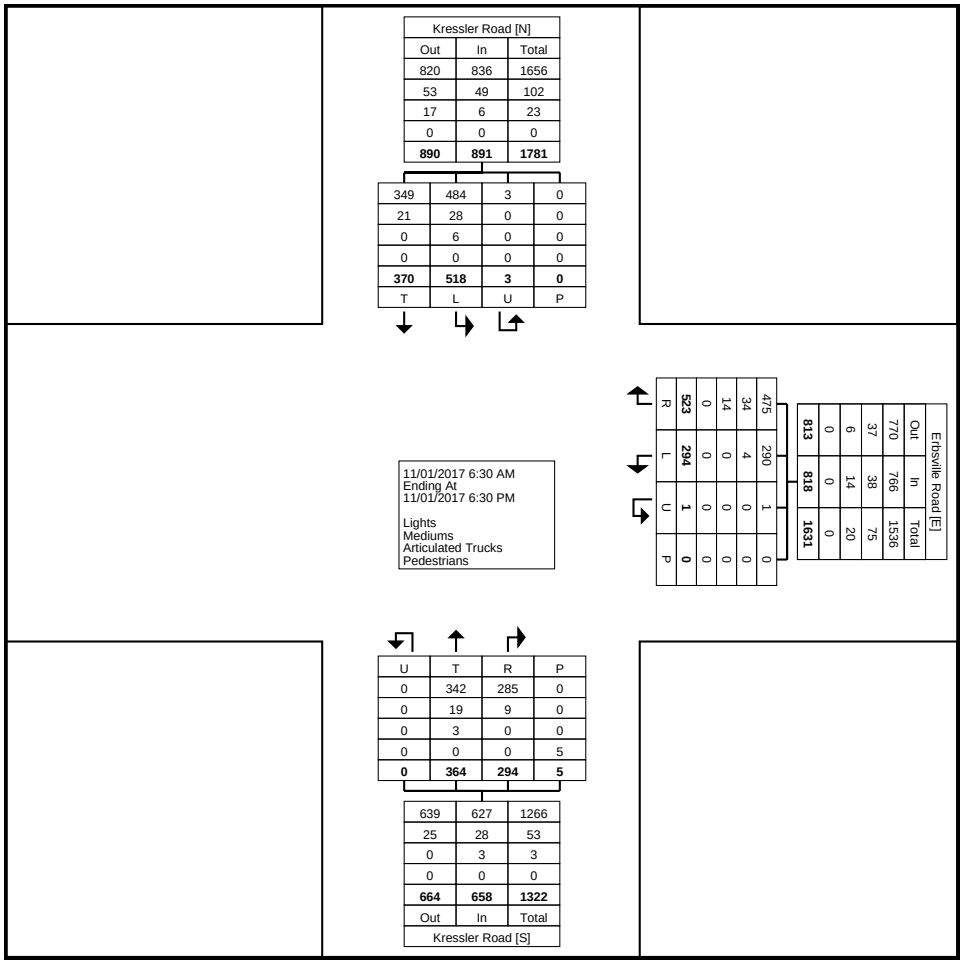
Start Time	Erbsville Road Westbound					Kressler Road Northbound					Kressler Road Southbound					
	Left	Right	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Int. Total
6:30 AM	2	12	0	0	14	13	5	0	0	18	7	4	0	0	11	43
6:45 AM	2	4	0	0	6	20	4	0	0	24	12	4	0	0	16	46
Hourly Total	4	16	0	0	20	33	9	0	0	42	19	8	0	0	27	89
7:00 AM	2	15	0	0	17	17	10	0	0	27	8	6	0	0	14	58
7:15 AM	9	15	0	0	24	14	12	0	0	26	11	5	0	0	16	66
7:30 AM	1	17	0	0	18	22	11	0	0	33	10	9	0	0	19	70
7:45 AM	7	13	0	0	20	19	12	0	0	31	12	5	0	0	17	68
Hourly Total	19	60	0	0	79	72	45	0	0	117	41	25	0	0	66	262
8:00 AM	6	14	0	0	20	14	15	0	0	29	11	5	0	0	16	65
8:15 AM	7	17	0	0	24	23	17	0	0	40	19	13	0	0	32	96
8:30 AM	2	26	0	0	28	13	24	0	0	37	8	5	0	0	13	78
8:45 AM	6	13	0	0	19	20	13	0	0	33	10	5	0	0	15	67
Hourly Total	21	70	0	0	91	70	69	0	0	139	48	28	0	0	76	306
9:00 AM	5	13	0	0	18	13	14	0	0	27	10	7	0	0	17	62
9:15 AM	3	10	0	0	13	1	4	0	0	5	9	4	0	0	13	31
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	8	23	0	0	31	14	18	0	0	32	19	11	0	0	30	93
11:00 AM	5	9	0	0	14	3	1	0	0	4	9	6	0	0	15	33
11:15 AM	4	12	0	0	16	3	9	0	5	12	12	5	0	0	17	45
11:30 AM	4	21	1	0	26	8	7	0	0	15	14	8	0	0	22	63
11:45 AM	5	15	0	0	20	9	8	0	0	17	9	5	0	0	14	51
Hourly Total	18	57	1	0	76	23	25	0	5	48	44	24	0	0	68	192
12:00 PM	0	12	0	0	12	8	5	0	0	13	8	6	0	0	14	39
12:15 PM	10	8	0	0	18	2	4	0	0	6	11	7	0	0	18	42
12:30 PM	6	13	0	0	19	9	6	0	0	15	16	9	0	0	25	59
12:45 PM	4	11	0	0	15	5	4	0	0	9	10	10	0	0	20	44
Hourly Total	20	44	0	0	64	24	19	0	0	43	45	32	0	0	77	184
1:00 PM	3	5	0	0	8	4	3	0	0	7	18	8	0	0	26	41
1:15 PM	7	16	0	0	23	4	5	0	0	9	12	6	0	0	18	50
1:30 PM	7	17	0	0	24	8	9	0	0	17	9	9	0	0	18	59
1:45 PM	8	15	0	0	23	7	4	0	0	11	13	6	1	0	20	54
Hourly Total	25	53	0	0	78	23	21	0	0	44	52	29	1	0	82	204
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:30 PM	13	16	0	0	29	12	4	0	0	16	17	13	0	0	30	75
3:45 PM	9	16	0	0	25	6	8	0	0	14	15	7	1	0	23	62
Hourly Total	22	32	0	0	54	18	12	0	0	30	32	20	1	0	53	137
4:00 PM	14	29	0	0	43	7	9	0	0	16	20	11	0	0	31	90
4:15 PM	19	21	0	0	40	10	10	0	0	20	20	17	0	0	37	97

4:30 PM	13	13	0	0	26	5	6	0	0	11	19	29	0	0	48	85
4:45 PM	19	21	0	0	40	9	7	0	0	16	33	19	0	0	52	108
Hourly Total	65	84	0	0	149	31	32	0	0	63	92	76	0	0	168	380
5:00 PM	12	16	0	0	28	10	8	0	0	18	29	21	1	0	51	97
5:15 PM	27	10	0	0	37	13	10	0	0	23	23	31	0	0	54	114
5:30 PM	14	17	0	0	31	7	7	0	0	14	26	27	0	0	53	98
5:45 PM	19	15	0	0	34	11	7	0	0	18	22	14	0	0	36	88
Hourly Total	72	58	0	0	130	41	32	0	0	73	100	93	1	0	194	397
6:00 PM	10	14	0	0	24	8	4	0	0	12	12	12	0	0	24	60
6:15 PM	10	12	0	0	22	7	8	0	0	15	14	12	0	0	26	63
Grand Total	294	523	1	0	818	364	294	0	5	658	518	370	3	0	891	2367
Approach %	35.9	63.9	0.1	-	-	55.3	44.7	0.0	-	-	58.1	41.5	0.3	-	-	-
Total %	12.4	22.1	0.0	-	34.6	15.4	12.4	0.0	-	27.8	21.9	15.6	0.1	-	37.6	-
Lights	290	475	1	-	766	342	285	0	-	627	484	349	3	-	836	2229
% Lights	98.6	90.8	100.0	-	93.6	94.0	96.9	-	-	95.3	93.4	94.3	100.0	-	93.8	94.2
Mediums	4	34	0	-	38	19	9	0	-	28	28	21	0	-	49	115
% Mediums	1.4	6.5	0.0	-	4.6	5.2	3.1	-	-	4.3	5.4	5.7	0.0	-	5.5	4.9
Articulated Trucks	0	14	0	-	14	3	0	0	-	3	6	0	0	-	6	23
% Articulated Trucks	0.0	2.7	0.0	-	1.7	0.8	0.0	-	-	0.5	1.2	0.0	0.0	-	0.7	1.0
Pedestrians	-	-	-	0	-	-	-	-	5	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Erbsville Road & Kressler Road
Site Code:
Start Date: 11/01/2017



Turning Movement Data Plot

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Erbsville Road & Kressler Road
Site Code:
Start Date: 11/01/2017

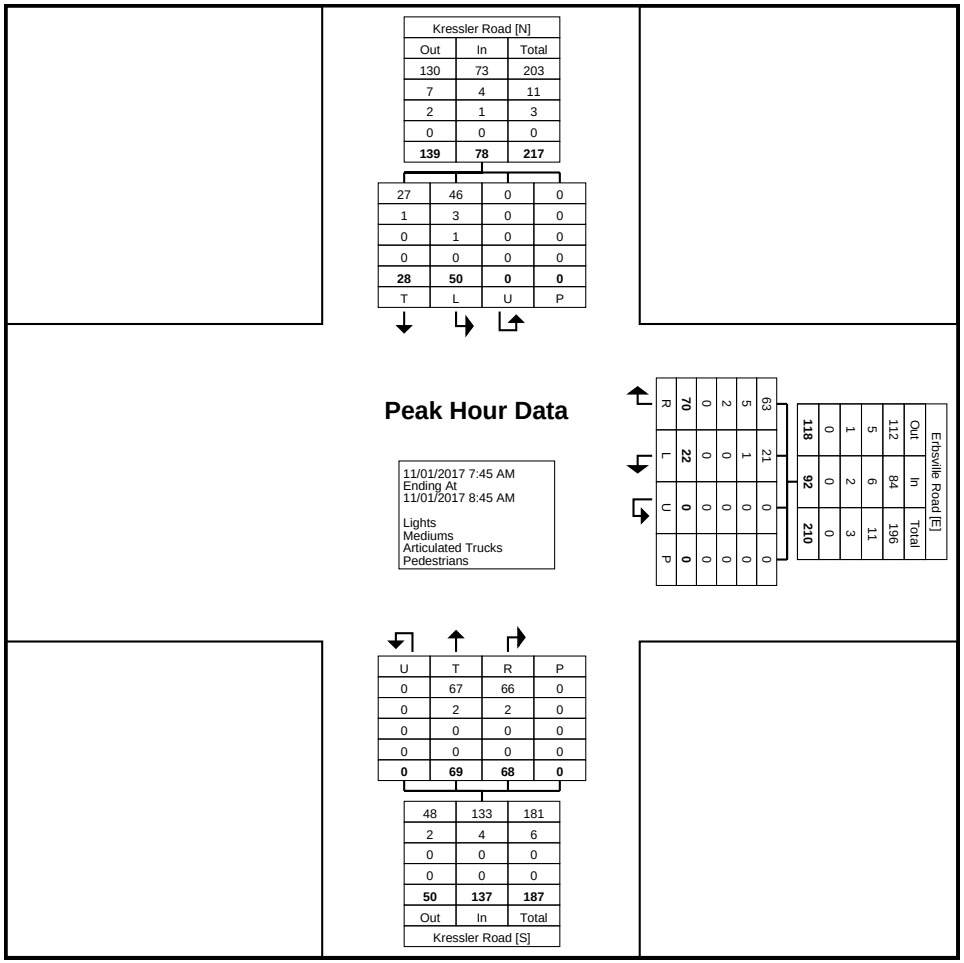
Turning Movement Peak Hour Data (7:45 AM)

Start Time	Erbsville Road Westbound					Kressler Road Northbound					Kressler Road Southbound					
	Left	Right	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Int. Total
7:45 AM	7	13	0	0	20	19	12	0	0	31	12	5	0	0	17	68
8:00 AM	6	14	0	0	20	14	15	0	0	29	11	5	0	0	16	65
8:15 AM	7	17	0	0	24	23	17	0	0	40	19	13	0	0	32	96
8:30 AM	2	26	0	0	28	13	24	0	0	37	8	5	0	0	13	78
Total	22	70	0	0	92	69	68	0	0	137	50	28	0	0	78	307
Approach %	23.9	76.1	0.0	-	-	50.4	49.6	0.0	-	-	64.1	35.9	0.0	-	-	-
Total %	7.2	22.8	0.0	-	30.0	22.5	22.1	0.0	-	44.6	16.3	9.1	0.0	-	25.4	-
PHF	0.786	0.673	0.000	-	0.821	0.750	0.708	0.000	-	0.856	0.658	0.538	0.000	-	0.609	0.799
Lights	21	63	0	-	84	67	66	0	-	133	46	27	0	-	73	290
% Lights	95.5	90.0	-	-	91.3	97.1	97.1	-	-	97.1	92.0	96.4	-	-	93.6	94.5
Mediums	1	5	0	-	6	2	2	0	-	4	3	1	0	-	4	14
% Mediums	4.5	7.1	-	-	6.5	2.9	2.9	-	-	2.9	6.0	3.6	-	-	5.1	4.6
Articulated Trucks	0	2	0	-	2	0	0	0	-	0	1	0	0	-	1	3
% Articulated Trucks	0.0	2.9	-	-	2.2	0.0	0.0	-	-	0.0	2.0	0.0	-	-	1.3	1.0
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Erbsville Road & Kressler Road
Site Code:
Start Date: 11/01/2017



Turning Movement Peak Hour Data Plot (7:45 AM)

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Erbsville Road & Kressler Road
Site Code:
Start Date: 11/01/2017

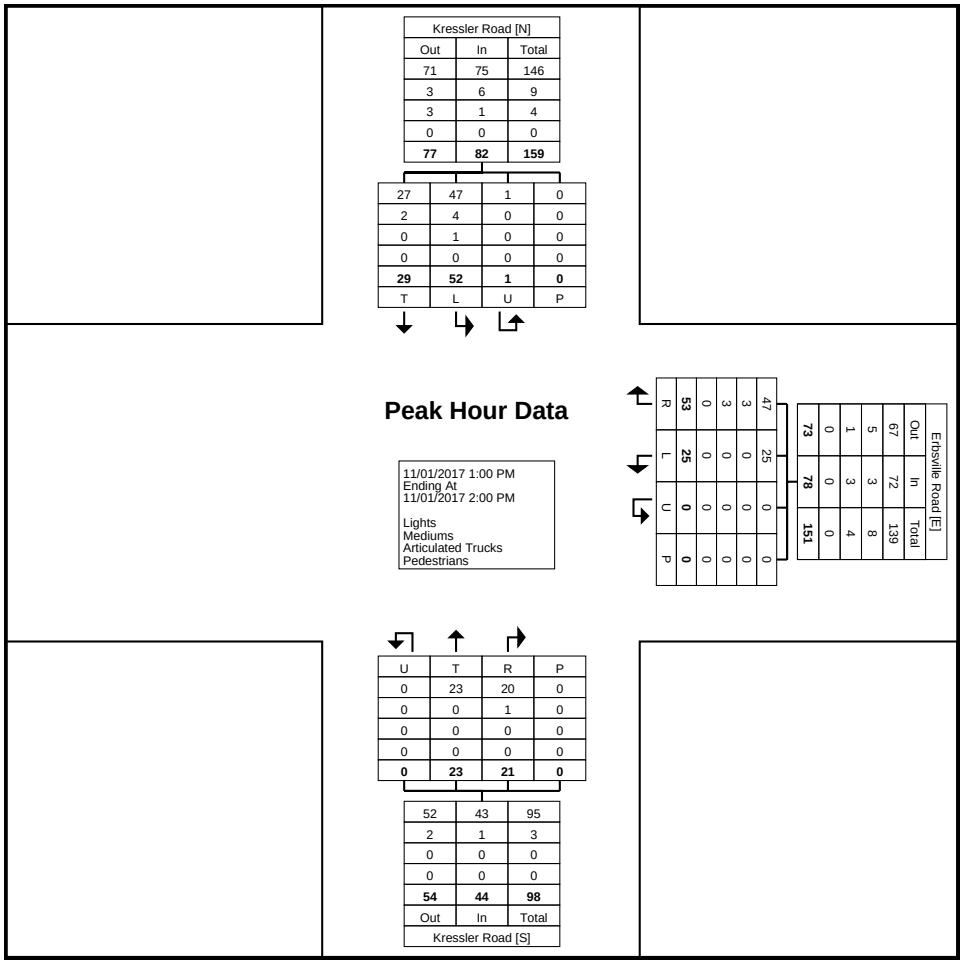
Turning Movement Peak Hour Data (1:00 PM)

Start Time	Erbsville Road Westbound					Kressler Road Northbound					Kressler Road Southbound					
	Left	Right	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Int. Total
1:00 PM	3	5	0	0	8	4	3	0	0	7	18	8	0	0	26	41
1:15 PM	7	16	0	0	23	4	5	0	0	9	12	6	0	0	18	50
1:30 PM	7	17	0	0	24	8	9	0	0	17	9	9	0	0	18	59
1:45 PM	8	15	0	0	23	7	4	0	0	11	13	6	1	0	20	54
Total	25	53	0	0	78	23	21	0	0	44	52	29	1	0	82	204
Approach %	32.1	67.9	0.0	-	-	52.3	47.7	0.0	-	-	63.4	35.4	1.2	-	-	-
Total %	12.3	26.0	0.0	-	38.2	11.3	10.3	0.0	-	21.6	25.5	14.2	0.5	-	40.2	-
PHF	0.781	0.779	0.000	-	0.813	0.719	0.583	0.000	-	0.647	0.722	0.806	0.250	-	0.788	0.864
Lights	25	47	0	-	72	23	20	0	-	43	47	27	1	-	75	190
% Lights	100.0	88.7	-	-	92.3	100.0	95.2	-	-	97.7	90.4	93.1	100.0	-	91.5	93.1
Mediums	0	3	0	-	3	0	1	0	-	1	4	2	0	-	6	10
% Mediums	0.0	5.7	-	-	3.8	0.0	4.8	-	-	2.3	7.7	6.9	0.0	-	7.3	4.9
Articulated Trucks	0	3	0	-	3	0	0	0	-	0	1	0	0	-	1	4
% Articulated Trucks	0.0	5.7	-	-	3.8	0.0	0.0	-	-	0.0	1.9	0.0	0.0	-	1.2	2.0
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Erbsville Road & Kressler Road
Site Code:
Start Date: 11/01/2017



Turning Movement Peak Hour Data Plot (1:00 PM)

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Erbsville Road & Kressler Road
Site Code:
Start Date: 11/01/2017

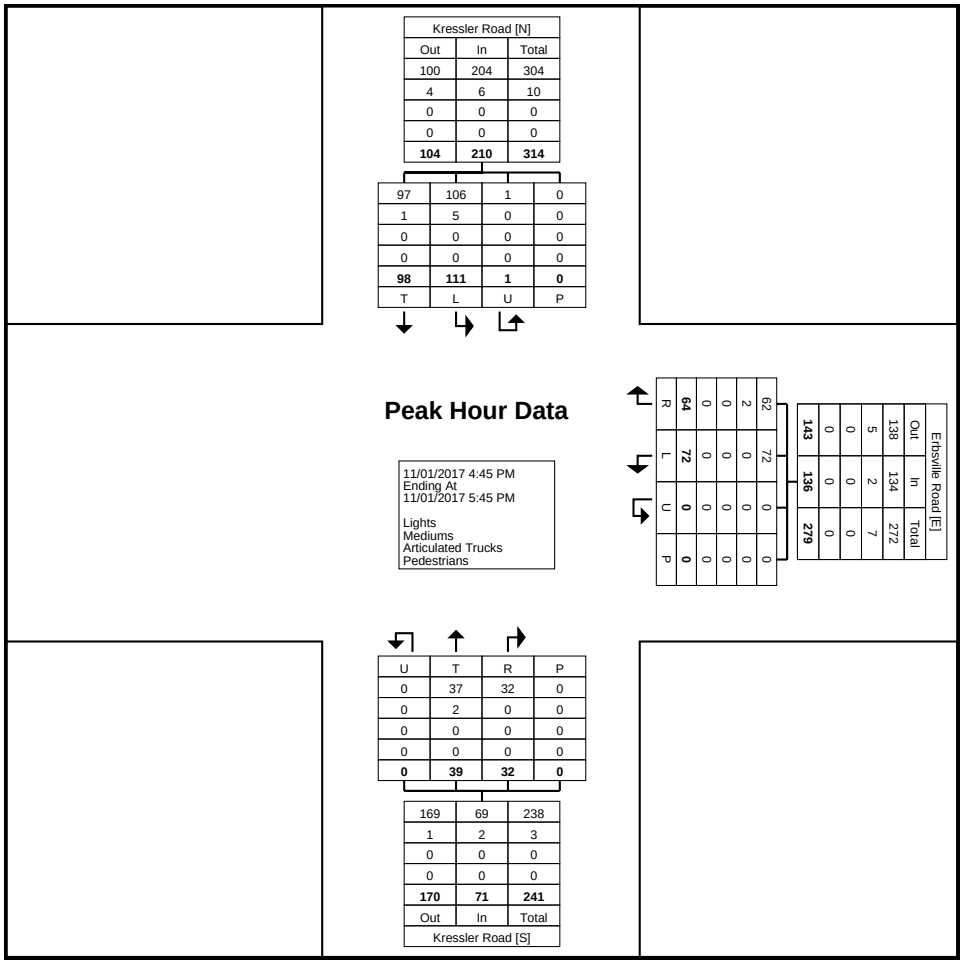
Turning Movement Peak Hour Data (4:45 PM)

Start Time	Erbsville Road Westbound					Kressler Road Northbound					Kressler Road Southbound					
	Left	Right	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Int. Total
4:45 PM	19	21	0	0	40	9	7	0	0	16	33	19	0	0	52	108
5:00 PM	12	16	0	0	28	10	8	0	0	18	29	21	1	0	51	97
5:15 PM	27	10	0	0	37	13	10	0	0	23	23	31	0	0	54	114
5:30 PM	14	17	0	0	31	7	7	0	0	14	26	27	0	0	53	98
Total	72	64	0	0	136	39	32	0	0	71	111	98	1	0	210	417
Approach %	52.9	47.1	0.0	-	-	54.9	45.1	0.0	-	-	52.9	46.7	0.5	-	-	-
Total %	17.3	15.3	0.0	-	32.6	9.4	7.7	0.0	-	17.0	26.6	23.5	0.2	-	50.4	-
PHF	0.667	0.762	0.000	-	0.850	0.750	0.800	0.000	-	0.772	0.841	0.790	0.250	-	0.972	0.914
Lights	72	62	0	-	134	37	32	0	-	69	106	97	1	-	204	407
% Lights	100.0	96.9	-	-	98.5	94.9	100.0	-	-	97.2	95.5	99.0	100.0	-	97.1	97.6
Mediums	0	2	0	-	2	2	0	0	-	2	5	1	0	-	6	10
% Mediums	0.0	3.1	-	-	1.5	5.1	0.0	-	-	2.8	4.5	1.0	0.0	-	2.9	2.4
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	0.0	0.0
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Erbsville Road & Kressler Road
Site Code:
Start Date: 11/01/2017



Turning Movement Peak Hour Data Plot (4:45 PM)

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Erbsville Road & Kressler Road
Site Code:
Start Date: 11/01/2017

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Laurelwood Drive & Beaver Creek Road
Site Code:
Start Date: 11/02/2017

Turning Movement Data

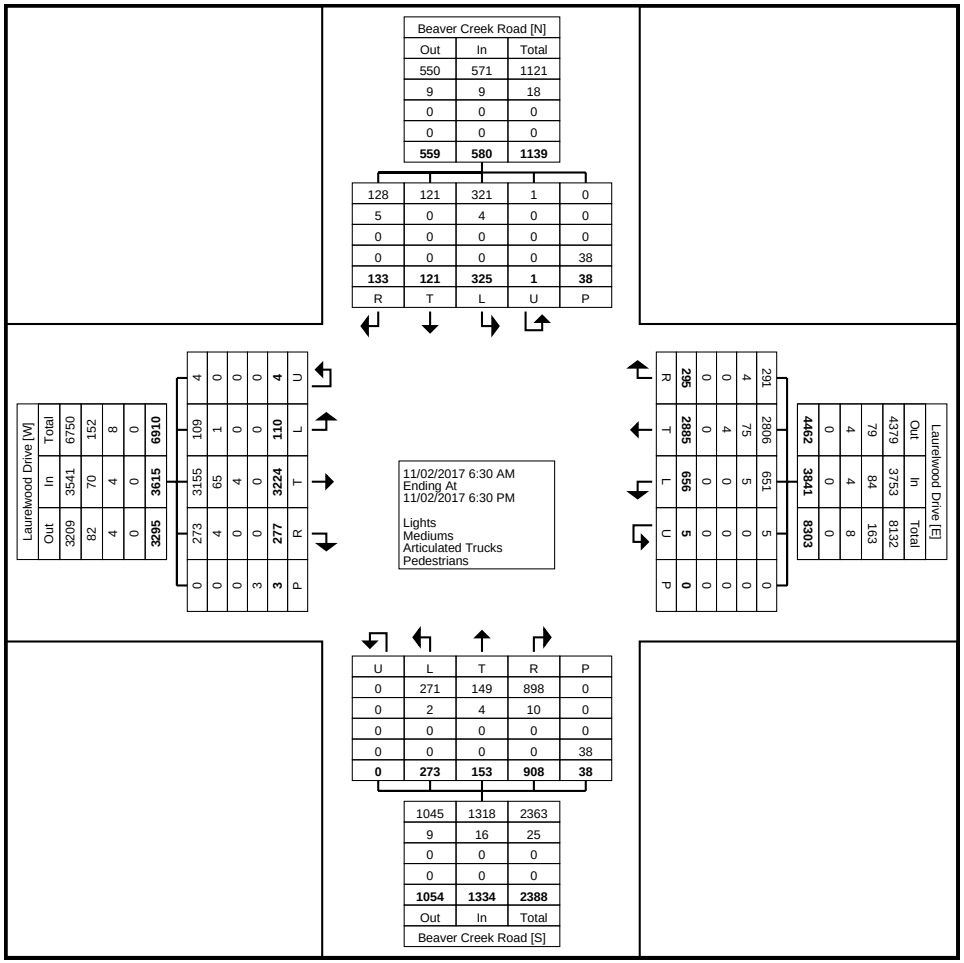
Start Time	Laurelwood Drive Eastbound						Laurelwood Drive Westbound						Beaver Creek Road Northbound						Beaver Creek Road Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
6:30 AM	1	48	0	0	0	49	0	9	4	0	0	13	1	3	18	0	0	22	6	3	0	0	0	9	93
6:45 AM	0	58	1	0	0	59	0	25	1	0	0	26	8	3	9	0	0	20	5	0	1	0	0	6	111
Hourly Total	1	106	1	0	0	108	0	34	5	0	0	39	9	6	27	0	0	42	11	3	1	0	0	15	204
7:00 AM	3	64	3	0	0	70	4	24	3	0	0	31	3	3	17	0	0	23	2	2	1	0	0	5	129
7:15 AM	2	57	2	0	0	61	6	26	3	0	0	35	4	2	16	0	0	22	7	1	1	0	0	9	127
7:30 AM	4	96	1	0	0	101	1	43	3	0	0	47	1	3	36	0	1	40	8	2	3	0	1	13	201
7:45 AM	2	121	6	0	0	129	13	38	7	0	0	58	7	8	47	0	2	62	8	1	1	0	0	10	259
Hourly Total	11	338	12	0	0	361	24	131	16	0	0	171	15	16	116	0	3	147	25	6	6	0	1	37	716
8:00 AM	5	160	11	0	0	176	14	79	6	0	0	99	26	9	37	0	0	72	13	6	2	0	1	21	368
8:15 AM	9	166	52	0	0	227	13	80	10	0	0	103	28	10	49	0	0	87	9	3	7	0	3	19	436
8:30 AM	5	185	49	0	2	239	20	42	10	0	0	72	16	10	54	0	4	80	17	9	2	0	5	28	419
8:45 AM	4	143	1	0	0	148	10	35	5	1	0	51	15	11	54	0	1	80	22	0	5	0	6	27	306
Hourly Total	23	654	113	0	2	790	57	236	31	1	0	325	85	40	194	0	5	319	61	18	16	0	15	95	1529
9:00 AM	7	140	3	1	0	151	7	54	5	2	0	68	6	7	43	0	1	56	9	0	0	0	0	9	284
9:15 AM	3	124	1	0	0	128	5	55	13	0	0	73	1	4	34	0	3	39	12	0	1	0	0	13	253
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	10	264	4	1	0	279	12	109	18	2	0	141	7	11	77	0	4	95	21	0	1	0	0	22	537
11:00 AM	3	77	5	0	0	85	7	56	8	0	0	71	6	2	23	0	0	31	13	1	3	0	0	17	204
11:15 AM	3	72	2	0	0	77	14	68	5	0	0	87	1	2	7	0	0	10	9	2	5	0	0	16	190
11:30 AM	1	70	6	1	0	78	9	73	6	0	0	88	5	0	10	0	0	15	13	2	4	0	1	19	200
11:45 AM	2	65	3	0	0	70	15	71	6	0	0	92	4	1	17	0	0	22	10	3	1	0	0	14	198
Hourly Total	9	284	16	1	0	310	45	268	25	0	0	338	16	5	57	0	0	78	45	8	13	0	1	66	792
12:00 PM	2	59	1	0	0	62	17	57	11	0	0	85	4	3	16	0	1	23	8	4	3	0	0	15	185
12:15 PM	3	70	2	0	0	75	9	75	8	0	0	92	2	2	14	0	2	18	3	3	7	0	1	13	198
12:30 PM	2	72	6	0	0	80	13	70	8	0	0	91	8	6	21	0	2	35	6	2	3	0	0	11	217
12:45 PM	4	91	6	0	0	101	10	65	7	0	0	82	6	4	21	0	0	31	10	2	3	0	0	15	229
Hourly Total	11	292	15	0	0	318	49	267	34	0	0	350	20	15	72	0	5	107	27	11	16	0	1	54	829
1:00 PM	1	71	1	0	1	73	10	76	5	0	0	91	2	2	18	0	0	22	8	0	1	0	1	9	195
1:15 PM	2	69	8	1	0	80	11	60	14	0	0	85	6	2	14	0	0	22	6	2	3	0	0	11	198
1:30 PM	2	63	2	0	0	67	13	66	3	0	0	82	7	4	14	0	1	25	6	2	0	0	0	8	182
1:45 PM	3	71	1	0	0	75	7	57	11	1	0	76	5	0	21	0	1	26	4	0	1	0	1	5	182
Hourly Total	8	274	12	1	1	295	41	259	33	1	0	334	20	8	67	0	2	95	24	4	5	0	2	33	757
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:30 PM	5	94	16	0	0	115	20	89	11	0	0	120	9	4	22	0	3	35	8	2	6	0	3	16	286
3:45 PM	3	85	8	0	0	96	22	89	11	0	0	122	4	3	15	0	2	22	10	1	5	0	1	16	256
Hourly Total	8	179	24	0	0	211	42	178	22	0	0	242	13	7	37	0	5	57	18	3	11	0	4	32	542
4:00 PM	8	85	14	0	0	107	20	121	6	0	0	147	7	2	21	0	1	30	9	2	4	1	2	16	300

4:15 PM	2	83	7	0	0	92	29	125	13	0	0	167	6	7	28	0	1	41	11	4	11	0	0	26	326
4:30 PM	3	74	7	0	0	84	23	134	16	0	0	173	11	4	17	0	2	32	9	3	8	0	3	20	309
4:45 PM	1	91	4	0	0	96	39	162	11	0	0	212	8	5	39	0	0	52	12	11	8	0	1	31	391
Hourly Total	14	333	32	0	0	379	111	542	46	0	0	699	32	18	105	0	4	155	41	20	31	1	6	93	1326
5:00 PM	3	100	10	0	0	113	45	154	8	1	0	208	10	4	19	0	2	33	13	10	5	0	0	28	382
5:15 PM	1	72	5	1	0	79	66	160	11	0	0	237	10	2	24	0	4	36	7	7	13	0	1	27	379
5:30 PM	1	79	9	0	0	89	50	171	14	0	0	235	8	6	32	0	0	46	5	14	6	0	4	25	395
5:45 PM	4	83	8	0	0	95	47	130	9	0	0	186	5	4	32	0	0	41	5	5	2	0	1	12	334
Hourly Total	9	334	32	1	0	376	208	615	42	1	0	866	33	16	107	0	6	156	30	36	26	0	6	92	1490
6:00 PM	5	86	7	0	0	98	35	122	10	0	0	167	12	6	23	0	3	41	14	7	3	0	1	24	330
6:15 PM	1	80	9	0	0	90	32	124	13	0	0	169	11	5	26	0	1	42	8	5	4	0	1	17	318
Grand Total	110	3224	277	4	3	3615	656	2885	295	5	0	3841	273	153	908	0	38	1334	325	121	133	1	38	580	9370
Approach %	3.0	89.2	7.7	0.1	-	-	17.1	75.1	7.7	0.1	-	-	20.5	11.5	68.1	0.0	-	-	56.0	20.9	22.9	0.2	-	-	-
Total %	1.2	34.4	3.0	0.0	-	38.6	7.0	30.8	3.1	0.1	-	41.0	2.9	1.6	9.7	0.0	-	14.2	3.5	1.3	1.4	0.0	-	6.2	-
Lights	109	3155	273	4	-	3541	651	2806	291	5	-	3753	271	149	898	0	-	1318	321	121	128	1	-	571	9183
% Lights	99.1	97.9	98.6	100.0	-	98.0	99.2	97.3	98.6	100.0	-	97.7	99.3	97.4	98.9	-	-	98.8	98.8	100.0	96.2	100.0	-	98.4	98.0
Mediums	1	65	4	0	-	70	5	75	4	0	-	84	2	4	10	0	-	16	4	0	5	0	-	9	179
% Mediums	0.9	2.0	1.4	0.0	-	1.9	0.8	2.6	1.4	0.0	-	2.2	0.7	2.6	1.1	-	-	1.2	1.2	0.0	3.8	0.0	-	1.6	1.9
Articulated Trucks	0	4	0	0	-	4	0	4	0	0	-	4	0	0	0	0	-	0	0	0	0	0	-	0	8
% Articulated Trucks	0.0	0.1	0.0	0.0	-	0.1	0.0	0.1	0.0	0.0	-	0.1	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.1
Pedestrians	-	-	-	-	3	-	-	-	-	-	0	-	-	-	-	-	38	-	-	-	-	-	38	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Laurelwood Drive & Beaver Creek Road
Site Code:
Start Date: 11/02/2017



Turning Movement Data Plot

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Laurelwood Drive & Beaver Creek Road
Site Code:
Start Date: 11/02/2017

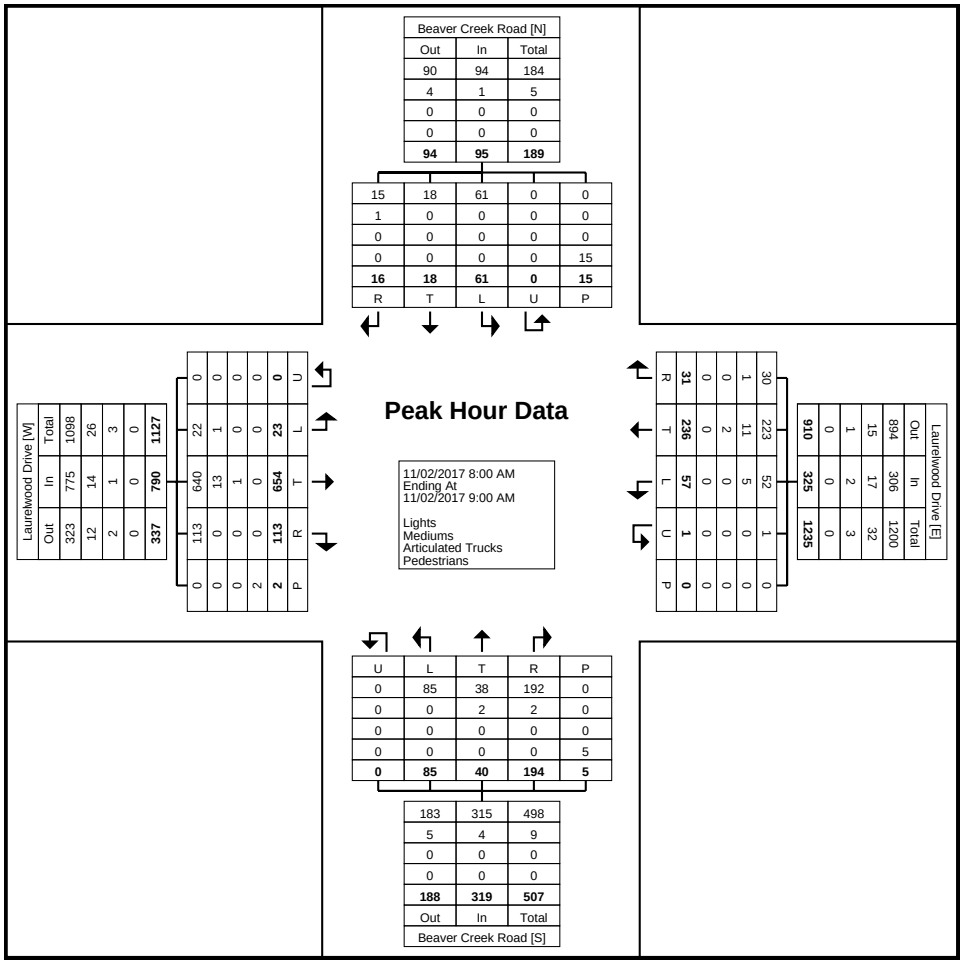
Turning Movement Peak Hour Data (8:00 AM)

Start Time	Laurelwood Drive Eastbound						Laurelwood Drive Westbound						Beaver Creek Road Northbound						Beaver Creek Road 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	160	11	0	0	176	14	79	6	0	0	99	26	9	37	0	0	72	13	6	2	0	1	21	368
8:15 AM	9	166	52	0	0	227	13	80	10	0	0	103	28	10	49	0	0	87	9	3	7	0	3	19	436
8:30 AM	5	185	49	0	2	239	20	42	10	0	0	72	16	10	54	0	4	80	17	9	2	0	5	28	419
8:45 AM	4	143	1	0	0	148	10	35	5	1	0	51	15	11	54	0	1	80	22	0	5	0	6	27	306
Total	23	654	113	0	2	790	57	236	31	1	0	325	85	40	194	0	5	319	61	18	16	0	15	95	1529
Approach %	2.9	82.8	14.3	0.0	-	-	17.5	72.6	9.5	0.3	-	-	26.6	12.5	60.8	0.0	-	-	64.2	18.9	16.8	0.0	-	-	-
Total %	1.5	42.8	7.4	0.0	-	51.7	3.7	15.4	2.0	0.1	-	21.3	5.6	2.6	12.7	0.0	-	20.9	4.0	1.2	1.0	0.0	-	6.2	-
PHF	0.639	0.884	0.543	0.000	-	0.826	0.713	0.738	0.775	0.250	-	0.789	0.759	0.909	0.898	0.000	-	0.917	0.693	0.500	0.571	0.000	-	0.848	0.877
Lights	22	640	113	0	-	775	52	223	30	1	-	306	85	38	192	0	-	315	61	18	15	0	-	94	1490
% Lights	95.7	97.9	100.0	-	-	98.1	91.2	94.5	96.8	100.0	-	94.2	100.0	95.0	99.0	-	-	98.7	100.0	100.0	93.8	-	-	98.9	97.4
Mediums	1	13	0	0	-	14	5	11	1	0	-	17	0	2	2	0	-	4	0	0	1	0	-	1	36
% Mediums	4.3	2.0	0.0	-	-	1.8	8.8	4.7	3.2	0.0	-	5.2	0.0	5.0	1.0	-	-	1.3	0.0	0.0	6.3	-	-	1.1	2.4
Articulated Trucks	0	1	0	0	-	1	0	2	0	0	-	2	0	0	0	0	-	0	0	0	0	0	-	0	3
% Articulated Trucks	0.0	0.2	0.0	-	-	0.1	0.0	0.8	0.0	0.0	-	0.6	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.2
Pedestrians	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	-	5	-	-	-	-	-	15	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Laurelwood Drive & Beaver Creek Road
Site Code:
Start Date: 11/02/2017



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

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Laurelwood Drive & Beaver Creek Road
Site Code:
Start Date: 11/02/2017

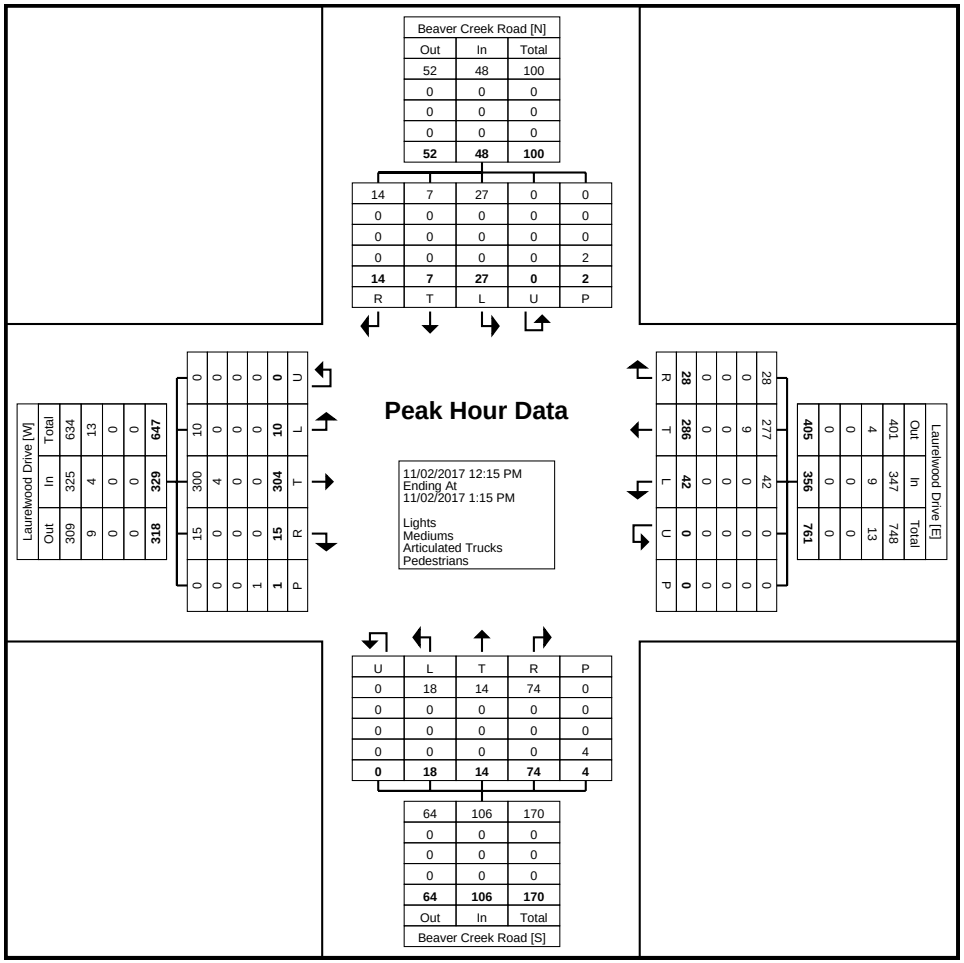
Turning Movement Peak Hour Data (12:15 PM)

Start Time	Laurelwood Drive Eastbound						Laurelwood Drive Westbound						Beaver Creek Road Northbound						Beaver Creek Road 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	
12:15 PM	3	70	2	0	0	75	9	75	8	0	0	92	2	2	14	0	2	18	3	3	7	0	1	13	198
12:30 PM	2	72	6	0	0	80	13	70	8	0	0	91	8	6	21	0	2	35	6	2	3	0	0	11	217
12:45 PM	4	91	6	0	0	101	10	65	7	0	0	82	6	4	21	0	0	31	10	2	3	0	0	15	229
1:00 PM	1	71	1	0	1	73	10	76	5	0	0	91	2	2	18	0	0	22	8	0	1	0	1	9	195
Total	10	304	15	0	1	329	42	286	28	0	0	356	18	14	74	0	4	106	27	7	14	0	2	48	839
Approach %	3.0	92.4	4.6	0.0	-	-	11.8	80.3	7.9	0.0	-	-	17.0	13.2	69.8	0.0	-	-	56.3	14.6	29.2	0.0	-	-	-
Total %	1.2	36.2	1.8	0.0	-	39.2	5.0	34.1	3.3	0.0	-	42.4	2.1	1.7	8.8	0.0	-	12.6	3.2	0.8	1.7	0.0	-	5.7	-
PHF	0.625	0.835	0.625	0.000	-	0.814	0.808	0.941	0.875	0.000	-	0.967	0.563	0.583	0.881	0.000	-	0.757	0.675	0.583	0.500	0.000	-	0.800	0.916
Lights	10	300	15	0	-	325	42	277	28	0	-	347	18	14	74	0	-	106	27	7	14	0	-	48	826
% Lights	100.0	98.7	100.0	-	-	98.8	100.0	96.9	100.0	-	-	97.5	100.0	100.0	100.0	-	-	100.0	100.0	100.0	100.0	-	-	100.0	98.5
Mediums	0	4	0	0	-	4	0	9	0	0	-	9	0	0	0	0	-	0	0	0	0	0	-	0	13
% Mediums	0.0	1.3	0.0	-	-	1.2	0.0	3.1	0.0	-	-	2.5	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	1.5
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Pedestrians	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	4	-	-	-	-	-	2	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Laurelwood Drive & Beaver Creek Road
Site Code:
Start Date: 11/02/2017



Turning Movement Peak Hour Data Plot (12:15 PM)

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

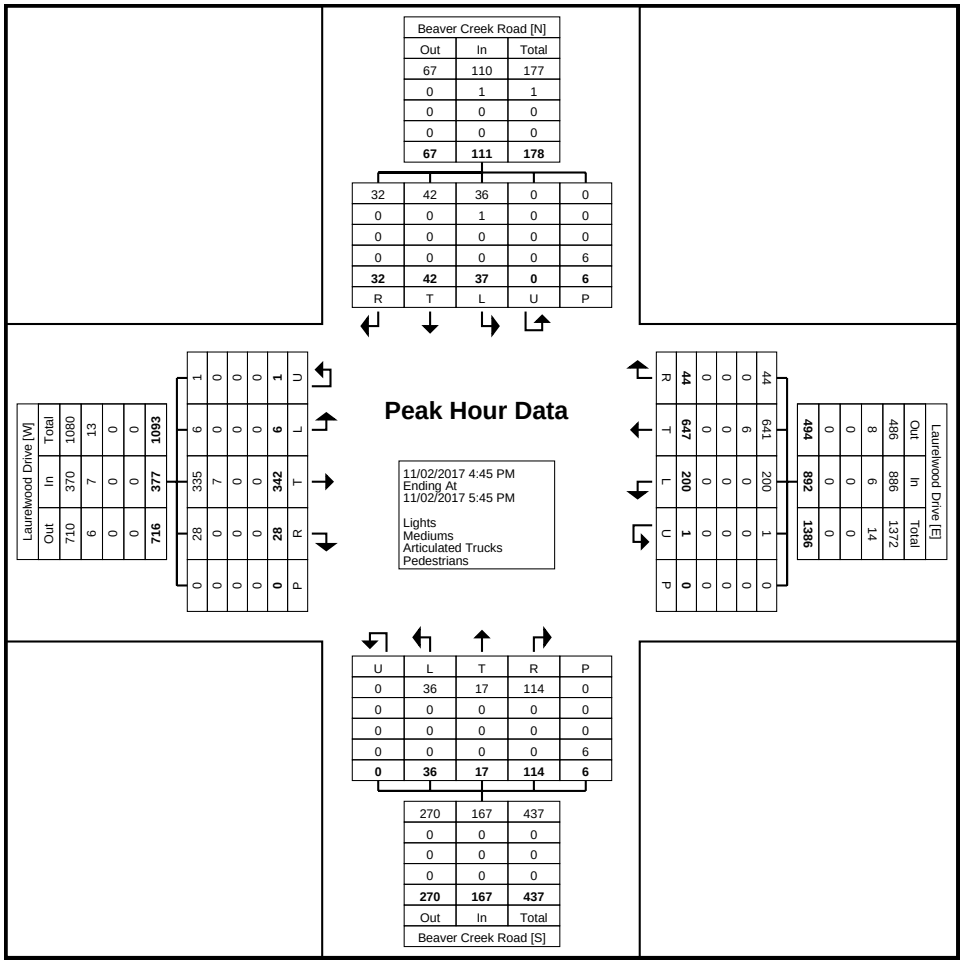
Count Name: Laurelwood Drive & Beaver Creek Road
Site Code:
Start Date: 11/02/2017

Turning Movement Peak Hour Data (4:45 PM)

Start Time	Laurelwood Drive Eastbound						Laurelwood Drive Westbound						Beaver Creek Road Northbound						Beaver Creek Road 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	
4:45 PM	1	91	4	0	0	96	39	162	11	0	0	212	8	5	39	0	0	52	12	11	8	0	1	31	391
5:00 PM	3	100	10	0	0	113	45	154	8	1	0	208	10	4	19	0	2	33	13	10	5	0	0	28	382
5:15 PM	1	72	5	1	0	79	66	160	11	0	0	237	10	2	24	0	4	36	7	7	13	0	1	27	379
5:30 PM	1	79	9	0	0	89	50	171	14	0	0	235	8	6	32	0	0	46	5	14	6	0	4	25	395
Total	6	342	28	1	0	377	200	647	44	1	0	892	36	17	114	0	6	167	37	42	32	0	6	111	1547
Approach %	1.6	90.7	7.4	0.3	-	-	22.4	72.5	4.9	0.1	-	-	21.6	10.2	68.3	0.0	-	-	33.3	37.8	28.8	0.0	-	-	-
Total %	0.4	22.1	1.8	0.1	-	24.4	12.9	41.8	2.8	0.1	-	57.7	2.3	1.1	7.4	0.0	-	10.8	2.4	2.7	2.1	0.0	-	7.2	-
PHF	0.500	0.855	0.700	0.250	-	0.834	0.758	0.946	0.786	0.250	-	0.941	0.900	0.708	0.731	0.000	-	0.803	0.712	0.750	0.615	0.000	-	0.895	0.979
Lights	6	335	28	1	-	370	200	641	44	1	-	886	36	17	114	0	-	167	36	42	32	0	-	110	1533
% Lights	100.0	98.0	100.0	100.0	-	98.1	100.0	99.1	100.0	100.0	-	99.3	100.0	100.0	100.0	-	-	100.0	97.3	100.0	100.0	-	-	99.1	99.1
Mediums	0	7	0	0	-	7	0	6	0	0	-	6	0	0	0	0	-	0	1	0	0	0	-	1	14
% Mediums	0.0	2.0	0.0	0.0	-	1.9	0.0	0.9	0.0	0.0	-	0.7	0.0	0.0	0.0	-	-	0.0	2.7	0.0	0.0	-	-	0.9	0.9
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	6	-	-	-	-	-	6	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com



Turning Movement Peak Hour Data Plot (4:45 PM)

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Laurelwood Drive & Beaver Creek Road
Site Code:
Start Date: 11/02/2017

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Laurelwood Drive & Erbsville Road
Site Code:
Start Date: 11/02/2017

Turning Movement Data

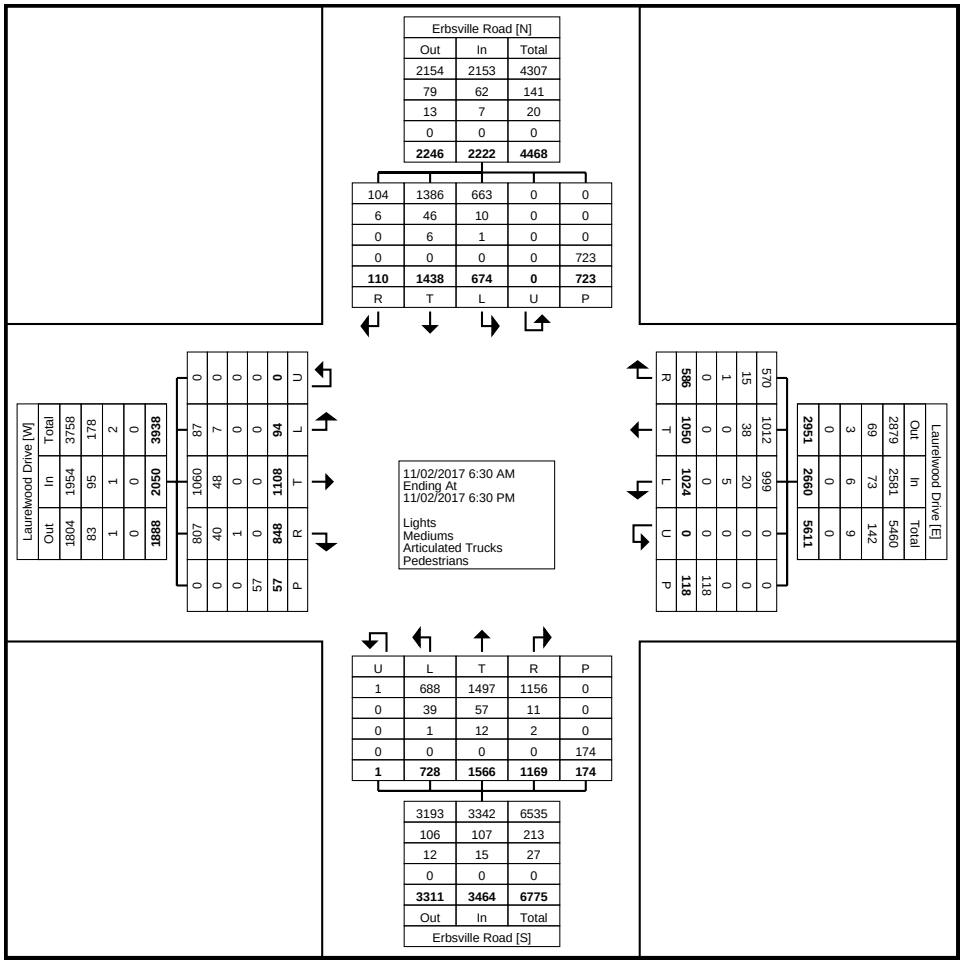
Start Time	Laurelwood Drive Eastbound						Laurelwood Drive Westbound						Erbsville Road Northbound						Erbsville Road Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
6:30 AM	1	12	11	0	0	24	5	3	3	0	0	11	2	28	21	0	0	51	9	12	3	0	0	24	110
6:45 AM	1	21	24	0	1	46	5	21	4	0	0	30	19	30	13	0	2	62	16	17	5	0	0	38	176
Hourly Total	2	33	35	0	1	70	10	24	7	0	0	41	21	58	34	0	2	113	25	29	8	0	0	62	286
7:00 AM	4	18	19	0	0	41	11	11	11	0	0	33	12	21	19	0	1	52	13	23	2	0	0	38	164
7:15 AM	1	22	12	0	0	35	12	13	8	0	0	33	7	29	13	0	3	49	13	23	0	0	0	36	153
7:30 AM	4	23	12	0	0	39	16	13	12	0	3	41	15	42	14	0	1	71	19	29	2	0	1	50	201
7:45 AM	1	34	36	0	1	71	14	16	12	0	0	42	24	55	25	0	2	104	32	27	0	0	2	59	276
Hourly Total	10	97	79	0	1	186	53	53	43	0	3	149	58	147	71	0	7	276	77	102	4	0	3	183	794
8:00 AM	6	75	57	0	1	138	15	35	31	0	8	81	60	65	31	0	8	156	37	41	8	0	25	86	461
8:15 AM	5	81	59	0	11	145	16	67	19	0	33	102	60	96	56	0	32	212	57	87	13	0	97	157	616
8:30 AM	2	70	46	0	0	118	22	29	10	0	5	61	44	79	45	0	11	168	41	55	3	0	19	99	446
8:45 AM	1	34	20	0	2	55	11	14	12	0	0	37	18	46	44	0	4	108	24	40	5	0	13	69	269
Hourly Total	14	260	182	0	14	456	64	145	72	0	46	281	182	286	176	0	55	644	159	223	29	0	154	411	1792
9:00 AM	4	66	26	0	1	96	20	32	17	0	2	69	20	45	40	0	7	105	33	29	9	0	6	71	341
9:15 AM	3	51	19	0	0	73	36	16	7	0	1	59	6	36	23	0	3	65	26	30	1	0	10	57	254
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	7	117	45	0	1	169	56	48	24	0	3	128	26	81	63	0	10	170	59	59	10	0	16	128	595
11:00 AM	1	31	24	0	1	56	22	13	12	0	5	47	14	31	13	0	9	58	17	34	1	0	146	52	213
11:15 AM	0	21	19	0	0	40	38	14	12	0	2	64	12	32	38	0	6	82	11	27	3	0	109	41	227
11:30 AM	3	36	19	0	1	58	23	23	13	0	5	59	12	42	30	0	7	84	16	40	3	0	81	59	260
11:45 AM	1	15	13	0	0	29	27	27	11	0	1	65	13	48	26	0	0	87	9	45	2	0	33	56	237
Hourly Total	5	103	75	0	2	183	110	77	48	0	13	235	51	153	107	0	22	311	53	146	9	0	369	208	937
12:00 PM	3	14	14	0	2	31	21	11	17	0	1	49	19	44	33	0	1	96	10	38	3	0	16	51	227
12:15 PM	0	13	18	0	0	31	22	23	12	0	2	57	5	27	24	0	1	56	14	28	0	0	1	42	186
12:30 PM	2	23	21	0	0	46	18	23	10	0	0	51	12	40	23	0	1	75	22	21	1	0	3	44	216
12:45 PM	3	21	10	0	1	34	30	23	9	0	0	62	14	36	31	0	0	81	14	28	1	0	7	43	220
Hourly Total	8	71	63	0	3	142	91	80	48	0	3	219	50	147	111	0	3	308	60	115	5	0	27	180	849
1:00 PM	2	13	17	0	0	32	20	21	13	0	3	54	10	40	34	0	4	84	10	42	3	0	3	55	225
1:15 PM	3	21	19	0	3	43	24	24	13	0	1	61	21	41	31	0	4	93	6	26	1	0	16	33	230
1:30 PM	3	12	11	0	0	26	28	12	13	0	0	53	12	39	33	0	0	84	7	28	2	0	6	37	200
1:45 PM	2	20	15	0	0	37	26	14	10	0	2	50	8	37	25	0	2	70	9	40	1	0	4	50	207
Hourly Total	10	66	62	0	3	138	98	71	49	0	6	218	51	157	123	0	10	331	32	136	7	0	29	175	862
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:30 PM	4	47	26	0	4	77	38	29	4	0	5	71	17	47	41	0	9	105	28	36	3	0	21	67	320
3:45 PM	1	31	26	0	4	58	43	36	17	0	3	96	20	40	45	1	11	106	11	55	1	0	18	67	327
Hourly Total	5	78	52	0	8	135	81	65	21	0	8	167	37	87	86	1	20	211	39	91	4	0	39	134	647
4:00 PM	3	27	23	0	2	53	37	32	23	0	7	92	25	60	46	0	7	131	18	35	2	0	8	55	331

4:15 PM	4	31	30	0	4	65	47	39	28	0	3	114	28	49	36	0	1	113	10	42	4	0	14	56	348
4:30 PM	1	26	27	0	2	54	52	45	31	0	6	128	25	51	40	0	9	116	19	55	1	0	13	75	373
4:45 PM	2	31	27	0	4	60	45	61	35	0	2	141	25	35	42	0	1	102	20	65	6	0	11	91	394
Hourly Total	10	115	107	0	12	232	181	177	117	0	18	475	103	195	164	0	18	462	67	197	13	0	46	277	1446
5:00 PM	8	24	40	0	5	72	61	60	31	0	4	152	29	36	43	0	5	108	27	67	7	0	13	101	433
5:15 PM	2	26	29	0	1	57	52	46	38	0	0	136	25	44	41	0	3	110	18	86	4	0	5	108	411
5:30 PM	4	30	18	0	0	52	51	63	29	0	5	143	17	42	46	0	5	105	22	55	2	0	4	79	379
5:45 PM	3	25	22	0	0	50	46	38	12	0	3	96	25	48	30	0	4	103	13	48	6	0	3	67	316
Hourly Total	17	105	109	0	6	231	210	207	110	0	12	527	96	170	160	0	17	426	80	256	19	0	25	355	1539
6:00 PM	5	41	23	0	5	69	36	48	23	0	4	107	22	38	46	0	7	106	10	36	1	0	11	47	329
6:15 PM	1	22	16	0	1	39	34	55	24	0	2	113	31	47	28	0	3	106	13	48	1	0	4	62	320
Grand Total	94	1108	848	0	57	2050	1024	1050	586	0	118	2660	728	1566	1169	1	174	3464	674	1438	110	0	723	2222	10396
Approach %	4.6	54.0	41.4	0.0	-	-	38.5	39.5	22.0	0.0	-	-	21.0	45.2	33.7	0.0	-	-	30.3	64.7	5.0	0.0	-	-	-
Total %	0.9	10.7	8.2	0.0	-	19.7	9.8	10.1	5.6	0.0	-	25.6	7.0	15.1	11.2	0.0	-	33.3	6.5	13.8	1.1	0.0	-	21.4	-
Lights	87	1060	807	0	-	1954	999	1012	570	0	-	2581	688	1497	1156	1	-	3342	663	1386	104	0	-	2153	10030
% Lights	92.6	95.7	95.2	-	-	95.3	97.6	96.4	97.3	-	-	97.0	94.5	95.6	98.9	100.0	-	96.5	98.4	96.4	94.5	-	-	96.9	96.5
Mediums	7	48	40	0	-	95	20	38	15	0	-	73	39	57	11	0	-	107	10	46	6	0	-	62	337
% Mediums	7.4	4.3	4.7	-	-	4.6	2.0	3.6	2.6	-	-	2.7	5.4	3.6	0.9	0.0	-	3.1	1.5	3.2	5.5	-	-	2.8	3.2
Articulated Trucks	0	0	1	0	-	1	5	0	1	0	-	6	1	12	2	0	-	15	1	6	0	0	-	7	29
% Articulated Trucks	0.0	0.0	0.1	-	-	0.0	0.5	0.0	0.2	-	-	0.2	0.1	0.8	0.2	0.0	-	0.4	0.1	0.4	0.0	-	-	0.3	0.3
Pedestrians	-	-	-	-	57	-	-	-	-	-	118	-	-	-	-	-	174	-	-	-	-	-	723	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Laurelwood Drive & Erbsville Road
Site Code:
Start Date: 11/02/2017



Turning Movement Data Plot

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Laurelwood Drive & Erbsville Road
Site Code:
Start Date: 11/02/2017

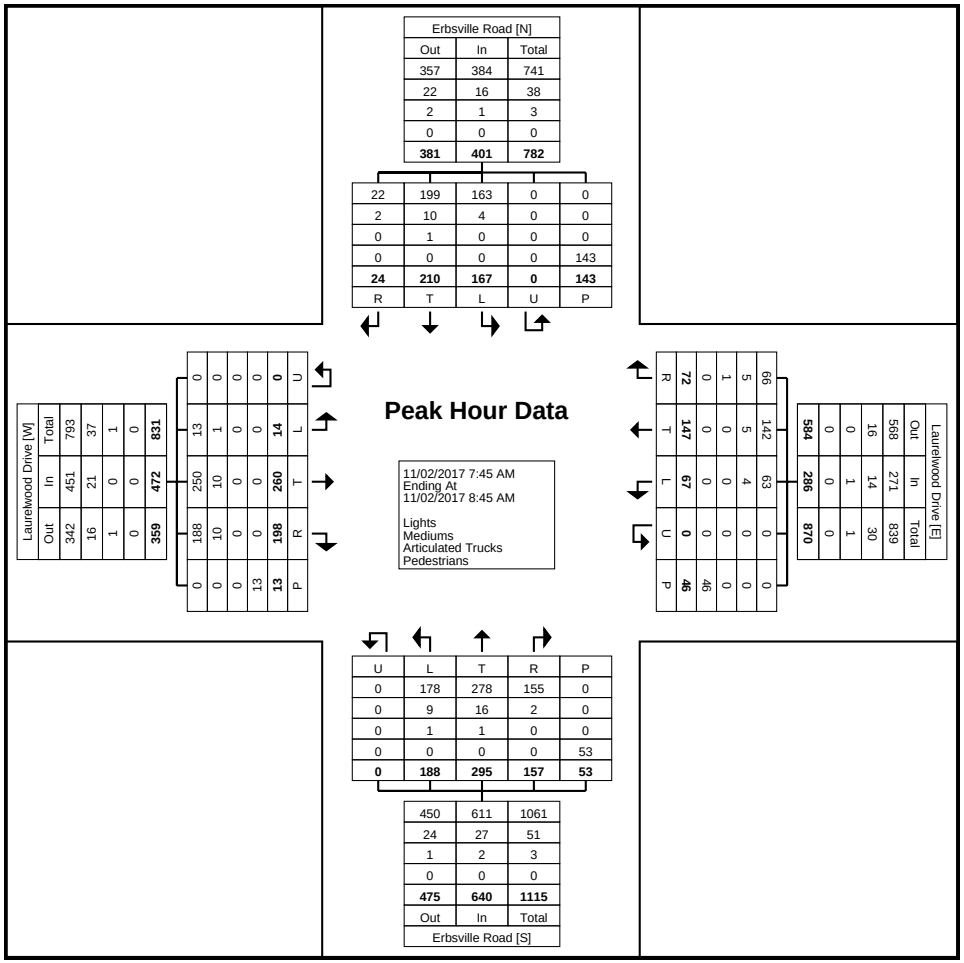
Turning Movement Peak Hour Data (7:45 AM)

Start Time	Laurelwood Drive Eastbound						Laurelwood Drive Westbound						Erbsville Road Northbound						Erbsville Road 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	
7:45 AM	1	34	36	0	1	71	14	16	12	0	0	42	24	55	25	0	2	104	32	27	0	0	2	59	276
8:00 AM	6	75	57	0	1	138	15	35	31	0	8	81	60	65	31	0	8	156	37	41	8	0	25	86	461
8:15 AM	5	81	59	0	11	145	16	67	19	0	33	102	60	96	56	0	32	212	57	87	13	0	97	157	616
8:30 AM	2	70	46	0	0	118	22	29	10	0	5	61	44	79	45	0	11	168	41	55	3	0	19	99	446
Total	14	260	198	0	13	472	67	147	72	0	46	286	188	295	157	0	53	640	167	210	24	0	143	401	1799
Approach %	3.0	55.1	41.9	0.0	-	-	23.4	51.4	25.2	0.0	-	-	29.4	46.1	24.5	0.0	-	-	41.6	52.4	6.0	0.0	-	-	-
Total %	0.8	14.5	11.0	0.0	-	26.2	3.7	8.2	4.0	0.0	-	15.9	10.5	16.4	8.7	0.0	-	35.6	9.3	11.7	1.3	0.0	-	22.3	-
PHF	0.583	0.802	0.839	0.000	-	0.814	0.761	0.549	0.581	0.000	-	0.701	0.783	0.768	0.701	0.000	-	0.755	0.732	0.603	0.462	0.000	-	0.639	0.730
Lights	13	250	188	0	-	451	63	142	66	0	-	271	178	278	155	0	-	611	163	199	22	0	-	384	1717
% Lights	92.9	96.2	94.9	-	-	95.6	94.0	96.6	91.7	-	-	94.8	94.7	94.2	98.7	-	-	95.5	97.6	94.8	91.7	-	-	95.8	95.4
Mediums	1	10	10	0	-	21	4	5	5	0	-	14	9	16	2	0	-	27	4	10	2	0	-	16	78
% Mediums	7.1	3.8	5.1	-	-	4.4	6.0	3.4	6.9	-	-	4.9	4.8	5.4	1.3	-	-	4.2	2.4	4.8	8.3	-	-	4.0	4.3
Articulated Trucks	0	0	0	0	-	0	0	0	1	0	-	1	1	1	0	0	-	2	0	1	0	0	-	1	4
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	1.4	-	-	0.3	0.5	0.3	0.0	-	-	0.3	0.0	0.5	0.0	-	-	0.2	0.2
Pedestrians	-	-	-	-	13	-	-	-	-	-	46	-	-	-	-	-	53	-	-	-	-	-	143	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Laurelwood Drive & Erbsville Road
Site Code:
Start Date: 11/02/2017



Turning Movement Peak Hour Data Plot (7:45 AM)

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Laurelwood Drive & Erbsville Road
Site Code:
Start Date: 11/02/2017

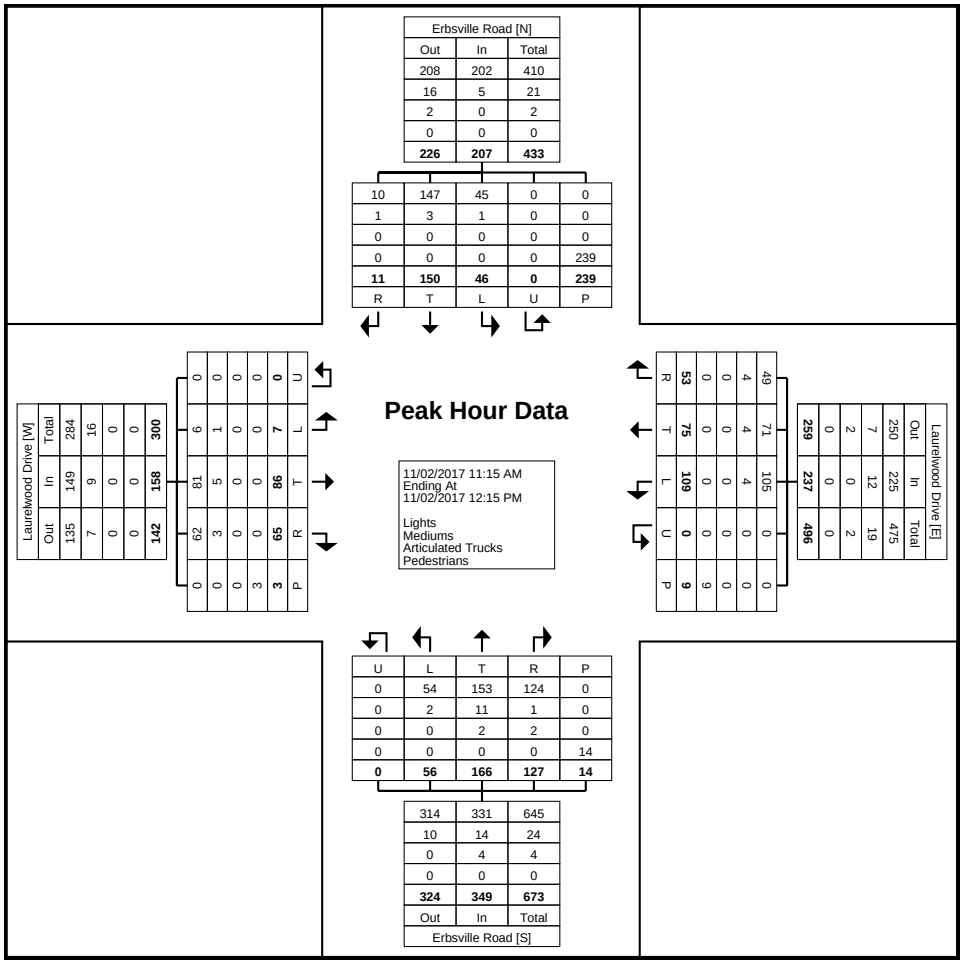
Turning Movement Peak Hour Data (11:15 AM)

Start Time	Laurelwood Drive Eastbound						Laurelwood Drive Westbound						Erbsville Road Northbound						Erbsville Road 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	
11:15 AM	0	21	19	0	0	40	38	14	12	0	2	64	12	32	38	0	6	82	11	27	3	0	109	41	227
11:30 AM	3	36	19	0	1	58	23	23	13	0	5	59	12	42	30	0	7	84	16	40	3	0	81	59	260
11:45 AM	1	15	13	0	0	29	27	27	11	0	1	65	13	48	26	0	0	87	9	45	2	0	33	56	237
12:00 PM	3	14	14	0	2	31	21	11	17	0	1	49	19	44	33	0	1	96	10	38	3	0	16	51	227
Total	7	86	65	0	3	158	109	75	53	0	9	237	56	166	127	0	14	349	46	150	11	0	239	207	951
Approach %	4.4	54.4	41.1	0.0	-	-	46.0	31.6	22.4	0.0	-	-	16.0	47.6	36.4	0.0	-	-	22.2	72.5	5.3	0.0	-	-	-
Total %	0.7	9.0	6.8	0.0	-	16.6	11.5	7.9	5.6	0.0	-	24.9	5.9	17.5	13.4	0.0	-	36.7	4.8	15.8	1.2	0.0	-	21.8	-
PHF	0.583	0.597	0.855	0.000	-	0.681	0.717	0.694	0.779	0.000	-	0.912	0.737	0.865	0.836	0.000	-	0.909	0.719	0.833	0.917	0.000	-	0.877	0.914
Lights	6	81	62	0	-	149	105	71	49	0	-	225	54	153	124	0	-	331	45	147	10	0	-	202	907
% Lights	85.7	94.2	95.4	-	-	94.3	96.3	94.7	92.5	-	-	94.9	96.4	92.2	97.6	-	-	94.8	97.8	98.0	90.9	-	-	97.6	95.4
Mediums	1	5	3	0	-	9	4	4	4	0	-	12	2	11	1	0	-	14	1	3	1	0	-	5	40
% Mediums	14.3	5.8	4.6	-	-	5.7	3.7	5.3	7.5	-	-	5.1	3.6	6.6	0.8	-	-	4.0	2.2	2.0	9.1	-	-	2.4	4.2
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	2	2	0	-	4	0	0	0	0	-	0	4
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	1.2	1.6	-	-	1.1	0.0	0.0	0.0	-	-	0.0	0.4
Pedestrians	-	-	-	-	3	-	-	-	-	-	9	-	-	-	-	-	14	-	-	-	-	-	239	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Laurelwood Drive & Erbsville Road
Site Code:
Start Date: 11/02/2017



Turning Movement Peak Hour Data Plot (11:15 AM)

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Laurelwood Drive & Erbsville Road
Site Code:
Start Date: 11/02/2017

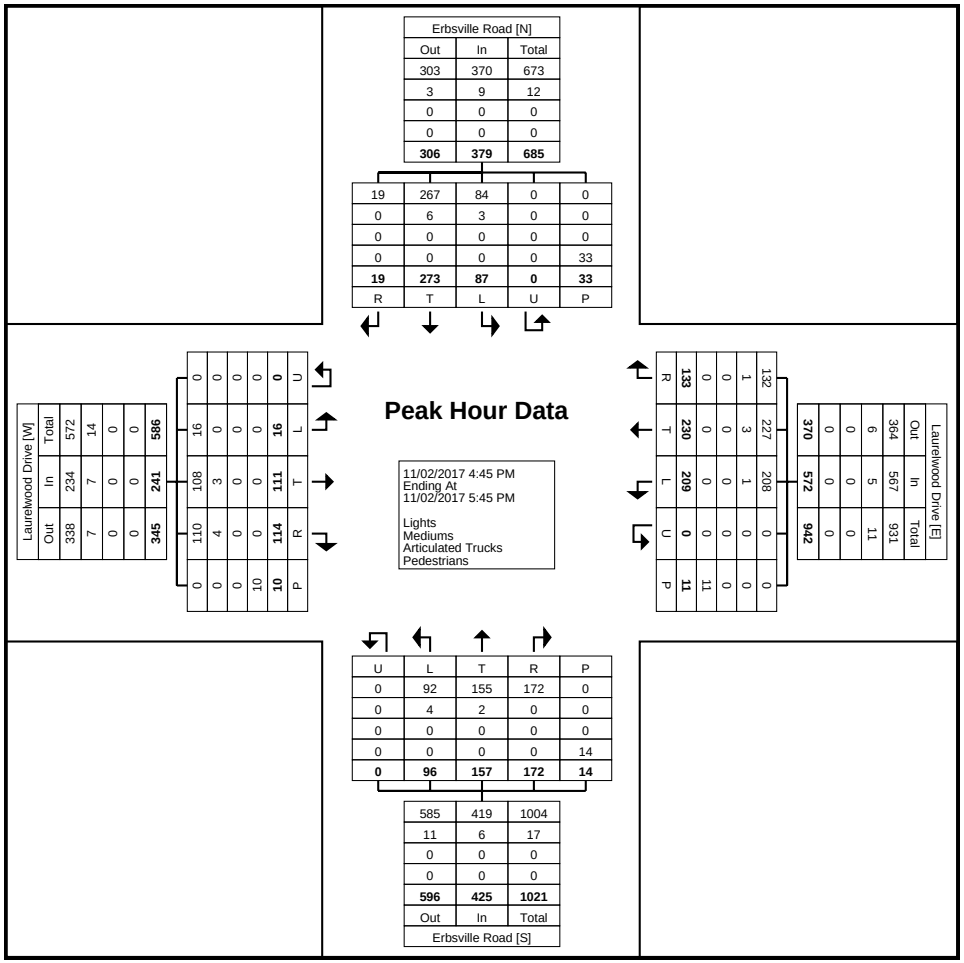
Turning Movement Peak Hour Data (4:45 PM)

Start Time	Laurelwood Drive Eastbound						Laurelwood Drive Westbound						Erbsville Road Northbound						Erbsville Road 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	
4:45 PM	2	31	27	0	4	60	45	61	35	0	2	141	25	35	42	0	1	102	20	65	6	0	11	91	394
5:00 PM	8	24	40	0	5	72	61	60	31	0	4	152	29	36	43	0	5	108	27	67	7	0	13	101	433
5:15 PM	2	26	29	0	1	57	52	46	38	0	0	136	25	44	41	0	3	110	18	86	4	0	5	108	411
5:30 PM	4	30	18	0	0	52	51	63	29	0	5	143	17	42	46	0	5	105	22	55	2	0	4	79	379
Total	16	111	114	0	10	241	209	230	133	0	11	572	96	157	172	0	14	425	87	273	19	0	33	379	1617
Approach %	6.6	46.1	47.3	0.0	-	-	36.5	40.2	23.3	0.0	-	-	22.6	36.9	40.5	0.0	-	-	23.0	72.0	5.0	0.0	-	-	-
Total %	1.0	6.9	7.1	0.0	-	14.9	12.9	14.2	8.2	0.0	-	35.4	5.9	9.7	10.6	0.0	-	26.3	5.4	16.9	1.2	0.0	-	23.4	-
PHF	0.500	0.895	0.713	0.000	-	0.837	0.857	0.913	0.875	0.000	-	0.941	0.828	0.892	0.935	0.000	-	0.966	0.806	0.794	0.679	0.000	-	0.877	0.934
Lights	16	108	110	0	-	234	208	227	132	0	-	567	92	155	172	0	-	419	84	267	19	0	-	370	1590
% Lights	100.0	97.3	96.5	-	-	97.1	99.5	98.7	99.2	-	-	99.1	95.8	98.7	100.0	-	-	98.6	96.6	97.8	100.0	-	-	97.6	98.3
Mediums	0	3	4	0	-	7	1	3	1	0	-	5	4	2	0	0	-	6	3	6	0	0	-	9	27
% Mediums	0.0	2.7	3.5	-	-	2.9	0.5	1.3	0.8	-	-	0.9	4.2	1.3	0.0	-	-	1.4	3.4	2.2	0.0	-	-	2.4	1.7
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Pedestrians	-	-	-	-	10	-	-	-	-	-	11	-	-	-	-	-	14	-	-	-	-	-	33	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Laurelwood Drive & Erbsville Road
Site Code:
Start Date: 11/02/2017



Turning Movement Peak Hour Data Plot (4:45 PM)

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Laurelwood Drive & Erbsville Road
Site Code:
Start Date: 11/02/2017

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Laurelwood Drive & Fischer Hallman Road
Site Code:
Start Date: 11/02/2017

Turning Movement Data

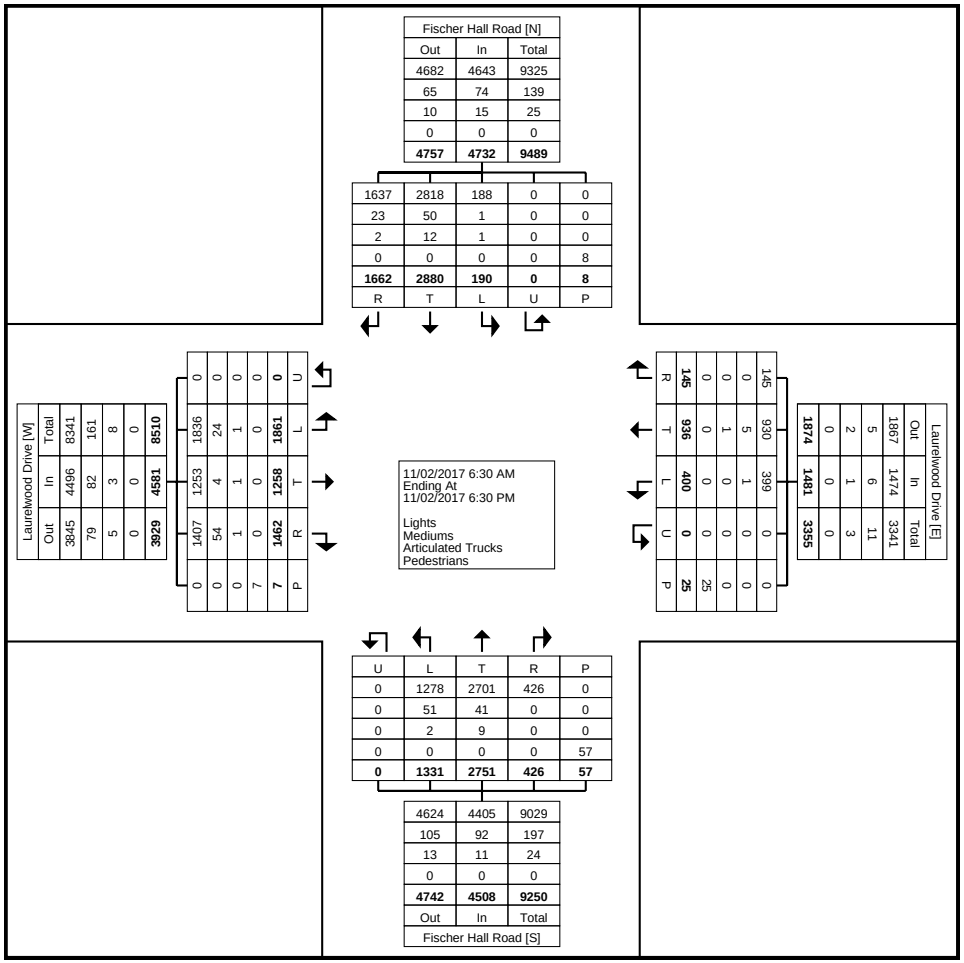
Start Time	Laurelwood Drive Eastbound						Laurelwood Drive Westbound						Fischer Hall Road Northbound						Fischer Hall Road Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
6:30 AM	49	14	16	0	0	79	8	0	2	0	0	10	7	69	3	0	0	79	2	27	6	0	0	35	203
6:45 AM	42	14	23	0	0	79	5	6	1	0	0	12	7	68	7	0	3	82	1	19	14	0	0	34	207
Hourly Total	91	28	39	0	0	158	13	6	3	0	0	22	14	137	10	0	3	161	3	46	20	0	0	69	410
7:00 AM	49	17	22	0	0	88	4	10	0	0	0	14	13	68	4	0	0	85	3	34	10	0	0	47	234
7:15 AM	51	19	20	0	0	90	3	10	0	0	0	13	12	82	7	0	0	101	1	38	16	0	0	55	259
7:30 AM	64	43	26	0	0	133	5	7	1	0	1	13	20	81	14	0	1	115	2	48	22	0	0	72	333
7:45 AM	95	49	37	0	0	181	2	10	5	0	1	17	22	110	7	0	0	139	4	55	28	0	0	87	424
Hourly Total	259	128	105	0	0	492	14	37	6	0	2	57	67	341	32	0	1	440	10	175	76	0	0	261	1250
8:00 AM	77	60	53	0	0	190	3	17	2	0	0	22	44	97	8	0	0	149	2	47	40	0	0	89	450
8:15 AM	73	83	74	0	0	230	4	16	2	0	0	22	46	134	8	0	0	188	2	66	33	0	0	101	541
8:30 AM	112	92	72	0	0	276	8	11	1	0	0	20	23	149	8	0	0	180	2	54	27	0	0	83	559
8:45 AM	115	51	65	0	1	231	7	6	1	0	0	14	23	141	15	0	0	179	10	60	25	0	2	95	519
Hourly Total	377	286	264	0	1	927	22	50	6	0	0	78	136	521	39	0	0	696	16	227	125	0	2	368	2069
9:00 AM	81	49	58	0	1	188	2	5	4	0	0	11	41	111	16	0	0	168	10	38	23	0	2	71	438
9:15 AM	75	58	52	0	1	185	5	11	3	0	2	19	33	103	26	0	0	162	9	59	31	0	1	99	465
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	156	107	110	0	2	373	7	16	7	0	2	30	74	214	42	0	0	330	19	97	54	0	3	170	903
11:00 AM	29	34	46	0	1	109	12	9	6	0	0	27	34	52	5	0	1	91	2	61	27	0	1	90	317
11:15 AM	33	27	32	0	0	92	10	12	5	0	0	27	37	62	9	0	0	108	3	67	39	0	0	109	336
11:30 AM	31	22	36	0	0	89	17	32	4	0	0	53	21	57	10	0	3	88	4	66	31	0	0	101	331
11:45 AM	40	23	29	0	0	92	10	20	8	0	1	38	31	46	6	0	2	83	5	72	46	0	0	123	336
Hourly Total	133	106	143	0	1	382	49	73	23	0	1	145	123	217	30	0	6	370	14	266	143	0	1	423	1320
12:00 PM	37	16	38	0	0	91	17	13	4	0	4	34	34	52	14	0	1	100	5	88	41	0	0	134	359
12:15 PM	29	17	39	0	0	85	12	25	5	0	1	42	38	49	10	0	1	97	1	72	36	0	0	109	333
12:30 PM	37	25	52	0	0	114	15	23	3	0	0	41	34	81	9	0	3	124	6	67	38	0	0	111	390
12:45 PM	47	26	38	0	0	111	9	15	3	0	2	27	35	71	10	0	1	116	8	56	35	0	0	99	353
Hourly Total	150	84	167	0	0	401	53	76	15	0	7	144	141	253	43	0	6	437	20	283	150	0	0	453	1435
1:00 PM	51	26	34	0	1	111	17	25	6	0	0	48	37	50	9	0	3	96	2	67	35	0	1	104	359
1:15 PM	42	16	34	0	0	92	3	21	5	0	1	29	32	62	9	0	2	103	4	66	37	0	0	107	331
1:30 PM	36	22	31	0	0	89	14	26	5	0	4	45	28	61	9	0	3	98	7	82	33	0	0	122	354
1:45 PM	41	18	38	0	0	97	6	13	4	0	1	23	35	64	12	0	0	111	7	66	28	0	0	101	332
Hourly Total	170	82	137	0	1	389	40	85	20	0	6	145	132	237	39	0	8	408	20	281	133	0	1	434	1376
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:30 PM	44	36	41	0	0	121	7	31	4	0	1	42	45	68	11	0	7	124	9	90	46	0	0	145	432
3:45 PM	51	31	46	0	0	128	12	31	6	0	0	49	44	63	14	0	3	121	7	118	52	0	0	177	475
Hourly Total	95	67	87	0	0	249	19	62	10	0	1	91	89	131	25	0	10	245	16	208	98	0	0	322	907
4:00 PM	45	25	44	0	0	114	7	36	5	0	0	48	46	64	10	0	2	120	6	127	64	0	0	197	479

4:15 PM	42	35	46	0	0	123	12	38	5	0	0	55	62	73	20	0	5	155	12	124	79	0	0	215	548
4:30 PM	39	29	32	0	0	100	22	56	6	0	1	84	50	57	14	0	0	121	7	147	67	0	0	221	526
4:45 PM	47	50	45	0	1	142	21	57	5	0	1	83	59	69	16	0	2	144	6	141	105	0	0	252	621
Hourly Total	173	139	167	0	1	479	62	187	21	0	2	270	217	263	60	0	9	540	31	539	315	0	0	885	2174
5:00 PM	48	38	51	0	0	137	18	70	16	0	1	104	47	72	11	0	4	130	5	164	92	0	0	261	632
5:15 PM	32	44	35	0	0	111	28	77	4	0	1	109	58	73	20	0	2	151	11	150	118	0	0	279	650
5:30 PM	37	37	40	0	1	114	20	62	3	0	1	85	64	73	20	0	5	157	10	144	120	0	1	274	630
5:45 PM	56	32	43	0	0	131	20	51	2	0	0	73	55	68	16	0	0	139	5	104	73	0	0	182	525
Hourly Total	173	151	169	0	1	493	86	260	25	0	3	371	224	286	67	0	11	577	31	562	403	0	1	996	2437
6:00 PM	42	45	36	0	0	123	20	40	7	0	0	67	56	72	24	0	0	152	4	105	78	0	0	187	529
6:15 PM	42	35	38	0	0	115	15	44	2	0	1	61	58	79	15	0	3	152	6	91	67	0	0	164	492
Grand Total	1861	1258	1462	0	7	4581	400	936	145	0	25	1481	1331	2751	426	0	57	4508	190	2880	1662	0	8	4732	15302
Approach %	40.6	27.5	31.9	0.0	-	-	27.0	63.2	9.8	0.0	-	-	29.5	61.0	9.4	0.0	-	-	4.0	60.9	35.1	0.0	-	-	-
Total %	12.2	8.2	9.6	0.0	-	29.9	2.6	6.1	0.9	0.0	-	9.7	8.7	18.0	2.8	0.0	-	29.5	1.2	18.8	10.9	0.0	-	30.9	-
Lights	1836	1253	1407	0	-	4496	399	930	145	0	-	1474	1278	2701	426	0	-	4405	188	2818	1637	0	-	4643	15018
% Lights	98.7	99.6	96.2	-	-	98.1	99.8	99.4	100.0	-	-	99.5	96.0	98.2	100.0	-	-	97.7	98.9	97.8	98.5	-	-	98.1	98.1
Mediums	24	4	54	0	-	82	1	5	0	0	-	6	51	41	0	0	-	92	1	50	23	0	-	74	254
% Mediums	1.3	0.3	3.7	-	-	1.8	0.3	0.5	0.0	-	-	0.4	3.8	1.5	0.0	-	-	2.0	0.5	1.7	1.4	-	-	1.6	1.7
Articulated Trucks	1	1	1	0	-	3	0	1	0	0	-	1	2	9	0	0	-	11	1	12	2	0	-	15	30
% Articulated Trucks	0.1	0.1	0.1	-	-	0.1	0.0	0.1	0.0	-	-	0.1	0.2	0.3	0.0	-	-	0.2	0.5	0.4	0.1	-	-	0.3	0.2
Pedestrians	-	-	-	-	7	-	-	-	-	-	25	-	-	-	-	-	57	-	-	-	-	-	8	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Laurelwood Drive & Fischer Hallman Road
Site Code:
Start Date: 11/02/2017



Turning Movement Data Plot

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Laurelwood Drive & Fischer Hallman Road
Site Code:
Start Date: 11/02/2017

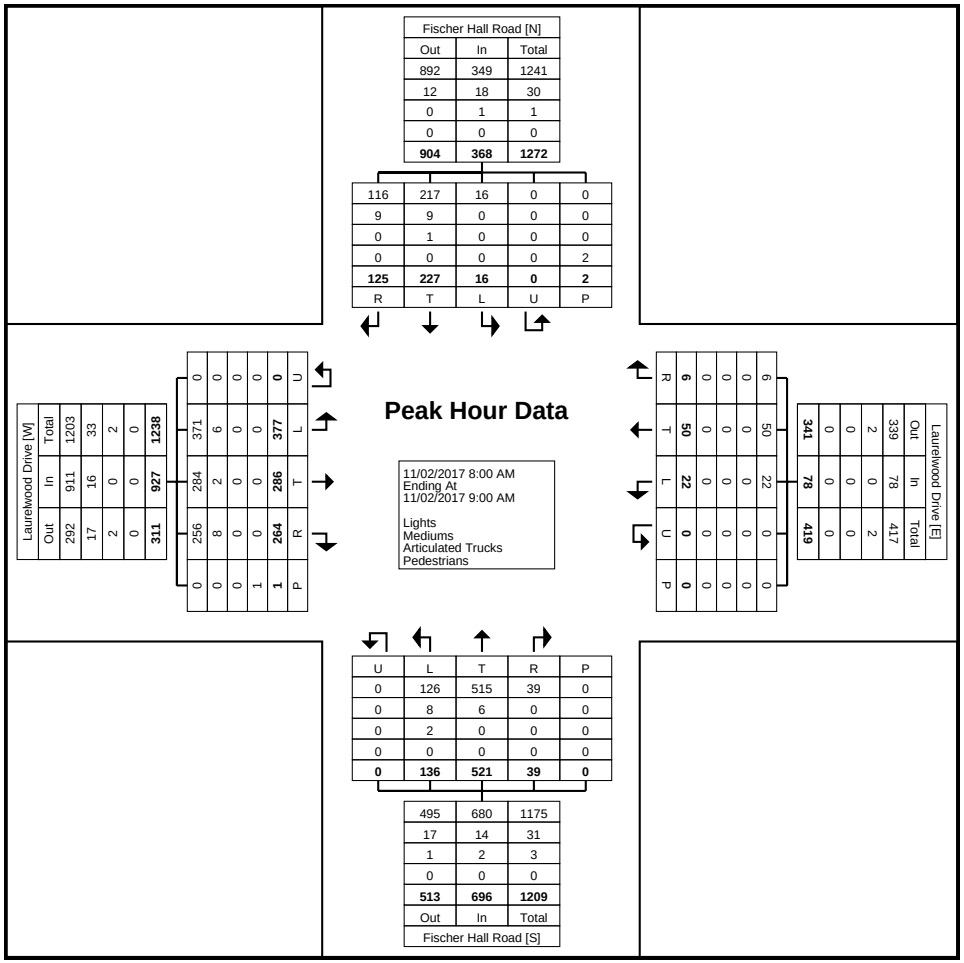
Turning Movement Peak Hour Data (8:00 AM)

Start Time	Laurelwood Drive Eastbound						Laurelwood Drive Westbound						Fischer Hall Road Northbound						Fischer Hall Road 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	77	60	53	0	0	190	3	17	2	0	0	22	44	97	8	0	0	149	2	47	40	0	0	89	450
8:15 AM	73	83	74	0	0	230	4	16	2	0	0	22	46	134	8	0	0	188	2	66	33	0	0	101	541
8:30 AM	112	92	72	0	0	276	8	11	1	0	0	20	23	149	8	0	0	180	2	54	27	0	0	83	559
8:45 AM	115	51	65	0	1	231	7	6	1	0	0	14	23	141	15	0	0	179	10	60	25	0	2	95	519
Total	377	286	264	0	1	927	22	50	6	0	0	78	136	521	39	0	0	696	16	227	125	0	2	368	2069
Approach %	40.7	30.9	28.5	0.0	-	-	28.2	64.1	7.7	0.0	-	-	19.5	74.9	5.6	0.0	-	-	4.3	61.7	34.0	0.0	-	-	-
Total %	18.2	13.8	12.8	0.0	-	44.8	1.1	2.4	0.3	0.0	-	3.8	6.6	25.2	1.9	0.0	-	33.6	0.8	11.0	6.0	0.0	-	17.8	-
PHF	0.820	0.777	0.892	0.000	-	0.840	0.688	0.735	0.750	0.000	-	0.886	0.739	0.874	0.650	0.000	-	0.926	0.400	0.860	0.781	0.000	-	0.911	0.925
Lights	371	284	256	0	-	911	22	50	6	0	-	78	126	515	39	0	-	680	16	217	116	0	-	349	2018
% Lights	98.4	99.3	97.0	-	-	98.3	100.0	100.0	100.0	-	-	100.0	92.6	98.8	100.0	-	-	97.7	100.0	95.6	92.8	-	-	94.8	97.5
Mediums	6	2	8	0	-	16	0	0	0	0	-	0	8	6	0	0	-	14	0	9	9	0	-	18	48
% Mediums	1.6	0.7	3.0	-	-	1.7	0.0	0.0	0.0	-	-	0.0	5.9	1.2	0.0	-	-	2.0	0.0	4.0	7.2	-	-	4.9	2.3
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	2	0	0	0	-	2	0	1	0	0	-	1	3
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	1.5	0.0	0.0	-	-	0.3	0.0	0.4	0.0	-	-	0.3	0.1
Pedestrians	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	2	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Laurelwood Drive & Fischer Hallman Road
Site Code:
Start Date: 11/02/2017



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

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Laurelwood Drive & Fischer Hallman Road
Site Code:
Start Date: 11/02/2017

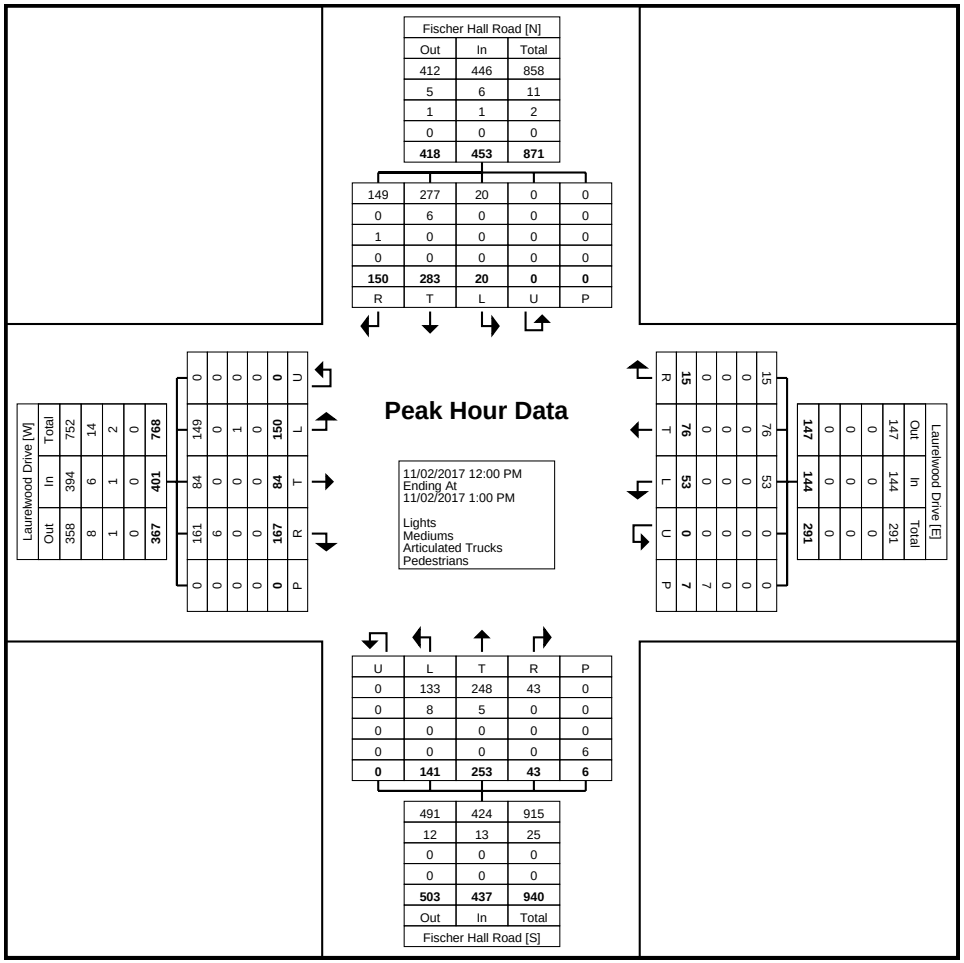
Turning Movement Peak Hour Data (12:00 PM)

Start Time	Laurelwood Drive Eastbound						Laurelwood Drive Westbound						Fischer Hall Road Northbound						Fischer Hall Road 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	37	16	38	0	0	91	17	13	4	0	4	34	34	52	14	0	1	100	5	88	41	0	0	134	359
12:15 PM	29	17	39	0	0	85	12	25	5	0	1	42	38	49	10	0	1	97	1	72	36	0	0	109	333
12:30 PM	37	25	52	0	0	114	15	23	3	0	0	41	34	81	9	0	3	124	6	67	38	0	0	111	390
12:45 PM	47	26	38	0	0	111	9	15	3	0	2	27	35	71	10	0	1	116	8	56	35	0	0	99	353
Total	150	84	167	0	0	401	53	76	15	0	7	144	141	253	43	0	6	437	20	283	150	0	0	453	1435
Approach %	37.4	20.9	41.6	0.0	-	-	36.8	52.8	10.4	0.0	-	-	32.3	57.9	9.8	0.0	-	-	4.4	62.5	33.1	0.0	-	-	-
Total %	10.5	5.9	11.6	0.0	-	27.9	3.7	5.3	1.0	0.0	-	10.0	9.8	17.6	3.0	0.0	-	30.5	1.4	19.7	10.5	0.0	-	31.6	-
PHF	0.798	0.808	0.803	0.000	-	0.879	0.779	0.760	0.750	0.000	-	0.857	0.928	0.781	0.768	0.000	-	0.881	0.625	0.804	0.915	0.000	-	0.845	0.920
Lights	149	84	161	0	-	394	53	76	15	0	-	144	133	248	43	0	-	424	20	277	149	0	-	446	1408
% Lights	99.3	100.0	96.4	-	-	98.3	100.0	100.0	100.0	-	-	100.0	94.3	98.0	100.0	-	-	97.0	100.0	97.9	99.3	-	-	98.5	98.1
Mediums	0	0	6	0	-	6	0	0	0	0	-	0	8	5	0	0	-	13	0	6	0	0	-	6	25
% Mediums	0.0	0.0	3.6	-	-	1.5	0.0	0.0	0.0	-	-	0.0	5.7	2.0	0.0	-	-	3.0	0.0	2.1	0.0	-	-	1.3	1.7
Articulated Trucks	1	0	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	0	0	1	0	-	1	2
% Articulated Trucks	0.7	0.0	0.0	-	-	0.2	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.7	-	-	0.2	0.1
Pedestrians	-	-	-	-	0	-	-	-	-	-	7	-	-	-	-	-	6	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Laurelwood Drive & Fischer Hallman Road
Site Code:
Start Date: 11/02/2017



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

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

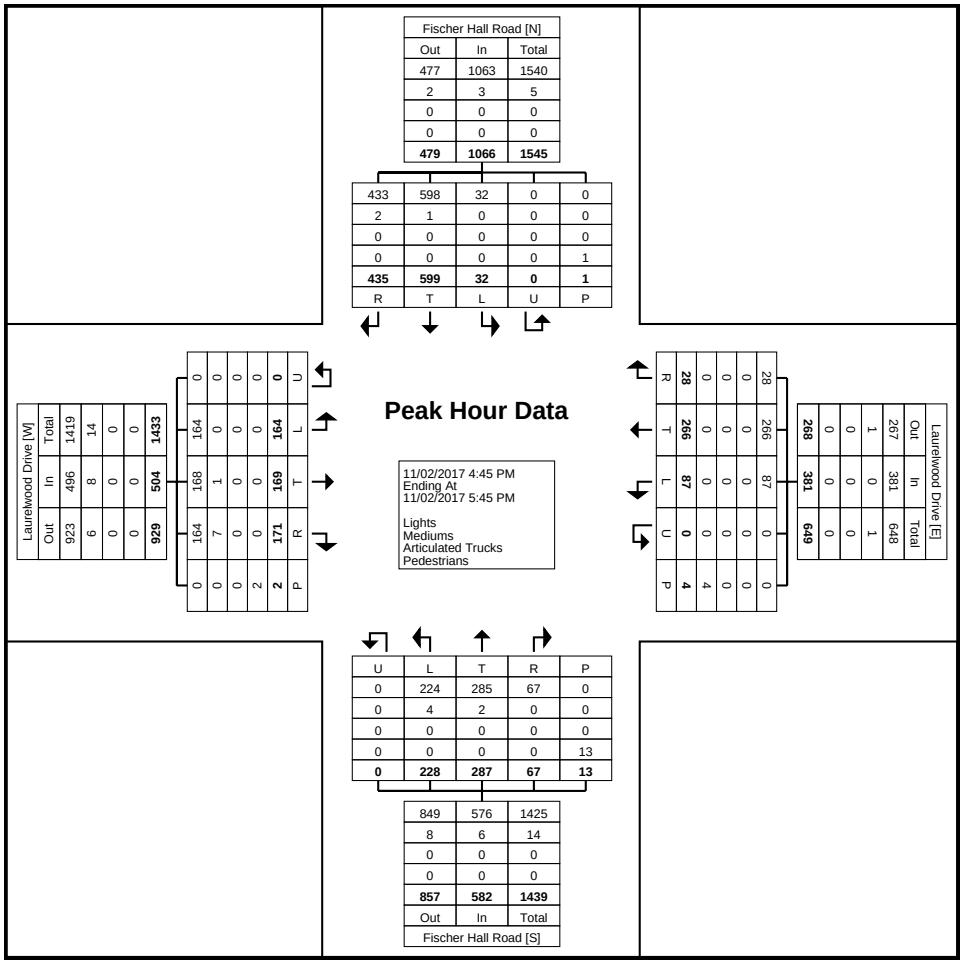
Count Name: Laurelwood Drive & Fischer Hallman Road
Site Code:
Start Date: 11/02/2017

Turning Movement Peak Hour Data (4:45 PM)

Start Time	Laurelwood Drive Eastbound						Laurelwood Drive Westbound						Fischer Hall Road Northbound						Fischer Hall Road 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	
4:45 PM	47	50	45	0	1	142	21	57	5	0	1	83	59	69	16	0	2	144	6	141	105	0	0	252	621
5:00 PM	48	38	51	0	0	137	18	70	16	0	1	104	47	72	11	0	4	130	5	164	92	0	0	261	632
5:15 PM	32	44	35	0	0	111	28	77	4	0	1	109	58	73	20	0	2	151	11	150	118	0	0	279	650
5:30 PM	37	37	40	0	1	114	20	62	3	0	1	85	64	73	20	0	5	157	10	144	120	0	1	274	630
Total	164	169	171	0	2	504	87	266	28	0	4	381	228	287	67	0	13	582	32	599	435	0	1	1066	2533
Approach %	32.5	33.5	33.9	0.0	-	-	22.8	69.8	7.3	0.0	-	-	39.2	49.3	11.5	0.0	-	-	3.0	56.2	40.8	0.0	-	-	-
Total %	6.5	6.7	6.8	0.0	-	19.9	3.4	10.5	1.1	0.0	-	15.0	9.0	11.3	2.6	0.0	-	23.0	1.3	23.6	17.2	0.0	-	42.1	-
PHF	0.854	0.845	0.838	0.000	-	0.887	0.777	0.864	0.438	0.000	-	0.874	0.891	0.983	0.838	0.000	-	0.927	0.727	0.913	0.906	0.000	-	0.955	0.974
Lights	164	168	164	0	-	496	87	266	28	0	-	381	224	285	67	0	-	576	32	598	433	0	-	1063	2516
% Lights	100.0	99.4	95.9	-	-	98.4	100.0	100.0	100.0	-	-	100.0	98.2	99.3	100.0	-	-	99.0	100.0	99.8	99.5	-	-	99.7	99.3
Mediums	0	1	7	0	-	8	0	0	0	0	-	0	4	2	0	0	-	6	0	1	2	0	-	3	17
% Mediums	0.0	0.6	4.1	-	-	1.6	0.0	0.0	0.0	-	-	0.0	1.8	0.7	0.0	-	-	1.0	0.0	0.2	0.5	-	-	0.3	0.7
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Pedestrians	-	-	-	-	2	-	-	-	-	-	4	-	-	-	-	-	13	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com



Turning Movement Peak Hour Data Plot (4:45 PM)

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Laurelwood Drive & Fischer Hallman Road
Site Code:
Start Date: 11/02/2017

#324 - ERBSVILLE ROAD & LAURELWOOD DRIVE **T08-50/113W**

1. Semi-actuated operation, coordinated with signals on Erbsville Rd
2. NB/SB actuated protected/permissive left turns on Erbsville Rd
3. Offsets are a percentage of the cycle length and relate to the beginning of Erbsville Rd. green

Signal timing in effect: - 7:00 - 8:15; 8:45 – 9:15 Monday to Friday

Erbsville Road	**Offset – 4%**	
NB/SB Grn Arrow	- Min - 5.0 sec	
	- Ext - 3.0 sec	
	- Max - 7.0 sec	
N/S Amber Arrow	- 3.0 sec	
All Red	- 1.0 sec	
Green	- 28.0 sec	Green/Walk – 10.0 sec
Amber	- 4.0 sec	Green/FDW – 18.0 sec
All Red	- 2.0 sec	

Laurelwood Drive

Vehicle Call		Pedestrian Call
Green	- Min - 8.0 sec	Green/Walk - 15.0 sec
	- Ext - 3.0 sec	Green/FDW - 21.0 sec
	- Max - 39.0 sec	Green/SDW - 3.0 sec
Amber	- 4.0 sec	Amber - 4.0 sec
All Red	- 2.0 sec	All Red - 2.0 sec
TOTAL	**90.0 seconds**	

Signal timing in effect: - 8:15 - 8:45 Monday to Friday

Erbsville Road	**Offset – 0%**			
SB Grn Arrow	- Min - 5.0 sec	NB Grn Arrow	- Min - 5.0 sec	
	- Ext - 3.0 sec		- Ext - 3.0 sec	
	- Max - 8.0 sec		- Max - 12.0 sec	
N/S Amber Arrow	- 3.0 sec			
All Red	- 1.0 sec			
Green	- 33.0 sec	Green/Walk – 15.0 sec		
Amber	- 4.0 sec	Green/FDW – 18.0 sec		
All Red	- 2.0 sec			

Laurelwood Drive

Vehicle Call		Pedestrian Call
Green	- Min - 8.0 sec	Green/Walk - 15.0 sec
	- Ext - 3.0 sec	Green/FDW - 21.0 sec
	- Max - 39.0 sec	Green/SDW - 3.0 sec
Amber	- 4.0 sec	Amber - 4.0 sec
All Red	- 2.0 sec	All Red - 2.0 sec
TOTAL	**100.0 seconds**	

Signal timing in effect: - 9:15 – 14:30 & All other times

Erbsville Road	**No offset – runs local**	
Green	- 33.0 sec	Green/Walk – 15.0 sec
Amber	- 4.0 sec	Green/FDW – 18.0 sec
All Red	- 2.0 sec	

Laurelwood Drive

Vehicle Call			Pedestrian Call	
Green	- Min	- 8.0 sec	Green/Walk	- 15.0 sec
	- Ext	- 3.0 sec	Green/FDW	- 21.0 sec
	- Max	- 20.0 sec	Green/SDW	- -2.0 sec
Amber		- 4.0 sec	Amber	- 4.0 sec
All Red		- 2.0 sec	All Red	- 2.0 sec
TOTAL		**65.0 seconds**		

Signal timing in effect: - 14:30 - 19:00 Monday to Friday ** Ped/Veh on 14:30 - 16:00

Erbsville Road	**Offset – 72%**		
NB/SB Grn Arrow	- Min	- 5.0 sec	
	- Ext	- 3.0 sec	
	- Max	- 9.0 sec	
Amber Arrow		- 3.0 sec	
All Red		- 1.0 sec	
Green		- 30.0 sec	Green/Walk – 12.0 sec
Amber		- 4.0 sec	Green/FDW – 18.0 sec
All Red		- 2.0 sec	

Laurelwood Drive

Vehicle Call			Pedestrian Call	
Green	- Min	- 8.0 sec	Green/Walk	- 15.0 sec
	- Ext	- 3.0 sec	Green/FDW	- 21.0 sec
	- Max	- 35.0 sec	Green/SDW	- -1.0 sec
Amber		- 4.0 sec	Amber	- 4.0 sec
All Red		- 2.0 sec	All Red	- 2.0 sec
TOTAL		**90.0 seconds**		

Dec 17 - JAB

 # 323 - FISCHER-HALLMAN ROAD & LAURELWOOD DR/YMCA DRWY **T08-50/110W**

- Semi-actuated Operation
- Actuated Northbound Left Turn Arrow on Fischer-Hallman Rd.
- No offsets – runs free

Signal timing in effect: 07:00 - 15:00 Monday to Friday, 08:30 – 18:00 Saturday, 11:00 – 18:00 Sunday

FISCHER-HALLMAN ROAD

NBL Green Arrow	- Min	- 5.0 sec		
	- Ext	- 3.0 sec		
	- Max	- 5.0 sec		
Amber		- 3.0 sec		
All Red		- 1.0 sec		
N/S Green		- 30.0 sec	Walk	- 9.0 sec
Amber		- 4.0 sec	FDW	- 21.0 sec
All Red		- 2.0 sec		

LAURELWOOD DRIVE/YMCA DRIVEWAY

Vehicle Call			Pedestrian Call	
E/W Green	- Min	- 8.0 sec	Green/Walk	- 12.0 sec
	- Ext	- 3.0 sec	Green/FDW	- 10.0 sec
	- Max	- 25.0 sec	Green/SDW	- 3.0 sec
Amber		- 4.0 sec	Amber	- 4.0 sec
All Red		- 2.0 sec	All Red	- 2.0 sec
TOTAL		**76.0 seconds**		

Signal timing in effect: 15:00 - 18:30, Monday to Friday

FISCHER-HALLMAN ROAD

NBL Green Arrow	- Min	- 5.0 sec		
	- Ext	- 3.0 sec		
	- Max	- 12.0 sec		
Amber		- 3.0 sec		
All Red		- 1.0 sec		
N/S Green		- 37.0 sec	Walk	- 16.0 sec
Amber		- 4.0 sec	FDW	- 21.0 sec
All Red		- 2.0 sec		

LAURELWOOD DRIVE/YMCA DRIVEWAY

Vehicle Call			Pedestrian Call	
E/W Green	- Min	- 8.0 sec	Green/Walk	- 12.0 sec
	- Ext	- 3.0 sec	Green/FDW	- 10.0 sec
	- Max	- 25.0 sec	Green/SDW	- 3.0 sec
Amber		- 4.0 sec	Amber	- 4.0 sec
All Red		- 2.0 sec	All Red	- 2.0 sec
TOTAL		**90.0 seconds**		

Signal timing in effect: 18:30-22:00, Monday to Friday

FISCHER-HALLMAN ROAD

N/S Green	- 37.0 sec	Walk - 16.0 sec
Amber	- 4.0 sec	FDW - 21.0 sec
All Red	- 2.0 sec	

LAURELWOOD DRIVE/YMCA DRIVEWAY

Vehicle Call			Pedestrian Call	
E/W Green	- Min	- 8.0 sec	Green/Walk	- 12.0 sec
	- Ext	- 3.0 sec	Green/FDW	- 10.0 sec
	- Max	- 25.0 sec	Green/SDW	- 3.0 sec
Amber		- 4.0 sec	Amber	- 4.0 sec
All Red		- 2.0 sec	All Red	- 2.0 sec
TOTAL		**74.0 seconds**		

All Other Times

FISCHER-HALLMAN ROAD

Green	- 28.0 sec	Walk - 7.0 sec
Amber	- 4.0 sec	FDW - 21.0 sec
All Red	- 2.0 sec	

LAURELWOOD DRIVE/YMCA DRIVEWAY

Vehicle Call			Pedestrian Call	
E/W Green	- Min	- 8.0 sec	Green/Walk	- 12.0 sec
	- Ext	- 3.0 sec	Green/FDW	- 10.0 sec
	- Max	- 22.0 sec	Green/SDW	- 0.0 sec
Amber		- 4.0 sec	Amber	- 4.0 sec
All Red		- 2.0 sec	All Red	- 2.0 sec
TOTAL		**62.0 seconds**		

Dec 2017 – JAB

Appendix B

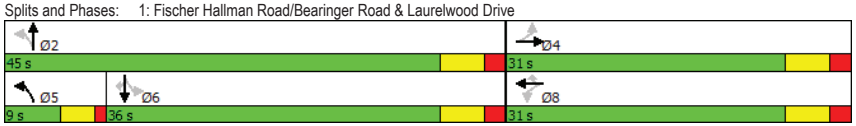
Existing Traffic Operations Reports

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	312	229	203	38	35	13	69	577	88	42	230	77
Future Volume (vph)	312	229	203	38	35	13	69	577	88	42	230	77
Ideal Flow (vphpl)	1775	1650	1650	1775	1900	1750	1775	1650	1650	1775	1900	1750
Storage Length (m)	85.0		0.0	90.0		90.0	90.0		0.0	60.0		60.0
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (m)	35.0			7.5			45.0			70.0		
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	0.99		0.99		0.98	1.00	1.00		1.00		0.98
Frt		0.930				0.850		0.980				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1653	1476	0	1188	1845	1488	1506	1565	0	1686	1881	1430
Flt Permitted	0.734			0.276			0.538			0.345		
Satd. Flow (perm)	1273	1476	0	343	1845	1453	851	1565	0	612	1881	1398
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		63				100		15				100
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		133.2			228.2			160.2			234.1	
Travel Time (s)		9.6			16.4			11.5			16.9	
Confl. Peds. (#/hr)	2		7	7		2	2		3	3		2
Peak Hour 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
Heavy Vehicles (%)	2%	1%	4%	42%	3%	0%	12%	1%	16%	0%	1%	4%
Adj. Flow (vph)	312	229	203	38	35	13	69	577	88	42	230	77
Shared Lane Traffic (%)												
Lane Group Flow (vph)	312	432	0	38	35	13	69	665	0	42	230	77
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA		Perm	NA	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8		8	2			6		6
Detector Phase	4	4		8	8	8	5	2		6	6	6
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0	8.0	5.0	30.0		30.0	30.0	30.0
Minimum Split (s)	14.0	14.0		14.0	14.0	14.0	9.0	36.0		36.0	36.0	36.0
Total Split (s)	31.0	31.0		31.0	31.0	31.0	9.0	45.0		36.0	36.0	36.0
Total Split (%)	40.8%	40.8%		40.8%	40.8%	40.8%	11.8%	59.2%		47.4%	47.4%	47.4%
Maximum Green (s)	25.0	25.0		25.0	25.0	25.0	5.0	39.0		30.0	30.0	30.0
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	3.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	1.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0	4.0	6.0		6.0	6.0	6.0
Lead/Lag							Lead			Lag	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None	None	Max	Max		Max	Max	Max
Walk Time (s)	12.0	12.0		12.0	12.0	12.0		9.0		9.0	9.0	9.0
Flash Dont Walk (s)	10.0	10.0		10.0	10.0	10.0		21.0		21.0	21.0	21.0
Pedestrian Calls (#/hr)	0	0		0	0	0		0		0	0	0
Act Effct Green (s)	22.0	22.0		22.0	22.0	22.0	41.1	39.1		30.1	30.1	30.1
Actuated g/C Ratio	0.30	0.30		0.30	0.30	0.30	0.56	0.53		0.41	0.41	0.41
v/c Ratio	0.81	0.89		0.37	0.06	0.03	0.13	0.79		0.17	0.30	0.12

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	42.1	42.4		31.5	18.0	0.1	9.0	23.2		17.1	16.6	2.8
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	42.1	42.4		31.5	18.0	0.1	9.0	23.2		17.1	16.6	2.8
LOS	D	D		C	B	A	A	C		B	B	A
Approach Delay		42.3			21.2			21.8			13.6	
Approach LOS		D			C			C			B	
Queue Length 50th (m)	41.4	51.0		4.3	3.6	0.0	4.7	77.6		4.0	23.3	0.0
Queue Length 95th (m)	#80.6	#101.1		13.5	9.7	0.0	10.5	#145.2		11.2	39.9	5.4
Internal Link Dist (m)		109.2			204.2			136.2			210.1	
Turn Bay Length (m)	85.0			90.0		90.0	90.0			60.0		60.0
Base Capacity (vph)	436	546		117	631	563	523	843		251	773	633
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.72	0.79		0.32	0.06	0.02	0.13	0.79		0.17	0.30	0.12

Intersection Summary		
Area Type:	Other	
Cycle Length: 76		
Actuated Cycle Length: 73.2		
Natural Cycle: 70		
Control Type: Semi Act-Uncoord		
Maximum v/c Ratio: 0.89		
Intersection Signal Delay: 28.3		Intersection LOS: C
Intersection Capacity Utilization 105.2%		ICU Level of Service G
Analysis Period (min) 15		
# 95th percentile volume exceeds capacity, queue may be longer.		
Queue shown is maximum after two cycles.		

Splits and Phases: 1: Fischer Hallman Road/Bearinger Road & Laurelwood Drive



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	312	229	203	38	35	13	69	577	88	42	230	77
Future Volume (vph)	312	229	203	38	35	13	69	577	88	42	230	77
Ideal Flow (vphpl)	1775	1650	1650	1775	1900	1750	1775	1650	1650	1775	1900	1750
Total Lost time (s)	6.0	6.0		6.0	6.0	6.0	4.0	6.0		6.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.98	1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.93		1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1648	1476		1182	1845	1453	1504	1565		1684	1881	1398
Flt Permitted	0.73	1.00		0.28	1.00	1.00	0.54	1.00		0.34	1.00	1.00
Satd. Flow (perm)	1274	1476		343	1845	1453	851	1565		611	1881	1398
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	312	229	203	38	35	13	69	577	88	42	230	77
RTOR Reduction (vph)	0	44	0	0	0	9	0	7	0	0	0	45
Lane Group Flow (vph)	312	388	0	38	35	4	69	658	0	42	230	32
Confl. Peds. (#/hr)	2		7	7		2	2		3	3		2
Heavy Vehicles (%)	2%	1%	4%	42%	3%	0%	12%	1%	16%	0%	1%	4%
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA		Perm	NA	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8		8	2			6		6
Actuated Green, G (s)	22.0	22.0		22.0	22.0	22.0	39.1	39.1		30.1	30.1	30.1
Effective Green, g (s)	22.0	22.0		22.0	22.0	22.0	39.1	39.1		30.1	30.1	30.1
Actuated g/C Ratio	0.30	0.30		0.30	0.30	0.30	0.53	0.53		0.41	0.41	0.41
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0	4.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	383	444		103	555	437	499	837		251	774	575
v/s Ratio Prot		c0.26			0.02		0.01	c0.42			0.12	
v/s Ratio Perm	0.24			0.11		0.00	0.06			0.07		0.02
v/c Ratio	0.81	0.87		0.37	0.06	0.01	0.14	0.79		0.17	0.30	0.06
Uniform Delay, d1	23.7	24.2		20.1	18.2	17.9	8.4	13.6		13.6	14.4	12.9
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	12.5	17.1		2.2	0.0	0.0	0.6	7.3		1.4	1.0	0.2
Delay (s)	36.2	41.3		22.3	18.3	17.9	9.0	21.0		15.0	15.4	13.1
Level of Service	D	D		C	B	B	A	C		B	B	B
Approach Delay (s)		39.2			20.0			19.9			14.8	
Approach LOS		D			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	26.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	73.1	Sum of lost time (s)	16.0
Intersection Capacity Utilization	105.2%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	117	34	327	43	28	11	67	153	21	10	263	18
Future Volume (vph)	117	34	327	43	28	11	67	153	21	10	263	18
Ideal Flow (vphpl)	1650	1650	1750	1550	1550	1550	1775	1650	1650	1550	1550	1550
Storage Length (m)	0.0		25.0	0.0		0.0	25.0		0.0	0.0		0.0
Storage Lanes	0		1	0		0	1		0	0		0
Taper Length (m)	0.0			0.0			35.0			0.0		
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			0.850		0.982			0.982			0.992	
Flt Protected		0.963			0.974		0.950				0.998	
Satd. Flow (prot)	0	1531	1473	0	1448	0	1606	1556	0	0	1492	0
Flt Permitted		0.963			0.974		0.950				0.998	
Satd. Flow (perm)	0	1531	1473	0	1448	0	1606	1556	0	0	1492	0
Link Speed (k/h)		60			50			50			50	
Link Distance (m)		1012.1			151.5			558.2			326.3	
Travel Time (s)		60.7			10.9			40.2			23.5	
Confl. Peds. (#/hr)	3		1	1		3	3		1	1		3
Peak Hour 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
Heavy Vehicles (%)	4%	3%	1%	0%	7%	0%	5%	4%	5%	20%	2%	6%
Adj. Flow (vph)	117	34	327	43	28	11	67	153	21	10	263	18
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	151	327	0	82	0	67	174	0	0	291	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	57.4%	ICU Level of Service	B
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	117	34	327	43	28	11	67	153	21	10	263	18
Future Volume (vph)	117	34	327	43	28	11	67	153	21	10	263	18
Peak Hour 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
Hourly flow rate (vph)	117	34	327	43	28	11	67	153	21	10	263	18

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1
Volume Total (vph)	151	327	82	67	174	291
Volume Left (vph)	117	0	43	67	0	10
Volume Right (vph)	0	327	11	0	21	18
Hadj (s)	0.45	-0.68	0.07	0.58	-0.01	0.02
Departure Headway (s)	6.8	5.7	7.1	7.2	6.6	6.5
Degree Utilization, x	0.29	0.51	0.16	0.13	0.32	0.53
Capacity (veh/h)	504	608	451	466	509	528
Control Delay (s)	11.3	13.3	11.5	10.1	11.5	16.5
Approach Delay (s)	12.6		11.5	11.1		16.5
Approach LOS	B		B	B		C

Intersection Summary				
Delay	13.2			
Level of Service	B			
Intersection Capacity Utilization	57.4%	ICU Level of Service		B
Analysis Period (min)	15			

Intersection	
Intersection Delay, s/veh	14.5
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	117	34	327	43	28	11	67	153	21	10	263	18
Future Vol, veh/h	117	34	327	43	28	11	67	153	21	10	263	18
Peak Hour 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
Heavy Vehicles, %	4	3	1	0	7	0	5	4	5	20	2	6
Mvmt Flow	117	34	327	43	28	11	67	153	21	10	263	18
Number of Lanes	0	1	1	0	1	0	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	2
HCM Control Delay	13.9	11.7	12.2	18.1
HCM LOS	B	B	B	C

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	100%	0%	77%	0%	52%	3%
Vol Thru, %	0%	88%	23%	0%	34%	90%
Vol Right, %	0%	12%	0%	100%	13%	6%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	67	174	151	327	82	291
LT Vol	67	0	117	0	43	10
Through Vol	0	153	34	0	28	263
RT Vol	0	21	0	327	11	18
Lane Flow Rate	67	174	151	327	82	291
Geometry Grp	7	7	7	7	6	6
Degree of Util (X)	0.135	0.321	0.287	0.52	0.165	0.552
Departure Headway (Hd)	7.256	6.643	6.849	5.727	7.245	6.824
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	492	538	522	625	498	527
Service Time	5.038	4.424	4.623	3.5	5.245	4.897
HCM Lane V/C Ratio	0.136	0.323	0.289	0.523	0.165	0.552
HCM Control Delay	11.2	12.6	12.4	14.6	11.7	18.1
HCM Lane LOS	B	B	B	B	B	C
HCM 95th-tile Q	0.5	1.4	1.2	3	0.6	3.3

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	158	83	116	57	28	286
Future Volume (vph)	158	83	116	57	28	286
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.954				0.877	
Flt Protected				0.968	0.996	
Satd. Flow (prot)	1513	0	0	1551	1496	0
Flt Permitted				0.968	0.996	
Satd. Flow (perm)	1513	0	0	1551	1496	0
Link Speed (k/h)	80			80	50	
Link Distance (m)	1516.2			424.2	223.3	
Travel Time (s)	68.2			19.1	16.1	
Confl. Peds. (#/hr)		1	1			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	6%	2%	5%	14%	2%
Adj. Flow (vph)	158	83	116	57	28	286
Shared Lane Traffic (%)						
Lane Group Flow (vph)	241	0	0	173	314	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 57.0%		ICU Level of Service B	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	158	83	116	57	28	286
Future Volume (Veh/h)	158	83	116	57	28	286
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	158	83	116	57	28	286
Pedestrians					1	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			242		490	200
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			242		490	200
tC, single (s)			4.1		6.5	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			91		94	66
cM capacity (veh/h)			1323		471	840

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	241	173	314
Volume Left	0	116	28
Volume Right	83	0	286
cSH	1700	1323	785
Volume to Capacity	0.14	0.09	0.40
Queue Length 95th (m)	0.0	2.3	15.5
Control Delay (s)	0.0	5.6	12.6
Lane LOS		A	B
Approach Delay (s)	0.0	5.6	12.6
Approach LOS			B

Intersection Summary			
Average Delay	6.8		
Intersection Capacity Utilization	57.0%	ICU Level of Service	B
Analysis Period (min)	15		



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	13	69	95	41	164	62
Future Volume (vph)	13	69	95	41	164	62
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.886		0.959			
Flt Protected	0.992					0.965
Satd. Flow (prot)	1393	0	1469	0	0	1526
Flt Permitted	0.992					0.965
Satd. Flow (perm)	1393	0	1469	0	0	1526
Link Speed (k/h)	80		80			80
Link Distance (m)	1200.3		1761.7			383.9
Travel Time (s)	54.0		79.3			17.3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	8%	12%	11%	0%	3%	8%
Adj. Flow (vph)	13	69	95	41	164	62
Shared Lane Traffic (%)						
Lane Group Flow (vph)	82	0	136	0	0	226
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 38.2%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	13	69	95	41	164	62
Future Volume (Veh/h)	13	69	95	41	164	62
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	13	69	95	41	164	62
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	506	116			136	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	506	116			136	
tC, single (s)	6.5	6.3			4.1	
tC, 2 stage (s)						
tF (s)	3.6	3.4			2.2	
p0 queue free %	97	92			89	
cM capacity (veh/h)	457	910			1442	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	82	136	226
Volume Left	13	0	164
Volume Right	69	41	0
cSH	787	1700	1442
Volume to Capacity	0.10	0.08	0.11
Queue Length 95th (m)	2.8	0.0	3.1
Control Delay (s)	10.1	0.0	5.9
Lane LOS	B		A
Approach Delay (s)	10.1	0.0	5.9
Approach LOS	B		

Intersection Summary			
Average Delay	4.9		
Intersection Capacity Utilization	38.2%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	22	70	69	68	50	28
Future Volume (vph)	22	70	69	68	50	28
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.897		0.933			
Flt Protected	0.988					0.969
Satd. Flow (prot)	1438	0	1495	0	0	1500
Flt Permitted	0.988					0.969
Satd. Flow (perm)	1438	0	1495	0	0	1500
Link Speed (k/h)	80		80			80
Link Distance (m)	605.5		233.8			1761.7
Travel Time (s)	27.2		10.5			79.3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	5%	10%	3%	3%	8%	4%
Adj. Flow (vph)	22	70	69	68	50	28
Shared Lane Traffic (%)						
Lane Group Flow (vph)	92	0	137	0	0	78
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 29.8%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	22	70	69	68	50	28
Future Volume (Veh/h)	22	70	69	68	50	28
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	22	70	69	68	50	28
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	231	103			137	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	231	103			137	
tC, single (s)	6.4	6.3			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.4			2.3	
p0 queue free %	97	92			96	
cM capacity (veh/h)	724	930			1411	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	92	137	78
Volume Left	22	0	50
Volume Right	70	68	0
cSH	871	1700	1411
Volume to Capacity	0.11	0.08	0.04
Queue Length 95th (m)	2.8	0.0	0.9
Control Delay (s)	9.6	0.0	5.0
Lane LOS	A		A
Approach Delay (s)	9.6	0.0	5.0
Approach LOS	A		

Intersection Summary			
Average Delay	4.2		
Intersection Capacity Utilization	29.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	41	4	68	25	23	0	141	121	55	106	0
Future Volume (vph)	6	41	4	68	25	23	0	141	121	55	106	0
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.989			0.973			0.938				
Flt Protected		0.994			0.972						0.983	
Satd. Flow (prot)	0	1500	0	0	1405	0	0	1383	0	0	1429	0
Flt Permitted		0.994			0.972						0.983	
Satd. Flow (perm)	0	1500	0	0	1405	0	0	1383	0	0	1429	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		187.7			400.3			618.6			394.6	
Travel Time (s)		13.5			28.8			44.5			28.4	
Peak Hour 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
Heavy Vehicles (%)	0%	2%	0%	6%	0%	4%	0%	7%	3%	4%	8%	0%
Adj. Flow (vph)	6	41	4	68	25	23	0	141	121	55	106	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	51	0	0	116	0	0	262	0	0	161	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 53.3%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	41	4	68	25	23	0	141	121	55	106	0
Future Volume (Veh/h)	6	41	4	68	25	23	0	141	121	55	106	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	6	41	4	68	25	23	0	141	121	55	106	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	453	478	106	442	418	202	106			262		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	453	478	106	442	418	202	106			262		
tC, single (s)	7.1	6.5	6.2	7.2	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.0	3.3	2.2			2.2		
p0 queue free %	99	91	100	85	95	97	100			96		
cM capacity (veh/h)	471	466	954	466	507	834	1498			1291		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	51	116	262	161
Volume Left	6	68	0	55
Volume Right	4	23	121	0
cSH	486	521	1498	1291
Volume to Capacity	0.10	0.22	0.00	0.04
Queue Length 95th (m)	2.8	6.8	0.0	1.1
Control Delay (s)	13.3	13.9	0.0	2.9
Lane LOS	B	B		A
Approach Delay (s)	13.3	13.9	0.0	2.9
Approach LOS	B	B		

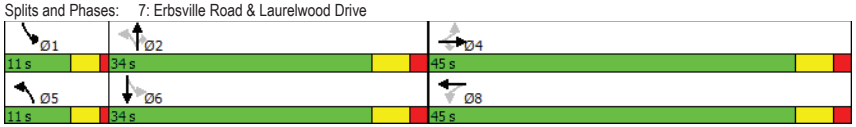
Intersection Summary				
Average Delay		4.7		
Intersection Capacity Utilization		53.3%	ICU Level of Service	A
Analysis Period (min)		15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	208	178	52	96	42	156	228	105	116	210	18
Future Volume (vph)	17	208	178	52	96	42	156	228	105	116	210	18
Ideal Flow (vphpl)	1775	1900	1750	1775	1650	1650	1775	1900	1750	1775	1650	1650
Storage Length (m)	20.0		20.0	25.0		0.0	65.0		30.0	25.0		0.0
Storage Lanes	1		1	1		0	1		1	1		0
Taper Length (m)	35.0			10.0			80.0			35.0		
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	0.84		0.92	0.96	0.94		0.98		0.91	0.95	1.00	
Frt			0.850		0.954				0.850		0.988	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1591	1810	1403	1561	1358	0	1606	1776	1430	1653	1520	0
Flt Permitted	0.669			0.593			0.616			0.616		
Satd. Flow (perm)	938	1810	1296	933	1358	0	1026	1776	1307	1024	1520	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			178		31				105		5	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		123.5			178.3			236.9			930.8	
Travel Time (s)		8.9			12.8			17.1			67.0	
Confl. Peds. (#/hr)	79		23	23		79	9		27	27		9
Peak Hour 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
Heavy Vehicles (%)	6%	5%	6%	8%	9%	7%	5%	7%	4%	2%	6%	17%
Adj. Flow (vph)	17	208	178	52	96	42	156	228	105	116	210	18
Shared Lane Traffic (%)												
Lane Group Flow (vph)	17	208	178	52	138	0	156	228	105	116	228	0
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2		2	6		
Detector Phase	4	4	4	8	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0		5.0	28.0	28.0	5.0	28.0	
Minimum Split (s)	14.0	14.0	14.0	14.0	14.0		9.0	34.0	34.0	9.0	34.0	
Total Split (s)	45.0	45.0	45.0	45.0	45.0		11.0	34.0	34.0	11.0	34.0	
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%		12.2%	37.8%	37.8%	12.2%	37.8%	
Maximum Green (s)	39.0	39.0	39.0	39.0	39.0		7.0	28.0	28.0	7.0	28.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		1.0	2.0	2.0	1.0	2.0	
Lost Time Adjust (s)	0.0	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	6.0		4.0	6.0	6.0	4.0	6.0	
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	None	None		Max	Max	Max	Max	Max	
Walk Time (s)	7.0	7.0	7.0	7.0	7.0			7.0	7.0		7.0	
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0			11.0	11.0		11.0	
Pedestrian Calls (#/hr)	0	0	0	0	0			0	0		0	
Act Effct Green (s)	12.5	12.5	12.5	12.5	12.5		37.1	28.1	28.1	37.1	28.1	
Actuated g/C Ratio	0.20	0.20	0.20	0.20	0.20		0.58	0.44	0.44	0.58	0.44	
v/c Ratio	0.09	0.59	0.45	0.29	0.48		0.24	0.29	0.17	0.17	0.34	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	21.5	30.2	7.9	25.7	23.2		6.2	13.4	3.8	5.8	14.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	21.5	30.2	7.9	25.7	23.2		6.2	13.4	3.8	5.8	14.0	
LOS	C	C	A	C	C		A	B	A	A	B	
Approach Delay		20.0			23.9			9.0			11.2	
Approach LOS		C			C			A			B	
Queue Length 50th (m)	1.7	23.5	0.0	5.5	11.6		6.3	17.1	0.0	4.6	17.1	
Queue Length 95th (m)	6.3	42.1	13.9	14.3	26.4		15.7	35.2	8.2	12.0	36.2	
Internal Link Dist (m)		99.5			154.3			212.9			906.8	
Turn Bay Length (m)	20.0		20.0	25.0			65.0		30.0	25.0		
Base Capacity (vph)	576	1113	865	573	847		662	784	635	667	673	
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Reduced v/c Ratio	0.03	0.19	0.21	0.09	0.16		0.24	0.29	0.17	0.17	0.34	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 63.6			
Natural Cycle: 60			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.59			
Intersection Signal Delay: 14.6		Intersection LOS: B	
Intersection Capacity Utilization 72.3%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 7: Erbsville Road & Laurelwood Drive





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	208	178	52	96	42	156	228	105	116	210	18
Future Volume (vph)	17	208	178	52	96	42	156	228	105	116	210	18
Ideal Flow (vphpl)	1775	1900	1750	1775	1650	1650	1775	1900	1750	1775	1650	1650
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0		4.0	6.0	6.0	4.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.94	1.00	0.95		1.00	1.00	0.93	1.00	1.00	
Flpb, ped/bikes	0.88	1.00	1.00	0.97	1.00		0.99	1.00	1.00	0.98	1.00	
Frt	1.00	1.00	0.85	1.00	0.95		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1408	1810	1319	1515	1384		1595	1776	1335	1619	1521	
Flt Permitted	0.67	1.00	1.00	0.59	1.00		0.62	1.00	1.00	0.62	1.00	
Satd. Flow (perm)	991	1810	1319	946	1384		1035	1776	1335	1050	1521	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	17	208	178	52	96	42	156	228	105	116	210	18
RTOR Reduction (vph)	0	0	143	0	25	0	0	0	59	0	3	0
Lane Group Flow (vph)	17	208	35	52	113	0	156	228	46	116	225	0
Confl. Peds. (#/hr)	79		23	23		79	9		27	27		9
Heavy Vehicles (%)	6%	5%	6%	8%	9%	7%	5%	7%	4%	2%	6%	17%
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2		2	6		
Actuated Green, G (s)	12.4	12.4	12.4	12.4	12.4		35.1	28.1	28.1	35.1	28.1	
Effective Green, g (s)	12.4	12.4	12.4	12.4	12.4		35.1	28.1	28.1	35.1	28.1	
Actuated g/C Ratio	0.20	0.20	0.20	0.20	0.20		0.55	0.44	0.44	0.55	0.44	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		4.0	6.0	6.0	4.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	193	353	257	184	270		633	785	590	643	673	
v/s Ratio Prot		c0.11			0.08		c0.03	0.13		0.02	c0.15	
v/s Ratio Perm	0.02		0.03	0.05			0.11		0.03	0.08		
v/c Ratio	0.09	0.59	0.14	0.28	0.42		0.25	0.29	0.08	0.18	0.33	
Uniform Delay, d1	20.9	23.2	21.1	21.8	22.4		7.0	11.3	10.2	6.8	11.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.2	2.5	0.2	0.8	1.1		0.9	0.9	0.3	0.6	1.3	
Delay (s)	21.1	25.7	21.4	22.6	23.4		8.0	12.3	10.5	7.5	12.9	
Level of Service	C	C	C	C	C		A	B	B	A	B	
Approach Delay (s)		23.6			23.2			10.5			11.1	
Approach LOS		C			C			B			B	

Intersection Summary				
HCM 2000 Control Delay	16.0	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.39			
Actuated Cycle Length (s)	63.5	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	72.3%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	504	78	33	160	24	51	34	179	34	18	9
Future Volume (vph)	28	504	78	33	160	24	51	34	179	34	18	9
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
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		0.983			0.985			0.908			0.980	
Flt Protected		0.998			0.992			0.990			0.973	
Satd. Flow (prot)	0	1484	0	0	1432	0	0	1368	0	0	1454	0
Flt Permitted		0.998			0.992			0.990			0.973	
Satd. Flow (perm)	0	1484	0	0	1432	0	0	1368	0	0	1454	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		213.7			555.1			104.8			136.8	
Travel Time (s)		15.4			40.0			7.5			9.8	
Confl. Peds. (#/hr)	10		4	4		10	7		10	10		7
Peak Hour 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
Heavy Vehicles (%)	0%	3%	0%	6%	6%	4%	0%	9%	1%	0%	0%	11%
Adj. Flow (vph)	28	504	78	33	160	24	51	34	179	34	18	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	610	0	0	217	0	0	264	0	0	61	0
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Roundabout			
Intersection Capacity Utilization 70.5%		ICU Level of Service C	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Traffic Volume (veh/h)	28	504	78	33	160	24	51	34	179	34	18	9
Future Volume (veh/h)	28	504	78	33	160	24	51	34	179	34	18	9
Peak Hour 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
Hourly flow rate (vph)	28	504	78	33	160	24	51	34	179	34	18	9
Approach Volume (veh/h)		610			217			264			61	
Crossing Volume (veh/h)		85			113			566			244	
High Capacity (veh/h)		1296			1268			885			1144	
High v/c (veh/h)		0.47			0.17			0.30			0.05	
Low Capacity (veh/h)		1080			1055			712			943	
Low v/c (veh/h)		0.56			0.21			0.37			0.06	

Intersection Summary				
Maximum v/c High	0.47			
Maximum v/c Low	0.56			
Intersection Capacity Utilization	70.5%	ICU Level of Service	C	



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	183	19	19	66	16	70
Future Volume (vph)	183	19	19	66	16	70
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.987				0.890	
Flt Protected				0.989	0.991	
Satd. Flow (prot)	1585	0	0	1478	1503	0
Flt Permitted				0.989	0.991	
Satd. Flow (perm)	1585	0	0	1478	1503	0
Link Speed (k/h)	80			80	50	
Link Distance (m)	1200.3			667.7	811.2	
Travel Time (s)	54.0			30.0	58.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	0%	5%	12%	6%	3%
Adj. Flow (vph)	183	19	19	66	16	70
Shared Lane Traffic (%)						
Lane Group Flow (vph)	202	0	0	85	86	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	33.2%	ICU Level of Service A	
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	183	19	19	66	16	70
Future Volume (Veh/h)	183	19	19	66	16	70
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	183	19	19	66	16	70
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			202		296	192
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			202		296	192
tC, single (s)			4.1		6.5	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			99		98	92
cM capacity (veh/h)			1352		677	847

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	202	85	86
Volume Left	0	19	16
Volume Right	19	0	70
cSH	1700	1352	809
Volume to Capacity	0.12	0.01	0.11
Queue Length 95th (m)	0.0	0.3	2.8
Control Delay (s)	0.0	1.8	10.0
Lane LOS		A	A
Approach Delay (s)	0.0	1.8	10.0
Approach LOS			A

Intersection Summary			
Average Delay		2.7	
Intersection Capacity Utilization		33.2%	ICU Level of Service A
Analysis Period (min)		15	

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	23	0	88	54	5	113
Future Volume (vph)	23	0	88	54	5	113
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.949			
Flt Protected	0.950					0.998
Satd. Flow (prot)	1612	0	1537	0	0	1560
Flt Permitted	0.950					0.998
Satd. Flow (perm)	1612	0	1537	0	0	1560
Link Speed (k/h)	70		50			50
Link Distance (m)	143.4		394.6			123.0
Travel Time (s)	7.4		28.4			8.9
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	4%	0%	3%	0%	40%	4%
Adj. Flow (vph)	23	0	88	54	5	113
Shared Lane Traffic (%)						
Lane Group Flow (vph)	23	0	142	0	0	118
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 21.5%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	23	0	88	54	5	113
Future Volume (Veh/h)	23	0	88	54	5	113
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	23	0	88	54	5	113
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	238	115			142	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	238	115			142	
tC, single (s)	6.4	6.2			4.5	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.6	
p0 queue free %	97	100			100	
cM capacity (veh/h)	743	943			1238	

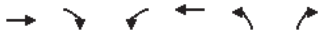
Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	23	142	118
Volume Left	23	0	5
Volume Right	0	54	0
cSH	743	1700	1238
Volume to Capacity	0.03	0.08	0.00
Queue Length 95th (m)	0.8	0.0	0.1
Control Delay (s)	10.0	0.0	0.4
Lane LOS	B		A
Approach Delay (s)	10.0	0.0	0.4
Approach LOS	B		

Intersection Summary			
Average Delay		1.0	
Intersection Capacity Utilization		21.5%	ICU Level of Service A
Analysis Period (min)		15	



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	209	16	49	105	15	72
Future Volume (vph)	209	16	49	105	15	72
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.990				0.888	
Flt Protected				0.984	0.991	
Satd. Flow (prot)	1589	0	0	1571	1486	0
Flt Permitted				0.984	0.991	
Satd. Flow (perm)	1589	0	0	1571	1486	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	166.4			228.8	212.1	
Travel Time (s)	12.0			16.5	15.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	0%	4%	3%	7%	4%
Adj. Flow (vph)	209	16	49	105	15	72
Shared Lane Traffic (%)						
Lane Group Flow (vph)	225	0	0	154	87	0
Sign Control	Free			Free	Stop	

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



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	209	16	49	105	15	72
Future Volume (Veh/h)	209	16	49	105	15	72
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	209	16	49	105	15	72
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			225		420	217
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			225		420	217
tC, single (s)			4.1		6.5	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			96		97	91
cM capacity (veh/h)			1332		559	818

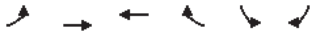
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	225	154	87
Volume Left	0	49	15
Volume Right	16	0	72
cSH	1700	1332	757
Volume to Capacity	0.13	0.04	0.11
Queue Length 95th (m)	0.0	0.9	3.1
Control Delay (s)	0.0	2.7	10.4
Lane LOS		A	B
Approach Delay (s)	0.0	2.7	10.4
Approach LOS			B

Intersection Summary			
Average Delay		2.8	
Intersection Capacity Utilization		38.9%	ICU Level of Service A
Analysis Period (min)		15	



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	11	255	122	13	65	29
Future Volume (vph)	11	255	122	13	65	29
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.987		0.958	
Flt Protected		0.998			0.967	
Satd. Flow (prot)	0	1586	1588	0	1635	0
Flt Permitted		0.998			0.967	
Satd. Flow (perm)	0	1586	1588	0	1635	0
Link Speed (k/h)		60	60		50	
Link Distance (m)		98.4	372.2		168.6	
Travel Time (s)		5.9	22.3		12.1	
Confl. Peds. (#/hr)	10			10		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	4%	2%	8%	0%	0%
Adj. Flow (vph)	11	255	122	13	65	29
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	266	135	0	94	0
Sign Control		Free	Free		Stop	

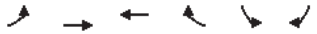
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 38.2%			ICU Level of Service A
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	11	255	122	13	65	29
Future Volume (Veh/h)	11	255	122	13	65	29
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	11	255	122	13	65	29
Pedestrians					10	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	145				416	138
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	145				416	138
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				89	97
cM capacity (veh/h)	1438				588	907

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	266	135	94
Volume Left	11	0	65
Volume Right	0	13	29
cSH	1438	1700	659
Volume to Capacity	0.01	0.08	0.14
Queue Length 95th (m)	0.2	0.0	4.0
Control Delay (s)	0.4	0.0	11.4
Lane LOS	A		B
Approach Delay (s)	0.4	0.0	11.4
Approach LOS			B

Intersection Summary			
Average Delay		2.4	
Intersection Capacity Utilization		38.2%	ICU Level of Service A
Analysis Period (min)		15	



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	14	307	108	24	59	27
Future Volume (vph)	14	307	108	24	59	27
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.975		0.958	
Flt Protected		0.998			0.967	
Satd. Flow (prot)	0	1601	1535	0	1613	0
Flt Permitted		0.998			0.967	
Satd. Flow (perm)	0	1601	1535	0	1613	0
Link Speed (k/h)		60	60		50	
Link Distance (m)		372.2	1012.1		87.7	
Travel Time (s)		22.3	60.7		6.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	3%	3%	13%	2%	0%
Adj. Flow (vph)	14	307	108	24	59	27
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	321	132	0	86	0
Sign Control		Free	Free		Stop	

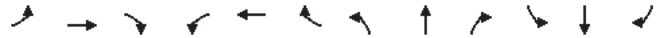
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 43.0%			ICU Level of Service A
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	14	307	108	24	59	27
Future Volume (Veh/h)	14	307	108	24	59	27
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	14	307	108	24	59	27
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	132				455	120
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	132				455	120
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				89	97
cM capacity (veh/h)	1466				558	937

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	321	132	86
Volume Left	14	0	59
Volume Right	0	24	27
cSH	1466	1700	639
Volume to Capacity	0.01	0.08	0.13
Queue Length 95th (m)	0.2	0.0	3.7
Control Delay (s)	0.4	0.0	11.5
Lane LOS	A		B
Approach Delay (s)	0.4	0.0	11.5
Approach LOS			B

Intersection Summary			
Average Delay		2.1	
Intersection Capacity Utilization		43.0%	ICU Level of Service A
Analysis Period (min)		15	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	78	5	64	28	2	7	20	299	4	5	205	19
Future Volume (vph)	78	5	64	28	2	7	20	299	4	5	205	19
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
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		0.941			0.974			0.998			0.989	
Flt Protected		0.974			0.964			0.997			0.999	
Satd. Flow (prot)	0	1402	0	0	1455	0	0	1510	0	0	1478	0
Flt Permitted		0.974			0.964			0.997			0.999	
Satd. Flow (perm)	0	1402	0	0	1455	0	0	1510	0	0	1478	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		77.1			66.0			326.3			223.3	
Travel Time (s)		5.6			4.8			23.5			16.1	
Confl. Peds. (#/hr)	7		1	1		7			5	5		
Peak Hour 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
Heavy Vehicles (%)	0%	0%	3%	0%	0%	0%	5%	2%	0%	0%	3%	11%
Adj. Flow (vph)	78	5	64	28	2	7	20	299	4	5	205	19
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	147	0	0	37	0	0	323	0	0	229	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 49.5%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	78	5	64	28	2	7	20	299	4	5	205	19
Future Volume (Veh/h)	78	5	64	28	2	7	20	299	4	5	205	19
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	78	5	64	28	2	7	20	299	4	5	205	19
Pedestrians					5			1			7	
Lane Width (m)					3.6			3.6			3.6	
Walking Speed (m/s)					1.2			1.2			1.2	
Percent Blockage					0			0			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	16			70			377	266	43	420	294	12
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	16			70			377	266	43	420	294	12
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.4
p0 queue free %	95			98			95	50	100	98	64	98
cM capacity (veh/h)	1605			1542			386	594	1028	309	571	1036

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	147	37	323	229
Volume Left	78	28	20	5
Volume Right	64	7	4	19
cSH	1605	1542	577	582
Volume to Capacity	0.05	0.02	0.56	0.39
Queue Length 95th (m)	1.2	0.4	27.5	15.0
Control Delay (s)	4.1	5.6	18.9	15.2
Lane LOS	A	A	C	C
Approach Delay (s)	4.1	5.6	18.9	15.2
Approach LOS			C	C

Intersection Summary					
Average Delay			14.1		
Intersection Capacity Utilization			49.5%	ICU Level of Service	A
Analysis Period (min)			15		

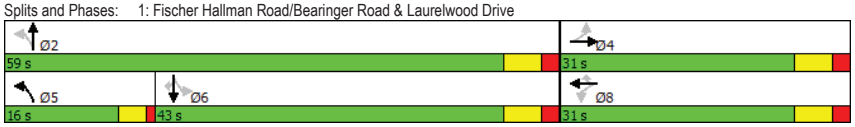


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	127	133	116	94	228	27	155	331	78	26	664	341
Future Volume (vph)	127	133	116	94	228	27	155	331	78	26	664	341
Ideal Flow (vphpl)	1775	1650	1650	1775	1900	1750	1775	1650	1650	1775	1900	1750
Storage Length (m)	85.0		0.0	90.0		90.0	90.0		0.0	60.0		60.0
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (m)	35.0			7.5			45.0			70.0		
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		0.97		0.98	1.00	1.00		1.00		0.98
Frt		0.930				0.850		0.971				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1670	1467	0	1686	1900	1488	1637	1595	0	1686	1900	1488
Flt Permitted	0.487			0.441			0.171			0.522		
Satd. Flow (perm)	855	1467	0	759	1900	1455	295	1595	0	925	1900	1456
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		48				85		23				297
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		133.2			228.2			160.2			234.1	
Travel Time (s)		9.6			16.4			11.5			16.9	
Confl. Peds. (#/hr)	1		23	23		1	1		2	2		1
Peak Hour 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
Heavy Vehicles (%)	1%	0%	3%	0%	0%	0%	3%	0%	0%	0%	0%	0%
Adj. Flow (vph)	127	133	116	94	228	27	155	331	78	26	664	341
Shared Lane Traffic (%)												
Lane Group Flow (vph)	127	249	0	94	228	27	155	409	0	26	664	341
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA		Perm	NA	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8		8	2			6		6
Detector Phase	4	4		8	8	8	5	2		6	6	6
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0	8.0	5.0	37.0		37.0	37.0	37.0
Minimum Split (s)	14.0	14.0		14.0	14.0	14.0	9.0	43.0		43.0	43.0	43.0
Total Split (s)	31.0	31.0		31.0	31.0	31.0	16.0	59.0		43.0	43.0	43.0
Total Split (%)	34.4%	34.4%		34.4%	34.4%	34.4%	17.8%	65.6%		47.8%	47.8%	47.8%
Maximum Green (s)	25.0	25.0		25.0	25.0	25.0	12.0	53.0		37.0	37.0	37.0
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	3.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	1.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0	4.0	6.0		6.0	6.0	6.0
Lead/Lag							Lead			Lag	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None	None	Max	Max		Max	Max	Max
Walk Time (s)	12.0	12.0		12.0	12.0	12.0		16.0		16.0	16.0	16.0
Flash Dont Walk (s)	10.0	10.0		10.0	10.0	10.0		21.0		21.0	21.0	21.0
Pedestrian Calls (#/hr)	0	0		0	0	0		0		0	0	0
Act Effct Green (s)	16.6	16.6		16.6	16.6	16.6	55.2	53.2		37.2	37.2	37.2
Actuated g/C Ratio	0.20	0.20		0.20	0.20	0.20	0.67	0.65		0.45	0.45	0.45
v/c Ratio	0.73	0.74		0.61	0.59	0.07	0.39	0.39		0.06	0.77	0.41

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	54.7	38.1		46.8	35.8	0.4	8.8	8.6		15.2	27.8	5.0
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	54.7	38.1		46.8	35.8	0.4	8.8	8.6		15.2	27.8	5.0
LOS	D	D		D	D	A	A	A		B	C	A
Approach Delay		43.7			36.0			8.7			19.9	
Approach LOS		D			D			A			B	
Queue Length 50th (m)	19.6	31.0		14.1	34.0	0.0	7.8	25.8		2.3	87.6	3.9
Queue Length 95th (m)	38.9	56.1		30.1	55.7	0.0	19.7	56.1		8.1	#171.5	22.7
Internal Link Dist (m)		109.2			204.2			136.2			210.1	
Turn Bay Length (m)	85.0			90.0		90.0	90.0			60.0		60.0
Base Capacity (vph)	262	482		232	582	504	396	1044		419	862	822
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.48	0.52		0.41	0.39	0.05	0.39	0.39		0.06	0.77	0.41

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 81.9			
Natural Cycle: 70			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay: 23.5		Intersection LOS: C	
Intersection Capacity Utilization 106.2%		ICU Level of Service G	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 1: Fischer Hallman Road/Bearinger Road & Laurelwood Drive



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	127	133	116	94	228	27	155	331	78	26	664	341
Future Volume (vph)	127	133	116	94	228	27	155	331	78	26	664	341
Ideal Flow (vphpl)	1775	1650	1650	1775	1900	1750	1775	1650	1650	1775	1900	1750
Total Lost time (s)	6.0	6.0		6.0	6.0	6.0	4.0	6.0		6.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.97		1.00	1.00	0.98	1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		0.97	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.93		1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1667	1470		1640	1900	1455	1637	1596		1684	1900	1456
Flt Permitted	0.49	1.00		0.44	1.00	1.00	0.17	1.00		0.52	1.00	1.00
Satd. Flow (perm)	856	1470		762	1900	1455	295	1596		926	1900	1456
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	127	133	116	94	228	27	155	331	78	26	664	341
RTOR Reduction (vph)	0	38	0	0	0	22	0	8	0	0	0	162
Lane Group Flow (vph)	127	211	0	94	228	5	155	401	0	26	664	179
Confl. Peds. (#/hr)	1		23	23		1	1		2	2		1
Heavy Vehicles (%)	1%	0%	3%	0%	0%	0%	3%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA		Perm	NA	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8		8	2			6		6
Actuated Green, G (s)	16.6	16.6		16.6	16.6	16.6	53.3	53.3		37.2	37.2	37.2
Effective Green, g (s)	16.6	16.6		16.6	16.6	16.6	53.3	53.3		37.2	37.2	37.2
Actuated g/C Ratio	0.20	0.20		0.20	0.20	0.20	0.65	0.65		0.45	0.45	0.45
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0	4.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	173	297		154	385	294	390	1038		420	863	661
v/s Ratio Prot		0.14			0.12		0.06	c0.25			c0.35	
v/s Ratio Perm	c0.15			0.12		0.00	0.20			0.03		0.12
v/c Ratio	0.73	0.71		0.61	0.59	0.02	0.40	0.39		0.06	0.77	0.27
Uniform Delay, d1	30.6	30.4		29.7	29.6	26.1	10.1	6.7		12.6	18.8	13.9
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	14.9	7.6		7.0	2.4	0.0	3.0	1.1		0.3	6.5	1.0
Delay (s)	45.5	38.0		36.7	32.0	26.2	13.1	7.8		12.8	25.3	14.9
Level of Service	D	D		D	C	C	B	A		B	C	B
Approach Delay (s)		40.5			32.8			9.2			21.5	
Approach LOS		D			C			A			C	

Intersection Summary					
HCM 2000 Control Delay	23.3	HCM 2000 Level of Service		C	
HCM 2000 Volume to Capacity ratio	0.70				
Actuated Cycle Length (s)	81.9	Sum of lost time (s)		16.0	
Intersection Capacity Utilization	106.2%	ICU Level of Service		G	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	41	31	118	18	29	12	313	265	38	8	293	143
Future Volume (vph)	41	31	118	18	29	12	313	265	38	8	293	143
Ideal Flow (vphpl)	1650	1650	1750	1550	1550	1550	1775	1650	1650	1550	1550	1550
Storage Length (m)	0.0		25.0	0.0		0.0	25.0		0.0	0.0		0.0
Storage Lanes	0		1	0		0	1		0	0		0
Taper Length (m)	0.0			0.0			35.0			0.0		
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			0.850		0.973			0.981			0.957	
Flt Protected		0.972			0.985		0.950				0.999	
Satd. Flow (prot)	0	1542	1473	0	1436	0	1653	1605	0	0	1466	0
Flt Permitted		0.972			0.985		0.950				0.999	
Satd. Flow (perm)	0	1542	1473	0	1436	0	1653	1605	0	0	1466	0
Link Speed (k/h)		60			50			50			50	
Link Distance (m)		1012.1			151.5			558.2			326.3	
Travel Time (s)		60.7			10.9			40.2			23.5	
Confl. Peds. (#/hr)	1					1						
Peak Hour 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
Heavy Vehicles (%)	7%	0%	1%	0%	7%	0%	2%	1%	0%	25%	1%	0%
Adj. Flow (vph)	41	31	118	18	29	12	313	265	38	8	293	143
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	72	118	0	59	0	313	303	0	0	444	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	69.6%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	41	31	118	18	29	12	313	265	38	8	293	143
Future Volume (vph)	41	31	118	18	29	12	313	265	38	8	293	143
Peak Hour 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
Hourly flow rate (vph)	41	31	118	18	29	12	313	265	38	8	293	143

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1
Volume Total (vph)	72	118	59	313	303	444
Volume Left (vph)	41	0	18	313	0	8
Volume Right (vph)	0	118	12	0	38	143
Hadj (s)	0.35	-0.68	0.00	0.53	-0.07	-0.17
Departure Headway (s)	7.7	6.6	7.7	6.5	5.9	6.0
Degree Utilization, x	0.15	0.22	0.13	0.57	0.50	0.74
Capacity (veh/h)	430	494	420	529	593	582
Control Delay (s)	10.9	10.3	11.8	16.6	13.5	23.9
Approach Delay (s)	10.5		11.8	15.1		23.9
Approach LOS	B		B	C		C

Intersection Summary					
Delay	17.3				
Level of Service	C				
Intersection Capacity Utilization	69.6%	ICU Level of Service		C	
Analysis Period (min)	15				

Intersection	
Intersection Delay, s/veh	20
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	41	31	118	18	29	12	313	265	38	8	293	143
Future Vol, veh/h	41	31	118	18	29	12	313	265	38	8	293	143
Peak Hour 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
Heavy Vehicles, %	7	0	1	0	7	0	2	1	0	25	1	0
Mvmt Flow	41	31	118	18	29	12	313	265	38	8	293	143
Number of Lanes	0	1	1	0	1	0	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	2
HCM Control Delay	11.7	12	16.3	29.8
HCM LOS	B	B	C	D

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	100%	0%	57%	0%	31%	2%
Vol Thru, %	0%	87%	43%	0%	49%	66%
Vol Right, %	0%	13%	0%	100%	20%	32%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	313	303	72	118	59	444
LT Vol	313	0	41	0	18	8
Through Vol	0	265	31	0	29	293
RT Vol	0	38	0	118	12	143
Lane Flow Rate	313	303	72	118	59	444
Geometry Grp	7	7	7	7	6	6
Degree of Util (X)	0.573	0.503	0.156	0.219	0.129	0.792
Departure Headway (Hd)	6.587	5.972	7.82	6.688	7.852	6.424
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	545	600	456	533	460	564
Service Time	4.352	3.737	5.602	4.469	5.852	4.485
HCM Lane V/C Ratio	0.574	0.505	0.158	0.221	0.128	0.787
HCM Control Delay	17.9	14.7	12.1	11.4	12	29.8
HCM Lane LOS	C	B	B	B	B	D
HCM 95th-tile Q	3.6	2.8	0.5	0.8	0.4	7.5

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	84	52	474	196	72	168
Future Volume (vph)	84	52	474	196	72	168
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.948				0.905	
Flt Protected				0.966	0.985	
Satd. Flow (prot)	1504	0	0	1594	1528	0
Flt Permitted				0.966	0.985	
Satd. Flow (perm)	1504	0	0	1594	1528	0
Link Speed (k/h)	80			80	50	
Link Distance (m)	1516.2			424.2	223.3	
Travel Time (s)	68.2			19.1	16.1	
Confl. Peds. (#/hr)		1	1			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	4%	4%	0%	0%	3%	3%
Adj. Flow (vph)	84	52	474	196	72	168
Shared Lane Traffic (%)						
Lane Group Flow (vph)	136	0	0	670	240	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 76.5%		ICU Level of Service D	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	84	52	474	196	72	168
Future Volume (Veh/h)	84	52	474	196	72	168
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	84	52	474	196	72	168
Pedestrians					1	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			137		1255	111
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			137		1255	111
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			67		43	82
cM capacity (veh/h)			1458		127	939

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	136	670	240
Volume Left	0	474	72
Volume Right	52	0	168
cSH	1700	1458	322
Volume to Capacity	0.08	0.33	0.75
Queue Length 95th (m)	0.0	11.4	45.3
Control Delay (s)	0.0	7.1	42.7
Lane LOS		A	E
Approach Delay (s)	0.0	7.1	42.7
Approach LOS			E

Intersection Summary			
Average Delay	14.3		
Intersection Capacity Utilization	76.5%	ICU Level of Service	D
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	53	155	94	14	97	153
Future Volume (vph)	53	155	94	14	97	153
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.899		0.982			
Flt Protected	0.987					0.981
Satd. Flow (prot)	1555	0	1566	0	0	1572
Flt Permitted	0.987					0.981
Satd. Flow (perm)	1555	0	1566	0	0	1572
Link Speed (k/h)	80		80			80
Link Distance (m)	1200.3		1761.7			383.9
Travel Time (s)	54.0		79.3			17.3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	4%	0%	3%	3%
Adj. Flow (vph)	53	155	94	14	97	153
Shared Lane Traffic (%)						
Lane Group Flow (vph)	208	0	108	0	0	250
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	42.2%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	53	155	94	14	97	153
Future Volume (Veh/h)	53	155	94	14	97	153
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	53	155	94	14	97	153
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	448	101			108	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	448	101			108	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	90	84			93	
cM capacity (veh/h)	535	957			1476	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	208	108	250
Volume Left	53	0	97
Volume Right	155	14	0
cSH	797	1700	1476
Volume to Capacity	0.26	0.06	0.07
Queue Length 95th (m)	8.4	0.0	1.7
Control Delay (s)	11.1	0.0	3.3
Lane LOS	B		A
Approach Delay (s)	11.1	0.0	3.3
Approach LOS	B		

Intersection Summary			
Average Delay		5.5	
Intersection Capacity Utilization		42.2%	ICU Level of Service A
Analysis Period (min)		15	



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	72	64	39	32	111	98
Future Volume (vph)	72	64	39	32	111	98
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.936		0.939			
Flt Protected	0.974					0.974
Satd. Flow (prot)	1587	0	1508	0	0	1558
Flt Permitted	0.974					0.974
Satd. Flow (perm)	1587	0	1508	0	0	1558
Link Speed (k/h)	80		80			80
Link Distance (m)	605.5		233.8			1761.7
Travel Time (s)	27.2		10.5			79.3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	3%	5%	0%	5%	1%
Adj. Flow (vph)	72	64	39	32	111	98
Shared Lane Traffic (%)						
Lane Group Flow (vph)	136	0	71	0	0	209
Sign Control	Stop		Free			Free

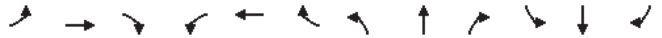
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 34.9%			ICU Level of Service A
Analysis Period (min) 15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	72	64	39	32	111	98
Future Volume (Veh/h)	72	64	39	32	111	98
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	72	64	39	32	111	98
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	375	55			71	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	375	55			71	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	88	94			93	
cM capacity (veh/h)	584	1009			1510	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	136	71	209
Volume Left	72	0	111
Volume Right	64	32	0
cSH	728	1700	1510
Volume to Capacity	0.19	0.04	0.07
Queue Length 95th (m)	5.5	0.0	1.9
Control Delay (s)	11.1	0.0	4.3
Lane LOS	B		A
Approach Delay (s)	11.1	0.0	4.3
Approach LOS	B		

Intersection Summary			
Average Delay		5.8	
Intersection Capacity Utilization		34.9%	ICU Level of Service A
Analysis Period (min)		15	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	23	2	129	54	60	1	118	98	28	202	14
Future Volume (vph)	2	23	2	129	54	60	1	118	98	28	202	14
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.990			0.967			0.939			0.992	
Flt Protected		0.996			0.974						0.994	
Satd. Flow (prot)	0	1528	0	0	1428	0	0	1422	0	0	1485	0
Flt Permitted		0.996			0.974						0.994	
Satd. Flow (perm)	0	1528	0	0	1428	0	0	1422	0	0	1485	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		187.7			400.3			618.6			394.6	
Travel Time (s)		13.5			28.8			44.5			28.4	
Peak Hour 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
Heavy Vehicles (%)	0%	0%	0%	1%	0%	7%	0%	1%	4%	4%	3%	0%
Adj. Flow (vph)	2	23	2	129	54	60	1	118	98	28	202	14
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	27	0	0	243	0	0	217	0	0	244	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 64.4%		ICU Level of Service C	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	23	2	129	54	60	1	118	98	28	202	14
Future Volume (Veh/h)	2	23	2	129	54	60	1	118	98	28	202	14
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	2	23	2	129	54	60	1	118	98	28	202	14
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	521	483	209	448	441	167	216			216		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	521	483	209	448	441	167	216			216		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.3	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.4	2.2			2.2		
p0 queue free %	99	95	100	74	89	93	100			98		
cM capacity (veh/h)	394	476	836	494	502	864	1366			1342		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	27	243	217	244
Volume Left	2	129	1	28
Volume Right	2	60	98	14
cSH	484	555	1366	1342
Volume to Capacity	0.06	0.44	0.00	0.02
Queue Length 95th (m)	1.4	17.7	0.0	0.5
Control Delay (s)	12.9	16.4	0.0	1.1
Lane LOS	B	C	A	A
Approach Delay (s)	12.9	16.4	0.0	1.1
Approach LOS	B	C		

Intersection Summary					
Average Delay			6.3		
Intersection Capacity Utilization			64.4%	ICU Level of Service	C
Analysis Period (min)			15		

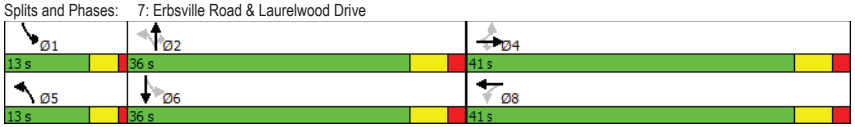


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	90	109	136	168	100	122	222	140	40	225	22
Future Volume (vph)	13	90	109	136	168	100	122	222	140	40	225	22
Ideal Flow (vphpl)	1775	1900	1750	1775	1650	1650	1775	1900	1750	1775	1650	1650
Storage Length (m)	20.0		20.0	25.0		0.0	65.0		30.0	25.0		0.0
Storage Lanes	1		1	1		0	1		1	1		0
Taper Length (m)	35.0			10.0			80.0			35.0		
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	0.98		0.97	0.99	0.98		0.99		0.97	0.99	1.00	
Frt			0.850		0.944				0.850		0.987	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1686	1776	1417	1670	1513	0	1621	1881	1488	1686	1609	0
Flt Permitted	0.460			0.699			0.595			0.620		
Satd. Flow (perm)	803	1776	1371	1215	1513	0	1008	1881	1442	1092	1609	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			109		39				140		6	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		123.5			178.3			236.9			930.8	
Travel Time (s)		8.9			12.8			17.1			67.0	
Confl. Peds. (#/hr)	20		10	10		20	7		7	7		7
Peak Hour 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
Heavy Vehicles (%)	0%	7%	5%	1%	2%	0%	4%	1%	0%	0%	1%	0%
Adj. Flow (vph)	13	90	109	136	168	100	122	222	140	40	225	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	13	90	109	136	268	0	122	222	140	40	247	0
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2		2	6		
Detector Phase	4	4	4	8	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0		5.0	30.0	30.0	5.0	30.0	
Minimum Split (s)	14.0	14.0	14.0	14.0	14.0		9.0	36.0	36.0	9.0	36.0	
Total Split (s)	41.0	41.0	41.0	41.0	41.0		13.0	36.0	36.0	13.0	36.0	
Total Split (%)	45.6%	45.6%	45.6%	45.6%	45.6%		14.4%	40.0%	40.0%	14.4%	40.0%	
Maximum Green (s)	35.0	35.0	35.0	35.0	35.0		9.0	30.0	30.0	9.0	30.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		1.0	2.0	2.0	1.0	2.0	
Lost Time Adjust (s)	0.0	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	6.0		4.0	6.0	6.0	4.0	6.0	
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	None	None		Max	Max	Max	Max	Max	
Walk Time (s)	15.0	15.0	15.0	15.0	15.0			12.0	12.0		12.0	
Flash Dont Walk (s)	21.0	21.0	21.0	21.0	21.0			18.0	18.0		18.0	
Pedestrian Calls (#/hr)	0	0	0	0	0			0	0		0	
Act Effct Green (s)	16.1	16.1	16.1	16.1	16.1		41.2	30.1	30.1	41.2	30.1	
Actuated g/C Ratio	0.23	0.23	0.23	0.23	0.23		0.58	0.42	0.42	0.58	0.42	
v/c Ratio	0.07	0.22	0.28	0.50	0.72		0.19	0.28	0.20	0.06	0.36	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	21.5	23.1	6.7	30.2	33.0		7.2	16.0	4.0	6.7	16.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	21.5	23.1	6.7	30.2	33.0		7.2	16.0	4.0	6.7	16.9	
LOS	C	C	A	C	C		A	B	A	A	B	
Approach Delay		14.6			32.1			10.3			15.5	
Approach LOS		B			C			B			B	
Queue Length 50th (m)	1.5	10.3	0.0	16.7	29.7		5.9	19.6	0.0	1.8	22.0	
Queue Length 95th (m)	5.6	21.3	11.0	32.4	53.7		16.0	41.0	10.8	6.6	46.8	
Internal Link Dist (m)		99.5			154.3			212.9			906.8	
Turn Bay Length (m)	20.0		20.0	25.0			65.0		30.0	25.0		
Base Capacity (vph)	395	874	730	598	765		659	794	689	705	682	
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Reduced v/c Ratio	0.03	0.10	0.15	0.23	0.35		0.19	0.28	0.20	0.06	0.36	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 71.4			
Natural Cycle: 60			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 18.4		Intersection LOS: B	
Intersection Capacity Utilization 69.4%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 7: Erbsville Road & Laurelwood Drive



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	90	109	136	168	100	122	222	140	40	225	22
Future Volume (vph)	13	90	109	136	168	100	122	222	140	40	225	22
Ideal Flow (vphpl)	1775	1900	1750	1775	1650	1650	1775	1900	1750	1775	1650	1650
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0		4.0	6.0	6.0	4.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	0.99		1.00	1.00	0.97	1.00	1.00	
Flpb, ped/bikes	0.99	1.00	1.00	0.99	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.94		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1664	1776	1375	1655	1516		1616	1881	1446	1680	1609	
Flt Permitted	0.46	1.00	1.00	0.70	1.00		0.59	1.00	1.00	0.62	1.00	
Satd. Flow (perm)	806	1776	1375	1217	1516		1012	1881	1446	1096	1609	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	13	90	109	136	168	100	122	222	140	40	225	22
RTOR Reduction (vph)	0	0	84	0	30	0	0	0	81	0	3	0
Lane Group Flow (vph)	13	90	25	136	238	0	122	222	59	40	244	0
Confl. Peds. (#/hr)	20		10	10		20	7		7	7		7
Heavy Vehicles (%)	0%	7%	5%	1%	2%	0%	4%	1%	0%	0%	1%	0%
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2		2	6		
Actuated Green, G (s)	16.1	16.1	16.1	16.1	16.1		39.1	30.1	30.1	39.1	30.1	
Effective Green, g (s)	16.1	16.1	16.1	16.1	16.1		39.1	30.1	30.1	39.1	30.1	
Actuated g/C Ratio	0.23	0.23	0.23	0.23	0.23		0.55	0.42	0.42	0.55	0.42	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		4.0	6.0	6.0	4.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	182	401	310	275	342		632	795	611	675	680	
v/s Ratio Prot		0.05			c0.16		c0.02	0.12		0.01	c0.15	
v/s Ratio Perm	0.02		0.02	0.11			0.08		0.04	0.03		
v/c Ratio	0.07	0.22	0.08	0.49	0.70		0.19	0.28	0.10	0.06	0.36	
Uniform Delay, d1	21.7	22.5	21.7	24.0	25.3		7.8	13.5	12.4	7.4	14.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.2	0.3	0.1	1.4	6.0		0.7	0.9	0.3	0.2	1.5	
Delay (s)	21.8	22.7	21.8	25.4	31.3		8.5	14.3	12.7	7.6	15.4	
Level of Service	C	C	C	C	C		A	B	B	A	B	
Approach Delay (s)		22.2			29.3			12.4			14.4	
Approach LOS		C			C			B			B	

Intersection Summary					
HCM 2000 Control Delay	19.2	HCM 2000 Level of Service		B	
HCM 2000 Volume to Capacity ratio	0.43				
Actuated Cycle Length (s)	71.2	Sum of lost time (s)		16.0	
Intersection Capacity Utilization	69.4%	ICU Level of Service		C	
Analysis Period (min)	15				

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	257	30	129	522	39	28	22	73	26	39	22
Future Volume (vph)	10	257	30	129	522	39	28	22	73	26	39	22
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
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		0.986			0.992			0.920			0.966	
Flt Protected		0.998			0.991			0.989			0.985	
Satd. Flow (prot)	0	1499	0	0	1512	0	0	1410	0	0	1455	0
Flt Permitted		0.998			0.991			0.989			0.985	
Satd. Flow (perm)	0	1499	0	0	1512	0	0	1410	0	0	1455	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		213.7			555.1			104.8			136.8	
Travel Time (s)		15.4			40.0			7.5			9.8	
Confl. Peds. (#/hr)	9		4	4		9	6		8	8		6
Peak Hour 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
Heavy Vehicles (%)	0%	2%	0%	0%	1%	0%	0%	0%	0%	0%	3%	0%
Adj. Flow (vph)	10	257	30	129	522	39	28	22	73	26	39	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	297	0	0	690	0	0	123	0	0	87	0
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Roundabout			
Intersection Capacity Utilization	86.6%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Traffic Volume (veh/h)	10	257	30	129	522	39	28	22	73	26	39	22
Future Volume (veh/h)	10	257	30	129	522	39	28	22	73	26	39	22
Peak Hour 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
Hourly flow rate (vph)	10	257	30	129	522	39	28	22	73	26	39	22
Approach Volume (veh/h)		297			690			123			87	
Crossing Volume (veh/h)		194			60			293			679	
High Capacity (veh/h)		1190			1321			1100			808	
High v/c (veh/h)		0.25			0.52			0.11			0.11	
Low Capacity (veh/h)		984			1104			904			644	
Low v/c (veh/h)		0.30			0.63			0.14			0.14	

Intersection Summary					
Maximum v/c High		0.52			
Maximum v/c Low		0.63			
Intersection Capacity Utilization		86.6%	ICU Level of Service		E

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	92	20	78	183	17	23
Future Volume (vph)	92	20	78	183	17	23
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.976				0.922	
Flt Protected				0.985	0.979	
Satd. Flow (prot)	1584	0	0	1609	1593	0
Flt Permitted				0.985	0.979	
Satd. Flow (perm)	1584	0	0	1609	1593	0
Link Speed (k/h)	80			80	50	
Link Distance (m)	1200.3			667.7	811.2	
Travel Time (s)	54.0			30.0	58.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	0%	1%	1%	0%	0%
Adj. Flow (vph)	92	20	78	183	17	23
Shared Lane Traffic (%)						
Lane Group Flow (vph)	112	0	0	261	40	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 32.7%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	92	20	78	183	17	23
Future Volume (Veh/h)	92	20	78	183	17	23
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	92	20	78	183	17	23
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			112		441	102
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			112		441	102
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			95		97	98
cM capacity (veh/h)			1484		547	959

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	112	261	40
Volume Left	0	78	17
Volume Right	20	0	23
cSH	1700	1484	726
Volume to Capacity	0.07	0.05	0.06
Queue Length 95th (m)	0.0	1.3	1.4
Control Delay (s)	0.0	2.6	10.2
Lane LOS		A	B
Approach Delay (s)	0.0	2.6	10.2
Approach LOS			B

Intersection Summary			
Average Delay	2.6		
Intersection Capacity Utilization	32.7%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	75	5	142	53	1	117
Future Volume (vph)	75	5	142	53	1	117
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.992		0.963			
Flt Protected	0.955					
Satd. Flow (prot)	1626	0	1577	0	0	1650
Flt Permitted	0.955					
Satd. Flow (perm)	1626	0	1577	0	0	1650
Link Speed (k/h)	70		50			50
Link Distance (m)	143.4		394.6			123.0
Travel Time (s)	7.4		28.4			8.9
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	0%	1%	0%	0%	0%
Adj. Flow (vph)	75	5	142	53	1	117
Shared Lane Traffic (%)						
Lane Group Flow (vph)	80	0	195	0	0	118
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	23.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	75	5	142	53	1	117
Future Volume (Veh/h)	75	5	142	53	1	117
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	75	5	142	53	1	117
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	288	168			195	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	288	168			195	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	89	99			100	
cM capacity (veh/h)	700	881			1390	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	80	195	118
Volume Left	75	0	1
Volume Right	5	53	0
cSH	709	1700	1390
Volume to Capacity	0.11	0.11	0.00
Queue Length 95th (m)	3.0	0.0	0.0
Control Delay (s)	10.7	0.0	0.1
Lane LOS	B		A
Approach Delay (s)	10.7	0.0	0.1
Approach LOS	B		

Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	23.8%	ICU Level of Service	A
Analysis Period (min)	15		

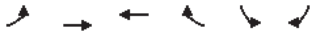
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	148	9	98	228	18	58
Future Volume (vph)	148	9	98	228	18	58
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.992				0.897	
Flt Protected				0.985	0.988	
Satd. Flow (prot)	1607	0	0	1598	1542	0
Flt Permitted				0.985	0.988	
Satd. Flow (perm)	1607	0	0	1598	1542	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	166.4			228.8	212.1	
Travel Time (s)	12.0			16.5	15.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	0%	1%	2%	6%	0%
Adj. Flow (vph)	148	9	98	228	18	58
Shared Lane Traffic (%)						
Lane Group Flow (vph)	157	0	0	326	76	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	44.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	148	9	98	228	18	58
Future Volume (Veh/h)	148	9	98	228	18	58
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	148	9	98	228	18	58
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			157		576	152
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			157		576	152
tC, single (s)			4.1		6.5	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			93		96	94
cM capacity (veh/h)			1429		440	899

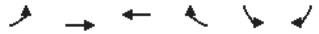
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	157	326	76
Volume Left	0	98	18
Volume Right	9	0	58
cSH	1700	1429	721
Volume to Capacity	0.09	0.07	0.11
Queue Length 95th (m)	0.0	1.8	2.8
Control Delay (s)	0.0	2.7	10.6
Lane LOS		A	B
Approach Delay (s)	0.0	2.7	10.6
Approach LOS			B

Intersection Summary			
Average Delay	3.0		
Intersection Capacity Utilization	44.6%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	36	192	263	51	20	26
Future Volume (vph)	36	192	263	51	20	26
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.978		0.924	
Flt Protected		0.992			0.979	
Satd. Flow (prot)	0	1623	1600	0	1563	0
Flt Permitted		0.992			0.979	
Satd. Flow (perm)	0	1623	1600	0	1563	0
Link Speed (k/h)		60	60		50	
Link Distance (m)		98.4	372.2		168.6	
Travel Time (s)		5.9	22.3		12.1	
Confl. Peds. (#/hr)	1			1		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	1%	0%	5%	0%
Adj. Flow (vph)	36	192	263	51	20	26
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	228	314	0	46	0
Sign Control		Free	Free		Stop	

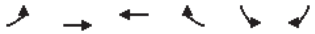
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 46.8%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	36	192	263	51	20	26
Future Volume (Veh/h)	36	192	263	51	20	26
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	36	192	263	51	20	26
Pedestrians					1	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	315				554	290
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	315				554	290
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				96	97
cM capacity (veh/h)	1256				474	754

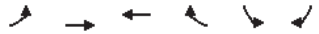
Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	228	314	46
Volume Left	36	0	20
Volume Right	0	51	26
cSH	1256	1700	600
Volume to Capacity	0.03	0.18	0.08
Queue Length 95th (m)	0.7	0.0	2.0
Control Delay (s)	1.5	0.0	11.5
Lane LOS	A		B
Approach Delay (s)	1.5	0.0	11.5
Approach LOS			B

Intersection Summary				
Average Delay		1.5		
Intersection Capacity Utilization		46.8%	ICU Level of Service	A
Analysis Period (min)		15		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	23	194	298	47	23	23
Future Volume (vph)	23	194	298	47	23	23
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.982		0.932	
Flt Protected		0.995			0.976	
Satd. Flow (prot)	0	1613	1598	0	1606	0
Flt Permitted		0.995			0.976	
Satd. Flow (perm)	0	1613	1598	0	1606	0
Link Speed (k/h)		60	60		50	
Link Distance (m)		372.2	1012.1		87.7	
Travel Time (s)		22.3	60.7		6.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	2%	1%	4%	0%	0%
Adj. Flow (vph)	23	194	298	47	23	23
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	217	345	0	46	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 43.9%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	23	194	298	47	23	23
Future Volume (Veh/h)	23	194	298	47	23	23
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	23	194	298	47	23	23
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	345				562	322
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	345				562	322
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				95	97
cM capacity (veh/h)	1225				483	724

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	217	345	46
Volume Left	23	0	23
Volume Right	0	47	23
cSH	1225	1700	579
Volume to Capacity	0.02	0.20	0.08
Queue Length 95th (m)	0.5	0.0	2.1
Control Delay (s)	1.0	0.0	11.8
Lane LOS	A		B
Approach Delay (s)	1.0	0.0	11.8
Approach LOS			B

Intersection Summary				
Average Delay		1.2		
Intersection Capacity Utilization		43.9%	ICU Level of Service	A
Analysis Period (min)		15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	9	59	11	5	7	85	184	31	6	312	98
Future Volume (vph)	20	9	59	11	5	7	85	184	31	6	312	98
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
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		0.909			0.959			0.986			0.968	
Flt Protected		0.989			0.977			0.986			0.999	
Satd. Flow (prot)	0	1366	0	0	1452	0	0	1498	0	0	1499	0
Flt Permitted		0.989			0.977			0.986			0.999	
Satd. Flow (perm)	0	1366	0	0	1452	0	0	1498	0	0	1499	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		77.1			66.0			326.3			223.3	
Travel Time (s)		5.6			4.8			23.5			16.1	
Confl. Peds. (#/hr)	4					4			1	1		
Peak Hour 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
Heavy Vehicles (%)	0%	0%	3%	0%	0%	0%	0%	1%	0%	0%	0%	0%
Adj. Flow (vph)	20	9	59	11	5	7	85	184	31	6	312	98
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	88	0	0	23	0	0	300	0	0	416	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 64.6%		ICU Level of Service C	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	9	59	11	5	7	85	184	31	6	312	98
Future Volume (Veh/h)	20	9	59	11	5	7	85	184	31	6	312	98
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	20	9	59	11	5	7	85	184	31	6	312	98
Pedestrians					1						4	
Lane Width (m)					3.6						3.6	
Walking Speed (m/s)					1.2						1.2	
Percent Blockage					0						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	16			68			363	116	40	237	142	12
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	16			68			363	116	40	237	142	12
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			76	76	97	99	58	91
cM capacity (veh/h)	1609			1546			357	758	1037	557	735	1070

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	88	23	300	416
Volume Left	20	11	85	6
Volume Right	59	7	31	98
cSH	1609	1546	587	790
Volume to Capacity	0.01	0.01	0.51	0.53
Queue Length 95th (m)	0.3	0.2	23.2	25.0
Control Delay (s)	1.7	3.5	17.4	14.5
Lane LOS	A	A	C	B
Approach Delay (s)	1.7	3.5	17.4	14.5
Approach LOS			C	B

Intersection Summary				
Average Delay		13.9		
Intersection Capacity Utilization		64.6%	ICU Level of Service	C
Analysis Period (min)		15		

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]
© Copyright TRL Limited, 2020

For sales and distribution information, program advice and maintenance, contact TRL:
Tel: +44 (0)1344 770758 email: software@trl.co.uk Web: http://www.trlsoftware.co.uk

The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: Laurelwood & Beaver Creek.arc8
Path: C:\Users\AdamMorrison\Paradigm\Projects - 170278 Beaver Creek Area TES\C5 - Analysis and Evaluation\Arcady
Report generation date: 2020-07-21 4:08:06 PM

Summary of intersection performance

There are warnings associated with this model run - see the 'Data Errors and Warnings' tables.

	AM					
	Queue (Veh)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS
	All - Existing					
Intersection 85% - Leg North	0.07	3.92	0.06	A	7.03	A
Intersection 85% - Leg West	1.31	7.78	0.57	A		
Intersection 85% - Leg South	0.60	8.19	0.38	A		
Intersection 85% - Leg East	0.27	4.46	0.21	A		
Intersection 90% - Leg North	0.06	3.66	0.06	A	6.22	A
Intersection 90% - Leg West	1.15	6.80	0.54	A		
Intersection 90% - Leg South	0.53	7.22	0.35	A		
Intersection 90% - Leg East	0.25	4.13	0.20	A		

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Intersection LOS and Intersection Delay are demand-weighted averages.

"D1 - Existing, AM " model duration: 8:00 AM - 9:00 AM
"D2 - Existing, PM" model duration: 4:00 PM - 5:00 PM
"D3 - Background 2022, AM" model duration: 8:00 AM - 9:00 AM
"D4 - Background 2022, PM" model duration: 4:00 PM - 5:00 PM
"D5 - Total 2022, AM" model duration: 8:00 AM - 9:00 AM
"D6 - Total 2022, PM" model duration: 4:00 PM - 5:00 PM
"D7 - Background 2025, AM" model duration: 8:00 AM - 9:00 AM
"D8 - Background 2025, PM" model duration: 4:00 PM - 5:00 PM
"D9 - Total 2025, AM" model duration: 8:00 AM - 9:00 AM
"D10 - Total 2025, PM" model duration: 4:00 PM - 5:00 PM
"D11 - Background 2027, AM" model duration: 8:00 AM - 9:00 AM
"D12 - Background 2027, PM" model duration: 4:00 PM - 5:00 PM
"D13 - Total 2027, AM" model duration: 8:00 AM - 9:00 AM
"D14 - Total 2027, PM" model duration: 4:00 PM - 5:00 PM
"D15 - Background 2032, AM" model duration: 8:00 AM - 9:00 AM
"D16 - Background 2032, PM" model duration: 4:00 PM - 5:00 PM
"D17 - Total 2032, AM" model duration: 8:00 AM - 9:00 AM
"D18 - Total 2032, PM" model duration: 4:00 PM - 5:00 PM

Run using Junctions 8.0.6.541 at 2020-07-21 4:08:05 PM

File summary

Title	Laurelwood & Beaver Creek
Location	Waterloo
Site Number	
Date	2017-12-05
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	170278
Analyst	Matt
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)
7.50	✓		N/A	0.90	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	Veh	Veh	perHour	s	-Min	perMin

All - Existing, AM

Data Errors and Warnings

Severity	Area	Item	Description
Last Run	Last Run	Intersection 85% - Leg East - Capacity	Pedestrian Crossing causes blocking on previous leg due to traffic queing to leave the intersection in 4 timesegment (s).
Last Run	Last Run	Intersection 90% - Leg East - Capacity	Pedestrian Crossing causes blocking on previous leg due to traffic queing to leave the intersection in 4 timesegment (s).

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
All	ARCADY		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
Existing, AM	Existing	AM		PHF	08:00	09:00	60	15				✓		

Intersection Network

Intersections

Junction	Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Do Geometric Delay	Intersection Delay (s)	Intersection LOS
85%	85%	Existing	Roundabout	North,West,South,East				7.03	A
90%	90%	Future	Roundabout	North,West,South,East				6.22	A

Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

Legs

Legs

Intersection	Leg	Leg	Name	Description
85%	North	North	Beaver Creek SB	
85%	West	West	Laurelwood EB	
85%	South	South	Beaver Creek NB	
85%	East	East	Laurelwood WB	
90%	North	North	Beaver Creek SB	
90%	West	West	Laurelwood EB	
90%	South	South	Beaver Creek NB	
90%	East	East	Laurelwood WB	

Capacity Options

Intersection	Leg	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)	Assume Flat Start Profile	Initial Queue (PCE)
85%	North	0.00	99999.00		0.00
85%	West	0.00	99999.00		0.00
85%	South	0.00	99999.00		0.00
85%	East	0.00	99999.00		0.00
90%	North	0.00	99999.00		0.00
90%	West	0.00	99999.00		0.00
90%	South	0.00	99999.00		0.00
90%	East	0.00	99999.00		0.00

Roundabout Geometry

Intersection	Leg	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
85%	North	3.50	4.50	30.00	20.00	30.00	25.00	
85%	West	3.50	4.50	30.00	20.00	30.00	25.00	
85%	South	3.50	4.50	30.00	20.00	30.00	25.00	
85%	East	3.50	4.50	30.00	20.00	30.00	25.00	
90%	North	3.50	4.50	30.00	20.00	30.00	25.00	
90%	West	3.50	4.50	30.00	20.00	30.00	25.00	
90%	South	3.50	4.50	30.00	20.00	30.00	25.00	
90%	East	3.50	4.50	30.00	20.00	30.00	25.00	

Pedestrian Crossings

Intersection	Leg	Crossing Type
85%	North	Unsignalled Pedestrian Crossing
85%	West	Unsignalled Pedestrian Crossing
85%	South	Unsignalled Pedestrian Crossing
85%	East	Unsignalled Pedestrian Crossing
90%	North	Unsignalled Pedestrian Crossing
90%	West	Unsignalled Pedestrian Crossing
90%	South	Unsignalled Pedestrian Crossing
90%	East	Unsignalled Pedestrian Crossing

Unsignalled Pedestrian Crossing Crossings

Intersection	Leg	Space between crossing and intersection entry (PCE)	Vehicles queueing on exit (PCE)	Central Refuge	Crossing Data Type	Crossing length (m)	Crossing time (s)	Crossing length (entry side) (m)	Crossing time (entry side) (s)	Crossing length (exit side) (m)	Crossing time (exit side) (s)
85%	North	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
85%	West	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
85%	South	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
85%	East	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
90%	North	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
90%	West	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
90%	South	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
90%	East	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50

Slope / Intercept / Capacity

Leg Intercept Adjustments

Intersection	Leg	Type	Reason	Direct Intercept Adjustment (PCE/hr)	Percentage Intercept Adjustment (%)
85%	North	Percentage	Region of Waterloo - Requirement		85.00
85%	West	Percentage	Region of Waterloo - Requirement		85.00
85%	South	Percentage	Region of Waterloo - Requirement		85.00
85%	East	Percentage	Region of Waterloo - Requirement		85.00
90%	North	Percentage	Region of Waterloo - Requirement		90.00
90%	West	Percentage	Region of Waterloo - Requirement		90.00
90%	South	Percentage	Region of Waterloo - Requirement		90.00
90%	East	Percentage	Region of Waterloo - Requirement		90.00

Roundabout Slope and Intercept used in model

Intersection	Leg	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
85%	North		(calculated)	(calculated)	0.593	1153.828
85%	West		(calculated)	(calculated)	0.593	1153.828
85%	South		(calculated)	(calculated)	0.593	1153.828
85%	East		(calculated)	(calculated)	0.593	1153.828
90%	North		(calculated)	(calculated)	0.593	1221.701
90%	West		(calculated)	(calculated)	0.593	1221.701
90%	South		(calculated)	(calculated)	0.593	1221.701
90%	East		(calculated)	(calculated)	0.593	1221.701

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCE Factor for a Truck (PCE)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Intersection	Leg	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
85%	North	PHF	✓	61.00	100.000
85%	West	PHF	✓	610.00	100.000
85%	South	PHF	✓	264.00	100.000
85%	East	PHF	✓	217.00	100.000
90%	North	PHF	✓	61.00	100.000
90%	West	PHF	✓	610.00	100.000
90%	South	PHF	✓	264.00	100.000
90%	East	PHF	✓	217.00	100.000

Peak Hour Factor Data

Intersection	Leg	Hourly Volume (Veh/hr)	Peak Hour Factor	Peak Time Segment
85%	North	61.00	1.00	SecondQuarter
85%	West	610.00	1.00	SecondQuarter
85%	South	264.00	1.00	SecondQuarter
85%	East	217.00	1.00	SecondQuarter
90%	North	61.00	1.00	SecondQuarter
90%	West	610.00	1.00	SecondQuarter
90%	South	264.00	1.00	SecondQuarter
90%	East	217.00	1.00	SecondQuarter

Pedestrian Flows

General Flows Data

Intersection	Leg	Profile Type	Average Pedestrian Flow (Ped/hr)
85%	North	PHF	10.00
85%	West	PHF	7.00
85%	South	PHF	4.00
85%	East	PHF	10.00
90%	North	PHF	10.00

90%	West	PHF	7.00
90%	South	PHF	4.00
90%	East	PHF	10.00

Peak Hour Factor Data

Intersection	Leg	Hourly Volume (Ped/hr)	Peak Hour Factor	Peak Time Segment
85%	North	10.00	1.00	SecondQuarter
85%	West	7.00	1.00	SecondQuarter
85%	South	4.00	1.00	SecondQuarter
85%	East	10.00	1.00	SecondQuarter
90%	North	10.00	1.00	SecondQuarter
90%	West	7.00	1.00	SecondQuarter
90%	South	4.00	1.00	SecondQuarter
90%	East	10.00	1.00	SecondQuarter

Turning Proportions

Turning Counts / Proportions (Veh/hr) - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.000	9.000	18.000	34.000
	West	28.000	0.000	78.000	504.000
	South	34.000	51.000	0.000	179.000
	East	24.000	160.000	33.000	0.000

Turning Proportions (Veh) - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.00	0.15	0.30	0.56
	West	0.05	0.00	0.13	0.83
	South	0.13	0.19	0.00	0.68
	East	0.11	0.74	0.15	0.00

Turning Counts / Proportions (Veh/hr) - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.000	9.000	18.000	34.000
	West	28.000	0.000	78.000	504.000
	South	34.000	51.000	0.000	179.000
	East	24.000	160.000	33.000	0.000

Turning Proportions (Veh) - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.00	0.15	0.30	0.56
	West	0.05	0.00	0.13	0.83
	South	0.13	0.19	0.00	0.68
	East	0.11	0.74	0.15	0.00

Vehicle Mix

Average PCE Per Vehicle - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	1.000	1.110	1.000	1.000
	West	1.000	1.000	1.000	1.030
	South	1.090	1.000	1.000	1.010

	East	1.040	1.060	1.060	1.000

Truck Percentages - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.0	11.0	0.0	0.0
	West	0.0	0.0	0.0	3.0
	South	9.0	0.0	0.0	1.0
	East	4.0	6.0	6.0	0.0

Average PCE Per Vehicle - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	1.000	1.110	1.000	1.000
	West	1.000	1.000	1.000	1.030
	South	1.090	1.000	1.000	1.010
	East	1.040	1.060	1.060	1.000

Truck Percentages - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.0	11.0	0.0	0.0
	West	0.0	0.0	0.0	3.0
	South	9.0	0.0	0.0	1.0
	East	4.0	6.0	6.0	0.0

Results

Results Summary for whole modelled period

Intersection	Leg	Max V/C Ratio	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Intersection Arrivals (Veh)	Total Queueing Delay (Veh-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (Veh-min/min)	Inclusive Total Queueing Delay (Veh-min)	Inclusive Average Queueing Delay (s)
85%	North	0.06	3.92	0.07	~1	A	61.00	61.00	3.96	3.89	0.07	3.96	3.89
85%	West	0.57	7.78	1.31	2.00	A	610.00	610.00	77.05	7.58	1.28	77.10	7.58
85%	South	0.38	8.19	0.60	~1	A	264.00	264.00	35.22	8.00	0.59	35.23	8.01
85%	East	0.21	4.46	0.27	~1	A	217.00	217.00	15.96	4.41	0.27	15.96	4.41
90%	North	0.06	3.66	0.06	~1	A	61.00	61.00	3.69	3.63	0.06	3.69	3.63
90%	West	0.54	6.80	1.15	?	A	610.00	610.00	67.70	6.66	1.13	67.73	6.66
90%	South	0.35	7.22	0.53	~1	A	264.00	264.00	31.15	7.08	0.52	31.16	7.08
90%	East	0.20	4.13	0.25	~1	A	217.00	217.00	14.80	4.09	0.25	14.80	4.09

Main Results for each time segment

Main results: (08:00-08:15)

Intersection	Leg	Total Demand (Veh/hr)	Intersection Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	V/C Ratio	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
85%	North	61.00	15.25	60.74	85.34	242.60	10.00	979.16	441.72	0.062	0.00	0.07	3.919	A
85%	West	610.00	152.50	604.83	218.72	84.61	7.00	1073.21	793.02	0.568	0.00	1.29	7.606	A
85%	South	264.00	66.00	261.65	128.10	561.35	4.00	707.47	378.09	0.373	0.00	0.59	8.035	A
85%	East	217.00	54.25	215.93	710.99	112.01	10.00	1025.13	993.40	0.212	0.00	0.27	4.443	A
90%	North	61.00	15.25	60.75	85.41	242.72	10.00	1045.32	453.68	0.058	0.00	0.06	3.656	A
90%	West	610.00	152.50	605.46	218.83	84.64	7.00	1139.25	843.34	0.535	0.00	1.13	6.689	A
90%	South	264.00	66.00	261.92	128.20	561.90	4.00	766.09	380.48	0.345	0.00	0.52	7.113	A
90%	East	217.00	54.25	216.01	711.71	112.12	10.00	1089.13	1054.69	0.199	0.00	0.25	4.119	A

Main results: (08:15-08:30)

Intersection	Leg	Total Demand (Veh/hr)	Intersection Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	V/C Ratio	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
85%	North	61.00	15.25	61.00	85.99	243.99	10.00	978.22	441.72	0.062	0.07	0.07	3.924	A
85%	West	610.00	152.50	609.95	219.99	85.00	7.00	1072.95	793.02	0.569	1.29	1.30	7.772	A
85%	South	264.00	66.00	263.97	128.99	565.96	4.00	703.30	378.09	0.375	0.59	0.60	8.192	A
85%	East	217.00	54.25	217.00	716.94	112.99	10.00	1024.55	993.40	0.212	0.27	0.27	4.457	A
90%	North	61.00	15.25	61.00	85.99	243.99	10.00	1044.45	453.68	0.058	0.06	0.06	3.659	A
90%	West	610.00	152.50	609.96	219.99	85.00	7.00	1139.00	843.34	0.536	1.13	1.14	6.804	A
90%	South	264.00	66.00	263.98	128.99	565.97	4.00	762.28	380.48	0.346	0.52	0.53	7.223	A
90%	East	217.00	54.25	217.00	716.95	112.99	10.00	1088.62	1054.69	0.199	0.25	0.25	4.129	A

Main results: (08:30-08:45)

Intersection	Leg	Total Demand (Veh/hr)	Intersection Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	V/C Ratio	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
85%	North	61.00	15.25	61.00	86.00	244.00	10.00	978.22	441.72	0.062	0.07	0.07	3.924	A
85%	West	610.00	152.50	609.98	220.00	85.00	7.00	1072.94	793.02	0.569	1.30	1.31	7.774	A
85%	South	264.00	66.00	263.99	129.00	565.99	4.00	703.27	378.09	0.375	0.60	0.60	8.195	A
85%	East	217.00	54.25	217.00	716.98	113.00	10.00	1024.54	993.40	0.212	0.27	0.27	4.457	A
90%	North	61.00	15.25	61.00	86.00	244.00	10.00	1044.45	453.68	0.058	0.06	0.06	3.659	A
90%	West	610.00	152.50	609.99	220.00	85.00	7.00	1139.00	843.34	0.536	1.14	1.15	6.804	A
90%	South	264.00	66.00	263.99	129.00	565.99	4.00	762.26	380.48	0.346	0.53	0.53	7.224	A
90%	East	217.00	54.25	217.00	716.99	113.00	10.00	1088.61	1054.69	0.199	0.25	0.25	4.129	A

Main results: (08:45-09:00)

Intersection	Leg	Total Demand (Veh/hr)	Intersection Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	V/C Ratio	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
85%	North	61.00	15.25	61.00	86.00	244.00	10.00	978.21	441.72	0.062	0.07	0.07	3.924	A
85%	West	610.00	152.50	609.99	220.00	85.00	7.00	1072.94	793.02	0.569	1.31	1.31	7.776	A
85%	South	264.00	66.00	264.00	129.00	565.99	4.00	703.26	378.09	0.375	0.60	0.60	8.195	A
85%	East	217.00	54.25	217.00	716.99	113.00	10.00	1024.54	993.40	0.212	0.27	0.27	4.457	A
90%	North	61.00	15.25	61.00	86.00	244.00	10.00	1044.45	453.68	0.058	0.06	0.06	3.659	A
90%	West	610.00	152.50	609.99	220.00	85.00	7.00	1139.00	843.34	0.536	1.15	1.15	6.804	A
90%	South	264.00	66.00	264.00	129.00	566.00	4.00	762.25	380.48	0.346	0.53	0.53	7.224	A
90%	East	217.00	54.25	217.00	717.00	113.00	10.00	1088.61	1054.69	0.199	0.25	0.25	4.129	A

Queueing Delay Results for each time segment

Queueing Delay results: (08:00-08:15)

Intersection	Leg	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	0.97	0.06	3.919	A	A
85%	West	18.31	1.22	7.606	A	A
85%	South	8.41	0.56	8.035	A	A
85%	East	3.90	0.26	4.443	A	A
90%	North	0.91	0.06	3.656	A	A
90%	West	16.20	1.08	6.689	A	A
90%	South	7.48	0.50	7.113	A	A
90%	East	3.62	0.24	4.119	A	A

Queueing Delay results: (08:15-08:30)

Intersection	Leg	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	0.99	0.07	3.924	A	A
85%	West	19.49	1.30	7.772	A	A
85%	South	8.89	0.59	8.192	A	A
85%	East	4.01	0.27	4.457	A	A
90%	North	0.93	0.06	3.659	A	A
90%	West	17.10	1.14	6.804	A	A
90%	South	7.85	0.52	7.223	A	A
90%	East	3.72	0.25	4.129	A	A

Queueing Delay results: (08:30-08:45)

Intersection	Leg	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	1.00	0.07	3.924	A	A
85%	West	19.60	1.31	7.774	A	A
85%	South	8.95	0.60	8.195	A	A
85%	East	4.02	0.27	4.457	A	A
90%	North	0.93	0.06	3.659	A	A
90%	West	17.18	1.15	6.804	A	A
90%	South	7.90	0.53	7.224	A	A
90%	East	3.73	0.25	4.129	A	A

Queueing Delay results: (08:45-09:00)

Intersection	Leg	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	1.00	0.07	3.924	A	A
85%	West	19.65	1.31	7.776	A	A
85%	South	8.97	0.60	8.195	A	A
85%	East	4.02	0.27	4.457	A	A
90%	North	0.93	0.06	3.659	A	A
90%	West	17.22	1.15	6.804	A	A
90%	South	7.92	0.53	7.224	A	A
90%	East	3.73	0.25	4.129	A	A

Queue Variation Results for each time segment

Queue Variation results: (08:00-08:15)

Intersection	Leg	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.07	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	1.29	0.00	0.00	1.00	2.00			N/A	N/A
85%	South	0.59	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	0.27	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.06	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	1.13	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.52	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.25	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:15-08:30)

Intersection	Leg	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.07	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	1.30	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.60	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	0.27	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.06	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
							Percentiles could not be calculated. This			

90%	West	1.14	?	?	?	?	may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.53	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.25	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:30-08:45)

Intersection	Leg	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.07	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	1.31	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.60	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	0.27	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.06	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	1.15	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.53	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.25	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:45-09:00)

Intersection	Leg	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.07	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	1.31	0.00	0.00	2.00	2.00			N/A	N/A
85%	South	0.60	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	0.27	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.06	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	1.15	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.53	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.25	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]
© Copyright TRL Limited, 2020

For sales and distribution information, program advice and maintenance, contact TRL:
Tel: +44 (0)1344 770758 email: software@trl.co.uk Web: http://www.trlsoftware.co.uk

The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: Laurelwood & Beaver Creek.arc8
Path: C:\Users\AdamMorrison\Paradigm\Projects - 170278 Beaver Creek Area TES\C5 - Analysis and Evaluation\Arcady
Report generation date: 2020-07-21 4:08:48 PM

Summary of intersection performance

	PM					
	Queue (Veh)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS
	All - Existing					
Intersection 85% - Leg North	0.17	6.50	0.15	A	7.99	A
Intersection 85% - Leg West	0.47	5.29	0.32	A		
Intersection 85% - Leg South	0.17	4.49	0.14	A		
Intersection 85% - Leg East	2.04	9.98	0.68	A		
Intersection 90% - Leg North	0.15	5.86	0.13	A	6.91	A
Intersection 90% - Leg West	0.43	4.82	0.30	A		
Intersection 90% - Leg South	0.15	4.15	0.13	A		
Intersection 90% - Leg East	1.73	8.43	0.64	A		

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Intersection LOS and Intersection Delay are demand-weighted averages.

"D1 - Existing, AM" model duration: 8:00 AM - 9:00 AM
"D2 - Existing, PM " model duration: 4:00 PM - 5:00 PM
"D3 - Background 2022, AM" model duration: 8:00 AM - 9:00 AM
"D4 - Background 2022, PM" model duration: 4:00 PM - 5:00 PM
"D5 - Total 2022, AM" model duration: 8:00 AM - 9:00 AM
"D6 - Total 2022, PM" model duration: 4:00 PM - 5:00 PM
"D7 - Background 2025, AM" model duration: 8:00 AM - 9:00 AM
"D8 - Background 2025, PM" model duration: 4:00 PM - 5:00 PM
"D9 - Total 2025, AM" model duration: 8:00 AM - 9:00 AM
"D10 - Total 2025, PM" model duration: 4:00 PM - 5:00 PM
"D11 - Background 2027, AM" model duration: 8:00 AM - 9:00 AM
"D12 - Background 2027, PM" model duration: 4:00 PM - 5:00 PM
"D13 - Total 2027, AM" model duration: 8:00 AM - 9:00 AM
"D14 - Total 2027, PM" model duration: 4:00 PM - 5:00 PM
"D15 - Background 2032, AM" model duration: 8:00 AM - 9:00 AM
"D16 - Background 2032, PM" model duration: 4:00 PM - 5:00 PM
"D17 - Total 2032, AM" model duration: 8:00 AM - 9:00 AM
"D18 - Total 2032, PM" model duration: 4:00 PM - 5:00 PM

Run using Junctions 8.0.6.541 at 2020-07-21 4:08:47 PM

File summary

Title	Laurelwood & Beaver Creek
Location	Waterloo
Site Number	
Date	2017-12-05
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	170278
Analyst	Matt
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)
7.50	✓		N/A	0.90	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	Veh	Veh	perHour	s	-Min	perMin

All - Existing, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
All	ARCADY		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
Existing, PM	Existing	PM		PHF	16:00	17:00	60	15				✓		

Intersection Network

Intersections

Junction	Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Do Geometric Delay	Intersection Delay (s)	Intersection LOS
85%	85%	Existing	Roundabout	North,West,South,East				7.99	A
90%	90%	Future	Roundabout	North,West,South,East				6.91	A

Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

Legs

Legs

Intersection	Leg	Leg	Name	Description
85%	**North**	North	Beaver Creek SB	
85%	**West**	West	Laurelwood EB	
85%	**South**	South	Beaver Creek NB	
85%	**East**	East	Laurelwood WB	
90%	**North**	North	Beaver Creek SB	
90%	**West**	West	Laurelwood EB	
90%	**South**	South	Beaver Creek NB	
90%	**East**	East	Laurelwood WB	

Capacity Options

Intersection	Leg	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)	Assume Flat Start Profile	Initial Queue (PCE)
85%	**North**	0.00	99999.00		0.00
85%	**West**	0.00	99999.00		0.00
85%	**South**	0.00	99999.00		0.00
85%	**East**	0.00	99999.00		0.00
90%	**North**	0.00	99999.00		0.00
90%	**West**	0.00	99999.00		0.00
90%	**South**	0.00	99999.00		0.00
90%	**East**	0.00	99999.00		0.00

Roundabout Geometry

Intersection	Leg	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
85%	**North**	3.50	4.50	30.00	20.00	30.00	25.00	
85%	**West**	3.50	4.50	30.00	20.00	30.00	25.00	
85%	**South**	3.50	4.50	30.00	20.00	30.00	25.00	
85%	**East**	3.50	4.50	30.00	20.00	30.00	25.00	
90%	**North**	3.50	4.50	30.00	20.00	30.00	25.00	
90%	**West**	3.50	4.50	30.00	20.00	30.00	25.00	
90%	**South**	3.50	4.50	30.00	20.00	30.00	25.00	
90%	**East**	3.50	4.50	30.00	20.00	30.00	25.00	

Pedestrian Crossings

Intersection	Leg	Crossing Type
85%	**North**	Unsignalled Pedestrian Crossing
85%	**West**	Unsignalled Pedestrian Crossing
85%	**South**	Unsignalled Pedestrian Crossing
85%	**East**	Unsignalled Pedestrian Crossing
90%	**North**	Unsignalled Pedestrian Crossing
90%	**West**	Unsignalled Pedestrian Crossing
90%	**South**	Unsignalled Pedestrian Crossing
90%	**East**	Unsignalled Pedestrian Crossing

Unsignalled Pedestrian Crossing Crossings

Intersection	Leg	Space between crossing and intersection entry (PCE)	Vehicles queueing on exit (PCE)	Central Refuge	Crossing Data Type	Crossing length (m)	Crossing time (s)	Crossing length (entry side) (m)	Crossing time (entry side) (s)	Crossing length (exit side) (m)	Crossing time (exit side) (s)
85%	**North**	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
85%	**West**	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
85%	**South**	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
85%	**East**	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
90%	**North**	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
90%	**West**	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
90%	**South**	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
90%	**East**	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50

Slope / Intercept / Capacity

Leg Intercept Adjustments

Intersection	Leg	Type	Reason	Direct Intercept Adjustment (PCE/hr)	Percentage Intercept Adjustment (%)
85%	**North**	Percentage	Region of Waterloo - Requirement		85.00
85%	**West**	Percentage	Region of Waterloo - Requirement		85.00
85%	**South**	Percentage	Region of Waterloo - Requirement		85.00
85%	**East**	Percentage	Region of Waterloo - Requirement		85.00
90%	**North**	Percentage	Region of Waterloo - Requirement		90.00
90%	**West**	Percentage	Region of Waterloo - Requirement		90.00
90%	**South**	Percentage	Region of Waterloo - Requirement		90.00
90%	**East**	Percentage	Region of Waterloo - Requirement		90.00

Roundabout Slope and Intercept used in model

Intersection	Leg	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
85%	**North**		(calculated)	(calculated)	0.593	1153.828

85%	West		(calculated)	(calculated)	0.593	1153.828
85%	South		(calculated)	(calculated)	0.593	1153.828
85%	East		(calculated)	(calculated)	0.593	1153.828
90%	North		(calculated)	(calculated)	0.593	1221.701
90%	West		(calculated)	(calculated)	0.593	1221.701
90%	South		(calculated)	(calculated)	0.593	1221.701
90%	East		(calculated)	(calculated)	0.593	1221.701

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCE Factor for a Truck (PCE)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Intersection	Leg	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
85%	North	PHF	✓	87.00	100.000
85%	West	PHF	✓	298.00	100.000
85%	South	PHF	✓	123.00	100.000
85%	East	PHF	✓	690.00	100.000
90%	North	PHF	✓	87.00	100.000
90%	West	PHF	✓	298.00	100.000
90%	South	PHF	✓	123.00	100.000
90%	East	PHF	✓	690.00	100.000

Peak Hour Factor Data

Intersection	Leg	Hourly Volume (Veh/hr)	Peak Hour Factor	Peak Time Segment
85%	North	87.00	0.92	SecondQuarter
85%	West	298.00	0.92	SecondQuarter
85%	South	123.00	0.92	SecondQuarter
85%	East	690.00	0.92	SecondQuarter
90%	North	87.00	0.92	SecondQuarter
90%	West	298.00	0.92	SecondQuarter
90%	South	123.00	0.92	SecondQuarter
90%	East	690.00	0.92	SecondQuarter

Pedestrian Flows

General Flows Data

Intersection	Leg	Profile Type	Average Pedestrian Flow (Ped/hr)
85%	North	PHF	9.00
85%	West	PHF	6.00
85%	South	PHF	4.00
85%	East	PHF	8.00
90%	North	PHF	9.00
90%	West	PHF	6.00
90%	South	PHF	4.00
90%	East	PHF	8.00

Peak Hour Factor Data

Intersection	Leg	Hourly Volume (Ped/hr)	Peak Hour Factor	Peak Time Segment
85%	North	9.00	1.00	SecondQuarter
85%	West	6.00	1.00	SecondQuarter
85%	South	4.00	1.00	SecondQuarter
85%	East	8.00	1.00	SecondQuarter
90%	North	9.00	1.00	SecondQuarter
90%	West	6.00	1.00	SecondQuarter
90%	South	4.00	1.00	SecondQuarter
90%	East	8.00	1.00	SecondQuarter

Turning Proportions

Turning Counts / Proportions (Veh/hr) - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.000	22.000	39.000	26.000
	West	10.000	1.000	30.000	257.000
	South	22.000	28.000	0.000	73.000
	East	39.000	522.000	129.000	0.000

Turning Proportions (Veh) - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.00	0.25	0.45	0.30
	West	0.03	0.00	0.10	0.86
	South	0.18	0.23	0.00	0.59
	East	0.06	0.76	0.19	0.00

Turning Counts / Proportions (Veh/hr) - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.000	22.000	39.000	26.000
	West	10.000	1.000	30.000	257.000
	South	22.000	28.000	0.000	73.000
	East	39.000	522.000	129.000	0.000

Turning Proportions (Veh) - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.00	0.25	0.45	0.30
	West	0.03	0.00	0.10	0.86
	South	0.18	0.23	0.00	0.59
	East	0.06	0.76	0.19	0.00

Vehicle Mix

Average PCE Per Vehicle - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	1.000	1.000	1.030	1.000
	West	1.000	1.000	1.000	1.020
	South	1.000	1.000	1.000	1.000
	East	1.000	1.010	1.000	1.000

Truck Percentages - Intersection 85% (for whole period)

		To

		North	West	South	East
From	North	0.0	0.0	3.0	0.0
	West	0.0	0.0	0.0	2.0
	South	0.0	0.0	0.0	0.0
	East	0.0	1.0	0.0	0.0

Average PCE Per Vehicle - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	1.000	1.000	1.030	1.000
	West	1.000	1.000	1.000	1.020
	South	1.000	1.000	1.000	1.000
	East	1.000	1.010	1.000	1.000

Truck Percentages - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.0	0.0	3.0	0.0
	West	0.0	0.0	0.0	2.0
	South	0.0	0.0	0.0	0.0
	East	0.0	1.0	0.0	0.0

Results

Results Summary for whole modelled period

Intersection	Leg	Max V/C Ratio	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Intersection Arrivals (Veh)	Total Queueing Delay (Veh-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (Veh-min/min)	Inclusive Total Queueing Delay (Veh-min)	Inclusive Average Queueing Delay (s)
85%	North	0.15	6.50	0.17	~1	A	87.00	87.00	8.68	5.99	0.14	8.69	5.99
85%	West	0.32	5.29	0.47	1.00	A	298.00	298.00	24.91	5.01	0.42	24.91	5.02
85%	South	0.14	4.49	0.17	~1	A	123.00	123.00	8.86	4.32	0.15	8.86	4.32
85%	East	0.68	9.98	2.04	4.00	A	690.00	690.00	99.15	8.62	1.65	99.21	8.63
90%	North	0.13	5.86	0.15	~1	A	87.00	87.00	7.87	5.43	0.13	7.87	5.43
90%	West	0.30	4.82	0.43	~1	A	298.00	298.00	22.80	4.59	0.38	22.81	4.59
90%	South	0.13	4.15	0.15	~1	A	123.00	123.00	8.21	4.00	0.14	8.21	4.00
90%	East	0.64	8.43	1.73	2.00	A	690.00	690.00	85.35	7.42	1.42	85.39	7.43

Main Results for each time segment

Main results: (16:00-16:15)

Intersection	Leg	Total Demand (Veh/hr)	Intersection Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	V/C Ratio	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
85%	North	81.96	20.49	81.45	66.42	635.23	9.00	720.10	397.34	0.114	0.00	0.13	5.631	A
85%	West	280.72	70.18	279.22	535.34	181.34	6.00	1022.43	814.63	0.275	0.00	0.38	4.834	A
85%	South	115.87	28.97	115.33	185.11	275.45	4.00	967.93	452.62	0.120	0.00	0.14	4.219	A
85%	East	650.00	162.50	644.47	333.59	57.19	8.00	1110.78	1014.86	0.585	0.00	1.38	7.633	A
90%	North	81.96	20.49	81.49	66.47	635.89	9.00	782.76	405.49	0.105	0.00	0.12	5.130	A
90%	West	280.72	70.18	279.34	535.88	181.50	6.00	1088.69	864.85	0.258	0.00	0.35	4.441	A
90%	South	115.87	28.97	115.37	185.27	275.58	4.00	1034.36	458.75	0.112	0.00	0.13	3.916	A
90%	East	650.00	162.50	645.15	333.73	57.21	8.00	1178.08	1078.99	0.552	0.00	1.21	6.696	A

Main results: (16:15-16:30)

Intersection	Leg	Total Demand (Veh/hr)	Intersection Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	V/C Ratio	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS

85%	North	94.57	23.64	94.40	76.99	736.60	9.00	647.66	397.34	0.146	0.13	0.17	6.505	A
85%	West	323.91	80.98	323.52	620.75	210.25	6.00	1003.50	814.63	0.323	0.38	0.47	5.292	A
85%	South	133.70	33.42	133.57	214.61	319.17	4.00	934.56	452.62	0.143	0.14	0.17	4.494	A
85%	East	750.00	187.50	747.35	386.50	66.24	8.00	1105.22	1014.86	0.679	1.38	2.04	9.981	A
90%	North	94.57	23.64	94.42	77.02	737.13	9.00	708.88	405.49	0.133	0.12	0.15	5.857	A
90%	West	323.91	80.98	323.57	621.18	210.37	6.00	1069.64	864.85	0.303	0.35	0.43	4.823	A
90%	South	133.70	33.42	133.58	214.73	319.21	4.00	1000.52	458.76	0.134	0.13	0.15	4.152	A
90%	East	750.00	187.50	747.91	386.55	66.25	8.00	1172.51	1078.99	0.640	1.21	1.73	8.435	A

Main results: (16:30-16:45)

Intersection	Leg	Total Demand (Veh/hr)	Intersection Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	V/C Ratio	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
85%	North	89.52	22.38	89.58	73.12	700.53	9.00	673.50	397.34	0.133	0.17	0.15	6.167	A
85%	West	306.64	76.66	306.77	590.29	199.83	6.00	1010.36	814.63	0.303	0.47	0.44	5.119	A
85%	South	126.57	31.64	126.61	203.94	302.66	4.00	947.29	452.62	0.134	0.17	0.16	4.386	A
85%	East	710.00	177.50	710.86	366.48	62.79	8.00	1107.34	1014.86	0.641	2.04	1.83	9.106	A
90%	North	89.52	22.38	89.58	73.11	700.38	9.00	735.79	405.49	0.122	0.15	0.14	5.570	A
90%	West	306.64	76.66	306.76	590.16	199.79	6.00	1076.66	864.85	0.285	0.43	0.40	4.678	A
90%	South	126.57	31.64	126.61	203.91	302.65	4.00	1013.50	458.75	0.125	0.15	0.14	4.060	A
90%	East	710.00	177.50	710.70	366.46	62.79	8.00	1174.64	1078.99	0.604	1.73	1.56	7.773	A

Main results: (16:45-17:00)

Intersection	Leg	Total Demand (Veh/hr)	Intersection Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	V/C Ratio	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
85%	North	81.96	20.49	82.05	66.99	642.07	9.00	715.26	397.34	0.115	0.15	0.13	5.685	A
85%	West	280.72	70.18	280.95	541.01	183.12	6.00	1021.28	814.63	0.275	0.44	0.38	4.865	A
85%	South	115.87	28.97	115.94	186.88	277.19	4.00	966.63	452.62	0.120	0.16	0.14	4.233	A
85%	East	650.00	162.50	651.56	335.63	57.50	8.00	1110.59	1014.86	0.585	1.83	1.44	7.870	A
90%	North	81.96	20.49	82.04	66.97	641.75	9.00	778.52	405.49	0.105	0.14	0.12	5.170	A
90%	West	280.72	70.18	280.93	540.75	183.04	6.00	1087.68	864.85	0.258	0.40	0.35	4.463	A
90%	South	115.87	28.97	115.94	186.81	277.17	4.00	1033.16	458.75	0.112	0.14	0.13	3.924	A
90%	East	650.00	162.50	651.22	335.60	57.50	8.00	1177.90	1078.99	0.552	1.56	1.25	6.851	A

Queueing Delay Results for each time segment

Queueing Delay results: (16:00-16:15)

Intersection	Leg	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	1.86	0.12	5.631	A	A
85%	West	5.48	0.37	4.834	A	A
85%	South	1.98	0.13	4.219	A	A
85%	East	19.56	1.30	7.633	A	A
90%	North	1.70	0.11	5.130	A	A
90%	West	5.04	0.34	4.441	A	A
90%	South	1.84	0.12	3.916	A	A
90%	East	17.27	1.15	6.696	A	A

Queueing Delay results: (16:15-16:30)

Intersection	Leg	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	2.49	0.17	6.505	A	A
85%	West	6.95	0.46	5.292	A	A
85%	South	2.45	0.16	4.494	A	A
85%	East	29.06	1.94	9.981	A	A
90%	North	2.25	0.15	5.857	A	A
90%	West	6.35	0.42	4.823	A	A
90%	South	2.27	0.15	4.152	A	A
90%	East	24.85	1.66	8.435	A	A

Queueing Delay results: (16:30-16:45)

Intersection	Leg	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service

85%	North	2.35	0.16	6.167	A	A
85%	West	6.67	0.44	5.119	A	A
85%	South	2.35	0.16	4.386	A	A
85%	East	28.16	1.88	9.106	A	A
90%	North	2.12	0.14	5.570	A	A
90%	West	6.08	0.41	4.678	A	A
90%	South	2.17	0.14	4.060	A	A
90%	East	23.90	1.59	7.773	A	A

Queueing Delay results: (16:45-17:00)

Intersection	Leg	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	1.99	0.13	5.685	A	A
85%	West	5.82	0.39	4.865	A	A
85%	South	2.08	0.14	4.233	A	A
85%	East	22.36	1.49	7.870	A	A
90%	North	1.80	0.12	5.170	A	A
90%	West	5.33	0.36	4.463	A	A
90%	South	1.93	0.13	3.924	A	A
90%	East	19.34	1.29	6.851	A	A

Queue Variation Results for each time segment

Queue Variation results: (16:00-16:15)

Intersection	Leg	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.13	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	0.38	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.14	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	1.38	0.00	0.00	2.00	3.00			N/A	N/A
90%	North	0.12	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	0.35	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.13	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	1.21	0.00	0.00	2.00	2.00			N/A	N/A

Queue Variation results: (16:15-16:30)

Intersection	Leg	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.17	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	0.47	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.17	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	2.04	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.15	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	0.43	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.15	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

90%	East	1.73	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (16:30-16:45)

Intersection	Leg	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.15	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	0.44	0.00	0.00	0.00	1.00			N/A	N/A
85%	South	0.16	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	1.83	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.14	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	0.40	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.14	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	1.56	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (16:45-17:00)

Intersection	Leg	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.13	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	0.38	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.14	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	1.44	0.00	0.00	2.00	4.00			N/A	N/A
90%	North	0.12	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	0.35	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.13	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	1.25	0.00	0.00	2.00	2.00			N/A	N/A

Appendix C

2022 Background Traffic Operations Reports

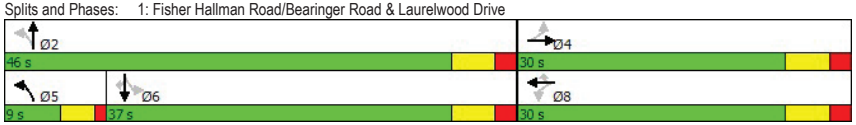


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	331	243	215	40	37	14	73	612	93	45	244	82
Future Volume (vph)	331	243	215	40	37	14	73	612	93	45	244	82
Ideal Flow (vphpl)	1775	1650	1650	1775	1900	1750	1775	1650	1650	1775	1900	1750
Storage Length (m)	85.0		0.0	90.0		90.0	90.0		0.0	60.0		60.0
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (m)	35.0			7.5			45.0			70.0		
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	0.99		1.00		0.98	1.00	1.00		1.00		0.98
Frt		0.930				0.850		0.980				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1653	1476	0	1188	1845	1488	1506	1565	0	1686	1881	1430
Flt Permitted	0.733			0.237			0.530			0.294		
Satd. Flow (perm)	1271	1476	0	295	1845	1453	839	1565	0	521	1881	1398
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		61				100		15				100
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		133.2			228.2			160.2			234.1	
Travel Time (s)		9.6			16.4			11.5			16.9	
Confl. Peds. (#/hr)	2		7	7		2	2		3	3		2
Peak Hour 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
Heavy Vehicles (%)	2%	1%	4%	42%	3%	0%	12%	1%	16%	0%	1%	4%
Adj. Flow (vph)	331	243	215	40	37	14	73	612	93	45	244	82
Shared Lane Traffic (%)												
Lane Group Flow (vph)	331	458	0	40	37	14	73	705	0	45	244	82
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA		Perm	NA	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8		8	2			6		6
Detector Phase	4	4		8	8	8	5	2		6	6	6
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0	8.0	5.0	30.0		30.0	30.0	30.0
Minimum Split (s)	14.0	14.0		14.0	14.0	14.0	9.0	36.0		36.0	36.0	36.0
Total Split (s)	30.0	30.0		30.0	30.0	30.0	9.0	46.0		37.0	37.0	37.0
Total Split (%)	39.5%	39.5%		39.5%	39.5%	39.5%	11.8%	60.5%		48.7%	48.7%	48.7%
Maximum Green (s)	24.0	24.0		24.0	24.0	24.0	5.0	40.0		31.0	31.0	31.0
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	3.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	1.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0	4.0	6.0		6.0	6.0	6.0
Lead/Lag							Lead			Lag	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None	None	None	Max		Max	Max	Max
Walk Time (s)	12.0	12.0		12.0	12.0	12.0		9.0		9.0	9.0	9.0
Flash Dont Walk (s)	10.0	10.0		10.0	10.0	10.0		21.0		21.0	21.0	21.0
Pedestrian Calls (#/hr)	0	0		0	0	0		0		0	0	0
Act Effct Green (s)	22.9	22.9		22.9	22.9	22.9	42.0	40.0		32.9	32.9	32.9
Actuated g/C Ratio	0.31	0.31		0.31	0.31	0.31	0.56	0.53		0.44	0.44	0.44
v/c Ratio	0.85	0.93		0.44	0.07	0.03	0.14	0.84		0.20	0.30	0.12

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	47.1	50.5		39.1	18.6	0.1	8.8	26.1		17.5	16.0	3.0
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	47.1	50.5		39.1	18.6	0.1	8.8	26.1		17.5	16.0	3.0
LOS	D	D		D	B	A	A	C		B	B	A
Approach Delay		49.1			24.8			24.5			13.3	
Approach LOS		D			C			C			B	
Queue Length 50th (m)	45.8	57.6		4.7	3.9	0.0	4.8	83.5		4.3	24.3	0.0
Queue Length 95th (m)	#90.4	#114.5		#17.4	10.3	0.0	10.6	#156.2		12.0	41.1	6.1
Internal Link Dist (m)		109.2			204.2			136.2			210.1	
Turn Bay Length (m)	85.0			90.0		90.0	90.0			60.0		60.0
Base Capacity (vph)	407	514		94	591	533	515	843		229	827	670
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.81	0.89		0.43	0.06	0.03	0.14	0.84		0.20	0.30	0.12

Intersection Summary			
Area Type:	Other		
Cycle Length: 76			
Actuated Cycle Length: 74.9			
Natural Cycle: 75			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.93			
Intersection Signal Delay: 32.0		Intersection LOS: C	
Intersection Capacity Utilization 110.5%		ICU Level of Service H	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 1: Fisher Hallman Road/Bearinger Road & Laurelwood Drive



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	331	243	215	40	37	14	73	612	93	45	244	82
Future Volume (vph)	331	243	215	40	37	14	73	612	93	45	244	82
Ideal Flow (vphpl)	1775	1650	1650	1775	1900	1750	1775	1650	1650	1775	1900	1750
Total Lost time (s)	6.0	6.0		6.0	6.0	6.0	4.0	6.0		6.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.98	1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.93		1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1648	1475		1182	1845	1453	1504	1566		1684	1881	1398
Flt Permitted	0.73	1.00		0.24	1.00	1.00	0.53	1.00		0.29	1.00	1.00
Satd. Flow (perm)	1271	1475		295	1845	1453	839	1566		521	1881	1398
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	331	243	215	40	37	14	73	612	93	45	244	82
RTOR Reduction (vph)	0	43	0	0	0	10	0	7	0	0	0	46
Lane Group Flow (vph)	331	415	0	40	37	4	73	698	0	45	244	36
Confl. Peds. (#/hr)	2		7	7		2	2		3	3		2
Heavy Vehicles (%)	2%	1%	4%	42%	3%	0%	12%	1%	16%	0%	1%	4%
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA		Perm	NA	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8		8	2			6		6
Actuated Green, G (s)	22.9	22.9		22.9	22.9	22.9	40.8	40.8		32.9	32.9	32.9
Effective Green, g (s)	22.9	22.9		22.9	22.9	22.9	40.8	40.8		32.9	32.9	32.9
Actuated g/C Ratio	0.30	0.30		0.30	0.30	0.30	0.54	0.54		0.43	0.43	0.43
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0	4.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	384	446		89	558	439	486	844		226	817	607
v/s Ratio Prot		c0.28			0.02		0.01	c0.45			0.13	
v/s Ratio Perm	0.26			0.14		0.00	0.07			0.09		0.03
v/c Ratio	0.86	0.93		0.45	0.07	0.01	0.15	0.83		0.20	0.30	0.06
Uniform Delay, d1	24.9	25.6		21.3	18.8	18.5	8.6	14.5		13.2	13.9	12.4
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	17.7	26.3		3.6	0.1	0.0	0.1	9.1		2.0	0.9	0.2
Delay (s)	42.6	51.9		24.9	18.8	18.5	8.8	23.6		15.2	14.8	12.6
Level of Service	D	D		C	B	B	A	C		B	B	B
Approach Delay (s)		48.0			21.4			22.3			14.4	
Approach LOS		D			C			C			B	

Intersection Summary			
HCM 2000 Control Delay	30.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	75.7	Sum of lost time (s)	16.0
Intersection Capacity Utilization	110.5%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	124	36	347	46	30	12	71	162	22	11	279	19
Future Volume (vph)	124	36	347	46	30	12	71	162	22	11	279	19
Ideal Flow (vphpl)	1650	1650	1750	1550	1550	1550	1775	1650	1650	1550	1550	1550
Storage Length (m)	0.0		25.0	0.0		0.0	25.0		0.0	0.0		0.0
Storage Lanes	0		1	0		0	1		0	0		0
Taper Length (m)	0.0			0.0			35.0			0.0		
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			0.850		0.982			0.982			0.992	
Flt Protected		0.963			0.975		0.950				0.998	
Satd. Flow (prot)	0	1531	1473	0	1449	0	1606	1556	0	0	1491	0
Flt Permitted		0.963			0.975		0.950				0.998	
Satd. Flow (perm)	0	1531	1473	0	1449	0	1606	1556	0	0	1491	0
Link Speed (k/h)		60			50			50			50	
Link Distance (m)		1012.1			151.5			558.2			326.3	
Travel Time (s)		60.7			10.9			40.2			23.5	
Confl. Peds. (#/hr)	3		1	1		3	3		1	1		3
Peak Hour 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
Heavy Vehicles (%)	4%	3%	1%	0%	7%	0%	5%	4%	5%	20%	2%	6%
Adj. Flow (vph)	124	36	347	46	30	12	71	162	22	11	279	19
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	160	347	0	88	0	71	184	0	0	309	0
Sign Control		Stop			Stop			Stop			Stop	

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	124	36	347	46	30	12	71	162	22	11	279	19
Future Volume (vph)	124	36	347	46	30	12	71	162	22	11	279	19
Peak Hour 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
Hourly flow rate (vph)	124	36	347	46	30	12	71	162	22	11	279	19

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1
Volume Total (vph)	160	347	88	71	184	309
Volume Left (vph)	124	0	46	71	0	11
Volume Right (vph)	0	347	12	0	22	19
Hadj (s)	0.45	-0.68	0.06	0.58	-0.01	0.02
Departure Headway (s)	7.0	5.8	7.4	7.4	6.8	6.7
Degree Utilization, x	0.31	0.56	0.18	0.15	0.35	0.57
Capacity (veh/h)	494	584	425	454	494	517
Control Delay (s)	11.9	14.9	12.0	10.5	12.3	18.3
Approach Delay (s)	13.9		12.0	11.8		18.3
Approach LOS	B		B	B		C

Intersection Summary				
Delay	14.5			
Level of Service	B			
Intersection Capacity Utilization	60.3%	ICU Level of Service		B
Analysis Period (min)	15			

Intersection	
Intersection Delay, s/veh	15.8
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	124	36	347	46	30	12	71	162	22	11	279	19
Future Vol, veh/h	124	36	347	46	30	12	71	162	22	11	279	19
Peak Hour 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
Heavy Vehicles, %	4	3	1	0	7	0	5	4	5	20	2	6
Mvmt Flow	124	36	347	46	30	12	71	162	22	11	279	19
Number of Lanes	0	1	1	0	1	0	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	2
HCM Control Delay	15.2	12.2	12.8	20.1
HCM LOS	C	B	B	C

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	100%	0%	78%	0%	52%	4%
Vol Thru, %	0%	88%	22%	0%	34%	90%
Vol Right, %	0%	12%	0%	100%	14%	6%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	71	184	160	347	88	309
LT Vol	71	0	124	0	46	11
Through Vol	0	162	36	0	30	279
RT Vol	0	22	0	347	12	19
Lane Flow Rate	71	184	160	347	88	309
Geometry Grp	7	7	7	7	6	6
Degree of Util (X)	0.149	0.349	0.311	0.566	0.183	0.599
Departure Headway (Hd)	7.536	6.822	7.001	5.877	7.489	6.978
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	479	523	510	607	482	513
Service Time	5.236	4.621	4.793	3.668	5.492	5.07
HCM Lane V/C Ratio	0.148	0.352	0.314	0.572	0.183	0.602
HCM Control Delay	11.6	13.3	13	16.2	12.2	20.1
HCM Lane LOS	B	B	B	C	B	C
HCM 95th-tile Q	0.5	1.6	1.3	3.5	0.7	3.9

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	168	88	123	60	30	304
Future Volume (vph)	168	88	123	60	30	304
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.954				0.877	
Flt Protected				0.967	0.996	
Satd. Flow (prot)	1513	0	0	1549	1496	0
Flt Permitted				0.967	0.996	
Satd. Flow (perm)	1513	0	0	1549	1496	0
Link Speed (k/h)	80			80	50	
Link Distance (m)	1516.2			424.2	223.3	
Travel Time (s)	68.2			19.1	16.1	
Confl. Peds. (#/hr)		1	1			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	6%	2%	5%	14%	2%
Adj. Flow (vph)	168	88	123	60	30	304
Shared Lane Traffic (%)						
Lane Group Flow (vph)	256	0	0	183	334	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	59.9%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	168	88	123	60	30	304
Future Volume (Veh/h)	168	88	123	60	30	304
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	168	88	123	60	30	304
Pedestrians					1	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			257		519	213
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			257		519	213
tC, single (s)			4.1		6.5	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			91		93	63
cM capacity (veh/h)			1307		449	826

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	256	183	334
Volume Left	0	123	30
Volume Right	88	0	304
cSH	1700	1307	768
Volume to Capacity	0.15	0.09	0.43
Queue Length 95th (m)	0.0	2.5	17.7
Control Delay (s)	0.0	5.7	13.2
Lane LOS		A	B
Approach Delay (s)	0.0	5.7	13.2
Approach LOS			B

Intersection Summary			
Average Delay	7.1		
Intersection Capacity Utilization	59.9%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	14	73	101	44	174	66
Future Volume (vph)	14	73	101	44	174	66
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.887		0.959			
Flt Protected	0.992					0.965
Satd. Flow (prot)	1395	0	1470	0	0	1526
Flt Permitted	0.992					0.965
Satd. Flow (perm)	1395	0	1470	0	0	1526
Link Speed (k/h)	80		80			80
Link Distance (m)	1200.3		1761.7			383.9
Travel Time (s)	54.0		79.3			17.3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	8%	12%	11%	0%	3%	8%
Adj. Flow (vph)	14	73	101	44	174	66
Shared Lane Traffic (%)						
Lane Group Flow (vph)	87	0	145	0	0	240
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 40.0%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	14	73	101	44	174	66
Future Volume (Veh/h)	14	73	101	44	174	66
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	14	73	101	44	174	66
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	537	123			145	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	537	123			145	
tC, single (s)	6.5	6.3			4.1	
tC, 2 stage (s)						
tF (s)	3.6	3.4			2.2	
p0 queue free %	97	92			88	
cM capacity (veh/h)	434	902			1431	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	87	145	240
Volume Left	14	0	174
Volume Right	73	44	0
cSH	769	1700	1431
Volume to Capacity	0.11	0.09	0.12
Queue Length 95th (m)	3.0	0.0	3.3
Control Delay (s)	10.3	0.0	6.0
Lane LOS	B		A
Approach Delay (s)	10.3	0.0	6.0
Approach LOS	B		

Intersection Summary			
Average Delay	4.9		
Intersection Capacity Utilization	40.0%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	23	74	73	72	53	30
Future Volume (vph)	23	74	73	72	53	30
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.897		0.933			
Flt Protected	0.988					0.969
Satd. Flow (prot)	1437	0	1495	0	0	1501
Flt Permitted	0.988					0.969
Satd. Flow (perm)	1437	0	1495	0	0	1501
Link Speed (k/h)	80		80			80
Link Distance (m)	605.5		233.8			1761.7
Travel Time (s)	27.2		10.5			79.3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	5%	10%	3%	3%	8%	4%
Adj. Flow (vph)	23	74	73	72	53	30
Shared Lane Traffic (%)						
Lane Group Flow (vph)	97	0	145	0	0	83
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 31.0%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	23	74	73	72	53	30
Future Volume (Veh/h)	23	74	73	72	53	30
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	23	74	73	72	53	30
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	245	109			145	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	245	109			145	
tC, single (s)	6.4	6.3			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.4			2.3	
p0 queue free %	97	92			96	
cM capacity (veh/h)	709	923			1401	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	97	145	83
Volume Left	23	0	53
Volume Right	74	72	0
cSH	862	1700	1401
Volume to Capacity	0.11	0.09	0.04
Queue Length 95th (m)	3.0	0.0	0.9
Control Delay (s)	9.7	0.0	5.0
Lane LOS	A		A
Approach Delay (s)	9.7	0.0	5.0
Approach LOS	A		

Intersection Summary			
Average Delay	4.2		
Intersection Capacity Utilization	31.0%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	44	4	72	27	24	0	150	128	58	113	0
Future Volume (vph)	6	44	4	72	27	24	0	150	128	58	113	0
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.990			0.974			0.938				
Flt Protected		0.994			0.972						0.983	
Satd. Flow (prot)	0	1501	0	0	1407	0	0	1383	0	0	1429	0
Flt Permitted		0.994			0.972						0.983	
Satd. Flow (perm)	0	1501	0	0	1407	0	0	1383	0	0	1429	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		187.7			400.3			618.6			394.6	
Travel Time (s)		13.5			28.8			44.5			28.4	
Peak Hour 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
Heavy Vehicles (%)	0%	2%	0%	6%	0%	4%	0%	7%	3%	4%	8%	0%
Adj. Flow (vph)	6	44	4	72	27	24	0	150	128	58	113	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	54	0	0	123	0	0	278	0	0	171	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 55.6%		ICU Level of Service B	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	44	4	72	27	24	0	150	128	58	113	0
Future Volume (Veh/h)	6	44	4	72	27	24	0	150	128	58	113	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	6	44	4	72	27	24	0	150	128	58	113	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	480	507	113	469	443	214	113			278		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	480	507	113	469	443	214	113			278		
tC, single (s)	7.1	6.5	6.2	7.2	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.0	3.3	2.2			2.2		
p0 queue free %	99	90	100	84	94	97	100			95		
cM capacity (veh/h)	448	447	945	443	489	821	1489			1273		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	54	123	278	171
Volume Left	6	72	0	58
Volume Right	4	24	128	0
cSH	465	498	1489	1273
Volume to Capacity	0.12	0.25	0.00	0.05
Queue Length 95th (m)	3.1	7.7	0.0	1.1
Control Delay (s)	13.7	14.6	0.0	3.0
Lane LOS	B	B		A
Approach Delay (s)	13.7	14.6	0.0	3.0
Approach LOS	B	B		

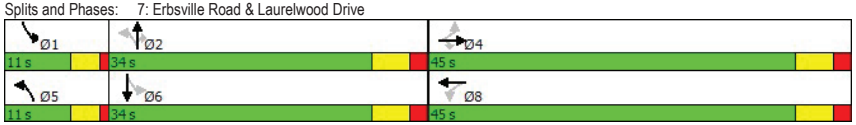
Intersection Summary				
Average Delay		4.9		
Intersection Capacity Utilization		55.6%	ICU Level of Service	B
Analysis Period (min)		15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	221	189	55	102	45	166	242	111	123	223	19
Future Volume (vph)	18	221	189	55	102	45	166	242	111	123	223	19
Ideal Flow (vphpl)	1775	1900	1750	1775	1650	1650	1775	1900	1750	1775	1650	1650
Storage Length (m)	20.0		20.0	25.0		0.0	65.0		30.0	25.0		0.0
Storage Lanes	1		1	1		0	1		1	1		0
Taper Length (m)	35.0			10.0			80.0			35.0		
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	0.84		0.92	0.96	0.93		0.99		0.91	0.96	1.00	
Frt			0.850		0.954				0.850		0.988	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1591	1810	1403	1561	1357	0	1606	1776	1430	1653	1520	0
Flt Permitted	0.663			0.560			0.579			0.608		
Satd. Flow (perm)	931	1810	1296	883	1357	0	965	1776	1307	1012	1520	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			189		31				111		5	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		123.5			178.3			236.9			930.8	
Travel Time (s)		8.9			12.8			17.1			67.0	
Confl. Peds. (#/hr)	79		23	23		79	9		27	27		9
Peak Hour 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
Heavy Vehicles (%)	6%	5%	6%	8%	9%	7%	5%	7%	4%	2%	6%	17%
Adj. Flow (vph)	18	221	189	55	102	45	166	242	111	123	223	19
Shared Lane Traffic (%)												
Lane Group Flow (vph)	18	221	189	55	147	0	166	242	111	123	242	0
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2		2	6		
Detector Phase	4	4	4	8	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0		5.0	28.0	28.0	5.0	28.0	
Minimum Split (s)	14.0	14.0	14.0	14.0	14.0		9.0	34.0	34.0	9.0	34.0	
Total Split (s)	45.0	45.0	45.0	45.0	45.0		11.0	34.0	34.0	11.0	34.0	
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%		12.2%	37.8%	37.8%	12.2%	37.8%	
Maximum Green (s)	39.0	39.0	39.0	39.0	39.0		7.0	28.0	28.0	7.0	28.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		1.0	2.0	2.0	1.0	2.0	
Lost Time Adjust (s)	0.0	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	6.0		4.0	6.0	6.0	4.0	6.0	
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	None	None		None	Max	Max	None	Max	
Walk Time (s)	7.0	7.0	7.0	7.0	7.0			7.0	7.0		7.0	
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0			11.0	11.0		11.0	
Pedestrian Calls (#/hr)	0	0	0	0	0			0	0		0	
Act Effct Green (s)	13.1	13.1	13.1	13.1	13.1		38.0	30.5	30.5	36.8	28.1	
Actuated g/C Ratio	0.20	0.20	0.20	0.20	0.20		0.59	0.48	0.48	0.57	0.44	
v/c Ratio	0.09	0.60	0.46	0.31	0.49		0.26	0.29	0.16	0.19	0.36	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	21.2	30.1	7.6	26.0	23.3		6.7	13.5	3.8	6.2	14.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	21.2	30.1	7.6	26.0	23.3		6.7	13.5	3.8	6.2	14.7	
LOS	C	C	A	C	C		A	B	A	A	B	
Approach Delay		19.8			24.0			9.2			11.9	
Approach LOS		B			C			A			B	
Queue Length 50th (m)	1.9	25.2	0.0	5.9	12.7		7.0	18.6	0.0	5.0	18.7	
Queue Length 95th (m)	6.5	44.3	14.1	15.1	28.0		17.7	39.0	8.7	13.6	40.3	
Internal Link Dist (m)		99.5			154.3			212.9			906.8	
Turn Bay Length (m)	20.0		20.0	25.0			65.0		30.0	25.0		
Base Capacity (vph)	567	1103	863	538	839		640	843	678	655	667	
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Reduced v/c Ratio	0.03	0.20	0.22	0.10	0.18		0.26	0.29	0.16	0.19	0.36	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 64.2			
Natural Cycle: 60			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.60			
Intersection Signal Delay: 14.8		Intersection LOS: B	
Intersection Capacity Utilization 72.9%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 7: Erbsville Road & Laurelwood Drive



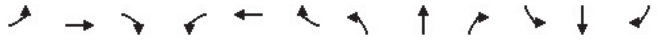
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	221	189	55	102	45	166	242	111	123	223	19
Future Volume (vph)	18	221	189	55	102	45	166	242	111	123	223	19
Ideal Flow (vphpl)	1775	1900	1750	1775	1650	1650	1775	1900	1750	1775	1650	1650
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0		4.0	6.0	6.0	4.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.94	1.00	0.95		1.00	1.00	0.93	1.00	1.00	
Flpb, ped/bikes	0.88	1.00	1.00	0.97	1.00		0.99	1.00	1.00	0.98	1.00	
Frt	1.00	1.00	0.85	1.00	0.95		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1406	1810	1318	1515	1381		1596	1776	1333	1619	1522	
Flt Permitted	0.66	1.00	1.00	0.56	1.00		0.58	1.00	1.00	0.61	1.00	
Satd. Flow (perm)	982	1810	1318	894	1381		972	1776	1333	1037	1522	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	18	221	189	55	102	45	166	242	111	123	223	19
RTOR Reduction (vph)	0	0	151	0	25	0	0	0	59	0	3	0
Lane Group Flow (vph)	18	221	38	55	122	0	166	242	52	123	239	0
Confl. Peds. (#/hr)	79		23	23		79	9		27	27		9
Heavy Vehicles (%)	6%	5%	6%	8%	9%	7%	5%	7%	4%	2%	6%	17%
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2		2	6		
Actuated Green, G (s)	13.1	13.1	13.1	13.1	13.1		37.4	30.5	30.5	34.4	29.0	
Effective Green, g (s)	13.1	13.1	13.1	13.1	13.1		37.4	30.5	30.5	34.4	29.0	
Actuated g/C Ratio	0.20	0.20	0.20	0.20	0.20		0.58	0.47	0.47	0.53	0.45	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		4.0	6.0	6.0	4.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	197	364	265	180	278		625	833	625	597	679	
v/s Ratio Prot		c0.12			0.09		c0.03	0.14		0.02	c0.16	
v/s Ratio Perm	0.02		0.03	0.06			0.12		0.04	0.09		
v/c Ratio	0.09	0.61	0.14	0.31	0.44		0.27	0.29	0.08	0.21	0.35	
Uniform Delay, d1	21.1	23.6	21.3	22.1	22.7		6.6	10.6	9.5	7.8	11.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.2	2.9	0.3	1.0	1.1		0.2	0.9	0.3	0.2	1.4	
Delay (s)	21.3	26.5	21.6	23.0	23.8		6.8	11.5	9.8	8.0	13.3	
Level of Service	C	C	C	C	C		A	B	A	A	B	
Approach Delay (s)		24.1			23.6			9.6			11.5	
Approach LOS		C			C			A			B	

Intersection Summary				
HCM 2000 Control Delay	16.0	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.41			
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	72.9%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	535	83	35	170	25	54	36	190	36	19	10
Future Volume (vph)	30	535	83	35	170	25	54	36	190	36	19	10
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
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		0.983			0.985			0.908			0.979	
Flt Protected		0.998			0.992			0.990			0.973	
Satd. Flow (prot)	0	1484	0	0	1432	0	0	1368	0	0	1452	0
Flt Permitted		0.998			0.992			0.990			0.973	
Satd. Flow (perm)	0	1484	0	0	1432	0	0	1368	0	0	1452	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		213.7			555.1			104.8			136.8	
Travel Time (s)		15.4			40.0			7.5			9.8	
Confl. Peds. (#/hr)	10		4	4		10	7		10	10		7
Peak Hour 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
Heavy Vehicles (%)	0%	3%	0%	6%	6%	4%	0%	9%	1%	0%	0%	11%
Adj. Flow (vph)	30	535	83	35	170	25	54	36	190	36	19	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	648	0	0	230	0	0	280	0	0	65	0
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Roundabout			
Intersection Capacity Utilization	74.5%	ICU Level of Service	D
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Traffic Volume (veh/h)	30	535	83	35	170	25	54	36	190	36	19	10
Future Volume (veh/h)	30	535	83	35	170	25	54	36	190	36	19	10
Peak Hour 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
Hourly flow rate (vph)	30	535	83	35	170	25	54	36	190	36	19	10
Approach Volume (veh/h)		648			230			280			65	
Crossing Volume (veh/h)		90			120			601			259	
High Capacity (veh/h)		1291			1261			861			1130	
High v/c (veh/h)		0.50			0.18			0.33			0.06	
Low Capacity (veh/h)		1076			1049			690			931	
Low v/c (veh/h)		0.60			0.22			0.41			0.07	

Intersection Summary				
Maximum v/c High		0.50		
Maximum v/c Low		0.60		
Intersection Capacity Utilization		74.5%	ICU Level of Service	D



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	194	20	20	70	17	74
Future Volume (vph)	194	20	20	70	17	74
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.987				0.890	
Flt Protected				0.989	0.991	
Satd. Flow (prot)	1585	0	0	1478	1503	0
Flt Permitted				0.989	0.991	
Satd. Flow (perm)	1585	0	0	1478	1503	0
Link Speed (k/h)	80			80	50	
Link Distance (m)	1200.3			667.7	811.2	
Travel Time (s)	54.0			30.0	58.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	0%	5%	12%	6%	3%
Adj. Flow (vph)	194	20	20	70	17	74
Shared Lane Traffic (%)						
Lane Group Flow (vph)	214	0	0	90	91	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	34.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	194	20	20	70	17	74
Future Volume (Veh/h)	194	20	20	70	17	74
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	194	20	20	70	17	74
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			214		314	204
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			214		314	204
tC, single (s)			4.1		6.5	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			99		97	91
cM capacity (veh/h)			1338		661	834

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	214	90	91
Volume Left	0	20	17
Volume Right	20	0	74
cSH	1700	1338	795
Volume to Capacity	0.13	0.01	0.11
Queue Length 95th (m)	0.0	0.4	3.1
Control Delay (s)	0.0	1.8	10.1
Lane LOS		A	B
Approach Delay (s)	0.0	1.8	10.1
Approach LOS			B

Intersection Summary			
Average Delay		2.7	
Intersection Capacity Utilization		34.6%	ICU Level of Service A
Analysis Period (min)		15	

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	24	0	93	57	5	120
Future Volume (vph)	24	0	93	57	5	120
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.949			
Flt Protected	0.950					0.998
Satd. Flow (prot)	1612	0	1537	0	0	1562
Flt Permitted	0.950					0.998
Satd. Flow (perm)	1612	0	1537	0	0	1562
Link Speed (k/h)	70		50			50
Link Distance (m)	143.4		394.6			123.0
Travel Time (s)	7.4		28.4			8.9
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	4%	0%	3%	0%	40%	4%
Adj. Flow (vph)	24	0	93	57	5	120
Shared Lane Traffic (%)						
Lane Group Flow (vph)	24	0	150	0	0	125
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 21.9%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	24	0	93	57	5	120
Future Volume (Veh/h)	24	0	93	57	5	120
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	24	0	93	57	5	120
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	252	122			150	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	252	122			150	
tC, single (s)	6.4	6.2			4.5	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.6	
p0 queue free %	97	100			100	
cM capacity (veh/h)	730	935			1229	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	24	150	125
Volume Left	24	0	5
Volume Right	0	57	0
cSH	730	1700	1229
Volume to Capacity	0.03	0.09	0.00
Queue Length 95th (m)	0.8	0.0	0.1
Control Delay (s)	10.1	0.0	0.4
Lane LOS	B		A
Approach Delay (s)	10.1	0.0	0.4
Approach LOS	B		

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	21.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	222	17	52	111	16	76
Future Volume (vph)	222	17	52	111	16	76
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.990				0.888	
Flt Protected				0.984	0.991	
Satd. Flow (prot)	1589	0	0	1571	1486	0
Flt Permitted				0.984	0.991	
Satd. Flow (perm)	1589	0	0	1571	1486	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	166.4			228.8	212.1	
Travel Time (s)	12.0			16.5	15.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	0%	4%	3%	7%	4%
Adj. Flow (vph)	222	17	52	111	16	76
Shared Lane Traffic (%)						
Lane Group Flow (vph)	239	0	0	163	92	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	40.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	222	17	52	111	16	76
Future Volume (Veh/h)	222	17	52	111	16	76
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	222	17	52	111	16	76
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			239		446	230
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			239		446	230
tC, single (s)			4.1		6.5	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			96		97	91
cM capacity (veh/h)			1316		539	804

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	239	163	92
Volume Left	0	52	16
Volume Right	17	0	76
cSH	1700	1316	740
Volume to Capacity	0.14	0.04	0.12
Queue Length 95th (m)	0.0	1.0	3.4
Control Delay (s)	0.0	2.7	10.6
Lane LOS		A	B
Approach Delay (s)	0.0	2.7	10.6
Approach LOS			B

Intersection Summary			
Average Delay		2.9	
Intersection Capacity Utilization		40.7%	ICU Level of Service A
Analysis Period (min)		15	

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	12	271	129	14	69	31
Future Volume (vph)	12	271	129	14	69	31
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.987		0.958	
Flt Protected		0.998			0.967	
Satd. Flow (prot)	0	1586	1587	0	1635	0
Flt Permitted		0.998			0.967	
Satd. Flow (perm)	0	1586	1587	0	1635	0
Link Speed (k/h)		60	60		50	
Link Distance (m)		98.4	372.2		168.6	
Travel Time (s)		5.9	22.3		12.1	
Confl. Peds. (#/hr)	10			10		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	4%	2%	8%	0%	0%
Adj. Flow (vph)	12	271	129	14	69	31
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	283	143	0	100	0
Sign Control		Free	Free		Stop	

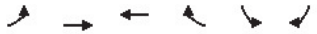
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 40.5%			ICU Level of Service A
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	12	271	129	14	69	31
Future Volume (Veh/h)	12	271	129	14	69	31
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	12	271	129	14	69	31
Pedestrians					10	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	153				441	146
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	153				441	146
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				88	97
cM capacity (veh/h)	1428				568	899

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	283	143	100
Volume Left	12	0	69
Volume Right	0	14	31
cSH	1428	1700	641
Volume to Capacity	0.01	0.08	0.16
Queue Length 95th (m)	0.2	0.0	4.4
Control Delay (s)	0.4	0.0	11.7
Lane LOS	A		B
Approach Delay (s)	0.4	0.0	11.7
Approach LOS			B

Intersection Summary			
Average Delay		2.4	
Intersection Capacity Utilization		40.5%	ICU Level of Service A
Analysis Period (min)		15	



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	15	326	115	25	63	29
Future Volume (vph)	15	326	115	25	63	29
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.976		0.957	
Flt Protected		0.998			0.967	
Satd. Flow (prot)	0	1601	1537	0	1611	0
Flt Permitted		0.998			0.967	
Satd. Flow (perm)	0	1601	1537	0	1611	0
Link Speed (k/h)		60	60		50	
Link Distance (m)		372.2	1012.1		87.7	
Travel Time (s)		22.3	60.7		6.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	3%	3%	13%	2%	0%
Adj. Flow (vph)	15	326	115	25	63	29
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	341	140	0	92	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 45.1%			ICU Level of Service A
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	15	326	115	25	63	29
Future Volume (Veh/h)	15	326	115	25	63	29
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	15	326	115	25	63	29
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	140				484	128
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	140				484	128
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				88	97
cM capacity (veh/h)	1456				537	928

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	341	140	92
Volume Left	15	0	63
Volume Right	0	25	29
cSH	1456	1700	619
Volume to Capacity	0.01	0.08	0.15
Queue Length 95th (m)	0.2	0.0	4.2
Control Delay (s)	0.4	0.0	11.8
Lane LOS	A		B
Approach Delay (s)	0.4	0.0	11.8
Approach LOS			B

Intersection Summary			
Average Delay		2.2	
Intersection Capacity Utilization		45.1%	ICU Level of Service A
Analysis Period (min)		15	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	83	5	68	30	2	7	21	317	4	5	218	20
Future Volume (vph)	83	5	68	30	2	7	21	317	4	5	218	20
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
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		0.941			0.976			0.998			0.989	
Flt Protected		0.974			0.963			0.997			0.999	
Satd. Flow (prot)	0	1402	0	0	1457	0	0	1510	0	0	1478	0
Flt Permitted		0.974			0.963			0.997			0.999	
Satd. Flow (perm)	0	1402	0	0	1457	0	0	1510	0	0	1478	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		77.1			66.0			326.3			223.3	
Travel Time (s)		5.6			4.8			23.5			16.1	
Confl. Peds. (#/hr)	7		1	1		7			5	5		
Peak Hour 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
Heavy Vehicles (%)	0%	0%	3%	0%	0%	0%	5%	2%	0%	0%	3%	11%
Adj. Flow (vph)	83	5	68	30	2	7	21	317	4	5	218	20
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	156	0	0	39	0	0	342	0	0	243	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 52.1%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	83	5	68	30	2	7	21	317	4	5	218	20
Future Volume (Veh/h)	83	5	68	30	2	7	21	317	4	5	218	20
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	83	5	68	30	2	7	21	317	4	5	218	20
Pedestrians					5			1			7	
Lane Width (m)					3.6			3.6			3.6	
Walking Speed (m/s)					1.2			1.2			1.2	
Percent Blockage					0			0			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	16			74			400	282	45	445	312	12
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	16			74			400	282	45	445	312	12
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.4
p0 queue free %	95			98			94	45	100	98	61	98
cM capacity (veh/h)	1605			1537			357	579	1025	279	555	1036

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	156	39	342	243
Volume Left	83	30	21	5
Volume Right	68	7	4	20
cSH	1605	1537	560	565
Volume to Capacity	0.05	0.02	0.61	0.43
Queue Length 95th (m)	1.3	0.5	32.7	17.2
Control Delay (s)	4.1	5.7	21.0	16.1
Lane LOS	A	A	C	C
Approach Delay (s)	4.1	5.7	21.0	16.1
Approach LOS			C	C

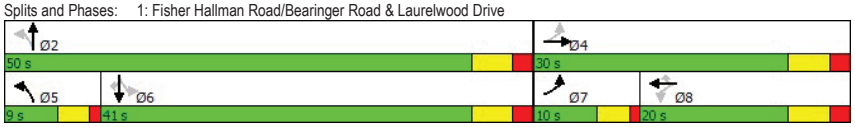
Intersection Summary					
Average Delay			15.3		
Intersection Capacity Utilization			52.1%	ICU Level of Service	A
Analysis Period (min)			15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	135	141	123	100	242	29	165	351	83	28	705	362
Future Volume (vph)	135	141	123	100	242	29	165	351	83	28	705	362
Ideal Flow (vphpl)	1775	1650	1650	1775	1900	1750	1775	1650	1650	1775	1900	1750
Storage Length (m)	85.0		0.0	90.0		90.0	90.0		0.0	60.0		60.0
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (m)	35.0			7.5			45.0			70.0		
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		0.97		0.98	1.00	1.00		1.00		0.98
Frt		0.930				0.850		0.971				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1670	1470	0	1686	1900	1488	1637	1595	0	1686	1900	1488
Flt Permitted	0.239			0.596			0.136			0.510		
Satd. Flow (perm)	420	1470	0	1027	1900	1455	234	1595	0	904	1900	1456
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		58				150		25				362
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		133.2			228.2			160.2			234.1	
Travel Time (s)		9.6			16.4			11.5			16.9	
Confl. Peds. (#/hr)	1		23	23		1	1		2	2		1
Peak Hour 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
Heavy Vehicles (%)	1%	0%	3%	0%	0%	0%	3%	0%	0%	0%	0%	0%
Adj. Flow (vph)	135	141	123	100	242	29	165	351	83	28	705	362
Shared Lane Traffic (%)												
Lane Group Flow (vph)	135	264	0	100	242	29	165	434	0	28	705	362
Turn Type	pm+pt	NA		Perm	NA	Perm	pm+pt	NA		Perm	NA	Perm
Protected Phases	7	4			8		5	2			6	
Permitted Phases	4			8		8	2			6		6
Detector Phase	7	4		8	8	8	5	2		6	6	6
Switch Phase												
Minimum Initial (s)	5.0	8.0		8.0	8.0	8.0	5.0	37.0		37.0	37.0	37.0
Minimum Split (s)	9.5	14.0		14.0	14.0	14.0	9.0	43.0		43.0	43.0	43.0
Total Split (s)	10.0	30.0		20.0	20.0	20.0	9.0	50.0		41.0	41.0	41.0
Total Split (%)	12.5%	37.5%		25.0%	25.0%	25.0%	11.3%	62.5%		51.3%	51.3%	51.3%
Maximum Green (s)	6.0	24.0		14.0	14.0	14.0	5.0	44.0		35.0	35.0	35.0
Yellow Time (s)	3.0	4.0		4.0	4.0	4.0	3.0	4.0		4.0	4.0	4.0
All-Red Time (s)	1.0	2.0		2.0	2.0	2.0	1.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	-2.0		-2.0	-2.0	-2.0	0.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lead			Lag	Lag	Lag	Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None	None	None	Max		Max	Max	Max
Walk Time (s)		12.0		12.0	12.0	12.0		16.0		16.0	16.0	16.0
Flash Dont Walk (s)		10.0		10.0	10.0	10.0		21.0		21.0	21.0	21.0
Pedestrian Calls (#/hr)		0		0	0	0		0		0	0	0
Act Effct Green (s)	24.9	24.9		14.9	14.9	14.9	48.0	48.0		39.0	39.0	39.0
Actuated g/C Ratio	0.31	0.31		0.18	0.18	0.18	0.59	0.59		0.48	0.48	0.48
v/c Ratio	0.61	0.54		0.53	0.69	0.07	0.73	0.45		0.06	0.77	0.41

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	34.4	22.4		40.9	42.1	0.4	30.3	10.7		12.2	24.7	3.0
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	34.4	22.4		40.9	42.1	0.4	30.3	10.7		12.2	24.7	3.0
LOS	C	C		D	D	A	C	B		B	C	A
Approach Delay		26.5			38.5			16.1			17.2	
Approach LOS		C			D			B			B	
Queue Length 50th (m)	16.3	27.0		14.8	37.0	0.0	11.4	34.5		2.4	92.2	0.0
Queue Length 95th (m)	#32.7	50.5		30.7	#61.6	0.0	#30.1	56.1		6.9	139.1	13.8
Internal Link Dist (m)		109.2			204.2			136.2			210.1	
Turn Bay Length (m)	85.0			90.0		90.0	90.0			60.0		60.0
Base Capacity (vph)	221	511		203	375	407	225	956		435	915	889
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.61	0.52		0.49	0.65	0.07	0.73	0.45		0.06	0.77	0.41

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 81			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay: 21.7		Intersection LOS: C	
Intersection Capacity Utilization 99.9%		ICU Level of Service F	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 1: Fisher Hallman Road/Bearinger Road & Laurelwood Drive



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	135	141	123	100	242	29	165	351	83	28	705	362
Future Volume (vph)	135	141	123	100	242	29	165	351	83	28	705	362
Ideal Flow (vphpl)	1775	1650	1650	1775	1900	1750	1775	1650	1650	1775	1900	1750
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.97		1.00	1.00	0.98	1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		0.97	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.93		1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1669	1470		1637	1900	1455	1637	1596		1684	1900	1456
Flt Permitted	0.24	1.00		0.60	1.00	1.00	0.14	1.00		0.51	1.00	1.00
Satd. Flow (perm)	421	1470		1027	1900	1455	234	1596		905	1900	1456
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	135	141	123	100	242	29	165	351	83	28	705	362
RTOR Reduction (vph)	0	40	0	0	0	24	0	10	0	0	0	187
Lane Group Flow (vph)	135	224	0	100	242	5	165	424	0	28	705	175
Confl. Peds. (#/hr)	1		23	23		1	1		2	2		1
Heavy Vehicles (%)	1%	0%	3%	0%	0%	0%	3%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA		Perm	NA	Perm	pm+pt	NA		Perm	NA	Perm
Protected Phases	7	4			8		5	2			6	
Permitted Phases	4			8		8	2			6		6
Actuated Green, G (s)	22.9	22.9		12.9	12.9	12.9	46.0	46.0		37.0	37.0	37.0
Effective Green, g (s)	22.9	24.9		14.9	14.9	14.9	46.0	48.0		39.0	39.0	39.0
Actuated g/C Ratio	0.28	0.31		0.18	0.18	0.18	0.57	0.59		0.48	0.48	0.48
Clearance Time (s)	4.0	6.0		6.0	6.0	6.0	4.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	211	452		189	349	267	219	946		436	915	701
v/s Ratio Prot	c0.05	0.15			c0.13		c0.05	0.27			c0.37	
v/s Ratio Perm	0.13			0.10		0.00	0.38			0.03		0.12
v/c Ratio	0.64	0.50		0.53	0.69	0.02	0.75	0.45		0.06	0.77	0.25
Uniform Delay, d1	23.4	22.9		29.8	30.9	27.0	14.3	9.1		11.2	17.3	12.3
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	6.2	0.9		2.7	5.9	0.0	13.6	1.5		0.3	6.2	0.8
Delay (s)	29.6	23.7		32.5	36.7	27.1	27.9	10.6		11.5	23.5	13.2
Level of Service	C	C		C	D	C	C	B		B	C	B
Approach Delay (s)		25.7			34.8			15.4			19.8	
Approach LOS		C			C			B			B	

Intersection Summary					
HCM 2000 Control Delay	21.9	HCM 2000 Level of Service		C	
HCM 2000 Volume to Capacity ratio	0.74				
Actuated Cycle Length (s)	80.9	Sum of lost time (s)		16.0	
Intersection Capacity Utilization	99.9%	ICU Level of Service		F	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	33	125	19	31	13	332	281	40	8	311	152
Future Volume (vph)	44	33	125	19	31	13	332	281	40	8	311	152
Ideal Flow (vphpl)	1650	1650	1750	1550	1550	1550	1775	1650	1650	1550	1550	1550
Storage Length (m)	0.0		25.0	0.0		0.0	25.0		0.0	0.0		0.0
Storage Lanes	0		1	0		0	1		0	0		0
Taper Length (m)	0.0			0.0			35.0			0.0		
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			0.850		0.972			0.981			0.956	
Flt Protected		0.972			0.985		0.950				0.999	
Satd. Flow (prot)	0	1542	1473	0	1435	0	1653	1605	0	0	1464	0
Flt Permitted		0.972			0.985		0.950				0.999	
Satd. Flow (perm)	0	1542	1473	0	1435	0	1653	1605	0	0	1464	0
Link Speed (k/h)		60			50			50			50	
Link Distance (m)		1012.1			151.5			558.2			326.3	
Travel Time (s)		60.7			10.9			40.2			23.5	
Confl. Peds. (#/hr)	1					1						
Peak Hour 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
Heavy Vehicles (%)	7%	0%	1%	0%	7%	0%	2%	1%	0%	25%	1%	0%
Adj. Flow (vph)	44	33	125	19	31	13	332	281	40	8	311	152
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	77	125	0	63	0	332	321	0	0	471	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	72.8%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	44	33	125	19	31	13	332	281	40	8	311	152
Future Volume (vph)	44	33	125	19	31	13	332	281	40	8	311	152
Peak Hour 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
Hourly flow rate (vph)	44	33	125	19	31	13	332	281	40	8	311	152

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1
Volume Total (vph)	77	125	63	332	321	471
Volume Left (vph)	44	0	19	332	0	8
Volume Right (vph)	0	125	13	0	40	152
Hadj (s)	0.35	-0.68	0.00	0.53	-0.07	-0.17
Departure Headway (s)	7.9	6.8	7.9	6.7	6.1	6.1
Degree Utilization, x	0.17	0.24	0.14	0.62	0.54	0.80
Capacity (veh/h)	430	492	417	519	578	573
Control Delay (s)	11.3	10.8	12.2	18.8	14.9	29.3
Approach Delay (s)	11.0		12.2	16.9		29.3
Approach LOS	B		B	C		D

Intersection Summary					
Delay	20.0				
Level of Service	C				
Intersection Capacity Utilization	72.8%	ICU Level of Service		C	
Analysis Period (min)	15				

Intersection	
Intersection Delay, s/veh	23.5
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	44	33	125	19	31	13	332	281	40	8	311	152
Future Vol, veh/h	44	33	125	19	31	13	332	281	40	8	311	152
Peak Hour 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
Heavy Vehicles, %	7	0	1	0	7	0	2	1	0	25	1	0
Mvmt Flow	44	33	125	19	31	13	332	281	40	8	311	152
Number of Lanes	0	1	1	0	1	0	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	2
HCM Control Delay	12.1	12.4	18.1	37.4
HCM LOS	B	B	C	E

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	100%	0%	57%	0%	30%	2%
Vol Thru, %	0%	88%	43%	0%	49%	66%
Vol Right, %	0%	12%	0%	100%	21%	32%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	332	321	77	125	63	471
LT Vol	332	0	44	0	19	8
Through Vol	0	281	33	0	31	311
RT Vol	0	40	0	125	13	152
Lane Flow Rate	332	321	77	125	63	471
Geometry Grp	7	7	7	7	6	6
Degree of Util (X)	0.621	0.546	0.171	0.238	0.142	0.857
Departure Headway (Hd)	6.733	6.118	7.998	6.862	8.106	6.553
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	535	584	446	520	445	551
Service Time	4.513	3.898	5.792	4.655	6.106	4.625
HCM Lane V/C Ratio	0.621	0.55	0.173	0.24	0.142	0.855
HCM Control Delay	20	16.1	12.5	11.8	12.4	37.4
HCM Lane LOS	C	C	B	B	B	E
HCM 95th-tile Q	4.2	3.3	0.6	0.9	0.5	9.2

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	89	55	503	208	76	178
Future Volume (vph)	89	55	503	208	76	178
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.948				0.905	
Flt Protected				0.966	0.985	
Satd. Flow (prot)	1504	0	0	1594	1528	0
Flt Permitted				0.966	0.985	
Satd. Flow (perm)	1504	0	0	1594	1528	0
Link Speed (k/h)	80			80	50	
Link Distance (m)	1516.2			424.2	223.3	
Travel Time (s)	68.2			19.1	16.1	
Confl. Peds. (#/hr)		1	1			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	4%	4%	0%	0%	3%	3%
Adj. Flow (vph)	89	55	503	208	76	178
Shared Lane Traffic (%)						
Lane Group Flow (vph)	144	0	0	711	254	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	80.4%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	89	55	503	208	76	178
Future Volume (Veh/h)	89	55	503	208	76	178
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	89	55	503	208	76	178
Pedestrians					1	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			145		1332	118
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			145		1332	118
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			65		31	81
cM capacity (veh/h)			1448		110	931

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	144	711	254
Volume Left	0	503	76
Volume Right	55	0	178
cSH	1700	1448	289
Volume to Capacity	0.08	0.35	0.88
Queue Length 95th (m)	0.0	12.6	62.5
Control Delay (s)	0.0	7.2	65.5
Lane LOS		A	F
Approach Delay (s)	0.0	7.2	65.5
Approach LOS			F

Intersection Summary			
Average Delay		19.7	
Intersection Capacity Utilization		80.4%	ICU Level of Service D
Analysis Period (min)		15	

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	56	165	100	15	103	162
Future Volume (vph)	56	165	100	15	103	162
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.899		0.982			
Flt Protected	0.987					0.981
Satd. Flow (prot)	1555	0	1566	0	0	1572
Flt Permitted	0.987					0.981
Satd. Flow (perm)	1555	0	1566	0	0	1572
Link Speed (k/h)	80		80			80
Link Distance (m)	1200.3		1761.7			383.9
Travel Time (s)	54.0		79.3			17.3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	4%	0%	3%	3%
Adj. Flow (vph)	56	165	100	15	103	162
Shared Lane Traffic (%)						
Lane Group Flow (vph)	221	0	115	0	0	265
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	44.0%	ICU Level of Service A	
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	56	165	100	15	103	162
Future Volume (Veh/h)	56	165	100	15	103	162
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	56	165	100	15	103	162
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	476	108			115	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	476	108			115	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	89	83			93	
cM capacity (veh/h)	513	949			1468	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	221	115	265
Volume Left	56	0	103
Volume Right	165	15	0
cSH	781	1700	1468
Volume to Capacity	0.28	0.07	0.07
Queue Length 95th (m)	9.3	0.0	1.8
Control Delay (s)	11.4	0.0	3.3
Lane LOS	B		A
Approach Delay (s)	11.4	0.0	3.3
Approach LOS	B		

Intersection Summary			
Average Delay		5.7	
Intersection Capacity Utilization		44.0%	ICU Level of Service A
Analysis Period (min)		15	

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	76	68	41	34	118	104
Future Volume (vph)	76	68	41	34	118	104
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.936		0.939			
Flt Protected	0.974					0.974
Satd. Flow (prot)	1587	0	1508	0	0	1558
Flt Permitted	0.974					0.974
Satd. Flow (perm)	1587	0	1508	0	0	1558
Link Speed (k/h)	80		80			80
Link Distance (m)	605.5		233.8			1761.7
Travel Time (s)	27.2		10.5			79.3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	3%	5%	0%	5%	1%
Adj. Flow (vph)	76	68	41	34	118	104
Shared Lane Traffic (%)						
Lane Group Flow (vph)	144	0	75	0	0	222
Sign Control	Stop		Free			Free

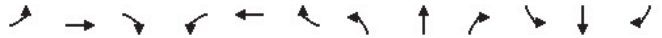
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 36.2%			ICU Level of Service A
Analysis Period (min) 15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	76	68	41	34	118	104
Future Volume (Veh/h)	76	68	41	34	118	104
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	76	68	41	34	118	104
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	398	58			75	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	398	58			75	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	87	93			92	
cM capacity (veh/h)	563	1005			1505	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	144	75	222
Volume Left	76	0	118
Volume Right	68	34	0
cSH	711	1700	1505
Volume to Capacity	0.20	0.04	0.08
Queue Length 95th (m)	6.0	0.0	2.0
Control Delay (s)	11.3	0.0	4.3
Lane LOS	B		A
Approach Delay (s)	11.3	0.0	4.3
Approach LOS	B		

Intersection Summary			
Average Delay		5.9	
Intersection Capacity Utilization		36.2%	ICU Level of Service A
Analysis Period (min)		15	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	24	2	137	57	64	1	125	104	30	214	15
Future Volume (vph)	2	24	2	137	57	64	1	125	104	30	214	15
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.990			0.967			0.939			0.992	
Flt Protected		0.996			0.974						0.994	
Satd. Flow (prot)	0	1528	0	0	1428	0	0	1422	0	0	1485	0
Flt Permitted		0.996			0.974						0.994	
Satd. Flow (perm)	0	1528	0	0	1428	0	0	1422	0	0	1485	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		187.7			400.3			618.6			394.6	
Travel Time (s)		13.5			28.8			44.5			28.4	
Peak Hour 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
Heavy Vehicles (%)	0%	0%	0%	1%	0%	7%	0%	1%	4%	4%	3%	0%
Adj. Flow (vph)	2	24	2	137	57	64	1	125	104	30	214	15
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	28	0	0	258	0	0	230	0	0	259	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 67.3%		ICU Level of Service C	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	24	2	137	57	64	1	125	104	30	214	15
Future Volume (Veh/h)	2	24	2	137	57	64	1	125	104	30	214	15
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	2	24	2	137	57	64	1	125	104	30	214	15
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	553	512	222	474	468	177	229			229		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	553	512	222	474	468	177	229			229		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.3	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.4	2.2			2.2		
p0 queue free %	99	95	100	71	88	92	100			98		
cM capacity (veh/h)	369	457	823	472	484	853	1351			1327		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	28	258	230	259
Volume Left	2	137	1	30
Volume Right	2	64	104	15
cSH	464	534	1351	1327
Volume to Capacity	0.06	0.48	0.00	0.02
Queue Length 95th (m)	1.5	20.8	0.0	0.6
Control Delay (s)	13.3	17.9	0.0	1.1
Lane LOS	B	C	A	A
Approach Delay (s)	13.3	17.9	0.0	1.1
Approach LOS	B	C		

Intersection Summary				
Average Delay			6.8	
Intersection Capacity Utilization			67.3%	ICU Level of Service
Analysis Period (min)			15	

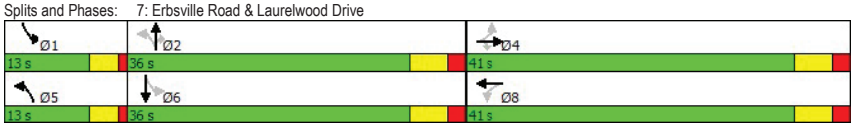


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	96	116	144	178	106	129	236	149	42	239	23
Future Volume (vph)	14	96	116	144	178	106	129	236	149	42	239	23
Ideal Flow (vphpl)	1775	1900	1750	1775	1650	1650	1775	1900	1750	1775	1650	1650
Storage Length (m)	20.0		20.0	25.0		0.0	65.0		30.0	25.0		0.0
Storage Lanes	1		1	1		0	1		1	1		0
Taper Length (m)	35.0			10.0			80.0			35.0		
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	0.98		0.97	0.99	0.98		0.99		0.97	0.99	1.00	
Frt			0.850		0.944				0.850		0.987	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1686	1776	1417	1670	1513	0	1621	1881	1488	1686	1610	0
Flt Permitted	0.408			0.695			0.511			0.612		
Satd. Flow (perm)	713	1776	1371	1208	1513	0	866	1881	1442	1079	1610	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			116		40				149		6	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		123.5			178.3			236.9			930.8	
Travel Time (s)		8.9			12.8			17.1			67.0	
Confl. Peds. (#/hr)	20		10	10		20	7		7	7		7
Peak Hour 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
Heavy Vehicles (%)	0%	7%	5%	1%	2%	0%	4%	1%	0%	0%	1%	0%
Adj. Flow (vph)	14	96	116	144	178	106	129	236	149	42	239	23
Shared Lane Traffic (%)												
Lane Group Flow (vph)	14	96	116	144	284	0	129	236	149	42	262	0
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2		2	6		
Detector Phase	4	4	4	8	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0		5.0	30.0	30.0	5.0	30.0	
Minimum Split (s)	14.0	14.0	14.0	14.0	14.0		9.0	36.0	36.0	9.0	36.0	
Total Split (s)	41.0	41.0	41.0	41.0	41.0		13.0	36.0	36.0	13.0	36.0	
Total Split (%)	45.6%	45.6%	45.6%	45.6%	45.6%		14.4%	40.0%	40.0%	14.4%	40.0%	
Maximum Green (s)	35.0	35.0	35.0	35.0	35.0		9.0	30.0	30.0	9.0	30.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		1.0	2.0	2.0	1.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		0.0	-2.0	-2.0	0.0	-2.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	None	None		None	Max	Max	None	Max	
Walk Time (s)	15.0	15.0	15.0	15.0	15.0			12.0	12.0		12.0	
Flash Dont Walk (s)	21.0	21.0	21.0	21.0	21.0			18.0	18.0		18.0	
Pedestrian Calls (#/hr)	0	0	0	0	0			0	0		0	
Act Effct Green (s)	18.9	18.9	18.9	18.9	18.9		40.9	36.2	36.2	37.6	32.7	
Actuated g/C Ratio	0.27	0.27	0.27	0.27	0.27		0.59	0.52	0.52	0.54	0.47	
v/c Ratio	0.07	0.20	0.25	0.44	0.64		0.22	0.24	0.18	0.07	0.34	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	19.7	20.8	5.8	25.9	26.6		7.9	12.6	3.4	7.2	15.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	19.7	20.8	5.8	25.9	26.6		7.9	12.6	3.4	7.2	15.5	
LOS	B	C	A	C	C		A	B	A	A	B	
Approach Delay		13.0			26.4			8.8			14.3	
Approach LOS		B			C			A			B	
Queue Length 50th (m)	1.5	10.4	0.0	16.7	30.1		6.5	18.6	0.0	2.0	22.3	
Queue Length 95th (m)	5.6	21.5	10.7	32.6	54.6		17.5	41.4	10.5	7.1	48.8	
Internal Link Dist (m)		99.5			154.3			212.9			906.8	
Turn Bay Length (m)	20.0		20.0	25.0			65.0		30.0	25.0		
Base Capacity (vph)	390	972	802	661	846		615	984	825	698	765	
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Reduced v/c Ratio	0.04	0.10	0.14	0.22	0.34		0.21	0.24	0.18	0.06	0.34	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 69.1			
Natural Cycle: 60			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.64			
Intersection Signal Delay: 15.7		Intersection LOS: B	
Intersection Capacity Utilization 67.0%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 7: Erbsville Road & Laurelwood Drive



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	96	116	144	178	106	129	236	149	42	239	23
Future Volume (vph)	14	96	116	144	178	106	129	236	149	42	239	23
Ideal Flow (vphpl)	1775	1900	1750	1775	1650	1650	1775	1900	1750	1775	1650	1650
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	0.99		1.00	1.00	0.97	1.00	1.00	
Flpb, ped/bikes	0.99	1.00	1.00	0.99	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.94		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1666	1776	1375	1655	1516		1617	1881	1446	1680	1610	
Flt Permitted	0.41	1.00	1.00	0.69	1.00		0.51	1.00	1.00	0.61	1.00	
Satd. Flow (perm)	715	1776	1375	1211	1516		870	1881	1446	1082	1610	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	14	96	116	144	178	106	129	236	149	42	239	23
RTOR Reduction (vph)	0	0	85	0	29	0	0	0	73	0	3	0
Lane Group Flow (vph)	14	96	31	144	255	0	129	236	76	42	259	0
Confl. Peds. (#/hr)	20		10	10		20	7		7	7		7
Heavy Vehicles (%)	0%	7%	5%	1%	2%	0%	4%	1%	0%	0%	1%	0%
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2		2	6		
Actuated Green, G (s)	16.8	16.8	16.8	16.8	16.8		40.4	34.1	34.1	35.2	31.5	
Effective Green, g (s)	18.8	18.8	18.8	18.8	18.8		40.4	36.1	36.1	35.2	33.5	
Actuated g/C Ratio	0.27	0.27	0.27	0.27	0.27		0.57	0.51	0.51	0.50	0.47	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		4.0	6.0	6.0	4.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	190	472	366	322	403		564	961	739	570	763	
v/s Ratio Prot		0.05			c0.17		c0.02	0.13		0.00	c0.16	
v/s Ratio Perm	0.02		0.02	0.12			0.11		0.05	0.03		
v/c Ratio	0.07	0.20	0.08	0.45	0.63		0.23	0.25	0.10	0.07	0.34	
Uniform Delay, d1	19.4	20.1	19.4	21.6	22.8		7.2	9.6	8.9	9.1	11.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.2	0.2	0.1	1.0	3.2		0.2	0.6	0.3	0.1	1.2	
Delay (s)	19.5	20.3	19.5	22.6	26.1		7.4	10.2	9.2	9.2	12.8	
Level of Service	B	C	B	C	C		A	B	A	A	B	
Approach Delay (s)		19.9			24.9			9.2			12.3	
Approach LOS		B			C			A			B	

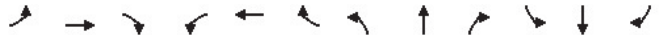
Intersection Summary					
HCM 2000 Control Delay	16.1	HCM 2000 Level of Service		B	
HCM 2000 Volume to Capacity ratio	0.42				
Actuated Cycle Length (s)	70.6	Sum of lost time (s)		12.0	
Intersection Capacity Utilization	67.0%	ICU Level of Service		C	
Analysis Period (min)	15				

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	273	32	137	554	41	30	23	77	28	41	23
Future Volume (vph)	11	273	32	137	554	41	30	23	77	28	41	23
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
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		0.986			0.992			0.920			0.966	
Flt Protected		0.998			0.991			0.989			0.985	
Satd. Flow (prot)	0	1499	0	0	1512	0	0	1410	0	0	1455	0
Flt Permitted		0.998			0.991			0.989			0.985	
Satd. Flow (perm)	0	1499	0	0	1512	0	0	1410	0	0	1455	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		213.7			555.1			104.8			136.8	
Travel Time (s)		15.4			40.0			7.5			9.8	
Confl. Peds. (#/hr)	9		4	4		9	6		8	8		6
Peak Hour 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
Heavy Vehicles (%)	0%	2%	0%	0%	1%	0%	0%	0%	0%	0%	3%	0%
Adj. Flow (vph)	11	273	32	137	554	41	30	23	77	28	41	23
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	316	0	0	732	0	0	130	0	0	92	0
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Roundabout			
Intersection Capacity Utilization	91.1%	ICU Level of Service	F
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Traffic Volume (veh/h)	11	273	32	137	554	41	30	23	77	28	41	23
Future Volume (veh/h)	11	273	32	137	554	41	30	23	77	28	41	23
Peak Hour 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
Hourly flow rate (vph)	11	273	32	137	554	41	30	23	77	28	41	23
Approach Volume (veh/h)		316			732			130			92	
Crossing Volume (veh/h)		206			64			312			721	
High Capacity (veh/h)		1179			1317			1084			781	
High v/c (veh/h)		0.27			0.56			0.12			0.12	
Low Capacity (veh/h)		974			1100			889			620	
Low v/c (veh/h)		0.32			0.67			0.15			0.15	

Intersection Summary					
Maximum v/c High		0.56			
Maximum v/c Low		0.67			
Intersection Capacity Utilization		91.1%	ICU Level of Service		F

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	98	21	83	194	18	24
Future Volume (vph)	98	21	83	194	18	24
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.976				0.923	
Flt Protected				0.985	0.979	
Satd. Flow (prot)	1584	0	0	1609	1595	0
Flt Permitted				0.985	0.979	
Satd. Flow (perm)	1584	0	0	1609	1595	0
Link Speed (k/h)	80			80	50	
Link Distance (m)	1200.3			667.7	811.2	
Travel Time (s)	54.0			30.0	58.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	0%	1%	1%	0%	0%
Adj. Flow (vph)	98	21	83	194	18	24
Shared Lane Traffic (%)						
Lane Group Flow (vph)	119	0	0	277	42	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 33.7%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	98	21	83	194	18	24
Future Volume (Veh/h)	98	21	83	194	18	24
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	98	21	83	194	18	24
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			119		468	108
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			119		468	108
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			94		97	97
cM capacity (veh/h)			1475		525	951

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	119	277	42
Volume Left	0	83	18
Volume Right	21	0	24
cSH	1700	1475	706
Volume to Capacity	0.07	0.06	0.06
Queue Length 95th (m)	0.0	1.4	1.5
Control Delay (s)	0.0	2.6	10.4
Lane LOS		A	B
Approach Delay (s)	0.0	2.6	10.4
Approach LOS			B

Intersection Summary			
Average Delay	2.7		
Intersection Capacity Utilization	33.7%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	80	5	151	56	1	124
Future Volume (vph)	80	5	151	56	1	124
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.992		0.963			
Flt Protected	0.955					
Satd. Flow (prot)	1626	0	1577	0	0	1650
Flt Permitted	0.955					
Satd. Flow (perm)	1626	0	1577	0	0	1650
Link Speed (k/h)	70		50			50
Link Distance (m)	143.4		394.6			123.0
Travel Time (s)	7.4		28.4			8.9
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	0%	1%	0%	0%	0%
Adj. Flow (vph)	80	5	151	56	1	124
Shared Lane Traffic (%)						
Lane Group Flow (vph)	85	0	207	0	0	125
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	24.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	80	5	151	56	1	124
Future Volume (Veh/h)	80	5	151	56	1	124
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	80	5	151	56	1	124
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	305	179			207	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	305	179			207	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	88	99			100	
cM capacity (veh/h)	684	869			1376	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	85	207	125
Volume Left	80	0	1
Volume Right	5	56	0
cSH	693	1700	1376
Volume to Capacity	0.12	0.12	0.00
Queue Length 95th (m)	3.3	0.0	0.0
Control Delay (s)	10.9	0.0	0.1
Lane LOS	B		A
Approach Delay (s)	10.9	0.0	0.1
Approach LOS	B		

Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	24.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	157	10	104	242	19	62
Future Volume (vph)	157	10	104	242	19	62
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.992				0.897	
Flt Protected				0.985	0.988	
Satd. Flow (prot)	1607	0	0	1598	1542	0
Flt Permitted				0.985	0.988	
Satd. Flow (perm)	1607	0	0	1598	1542	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	166.4			228.8	212.1	
Travel Time (s)	12.0			16.5	15.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	0%	1%	2%	6%	0%
Adj. Flow (vph)	157	10	104	242	19	62
Shared Lane Traffic (%)						
Lane Group Flow (vph)	167	0	0	346	81	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 46.7%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	157	10	104	242	19	62
Future Volume (Veh/h)	157	10	104	242	19	62
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	157	10	104	242	19	62
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			167		612	162
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			167		612	162
tC, single (s)			4.1		6.5	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			93		95	93
cM capacity (veh/h)			1417		417	888

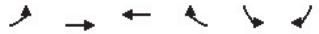
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	167	346	81
Volume Left	0	104	19
Volume Right	10	0	62
cSH	1700	1417	702
Volume to Capacity	0.10	0.07	0.12
Queue Length 95th (m)	0.0	1.9	3.1
Control Delay (s)	0.0	2.8	10.8
Lane LOS		A	B
Approach Delay (s)	0.0	2.8	10.8
Approach LOS			B

Intersection Summary			
Average Delay	3.1		
Intersection Capacity Utilization	46.7%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	38	204	279	54	21	28
Future Volume (vph)	38	204	279	54	21	28
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.978		0.923	
Flt Protected		0.992			0.979	
Satd. Flow (prot)	0	1623	1600	0	1561	0
Flt Permitted		0.992			0.979	
Satd. Flow (perm)	0	1623	1600	0	1561	0
Link Speed (k/h)		60	60		50	
Link Distance (m)		98.4	372.2		168.6	
Travel Time (s)		5.9	22.3		12.1	
Confl. Peds. (#/hr)	1			1		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	1%	0%	5%	0%
Adj. Flow (vph)	38	204	279	54	21	28
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	242	333	0	49	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	48.8%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	38	204	279	54	21	28
Future Volume (Veh/h)	38	204	279	54	21	28
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	38	204	279	54	21	28
Pedestrians					1	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	334				587	307
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	334				587	307
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				95	96
cM capacity (veh/h)	1236				452	737

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	242	333	49
Volume Left	38	0	21
Volume Right	0	54	28
cSH	1236	1700	580
Volume to Capacity	0.03	0.20	0.08
Queue Length 95th (m)	0.8	0.0	2.2
Control Delay (s)	1.5	0.0	11.8
Lane LOS	A		B
Approach Delay (s)	1.5	0.0	11.8
Approach LOS			B

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	48.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	24	206	316	50	24	24
Future Volume (vph)	24	206	316	50	24	24
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.982		0.932	
Flt Protected		0.995			0.976	
Satd. Flow (prot)	0	1613	1598	0	1606	0
Flt Permitted		0.995			0.976	
Satd. Flow (perm)	0	1613	1598	0	1606	0
Link Speed (k/h)		60	60		50	
Link Distance (m)		372.2	1012.1		87.7	
Travel Time (s)		22.3	60.7		6.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	2%	1%	4%	0%	0%
Adj. Flow (vph)	24	206	316	50	24	24
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	230	366	0	48	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 45.6%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	24	206	316	50	24	24
Future Volume (Veh/h)	24	206	316	50	24	24
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	24	206	316	50	24	24
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	366				595	341
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	366				595	341
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				95	97
cM capacity (veh/h)	1204				461	706

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	230	366	48
Volume Left	24	0	24
Volume Right	0	50	24
cSH	1204	1700	558
Volume to Capacity	0.02	0.22	0.09
Queue Length 95th (m)	0.5	0.0	2.2
Control Delay (s)	1.0	0.0	12.1
Lane LOS	A		B
Approach Delay (s)	1.0	0.0	12.1
Approach LOS			B

Intersection Summary				
Average Delay		1.3		
Intersection Capacity Utilization		45.6%	ICU Level of Service	A
Analysis Period (min)		15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	10	63	12	5	7	90	195	33	6	331	104
Future Volume (vph)	21	10	63	12	5	7	90	195	33	6	331	104
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
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		0.910			0.961			0.986			0.968	
Flt Protected		0.989			0.976			0.986			0.999	
Satd. Flow (prot)	0	1367	0	0	1454	0	0	1498	0	0	1499	0
Flt Permitted		0.989			0.976			0.986			0.999	
Satd. Flow (perm)	0	1367	0	0	1454	0	0	1498	0	0	1499	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		77.1			66.0			326.3			223.3	
Travel Time (s)		5.6			4.8			23.5			16.1	
Confl. Peds. (#/hr)	4					4			1	1		
Peak Hour 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
Heavy Vehicles (%)	0%	0%	3%	0%	0%	0%	0%	1%	0%	0%	0%	0%
Adj. Flow (vph)	21	10	63	12	5	7	90	195	33	6	331	104
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	94	0	0	24	0	0	318	0	0	441	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	67.8%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	21	10	63	12	5	7	90	195	33	6	331	104
Future Volume (Veh/h)	21	10	63	12	5	7	90	195	33	6	331	104
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	21	10	63	12	5	7	90	195	33	6	331	104
Pedestrians					1						4	
Lane Width (m)					3.6						3.6	
Walking Speed (m/s)					1.2						1.2	
Percent Blockage					0						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	16			73			386	124	42	252	152	12
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	16			73			386	124	42	252	152	12
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			73	74	97	99	54	90
cM capacity (veh/h)	1609			1540			329	750	1033	535	726	1070

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	94	24	318	441
Volume Left	21	12	90	6
Volume Right	63	7	33	104
cSH	1609	1540	562	781
Volume to Capacity	0.01	0.01	0.57	0.56
Queue Length 95th (m)	0.3	0.2	28.0	28.7
Control Delay (s)	1.7	3.7	19.4	15.4
Lane LOS	A	A	C	C
Approach Delay (s)	1.7	3.7	19.4	15.4
Approach LOS			C	C

Intersection Summary				
Average Delay	15.1			
Intersection Capacity Utilization	67.8%	ICU Level of Service		C
Analysis Period (min)	15			

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]
© Copyright TRL Limited, 2020

For sales and distribution information, program advice and maintenance, contact TRL:
Tel: +44 (0)1344 770758 email: software@trl.co.uk Web: http://www.trlsoftware.co.uk

The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: Conservation & Beaver Creek.arc8
Path: C:\Users\AdamMorrison\Paradigm\Projects - 170278 Beaver Creek Area TES\C5 - Analysis and Evaluation\Arcady
Report generation date: 2020-07-21 4:22:38 PM

Summary of intersection performance

	AM					
	Queue (PCE)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS
	All - Background 2022					
Intersection 85% - Leg North	0.00	0.00	0.00	A	4.13	A
Intersection 85% - Leg West	0.31	4.31	0.23	A		
Intersection 85% - Leg South	0.11	3.98	0.10	A		
Intersection 85% - Leg East	0.20	3.96	0.16	A		
Intersection 90% - Leg North	0.00	0.00	0.00	A	3.84	A
Intersection 90% - Leg West	0.29	4.00	0.22	A		
Intersection 90% - Leg South	0.10	3.71	0.09	A		
Intersection 90% - Leg East	0.18	3.70	0.15	A		

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Intersection LOS and Intersection Delay are demand-weighted averages.

"D1 - Existing, AM" model duration: 8:00 AM - 9:30 AM
"D2 - Existing, PM" model duration: 5:00 PM - 6:30 PM
"D3 - Background 2022, AM " model duration: 8:00 AM - 9:30 AM
"D4 - Background 2022, PM" model duration: 5:00 PM - 6:30 PM
"D5 - Total 2022, AM" model duration: 8:00 AM - 9:30 AM
"D6 - Total 2022, PM" model duration: 5:00 PM - 6:30 PM
"D7 - Background 2025, AM" model duration: 8:00 AM - 9:30 AM
"D8 - Background 2025, PM" model duration: 5:00 PM - 6:30 PM
"D9 - Total 2025, AM" model duration: 8:00 AM - 9:30 AM
"D10 - Total 2025, PM" model duration: 5:00 PM - 6:30 PM
"D11 - Background 2027, AM" model duration: 8:00 AM - 9:30 AM
"D12 - Background 2027, PM" model duration: 5:00 PM - 6:30 PM
"D13 - Total 2027, AM" model duration: 8:00 AM - 9:30 AM
"D14 - Total 2027, PM" model duration: 5:00 PM - 6:30 PM
"D15 - Background 2032, AM" model duration: 8:00 AM - 9:30 AM
"D16 - Background 2032, PM" model duration: 5:00 PM - 6:30 PM
"D17 - Total 2032, AM" model duration: 8:00 AM - 9:30 AM
"D18 - Total 2032, PM" model duration: 5:00 PM - 6:30 PM

Run using Junctions 8.0.6.541 at 2020-07-21 4:22:37 PM

File summary

Title	(untitled)
Location	
Site Number	
Date	2018-09-11
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	170278
Analyst	AdamMorrison
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)
7.50	✓		N/A	0.85	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	PCE	PCE	perHour	s	-Min	perMin

All - Background 2022, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
All	ARCADY		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
Background 2022, AM	Background 2022	AM		ONE HOUR	08:00	09:30	90	15				✓		

Intersection Network

Intersections

Junction	Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Do Geometric Delay	Intersection Delay (s)	Intersection LOS
85%	85%	Conservation Drive & Beaver Creek Road	Roundabout	North,West,South,East				4.13	A
90%	90%	Conservation Drive & Beaver Creek Road	Roundabout	North,West,South,East				3.84	A

Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

Legs

Legs

Intersection	Leg	Leg	Name	Description
85%	**North**	North	Beaver Creek Road	
85%	**West**	West	Conservation Drive	
85%	**South**	South	Beaver Creek Road	
85%	**East**	East	Conservation Drive	
90%	**North**	North	Beaver Creek Road	
90%	**West**	West	Conservation Drive	
90%	**South**	South	Beaver Creek Road	
90%	**East**	East	Conservation Drive	

Capacity Options

Intersection	Leg	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)	Assume Flat Start Profile	Initial Queue (PCE)
85%	**North**	0.00	99999.00		0.00
85%	**West**	0.00	99999.00		0.00
85%	**South**	0.00	99999.00		0.00

85%	East	0.00	99999.00		0.00
90%	North	0.00	99999.00		0.00
90%	West	0.00	99999.00		0.00
90%	South	0.00	99999.00		0.00
90%	East	0.00	99999.00		0.00

Roundabout Geometry

Intersection	Leg	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
85%	North	3.50	4.50	30.00	20.00	40.00	25.00	
85%	West	3.50	4.50	30.00	20.00	40.00	25.00	
85%	South	3.50	4.50	30.00	20.00	40.00	25.00	
85%	East	3.50	4.50	30.00	20.00	40.00	25.00	
90%	North	3.50	4.50	30.00	20.00	40.00	25.00	
90%	West	3.50	4.50	30.00	20.00	40.00	25.00	
90%	South	3.50	4.50	30.00	20.00	40.00	25.00	
90%	East	3.50	4.50	30.00	20.00	40.00	25.00	

Slope / Intercept / Capacity

Leg Intercept Adjustments

Intersection	Leg	Type	Reason	Direct Intercept Adjustment (PCE/hr)	Percentage Intercept Adjustment (%)
85%	North	Percentage	Region of Waterloo		85.00
85%	West	Percentage	Region of Waterloo		85.00
85%	South	Percentage	Region of Waterloo		85.00
85%	East	Percentage	Region of Waterloo		85.00
90%	North	Percentage	Region of Waterloo		90.00
90%	West	Percentage	Region of Waterloo		90.00
90%	South	Percentage	Region of Waterloo		90.00
90%	East	Percentage	Region of Waterloo		90.00

Roundabout Slope and Intercept used in model

Intersection	Leg	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
85%	North		(calculated)	(calculated)	0.579	1153.828
85%	West		(calculated)	(calculated)	0.579	1153.828
85%	South		(calculated)	(calculated)	0.579	1153.828
85%	East		(calculated)	(calculated)	0.579	1153.828
90%	North		(calculated)	(calculated)	0.579	1221.701
90%	West		(calculated)	(calculated)	0.579	1221.701
90%	South		(calculated)	(calculated)	0.579	1221.701
90%	East		(calculated)	(calculated)	0.579	1221.701

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCE Factor for a Truck (PCE)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Intersection	Leg	Profile Type	Use Turning Counts	Average Demand Flow (PCE/hr)	Flow Scaling Factor (%)
85%	North	ONE HOUR	✓	0.00	100.000
85%	West	ONE HOUR	✓	239.00	100.000
85%	South	ONE HOUR	✓	92.00	100.000

85%	East	ONE HOUR	✓	163.00	100.000
90%	North	ONE HOUR	✓	0.00	100.000
90%	West	ONE HOUR	✓	239.00	100.000
90%	South	ONE HOUR	✓	92.00	100.000
90%	East	ONE HOUR	✓	163.00	100.000

Turning Proportions

Turning Counts / Proportions (PCE/hr) - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.000	0.000	0.000	0.000
	West	0.000	0.000	17.000	222.000
	South	0.000	16.000	0.000	76.000
	East	0.000	111.000	52.000	0.000

Turning Proportions (PCE) - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.25	0.25	0.25	0.25
	West	0.00	0.00	0.07	0.93
	South	0.00	0.17	0.00	0.83
	East	0.00	0.68	0.32	0.00

Turning Counts / Proportions (PCE/hr) - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.000	0.000	0.000	0.000
	West	0.000	0.000	17.000	222.000
	South	0.000	16.000	0.000	76.000
	East	0.000	111.000	52.000	0.000

Turning Proportions (PCE) - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.25	0.25	0.25	0.25
	West	0.00	0.00	0.07	0.93
	South	0.00	0.17	0.00	0.83
	East	0.00	0.68	0.32	0.00

Vehicle Mix

Average PCE Per Vehicle - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	1.000	1.110	1.000	1.000
	West	1.000	1.000	1.000	1.030
	South	1.090	1.000	1.000	1.010
	East	1.040	1.060	1.060	1.000

Truck Percentages - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.0	11.0	0.0	0.0
	West	0.0	0.0	0.0	3.0
	South	9.0	0.0	0.0	1.0
	East	4.0	6.0	6.0	0.0

Average PCE Per Vehicle - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	1.000	1.110	1.000	1.000
	West	1.000	1.000	1.000	1.030
	South	1.090	1.000	1.000	1.010
	East	1.040	1.060	1.060	1.000

Truck Percentages - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.0	11.0	0.0	0.0
	West	0.0	0.0	0.0	3.0
	South	9.0	0.0	0.0	1.0
	East	4.0	6.0	6.0	0.0

Results

Results Summary for whole modelled period

Intersection	Leg	Max V/C Ratio	Max Delay (s)	Max Queue (PCE)	Max 95th percentile Queue (PCE)	Max LOS	Average Demand (PCE/hr)	Total Intersection Arrivals (PCE)	Total Queueing Delay (PCE-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCE-min/min)	Inclusive Total Queueing Delay (PCE-min)	Inclusive Average Queueing Delay (s)
85%	North	0.00	0.00	0.00	~1	A	0.00	0.00	0.00	0.00	0.00	0.00	0.00
85%	West	0.23	4.31	0.31	~1	A	219.31	328.97	22.42	4.09	0.25	22.42	4.09
85%	South	0.10	3.98	0.11	~1	A	84.42	126.63	8.06	3.82	0.09	8.06	3.82
85%	East	0.16	3.96	0.20	~1	A	149.57	224.36	14.32	3.83	0.16	14.32	3.83
90%	North	0.00	0.00	0.00	~1	A	0.00	0.00	0.00	0.00	0.00	0.00	0.00
90%	West	0.22	4.00	0.29	~1	A	219.31	328.97	20.85	3.80	0.23	20.85	3.80
90%	South	0.09	3.71	0.10	~1	A	84.42	126.63	7.52	3.56	0.08	7.52	3.56
90%	East	0.15	3.70	0.18	~1	A	149.57	224.36	13.40	3.58	0.15	13.40	3.58

Main Results for each time segment

Main results: (08:00-08:15)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	0.00	0.00	0.00	0.00	134.21	0.00	1076.16	502.39	0.000	0.00	0.00	0.000	A
85%	West	179.93	44.98	179.16	95.22	38.99	0.00	1131.26	747.41	0.159	0.00	0.19	3.883	A
85%	South	69.26	17.32	68.98	51.73	166.41	0.00	1057.51	606.64	0.066	0.00	0.07	3.671	A
85%	East	122.71	30.68	122.21	223.40	12.00	0.00	1146.89	1020.08	0.107	0.00	0.13	3.722	A
90%	North	0.00	0.00	0.00	0.00	134.24	0.00	1144.01	531.94	0.000	0.00	0.00	0.000	A
90%	West	179.93	44.98	179.21	95.24	39.00	0.00	1199.13	791.38	0.150	0.00	0.18	3.626	A
90%	South	69.26	17.32	69.00	51.74	166.46	0.00	1125.36	642.33	0.062	0.00	0.07	3.436	A
90%	East	122.71	30.68	122.24	223.46	12.00	0.00	1214.76	1080.08	0.101	0.00	0.12	3.490	A

Main results: (08:15-08:30)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	0.00	0.00	0.00	0.00	160.79	0.00	1060.77	502.39	0.000	0.00	0.00	0.000	A
85%	West	214.86	53.71	214.67	114.08	46.71	0.00	1126.79	747.41	0.191	0.19	0.24	4.055	A
85%	South	82.71	20.68	82.64	61.98	199.40	0.00	1038.43	606.64	0.080	0.07	0.09	3.796	A
85%	East	146.53	36.63	146.42	267.67	14.37	0.00	1145.51	1020.08	0.128	0.13	0.15	3.818	A
90%	North	0.00	0.00	0.00	0.00	160.80	0.00	1128.64	531.94	0.000	0.00	0.00	0.000	A
90%	West	214.86	53.71	214.68	114.09	46.71	0.00	1194.66	791.38	0.180	0.18	0.22	3.775	A
90%	South	82.71	20.68	82.65	61.98	199.41	0.00	1106.29	642.33	0.075	0.07	0.08	3.545	A
90%	East	146.53	36.63	146.43	267.68	14.37	0.00	1213.38	1080.08	0.121	0.12	0.14	3.575	A

Main results: (08:30-08:45)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	0.00	0.00	0.00	0.00	196.90	0.00	1039.87	502.39	0.000	0.00	0.00	0.000	A
85%	West	263.14	65.79	262.85	139.70	57.20	0.00	1120.72	747.41	0.235	0.24	0.31	4.312	A
85%	South	101.29	25.32	101.20	75.90	244.16	0.00	1012.52	606.64	0.100	0.09	0.11	3.983	A
85%	East	179.47	44.87	179.30	327.75	17.60	0.00	1143.64	1020.08	0.157	0.15	0.20	3.957	A
90%	North	0.00	0.00	0.00	0.00	196.91	0.00	1107.74	531.94	0.000	0.00	0.00	0.000	A
90%	West	263.14	65.79	262.88	139.71	57.20	0.00	1188.59	791.38	0.221	0.22	0.29	3.996	A
90%	South	101.29	25.32	101.20	75.90	244.18	0.00	1080.38	642.33	0.094	0.08	0.10	3.706	A
90%	East	179.47	44.87	179.31	327.78	17.60	0.00	1211.51	1080.08	0.148	0.14	0.18	3.696	A

Main results: (08:45-09:00)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	0.00	0.00	0.00	0.00	197.08	0.00	1039.77	502.39	0.000	0.00	0.00	0.000	A
85%	West	263.14	65.79	263.14	139.83	57.25	0.00	1120.69	747.41	0.235	0.31	0.31	4.314	A
85%	South	101.29	25.32	101.29	75.97	244.42	0.00	1012.37	606.64	0.100	0.11	0.11	3.983	A
85%	East	179.47	44.87	179.46	328.10	17.62	0.00	1143.63	1020.08	0.157	0.20	0.20	3.957	A
90%	North	0.00	0.00	0.00	0.00	197.08	0.00	1107.64	531.94	0.000	0.00	0.00	0.000	A
90%	West	263.14	65.79	263.14	139.83	57.25	0.00	1188.57	791.38	0.221	0.29	0.29	3.998	A
90%	South	101.29	25.32	101.29	75.97	244.42	0.00	1080.24	642.33	0.094	0.10	0.10	3.706	A
90%	East	179.47	44.87	179.46	328.10	17.62	0.00	1211.51	1080.08	0.148	0.18	0.18	3.696	A

Main results: (09:00-09:15)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	0.00	0.00	0.00	0.00	161.10	0.00	1060.59	502.39	0.000	0.00	0.00	0.000	A
85%	West	214.86	53.71	215.14	114.30	46.80	0.00	1126.74	747.41	0.191	0.31	0.24	4.059	A
85%	South	82.71	20.68	82.80	62.10	199.84	0.00	1038.17	606.64	0.080	0.11	0.09	3.798	A
85%	East	146.53	36.63	146.70	268.24	14.40	0.00	1145.49	1020.08	0.128	0.20	0.16	3.823	A
90%	North	0.00	0.00	0.00	0.00	161.08	0.00	1128.47	531.94	0.000	0.00	0.00	0.000	A
90%	West	214.86	53.71	215.12	114.29	46.79	0.00	1194.62	791.38	0.180	0.29	0.23	3.777	A
90%	South	82.71	20.68	82.80	62.10	199.81	0.00	1106.06	642.33	0.075	0.10	0.08	3.546	A
90%	East	146.53	36.63	146.68	268.21	14.40	0.00	1213.37	1080.08	0.121	0.18	0.15	3.579	A

Main results: (09:15-09:30)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	0.00	0.00	0.00	0.00	134.89	0.00	1075.76	502.39	0.000	0.00	0.00	0.000	A
85%	West	179.93	44.98	180.12	95.70	39.18	0.00	1131.15	747.41	0.159	0.24	0.20	3.892	A
85%	South	69.26	17.32	69.33	52.00	167.31	0.00	1056.99	606.64	0.066	0.09	0.07	3.677	A
85%	East	122.71	30.68	122.83	224.58	12.06	0.00	1146.85	1020.08	0.107	0.16	0.13	3.725	A
90%	North	0.00	0.00	0.00	0.00	134.88	0.00	1143.64	531.94	0.000	0.00	0.00	0.000	A
90%	West	179.93	44.98	180.11	95.70	39.18	0.00	1199.02	791.38	0.150	0.23	0.18	3.633	A
90%	South	69.26	17.32	69.32	51.99	167.30	0.00	1124.88	642.33	0.062	0.08	0.07	3.438	A
90%	East	122.71	30.68	122.82	224.57	12.06	0.00	1214.72	1080.08	0.101	0.15	0.12	3.497	A

Queueing Delay Results for each time segment

Queueing Delay results: (08:00-08:15)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	0.00	0.00	0.000	A	A
85%	West	2.84	0.19	3.883	A	A
85%	South	1.03	0.07	3.671	A	A
85%	East	1.86	0.12	3.722	A	A
90%	North	0.00	0.00	0.000	A	A
90%	West	2.65	0.18	3.626	A	A
90%	South	0.97	0.06	3.436	A	A
90%	East	1.75	0.12	3.490	A	A

Queueing Delay results: (08:15-08:30)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	0.00	0.00	0.000	A	A
85%	West	3.56	0.24	4.055	A	A
85%	South	1.29	0.09	3.796	A	A
85%	East	2.29	0.15	3.818	A	A
90%	North	0.00	0.00	0.000	A	A
90%	West	3.32	0.22	3.775	A	A
90%	South	1.20	0.08	3.545	A	A
90%	East	2.15	0.14	3.575	A	A

Queueing Delay results: (08:30-08:45)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	0.00	0.00	0.000	A	A
85%	West	4.62	0.31	4.312	A	A
85%	South	1.65	0.11	3.983	A	A
85%	East	2.90	0.19	3.957	A	A
90%	North	0.00	0.00	0.000	A	A
90%	West	4.29	0.29	3.996	A	A
90%	South	1.54	0.10	3.706	A	A
90%	East	2.71	0.18	3.696	A	A

Queueing Delay results: (08:45-09:00)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	0.00	0.00	0.000	A	A
85%	West	4.71	0.31	4.314	A	A
85%	South	1.68	0.11	3.983	A	A
85%	East	2.95	0.20	3.957	A	A
90%	North	0.00	0.00	0.000	A	A
90%	West	4.37	0.29	3.998	A	A
90%	South	1.56	0.10	3.706	A	A
90%	East	2.76	0.18	3.696	A	A

Queueing Delay results: (09:00-09:15)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	0.00	0.00	0.000	A	A
85%	West	3.71	0.25	4.059	A	A
85%	South	1.33	0.09	3.798	A	A
85%	East	2.38	0.16	3.823	A	A
90%	North	0.00	0.00	0.000	A	A
90%	West	3.45	0.23	3.777	A	A
90%	South	1.24	0.08	3.546	A	A
90%	East	2.22	0.15	3.579	A	A

Queueing Delay results: (09:15-09:30)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	0.00	0.00	0.000	A	A
85%	West	2.97	0.20	3.892	A	A
85%	South	1.08	0.07	3.677	A	A
85%	East	1.94	0.13	3.725	A	A
90%	North	0.00	0.00	0.000	A	A
90%	West	2.77	0.18	3.633	A	A
90%	South	1.01	0.07	3.438	A	A
90%	East	1.82	0.12	3.497	A	A

Queue Variation Results for each time segment

Queue Variation results: (08:00-08:15)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.00	~1	~1	~1	~1			N/A	N/A
85%	West	0.19	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.07	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	0.13	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.00	~1	~1	~1	~1			N/A	N/A
90%	West	0.18	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.07	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.12	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:15-08:30)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.00	~1	~1	~1	~1			N/A	N/A
85%	West	0.24	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.09	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	0.15	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.00	~1	~1	~1	~1			N/A	N/A
90%	West	0.22	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.08	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.14	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:30-08:45)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.00	~1	~1	~1	~1			N/A	N/A
85%	West	0.31	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.11	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	0.20	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.00	~1	~1	~1	~1			N/A	N/A
90%	West	0.29	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.10	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.18	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:45-09:00)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.00	~1	~1	~1	~1			N/A	N/A
85%	West	0.31	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.11	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

85%	East	0.20	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.00	~1	~1	~1	~1			N/A	N/A
90%	West	0.29	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.10	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.18	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (09:00-09:15)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.00	~1	~1	~1	~1			N/A	N/A
85%	West	0.24	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.09	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	0.16	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.00	~1	~1	~1	~1			N/A	N/A
90%	West	0.23	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.08	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.15	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (09:15-09:30)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.00	~1	~1	~1	~1			N/A	N/A
85%	West	0.20	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.07	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	0.13	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.00	~1	~1	~1	~1			N/A	N/A
90%	West	0.18	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.07	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.12	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]
© Copyright TRL Limited, 2020

For sales and distribution information, program advice and maintenance, contact TRL:
Tel: +44 (0)1344 770758 email: software@trl.co.uk Web: http://www.trlsoftware.co.uk

The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: Conservation & Beaver Creek.arc8
Path: C:\Users\AdamMorrison\Paradigm\Projects - 170278 Beaver Creek Area TES\C5 - Analysis and Evaluation\Arcady
Report generation date: 2020-07-21 4:23:54 PM

Summary of intersection performance

	PM					
	Queue (PCE)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS
	All - Background 2022					
Intersection 85% - Leg North	0.00	0.00	0.00	A	4.42	A
Intersection 85% - Leg West	0.21	4.06	0.17	A		
Intersection 85% - Leg South	0.09	3.73	0.08	A		
Intersection 85% - Leg East	0.50	4.76	0.33	A		
Intersection 90% - Leg North	0.00	0.00	0.00	A	4.08	A
Intersection 90% - Leg West	0.19	3.77	0.16	A		
Intersection 90% - Leg South	0.09	3.49	0.08	A		
Intersection 90% - Leg East	0.46	4.37	0.31	A		

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Intersection LOS and Intersection Delay are demand-weighted averages.

"D1 - Existing, AM" model duration: 8:00 AM - 9:30 AM
"D2 - Existing, PM" model duration: 5:00 PM - 6:30 PM
"D3 - Background 2022, AM" model duration: 8:00 AM - 9:30 AM
"D4 - Background 2022, PM " model duration: 5:00 PM - 6:30 PM
"D5 - Total 2022, AM" model duration: 8:00 AM - 9:30 AM
"D6 - Total 2022, PM" model duration: 5:00 PM - 6:30 PM
"D7 - Background 2025, AM" model duration: 8:00 AM - 9:30 AM
"D8 - Background 2025, PM" model duration: 5:00 PM - 6:30 PM
"D9 - Total 2025, AM" model duration: 8:00 AM - 9:30 AM
"D10 - Total 2025, PM" model duration: 5:00 PM - 6:30 PM
"D11 - Background 2027, AM" model duration: 8:00 AM - 9:30 AM
"D12 - Background 2027, PM" model duration: 5:00 PM - 6:30 PM
"D13 - Total 2027, AM" model duration: 8:00 AM - 9:30 AM
"D14 - Total 2027, PM" model duration: 5:00 PM - 6:30 PM
"D15 - Background 2032, AM" model duration: 8:00 AM - 9:30 AM
"D16 - Background 2032, PM" model duration: 5:00 PM - 6:30 PM
"D17 - Total 2032, AM" model duration: 8:00 AM - 9:30 AM
"D18 - Total 2032, PM" model duration: 5:00 PM - 6:30 PM

Run using Junctions 8.0.6.541 at 2020-07-21 4:23:52 PM

File summary

Title	(untitled)
Location	
Site Number	
Date	2018-09-11
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	170278
Analyst	AdamMorrison
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)

7.50	✓		N/A	0.85	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	PCE	PCE	perHour	s	-Min	perMin

All - Background 2022, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
All	ARCADY		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
Background 2022, PM	Background 2022	PM		ONE HOUR	17:00	18:30	90	15				✓		

Intersection Network

Intersections

Junction	Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Do Geometric Delay	Intersection Delay (s)	Intersection LOS
85%	85%	Conservation Drive & Beaver Creek Road	Roundabout	North,West,South,East				4.42	A
90%	90%	Conservation Drive & Beaver Creek Road	Roundabout	North,West,South,East				4.08	A

Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

Legs

Legs

Intersection	Leg	Leg	Name	Description
85%	**North**	North	Beaver Creek Road	
85%	**West**	West	Conservation Drive	
85%	**South**	South	Beaver Creek Road	
85%	**East**	East	Conservation Drive	
90%	**North**	North	Beaver Creek Road	
90%	**West**	West	Conservation Drive	
90%	**South**	South	Beaver Creek Road	
90%	**East**	East	Conservation Drive	

Capacity Options

Intersection	Leg	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)	Assume Flat Start Profile	Initial Queue (PCE)
85%	**North**	0.00	99999.00		0.00
85%	**West**	0.00	99999.00		0.00
85%	**South**	0.00	99999.00		0.00

85%	**East**	0.00	99999.00		0.00
90%	**North**	0.00	99999.00		0.00
90%	**West**	0.00	99999.00		0.00
90%	**South**	0.00	99999.00		0.00
90%	**East**	0.00	99999.00		0.00

Roundabout Geometry

Intersection	Leg	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
85%	**North**	3.50	4.50	30.00	20.00	40.00	25.00	
85%	**West**	3.50	4.50	30.00	20.00	40.00	25.00	
85%	**South**	3.50	4.50	30.00	20.00	40.00	25.00	
85%	**East**	3.50	4.50	30.00	20.00	40.00	25.00	
90%	**North**	3.50	4.50	30.00	20.00	40.00	25.00	
90%	**West**	3.50	4.50	30.00	20.00	40.00	25.00	
90%	**South**	3.50	4.50	30.00	20.00	40.00	25.00	
90%	**East**	3.50	4.50	30.00	20.00	40.00	25.00	

Slope / Intercept / Capacity

Leg Intercept Adjustments

Intersection	Leg	Type	Reason	Direct Intercept Adjustment (PCE/hr)	Percentage Intercept Adjustment (%)
85%	**North**	Percentage	Region of Waterloo		85.00
85%	**West**	Percentage	Region of Waterloo		85.00
85%	**South**	Percentage	Region of Waterloo		85.00
85%	**East**	Percentage	Region of Waterloo		85.00
90%	**North**	Percentage	Region of Waterloo		90.00
90%	**West**	Percentage	Region of Waterloo		90.00
90%	**South**	Percentage	Region of Waterloo		90.00
90%	**East**	Percentage	Region of Waterloo		90.00

Roundabout Slope and Intercept used in model

Intersection	Leg	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
85%	**North**		(calculated)	(calculated)	0.579	1153.828
85%	**West**		(calculated)	(calculated)	0.579	1153.828
85%	**South**		(calculated)	(calculated)	0.579	1153.828
85%	**East**		(calculated)	(calculated)	0.579	1153.828
90%	**North**		(calculated)	(calculated)	0.579	1221.701
90%	**West**		(calculated)	(calculated)	0.579	1221.701
90%	**South**		(calculated)	(calculated)	0.579	1221.701
90%	**East**		(calculated)	(calculated)	0.579	1221.701

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCE Factor for a Truck (PCE)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Intersection	Leg	Profile Type	Use Turning Counts	Average Demand Flow (PCE/hr)	Flow Scaling Factor (%)
85%	**North**	ONE HOUR	✓	0.00	100.000
85%	**West**	ONE HOUR	✓	167.00	100.000
85%	**South**	ONE HOUR	✓	81.00	100.000

85%	East	ONE HOUR	✓	346.00	100.000
90%	North	ONE HOUR	✓	0.00	100.000
90%	West	ONE HOUR	✓	167.00	100.000
90%	South	ONE HOUR	✓	81.00	100.000
90%	East	ONE HOUR	✓	346.00	100.000

Turning Proportions

Turning Counts / Proportions (PCE/hr) - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.000	0.000	0.000	0.000
	West	0.000	0.000	10.000	157.000
	South	0.000	19.000	0.000	62.000
	East	0.000	242.000	104.000	0.000

Turning Proportions (PCE) - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.25	0.25	0.25	0.25
	West	0.00	0.00	0.06	0.94
	South	0.00	0.23	0.00	0.77
	East	0.00	0.70	0.30	0.00

Turning Counts / Proportions (PCE/hr) - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.000	0.000	0.000	0.000
	West	0.000	0.000	10.000	157.000
	South	0.000	19.000	0.000	62.000
	East	0.000	242.000	104.000	0.000

Turning Proportions (PCE) - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.25	0.25	0.25	0.25
	West	0.00	0.00	0.06	0.94
	South	0.00	0.23	0.00	0.77
	East	0.00	0.70	0.30	0.00

Vehicle Mix

Average PCE Per Vehicle - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	1.000	1.000	1.030	1.000
	West	1.000	1.000	1.000	1.020
	South	1.000	1.000	1.000	1.000
	East	1.000	1.010	1.000	1.000

Truck Percentages - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.0	0.0	3.0	0.0
	West	0.0	0.0	0.0	2.0
	South	0.0	0.0	0.0	0.0
	East	0.0	1.0	0.0	0.0

Average PCE Per Vehicle - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	1.000	1.000	1.030	1.000
	West	1.000	1.000	1.000	1.020
	South	1.000	1.000	1.000	1.000
	East	1.000	1.010	1.000	1.000

Truck Percentages - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.0	0.0	3.0	0.0
	West	0.0	0.0	0.0	2.0
	South	0.0	0.0	0.0	0.0
	East	0.0	1.0	0.0	0.0

Results

Results Summary for whole modelled period

Intersection	Leg	Max V/C Ratio	Max Delay (s)	Max Queue (PCE)	Max 95th percentile Queue (PCE)	Max LOS	Average Demand (PCE/hr)	Total Intersection Arrivals (PCE)	Total Queueing Delay (PCE-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCE-min/min)	Inclusive Total Queueing Delay (PCE-min)	Inclusive Average Queueing Delay (s)
85%	North	0.00	0.00	0.00	~1	A	0.00	0.00	0.00	0.00	0.00	0.00	0.00
85%	West	0.17	4.06	0.21	~1	A	153.24	229.86	14.88	3.88	0.17	14.88	3.88
85%	South	0.08	3.73	0.09	~1	A	74.33	111.49	6.71	3.61	0.07	6.71	3.61
85%	East	0.33	4.76	0.50	1.01	A	317.50	476.24	35.03	4.41	0.39	35.04	4.41
90%	North	0.00	0.00	0.00	~1	A	0.00	0.00	0.00	0.00	0.00	0.00	0.00
90%	West	0.16	3.77	0.19	~1	A	153.24	229.86	13.88	3.62	0.15	13.88	3.62
90%	South	0.08	3.49	0.09	~1	A	74.33	111.49	6.28	3.38	0.07	6.28	3.38
90%	East	0.31	4.37	0.46	1.01	A	317.50	476.24	32.35	4.08	0.36	32.36	4.08

Main Results for each time segment

Main results: (17:00-17:15)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	0.00	0.00	0.00	0.00	273.56	0.00	995.50	493.35	0.000	0.00	0.00	0.000	A
85%	West	125.73	31.43	125.21	195.61	77.94	0.00	1108.72	765.42	0.113	0.00	0.13	3.727	A
85%	South	60.98	15.25	60.74	85.44	117.71	0.00	1085.70	594.60	0.056	0.00	0.06	3.512	A
85%	East	260.49	65.12	259.31	164.21	14.25	0.00	1145.58	1001.72	0.227	0.00	0.29	4.085	A
90%	North	0.00	0.00	0.00	0.00	273.64	0.00	1063.33	522.37	0.000	0.00	0.00	0.000	A
90%	West	125.73	31.43	125.24	195.68	77.97	0.00	1176.58	810.44	0.107	0.00	0.12	3.486	A
90%	South	60.98	15.25	60.76	85.47	117.74	0.00	1153.56	629.57	0.053	0.00	0.06	3.294	A
90%	East	260.49	65.12	259.39	164.25	14.25	0.00	1213.45	1060.65	0.215	0.00	0.27	3.797	A

Main results: (17:15-17:30)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	0.00	0.00	0.00	0.00	327.80	0.00	964.11	493.35	0.000	0.00	0.00	0.000	A
85%	West	150.13	37.53	150.01	234.40	93.40	0.00	1099.77	765.42	0.137	0.13	0.16	3.861	A
85%	South	72.82	18.20	72.76	102.38	141.02	0.00	1072.21	594.60	0.068	0.06	0.07	3.601	A
85%	East	311.05	77.76	310.73	196.72	17.07	0.00	1143.95	1001.72	0.272	0.29	0.37	4.351	A
90%	North	0.00	0.00	0.00	0.00	327.83	0.00	1031.97	522.37	0.000	0.00	0.00	0.000	A
90%	West	150.13	37.53	150.02	234.42	93.41	0.00	1167.64	810.44	0.129	0.12	0.15	3.603	A
90%	South	72.82	18.20	72.77	102.39	141.03	0.00	1140.08	629.57	0.064	0.06	0.07	3.372	A
90%	East	311.05	77.76	310.76	196.73	17.07	0.00	1211.82	1060.65	0.257	0.27	0.35	4.022	A

Main results: (17:30-17:45)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	0.00	0.00	0.00	0.00	401.35	0.00	921.54	493.35	0.000	0.00	0.00	0.000	A
85%	West	183.87	45.97	183.69	286.99	114.35	0.00	1087.65	765.42	0.169	0.16	0.21	4.056	A
85%	South	89.18	22.30	89.10	125.35	172.69	0.00	1053.88	594.60	0.085	0.07	0.09	3.730	A
85%	East	380.95	95.24	380.45	240.89	20.90	0.00	1141.73	1001.72	0.334	0.37	0.50	4.758	A
90%	North	0.00	0.00	0.00	0.00	401.40	0.00	989.39	522.37	0.000	0.00	0.00	0.000	A
90%	West	183.87	45.97	183.70	287.03	114.37	0.00	1155.51	810.44	0.159	0.15	0.19	3.773	A
90%	South	89.18	22.30	89.11	125.37	172.70	0.00	1121.75	629.57	0.080	0.07	0.09	3.485	A
90%	East	380.95	95.24	380.50	240.91	20.90	0.00	1209.60	1060.65	0.315	0.35	0.46	4.370	A

Main results: (17:45-18:00)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	0.00	0.00	0.00	0.00	401.86	0.00	921.25	493.35	0.000	0.00	0.00	0.000	A
85%	West	183.87	45.97	183.87	287.36	114.50	0.00	1087.56	765.42	0.169	0.21	0.21	4.058	A
85%	South	89.18	22.30	89.18	125.51	172.86	0.00	1053.79	594.60	0.085	0.09	0.09	3.731	A
85%	East	380.95	95.24	380.95	241.12	20.92	0.00	1141.72	1001.72	0.334	0.50	0.50	4.764	A
90%	North	0.00	0.00	0.00	0.00	401.87	0.00	989.12	522.37	0.000	0.00	0.00	0.000	A
90%	West	183.87	45.97	183.87	287.36	114.50	0.00	1155.43	810.44	0.159	0.19	0.19	3.773	A
90%	South	89.18	22.30	89.18	125.51	172.86	0.00	1121.66	629.57	0.080	0.09	0.09	3.485	A
90%	East	380.95	95.24	380.95	241.12	20.92	0.00	1209.59	1060.65	0.315	0.46	0.46	4.374	A

Main results: (18:00-18:15)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	0.00	0.00	0.00	0.00	328.64	0.00	963.62	493.35	0.000	0.00	0.00	0.000	A
85%	West	150.13	37.53	150.31	235.00	93.64	0.00	1099.63	765.42	0.137	0.21	0.16	3.863	A
85%	South	72.82	18.20	72.89	102.64	141.31	0.00	1072.04	594.60	0.068	0.09	0.07	3.602	A
85%	East	311.05	77.76	311.54	197.10	17.10	0.00	1143.93	1001.72	0.272	0.50	0.38	4.357	A
90%	North	0.00	0.00	0.00	0.00	328.59	0.00	1031.53	522.37	0.000	0.00	0.00	0.000	A
90%	West	150.13	37.53	150.29	234.96	93.63	0.00	1167.51	810.44	0.129	0.19	0.15	3.605	A
90%	South	72.82	18.20	72.89	102.63	141.30	0.00	1139.92	629.57	0.064	0.09	0.07	3.375	A
90%	East	311.05	77.76	311.49	197.09	17.10	0.00	1211.81	1060.65	0.257	0.46	0.35	4.029	A

Main results: (18:15-18:30)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	0.00	0.00	0.00	0.00	275.13	0.00	994.60	493.35	0.000	0.00	0.00	0.000	A
85%	West	125.73	31.43	125.85	196.73	78.39	0.00	1108.46	765.42	0.113	0.16	0.13	3.732	A
85%	South	60.98	15.25	61.03	85.93	118.31	0.00	1085.35	594.60	0.056	0.07	0.06	3.513	A
85%	East	260.49	65.12	260.81	165.03	14.32	0.00	1145.54	1001.72	0.227	0.38	0.30	4.098	A
90%	North	0.00	0.00	0.00	0.00	275.10	0.00	1062.49	522.37	0.000	0.00	0.00	0.000	A
90%	West	125.73	31.43	125.84	196.71	78.38	0.00	1176.33	810.44	0.107	0.15	0.12	3.490	A
90%	South	60.98	15.25	61.03	85.92	118.31	0.00	1153.23	629.57	0.053	0.07	0.06	3.298	A
90%	East	260.49	65.12	260.78	165.02	14.32	0.00	1213.42	1060.65	0.215	0.35	0.28	3.808	A

Queueing Delay Results for each time segment

Queueing Delay results: (17:00-17:15)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	0.00	0.00	0.000	A	A
85%	West	1.91	0.13	3.727	A	A
85%	South	0.87	0.06	3.512	A	A
85%	East	4.31	0.29	4.085	A	A
90%	North	0.00	0.00	0.000	A	A
90%	West	1.79	0.12	3.486	A	A
90%	South	0.82	0.05	3.294	A	A
90%	East	4.01	0.27	3.797	A	A

Queueing Delay results: (17:15-17:30)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	0.00	0.00	0.000	A	A
85%	West	2.37	0.16	3.861	A	A
85%	South	1.08	0.07	3.601	A	A
85%	East	5.51	0.37	4.351	A	A
90%	North	0.00	0.00	0.000	A	A
90%	West	2.22	0.15	3.603	A	A
90%	South	1.01	0.07	3.372	A	A
90%	East	5.10	0.34	4.022	A	A

Queueing Delay results: (17:30-17:45)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	0.00	0.00	0.000	A	A
85%	West	3.05	0.20	4.056	A	A
85%	South	1.36	0.09	3.730	A	A
85%	East	7.35	0.49	4.758	A	A
90%	North	0.00	0.00	0.000	A	A
90%	West	2.84	0.19	3.773	A	A
90%	South	1.27	0.08	3.485	A	A
90%	East	6.77	0.45	4.370	A	A

Queueing Delay results: (17:45-18:00)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	0.00	0.00	0.000	A	A
85%	West	3.10	0.21	4.058	A	A
85%	South	1.38	0.09	3.731	A	A
85%	East	7.52	0.50	4.764	A	A
90%	North	0.00	0.00	0.000	A	A
90%	West	2.88	0.19	3.773	A	A
90%	South	1.29	0.09	3.485	A	A
90%	East	6.91	0.46	4.374	A	A

Queueing Delay results: (18:00-18:15)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	0.00	0.00	0.000	A	A
85%	West	2.46	0.16	3.863	A	A
85%	South	1.11	0.07	3.602	A	A
85%	East	5.79	0.39	4.357	A	A
90%	North	0.00	0.00	0.000	A	A
90%	West	2.30	0.15	3.605	A	A
90%	South	1.04	0.07	3.375	A	A
90%	East	5.34	0.36	4.029	A	A

Queueing Delay results: (18:15-18:30)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	0.00	0.00	0.000	A	A
85%	West	1.99	0.13	3.732	A	A
85%	South	0.91	0.06	3.513	A	A
85%	East	4.55	0.30	4.098	A	A
90%	North	0.00	0.00	0.000	A	A
90%	West	1.86	0.12	3.490	A	A
90%	South	0.85	0.06	3.298	A	A
90%	East	4.22	0.28	3.808	A	A

Queue Variation Results for each time segment

Queue Variation results: (17:00-17:15)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.00	~1	~1	~1	~1			N/A	N/A

85%	West	0.13	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.06	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	0.29	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.00	~1	~1	~1	~1			N/A	N/A
90%	West	0.12	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.06	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.27	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (17:15-17:30)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.00	~1	~1	~1	~1			N/A	N/A
85%	West	0.16	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.07	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	0.37	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.00	~1	~1	~1	~1			N/A	N/A
90%	West	0.15	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.07	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.35	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (17:30-17:45)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.00	~1	~1	~1	~1			N/A	N/A
85%	West	0.21	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.09	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	0.50	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.00	~1	~1	~1	~1			N/A	N/A
90%	West	0.19	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.09	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.46	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (17:45-18:00)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.00	~1	~1	~1	~1			N/A	N/A
85%	West	0.21	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.09	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

85%	East	0.50	0.00	0.00	0.00	1.01			N/A	N/A
90%	North	0.00	~1	~1	~1	~1			N/A	N/A
90%	West	0.19	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.09	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.46	0.00	0.00	0.00	1.01			N/A	N/A

Queue Variation results: (18:00-18:15)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.00	~1	~1	~1	~1			N/A	N/A
85%	West	0.16	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.07	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	0.38	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.00	~1	~1	~1	~1			N/A	N/A
90%	West	0.15	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.07	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.35	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (18:15-18:30)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.00	~1	~1	~1	~1			N/A	N/A
85%	West	0.13	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.06	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	0.30	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.00	~1	~1	~1	~1			N/A	N/A
90%	West	0.12	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.06	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.28	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]
© Copyright TRL Limited, 2020

For sales and distribution information, program advice and maintenance, contact TRL:
Tel: +44 (0)1344 770758 email: software@trl.co.uk Web: http://www.trlsoftware.co.uk

The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: Laurelwood & Beaver Creek.arc8
Path: C:\Users\AdamMorrison\Paradigm\Projects - 170278 Beaver Creek Area TES\C5 - Analysis and Evaluation\Arcady
Report generation date: 2020-07-21 4:09:33 PM

Summary of intersection performance

There are warnings associated with this model run - see the 'Data Errors and Warnings' tables.

	AM					
	Queue (Veh)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS
	All - Background 2022					
Intersection 85% - Leg North	0.08	4.08	0.07	A	8.84	A
Intersection 85% - Leg West	1.90	9.86	0.66	A		
Intersection 85% - Leg South	0.92	11.10	0.49	B		
Intersection 85% - Leg East	0.32	4.71	0.25	A		
Intersection 90% - Leg North	0.07	3.80	0.07	A	7.60	A
Intersection 90% - Leg West	1.61	8.37	0.62	A		
Intersection 90% - Leg South	0.79	9.49	0.45	A		
Intersection 90% - Leg East	0.30	4.34	0.23	A		

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Intersection LOS and Intersection Delay are demand-weighted averages.

"D1 - Existing, AM" model duration: 8:00 AM - 9:00 AM
"D2 - Existing, PM" model duration: 4:00 PM - 5:00 PM
"D3 - Background 2022, AM " model duration: 8:00 AM - 9:00 AM
"D4 - Background 2022, PM" model duration: 4:00 PM - 5:00 PM
"D5 - Total 2022, AM" model duration: 8:00 AM - 9:00 AM
"D6 - Total 2022, PM" model duration: 4:00 PM - 5:00 PM
"D7 - Background 2025, AM" model duration: 8:00 AM - 9:00 AM
"D8 - Background 2025, PM" model duration: 4:00 PM - 5:00 PM
"D9 - Total 2025, AM" model duration: 8:00 AM - 9:00 AM
"D10 - Total 2025, PM" model duration: 4:00 PM - 5:00 PM
"D11 - Background 2027, AM" model duration: 8:00 AM - 9:00 AM
"D12 - Background 2027, PM" model duration: 4:00 PM - 5:00 PM
"D13 - Total 2027, AM" model duration: 8:00 AM - 9:00 AM
"D14 - Total 2027, PM" model duration: 4:00 PM - 5:00 PM
"D15 - Background 2032, AM" model duration: 8:00 AM - 9:00 AM
"D16 - Background 2032, PM" model duration: 4:00 PM - 5:00 PM
"D17 - Total 2032, AM" model duration: 8:00 AM - 9:00 AM
"D18 - Total 2032, PM" model duration: 4:00 PM - 5:00 PM

Run using Junctions 8.0.6.541 at 2020-07-21 4:09:31 PM

File summary

Title	Laurelwood & Beaver Creek
Location	Waterloo
Site Number	
Date	2017-12-05
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	170278
Analyst	Matt
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)
7.50	✓		N/A	0.90	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	Veh	Veh	perHour	s	-Min	perMin

All - Background 2022, AM

Data Errors and Warnings

Severity	Area	Item	Description
Last Run	Last Run	Intersection 85% - Leg East - Capacity	Pedestrian Crossing causes blocking on previous leg due to traffic queing to leave the intersection in 4 timesegment(s).
Last Run	Last Run	Intersection 90% - Leg East - Capacity	Pedestrian Crossing causes blocking on previous leg due to traffic queing to leave the intersection in 4 timesegment(s).

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
All	ARCADY		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
Background 2022, AM	Background 2022	AM		PHF	08:00	09:00	60	15				✓		

Intersection Network

Intersections

Junction	Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Do Geometric Delay	Intersection Delay (s)	Intersection LOS
85%	85%	Existing	Roundabout	North,West,South,East				8.84	A
90%	90%	Future	Roundabout	North,West,South,East				7.60	A

Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

Legs

Legs

Intersection	Leg	Leg	Name	Description
85%	**North**	North	Beaver Creek SB	
85%	**West**	West	Laurelwood EB	
85%	**South**	South	Beaver Creek NB	
85%	**East**	East	Laurelwood WB	
90%	**North**	North	Beaver Creek SB	
90%	**West**	West	Laurelwood EB	
90%	**South**	South	Beaver Creek NB	
90%	**East**	East	Laurelwood WB	

Capacity Options

Intersection	Leg	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)	Assume Flat Start Profile	Initial Queue (PCE)
85%	North	0.00	99999.00		0.00
85%	West	0.00	99999.00		0.00
85%	South	0.00	99999.00		0.00
85%	East	0.00	99999.00		0.00
90%	North	0.00	99999.00		0.00
90%	West	0.00	99999.00		0.00
90%	South	0.00	99999.00		0.00
90%	East	0.00	99999.00		0.00

Roundabout Geometry

Intersection	Leg	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
85%	North	3.50	4.50	30.00	20.00	30.00	25.00	
85%	West	3.50	4.50	30.00	20.00	30.00	25.00	
85%	South	3.50	4.50	30.00	20.00	30.00	25.00	
85%	East	3.50	4.50	30.00	20.00	30.00	25.00	
90%	North	3.50	4.50	30.00	20.00	30.00	25.00	
90%	West	3.50	4.50	30.00	20.00	30.00	25.00	
90%	South	3.50	4.50	30.00	20.00	30.00	25.00	
90%	East	3.50	4.50	30.00	20.00	30.00	25.00	

Pedestrian Crossings

Intersection	Leg	Crossing Type
85%	North	Unsignalled Pedestrian Crossing
85%	West	Unsignalled Pedestrian Crossing
85%	South	Unsignalled Pedestrian Crossing
85%	East	Unsignalled Pedestrian Crossing
90%	North	Unsignalled Pedestrian Crossing
90%	West	Unsignalled Pedestrian Crossing
90%	South	Unsignalled Pedestrian Crossing
90%	East	Unsignalled Pedestrian Crossing

Unsignalled Pedestrian Crossing Crossings

Intersection	Leg	Space between crossing and intersection entry (PCE)	Vehicles queueing on exit (PCE)	Central Refuge	Crossing Data Type	Crossing length (m)	Crossing time (s)	Crossing length (entry side) (m)	Crossing time (entry side) (s)	Crossing length (exit side) (m)	Crossing time (exit side) (s)
85%	North	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
85%	West	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
85%	South	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
85%	East	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
90%	North	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
90%	West	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
90%	South	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
90%	East	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50

Slope / Intercept / Capacity

Leg Intercept Adjustments

Intersection	Leg	Type	Reason	Direct Intercept Adjustment (PCE/hr)	Percentage Intercept Adjustment (%)
85%	North	Percentage	Region of Waterloo - Requirement		85.00
85%	West	Percentage	Region of Waterloo - Requirement		85.00
85%	South	Percentage	Region of Waterloo - Requirement		85.00
85%	East	Percentage	Region of Waterloo - Requirement		85.00
90%	North	Percentage	Region of Waterloo - Requirement		90.00
90%	West	Percentage	Region of Waterloo - Requirement		90.00
90%	South	Percentage	Region of Waterloo - Requirement		90.00
90%	East	Percentage	Region of Waterloo - Requirement		90.00

Roundabout Slope and Intercept used in model

Intersection	Leg	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
85%	North		(calculated)	(calculated)	0.593	1153.828
85%	West		(calculated)	(calculated)	0.593	1153.828
85%	South		(calculated)	(calculated)	0.593	1153.828
85%	East		(calculated)	(calculated)	0.593	1153.828
90%	North		(calculated)	(calculated)	0.593	1221.701
90%	West		(calculated)	(calculated)	0.593	1221.701
90%	South		(calculated)	(calculated)	0.593	1221.701
90%	East		(calculated)	(calculated)	0.593	1221.701

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCE Factor for a Truck (PCE)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Intersection	Leg	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
85%	North	PHF	✓	65.00	100.000
85%	West	PHF	✓	648.00	100.000
85%	South	PHF	✓	280.00	100.000
85%	East	PHF	✓	230.00	100.000
90%	North	PHF	✓	65.00	100.000
90%	West	PHF	✓	648.00	100.000
90%	South	PHF	✓	280.00	100.000
90%	East	PHF	✓	230.00	100.000

Peak Hour Factor Data

Intersection	Leg	Hourly Volume (Veh/hr)	Peak Hour Factor	Peak Time Segment
85%	North	65.00	0.92	SecondQuarter
85%	West	648.00	0.92	SecondQuarter
85%	South	280.00	0.92	SecondQuarter
85%	East	230.00	0.92	SecondQuarter
90%	North	65.00	0.92	SecondQuarter
90%	West	648.00	0.92	SecondQuarter
90%	South	280.00	0.92	SecondQuarter
90%	East	230.00	0.92	SecondQuarter

Pedestrian Flows

General Flows Data

Intersection	Leg	Profile Type	Average Pedestrian Flow (Ped/hr)
85%	North	PHF	10.00
85%	West	PHF	7.00
85%	South	PHF	4.00
85%	East	PHF	10.00
90%	North	PHF	10.00
90%	West	PHF	7.00
90%	South	PHF	4.00
90%	East	PHF	10.00

Peak Hour Factor Data

Intersection	Leg	Hourly Volume (Ped/hr)	Peak Hour Factor	Peak Time Segment
85%	North	10.00	1.00	SecondQuarter
85%	West	7.00	1.00	SecondQuarter
85%	South	4.00	1.00	SecondQuarter
85%	East	10.00	1.00	SecondQuarter
90%	North	10.00	1.00	SecondQuarter
90%	West	7.00	1.00	SecondQuarter
90%	South	4.00	1.00	SecondQuarter
90%	East	10.00	1.00	SecondQuarter

Turning Proportions

Turning Counts / Proportions (Veh/hr) - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.000	10.000	19.000	36.000
	West	30.000	0.000	83.000	535.000
	South	36.000	54.000	0.000	190.000
	East	25.000	170.000	35.000	0.000

Turning Proportions (Veh) - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.00	0.15	0.29	0.55
	West	0.05	0.00	0.13	0.83
	South	0.13	0.19	0.00	0.68
	East	0.11	0.74	0.15	0.00

Turning Counts / Proportions (Veh/hr) - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.000	10.000	19.000	36.000
	West	30.000	0.000	83.000	535.000
	South	36.000	54.000	0.000	190.000
	East	25.000	170.000	35.000	0.000

Turning Proportions (Veh) - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.00	0.15	0.29	0.55
	West	0.05	0.00	0.13	0.83
	South	0.13	0.19	0.00	0.68
	East	0.11	0.74	0.15	0.00

Vehicle Mix

Average PCE Per Vehicle - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	1.000	1.110	1.000	1.000
	West	1.000	1.000	1.000	1.030
	South	1.090	1.000	1.000	1.010
	East	1.040	1.060	1.060	1.000

Truck Percentages - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.0	11.0	0.0	0.0
	West	0.0	0.0	0.0	3.0
	South	9.0	0.0	0.0	1.0
	East	4.0	6.0	6.0	0.0

Average PCE Per Vehicle - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	1.000	1.110	1.000	1.000
	West	1.000	1.000	1.000	1.030
	South	1.090	1.000	1.000	1.010
	East	1.040	1.060	1.060	1.000

Truck Percentages - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.0	11.0	0.0	0.0
	West	0.0	0.0	0.0	3.0
	South	9.0	0.0	0.0	1.0
	East	4.0	6.0	6.0	0.0

Results

Results Summary for whole modelled period

Intersection	Leg	Max V/C Ratio	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Intersection Arrivals (Veh)	Total Queueing Delay (Veh-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (Veh-min/min)	Inclusive Total Queueing Delay (Veh-min)	Inclusive Average Queueing Delay (s)
85%	North	0.07	4.08	0.08	~1	A	65.00	65.00	4.31	3.98	0.07	4.31	3.98
85%	West	0.66	9.86	1.90	3.00	A	648.00	648.00	92.38	8.55	1.54	92.43	8.56
85%	South	0.49	11.10	0.92	200.00	B	280.00	280.00	43.37	9.29	0.72	43.39	9.30
85%	East	0.25	4.71	0.32	~1	A	230.00	230.00	17.41	4.54	0.29	17.41	4.54
90%	North	0.07	3.80	0.07	~1	A	65.00	65.00	4.02	3.71	0.07	4.02	3.71
90%	West	0.62	8.37	1.61	2.00	A	648.00	648.00	79.82	7.39	1.33	79.86	7.39
90%	South	0.45	9.49	0.79	~1	A	280.00	280.00	37.73	8.08	0.63	37.74	8.09
90%	East	0.23	4.34	0.30	~1	A	230.00	230.00	16.11	4.20	0.27	16.11	4.20

Main Results for each time segment

Main results: (08:00-08:15)

Intersection	Leg	Total Demand (Veh/hr)	Intersection Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	V/C Ratio	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
85%	North	61.23	15.31	60.97	85.07	242.58	10.00	978.47	439.39	0.063	0.00	0.07	3.923	A
85%	West	610.43	152.61	605.26	219.15	84.40	7.00	1073.36	795.84	0.569	0.00	1.29	7.610	A
85%	South	263.77	65.94	261.42	128.16	561.50	4.00	707.43	378.48	0.373	0.00	0.59	8.031	A
85%	East	216.67	54.17	215.60	710.88	112.05	10.00	1025.08	993.27	0.211	0.00	0.27	4.442	A
90%	North	61.23	15.31	60.98	85.14	242.71	10.00	1044.57	451.10	0.059	0.00	0.06	3.660	A
90%	West	610.43	152.61	605.89	219.27	84.42	7.00	1139.40	846.33	0.536	0.00	1.14	6.693	A
90%	South	263.77	65.94	261.69	128.25	562.06	4.00	766.05	380.91	0.344	0.00	0.52	7.110	A
90%	East	216.67	54.17	215.68	711.58	112.17	10.00	1089.08	1054.55	0.199	0.00	0.25	4.118	A

Main results: (08:15-08:30)

Intersection	Leg	Total Demand (Veh/hr)	Intersection Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	V/C Ratio	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
85%	North	70.65	17.66	70.60	98.60	281.05	10.00	952.13	439.39	0.074	0.07	0.08	4.083	A
85%	West	704.35	176.09	701.93	253.91	97.75	7.00	1064.50	795.84	0.662	1.29	1.90	9.860	A
85%	South	304.35	76.09	302.99	148.55	651.12	4.00	626.02	378.48	0.486	0.59	0.92	11.096	B
85%	East	250.00	62.50	249.77	824.23	129.89	10.00	1014.44	993.27	0.246	0.27	0.32	4.707	A
90%	North	70.65	17.66	70.60	98.66	281.12	10.00	1018.07	451.10	0.069	0.06	0.07	3.798	A

90%	West	704.35	176.09	702.43	253.97	97.75	7.00	1130.50	846.33	0.623	1.14	1.61	8.371	A
90%	South	304.35	76.09	303.25	148.62	651.56	4.00	681.69	380.91	0.446	0.52	0.79	9.485	A
90%	East	250.00	62.50	249.79	824.82	130.00	10.00	1078.43	1054.55	0.232	0.25	0.30	4.343	A

Main results: (08:30-08:45)

Intersection	Leg	Total Demand (Veh/hr)	Intersection Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	V/C Ratio	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
85%	North	66.88	16.72	66.90	93.75	266.68	10.00	962.03	439.39	0.070	0.08	0.08	4.023	A
85%	West	666.78	166.70	667.57	240.94	92.64	7.00	1067.89	795.84	0.624	1.90	1.70	9.016	A
85%	South	288.12	72.03	288.62	141.09	619.12	4.00	655.21	378.48	0.440	0.92	0.80	9.837	A
85%	East	236.67	59.17	236.75	784.06	123.68	10.00	1018.16	993.27	0.232	0.32	0.30	4.608	A
90%	North	66.88	16.72	66.90	93.73	266.65	10.00	1028.11	451.10	0.065	0.07	0.07	3.744	A
90%	West	666.78	166.70	667.43	240.92	92.64	7.00	1133.92	846.33	0.588	1.61	1.45	7.730	A
90%	South	288.12	72.03	288.53	141.07	618.99	4.00	712.58	380.91	0.404	0.79	0.69	8.500	A
90%	East	236.67	59.17	236.74	783.88	123.64	10.00	1082.23	1054.55	0.219	0.30	0.28	4.259	A

Main results: (08:45-09:00)

Intersection	Leg	Total Demand (Veh/hr)	Intersection Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	V/C Ratio	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
85%	North	61.23	15.31	61.26	85.90	244.25	10.00	977.34	439.39	0.063	0.08	0.07	3.931	A
85%	West	610.43	152.61	611.85	220.69	84.83	7.00	1073.05	795.84	0.569	1.70	1.34	7.830	A
85%	South	263.77	65.94	264.52	129.27	567.42	4.00	702.05	378.48	0.376	0.80	0.61	8.243	A
85%	East	216.67	54.17	216.81	718.58	113.35	10.00	1024.31	993.27	0.212	0.30	0.27	4.460	A
90%	North	61.23	15.31	61.26	85.87	244.22	10.00	1043.55	451.10	0.059	0.07	0.06	3.666	A
90%	West	610.43	152.61	611.56	220.65	84.83	7.00	1139.12	846.33	0.536	1.45	1.17	6.838	A
90%	South	263.77	65.94	264.38	129.23	567.15	4.00	761.25	380.91	0.346	0.69	0.54	7.256	A
90%	East	216.67	54.17	216.79	718.24	113.29	10.00	1088.41	1054.55	0.199	0.28	0.25	4.130	A

Queueing Delay Results for each time segment

Queueing Delay results: (08:00-08:15)

Intersection	Leg	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	0.98	0.07	3.923	A	A
85%	West	18.33	1.22	7.610	A	A
85%	South	8.40	0.56	8.031	A	A
85%	East	3.89	0.26	4.442	A	A
90%	North	0.91	0.06	3.660	A	A
90%	West	16.22	1.08	6.693	A	A
90%	South	7.47	0.50	7.110	A	A
90%	East	3.62	0.24	4.118	A	A

Queueing Delay results: (08:15-08:30)

Intersection	Leg	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	1.18	0.08	4.083	A	A
85%	West	27.03	1.80	9.860	A	A
85%	South	13.24	0.88	11.096	B	B
85%	East	4.79	0.32	4.707	A	A
90%	North	1.10	0.07	3.798	A	A
90%	West	23.20	1.55	8.371	A	A
90%	South	11.41	0.76	9.485	A	A
90%	East	4.43	0.30	4.343	A	A

Queueing Delay results: (08:30-08:45)

Intersection	Leg	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	1.14	0.08	4.023	A	A
85%	West	26.15	1.74	9.016	A	A
85%	South	12.30	0.82	9.837	A	A
85%	East	4.62	0.31	4.608	A	A
90%	North	1.06	0.07	3.744	A	A
90%	West	22.29	1.49	7.730	A	A
90%	South	10.57	0.70	8.500	A	A

90%	East	4.26	0.28	4.259	A	A

Queueing Delay results: (08:45-09:00)

Intersection	Leg	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	1.02	0.07	3.931	A	A
85%	West	20.87	1.39	7.830	A	A
85%	South	9.44	0.63	8.243	A	A
85%	East	4.10	0.27	4.460	A	A
90%	North	0.95	0.06	3.666	A	A
90%	West	18.11	1.21	6.838	A	A
90%	South	8.27	0.55	7.256	A	A
90%	East	3.80	0.25	4.130	A	A

Queue Variation Results for each time segment

Queue Variation results: (08:00-08:15)

Intersection	Leg	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.07	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	1.29	0.00	0.00	2.00	3.00			N/A	N/A
85%	South	0.59	0.00	0.00	0.00	>199			N/A	N/A
85%	East	0.27	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.06	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	1.14	0.00	0.00	1.00	2.00			N/A	N/A
90%	South	0.52	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.25	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:15-08:30)

Intersection	Leg	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.08	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	1.90	0.00	0.00	0.00	2.00			N/A	N/A
85%	South	0.92	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	0.32	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.07	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	1.61	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.79	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.30	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:30-08:45)

Intersection	Leg	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.08	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	1.70	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.80	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very		N/A	N/A

							small or very big.			
85%	**East**	0.30	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	**North**	0.07	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	**West**	1.45	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	**South**	0.69	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	**East**	0.28	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:45-09:00)

Intersection	Leg	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	**North**	0.07	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	**West**	1.34	0.00	0.00	2.00	3.00			N/A	N/A
85%	**South**	0.61	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	**East**	0.27	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	**North**	0.06	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	**West**	1.17	0.00	0.00	1.00	2.00			N/A	N/A
90%	**South**	0.54	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	**East**	0.25	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]
© Copyright TRL Limited, 2020

For sales and distribution information, program advice and maintenance, contact TRL:
Tel: +44 (0)1344 770758 email: software@trl.co.uk Web: http://www.trlsoftware.co.uk

The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: Laurelwood & Beaver Creek.arc8
Path: C:\Users\AdamMorrison\Paradigm\Projects - 170278 Beaver Creek Area TES\C5 - Analysis and Evaluation\Arcady
Report generation date: 2020-07-21 4:11:42 PM

Summary of intersection performance

	PM					
	Queue (Veh)	**Delay (s)**	**V/C Ratio**	**LOS**	**Intersection Delay (s)**	**Intersection LOS**
	All - Background 2022					
Intersection 85% - Leg North	0.19	6.97	0.16	A	8.95	A
Intersection 85% - Leg West	0.52	5.53	0.35	A		
Intersection 85% - Leg South	0.18	4.63	0.15	A		
Intersection 85% - Leg East	2.49	11.46	0.72	B		
Intersection 90% - Leg North	0.17	6.25	0.15	A	7.60	A
Intersection 90% - Leg West	0.48	5.02	0.32	A		
Intersection 90% - Leg South	0.17	4.27	0.14	A		
Intersection 90% - Leg East	2.06	9.48	0.68	A		

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Intersection LOS and Intersection Delay are demand-weighted averages.

"D1 - Existing, AM" model duration: 8:00 AM - 9:00 AM
"D2 - Existing, PM" model duration: 4:00 PM - 5:00 PM
"D3 - Background 2022, AM" model duration: 8:00 AM - 9:00 AM
"D4 - Background 2022, PM " model duration: 4:00 PM - 5:00 PM
"D5 - Total 2022, AM" model duration: 8:00 AM - 9:00 AM
"D6 - Total 2022, PM" model duration: 4:00 PM - 5:00 PM
"D7 - Background 2025, AM" model duration: 8:00 AM - 9:00 AM
"D8 - Background 2025, PM" model duration: 4:00 PM - 5:00 PM
"D9 - Total 2025, AM" model duration: 8:00 AM - 9:00 AM
"D10 - Total 2025, PM" model duration: 4:00 PM - 5:00 PM
"D11 - Background 2027, AM" model duration: 8:00 AM - 9:00 AM
"D12 - Background 2027, PM" model duration: 4:00 PM - 5:00 PM
"D13 - Total 2027, AM" model duration: 8:00 AM - 9:00 AM
"D14 - Total 2027, PM" model duration: 4:00 PM - 5:00 PM
"D15 - Background 2032, AM" model duration: 8:00 AM - 9:00 AM
"D16 - Background 2032, PM" model duration: 4:00 PM - 5:00 PM
"D17 - Total 2032, AM" model duration: 8:00 AM - 9:00 AM
"D18 - Total 2032, PM" model duration: 4:00 PM - 5:00 PM

Run using Junctions 8.0.6.541 at 2020-07-21 4:11:41 PM

File summary

Title	Laurelwood & Beaver Creek
Location	Waterloo
Site Number	
Date	2017-12-05
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	170278
Analyst	Matt
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)

7.50	✓		N/A	0.90	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	Veh	Veh	perHour	s	-Min	perMin

All - Background 2022, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
All	ARCADY		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
Background 2022, PM	Background 2022	PM		PHF	16:00	17:00	60	15				✓		

Intersection Network

Intersections

Junction	Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Do Geometric Delay	Intersection Delay (s)	Intersection LOS
85%	85%	Existing	Roundabout	North,West,South,East				8.95	A
90%	90%	Future	Roundabout	North,West,South,East				7.60	A

Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

Legs

Legs

Intersection	Leg	Leg	Name	Description
85%	**North**	North	Beaver Creek SB	
85%	**West**	West	Laurelwood EB	
85%	**South**	South	Beaver Creek NB	
85%	**East**	East	Laurelwood WB	
90%	**North**	North	Beaver Creek SB	
90%	**West**	West	Laurelwood EB	
90%	**South**	South	Beaver Creek NB	
90%	**East**	East	Laurelwood WB	

Capacity Options

Intersection	Leg	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)	Assume Flat Start Profile	Initial Queue (PCE)
85%	**North**	0.00	99999.00		0.00
85%	**West**	0.00	99999.00		0.00
85%	**South**	0.00	99999.00		0.00
85%	**East**	0.00	99999.00		0.00

90%	**North**	0.00	99999.00		0.00
90%	**West**	0.00	99999.00		0.00
90%	**South**	0.00	99999.00		0.00
90%	**East**	0.00	99999.00		0.00

Roundabout Geometry

Intersection	Leg	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
85%	**North**	3.50	4.50	30.00	20.00	30.00	25.00	
85%	**West**	3.50	4.50	30.00	20.00	30.00	25.00	
85%	**South**	3.50	4.50	30.00	20.00	30.00	25.00	
85%	**East**	3.50	4.50	30.00	20.00	30.00	25.00	
90%	**North**	3.50	4.50	30.00	20.00	30.00	25.00	
90%	**West**	3.50	4.50	30.00	20.00	30.00	25.00	
90%	**South**	3.50	4.50	30.00	20.00	30.00	25.00	
90%	**East**	3.50	4.50	30.00	20.00	30.00	25.00	

Pedestrian Crossings

Intersection	Leg	Crossing Type
85%	**North**	Unsignalled Pedestrian Crossing
85%	**West**	Unsignalled Pedestrian Crossing
85%	**South**	Unsignalled Pedestrian Crossing
85%	**East**	Unsignalled Pedestrian Crossing
90%	**North**	Unsignalled Pedestrian Crossing
90%	**West**	Unsignalled Pedestrian Crossing
90%	**South**	Unsignalled Pedestrian Crossing
90%	**East**	Unsignalled Pedestrian Crossing

Unsignalled Pedestrian Crossing Crossings

Intersection	Leg	Space between crossing and intersection entry (PCE)	Vehicles queueing on exit (PCE)	Central Refuge	Crossing Data Type	Crossing length (m)	Crossing time (s)	Crossing length (entry side) (m)	Crossing time (entry side) (s)	Crossing length (exit side) (m)	Crossing time (exit side) (s)
85%	**North**	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
85%	**West**	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
85%	**South**	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
85%	**East**	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
90%	**North**	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
90%	**West**	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
90%	**South**	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
90%	**East**	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50

Slope / Intercept / Capacity

Leg Intercept Adjustments

Intersection	Leg	Type	Reason	Direct Intercept Adjustment (PCE/hr)	Percentage Intercept Adjustment (%)
85%	**North**	Percentage	Region of Waterloo - Requirement		85.00
85%	**West**	Percentage	Region of Waterloo - Requirement		85.00
85%	**South**	Percentage	Region of Waterloo - Requirement		85.00
85%	**East**	Percentage	Region of Waterloo - Requirement		85.00
90%	**North**	Percentage	Region of Waterloo - Requirement		90.00
90%	**West**	Percentage	Region of Waterloo - Requirement		90.00
90%	**South**	Percentage	Region of Waterloo - Requirement		90.00
90%	**East**	Percentage	Region of Waterloo - Requirement		90.00

Roundabout Slope and Intercept used in model

Intersection	Leg	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
85%	**North**		(calculated)	(calculated)	0.593	1153.828
85%	**West**		(calculated)	(calculated)	0.593	1153.828
85%	**South**		(calculated)	(calculated)	0.593	1153.828
85%	**East**		(calculated)	(calculated)	0.593	1153.828
90%	**North**		(calculated)	(calculated)	0.593	1221.701
90%	**West**		(calculated)	(calculated)	0.593	1221.701

90%	South		(calculated)	(calculated)	0.593	1221.701
90%	East		(calculated)	(calculated)	0.593	1221.701

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCE Factor for a Truck (PCE)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Intersection	Leg	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
85%	North	PHF	✓	92.00	100.000
85%	West	PHF	✓	317.00	100.000
85%	South	PHF	✓	130.00	100.000
85%	East	PHF	✓	732.00	100.000
90%	North	PHF	✓	92.00	100.000
90%	West	PHF	✓	317.00	100.000
90%	South	PHF	✓	130.00	100.000
90%	East	PHF	✓	732.00	100.000

Peak Hour Factor Data

Intersection	Leg	Hourly Volume (Veh/hr)	Peak Hour Factor	Peak Time Segment
85%	North	92.00	0.92	SecondQuarter
85%	West	317.00	0.92	SecondQuarter
85%	South	130.00	0.92	SecondQuarter
85%	East	732.00	0.92	SecondQuarter
90%	North	92.00	0.92	SecondQuarter
90%	West	317.00	0.92	SecondQuarter
90%	South	130.00	0.92	SecondQuarter
90%	East	732.00	0.92	SecondQuarter

Pedestrian Flows

General Flows Data

Intersection	Leg	Profile Type	Average Pedestrian Flow (Ped/hr)
85%	North	PHF	9.00
85%	West	PHF	6.00
85%	South	PHF	4.00
85%	East	PHF	8.00
90%	North	PHF	9.00
90%	West	PHF	6.00
90%	South	PHF	4.00
90%	East	PHF	8.00

Peak Hour Factor Data

Intersection	Leg	Hourly Volume (Ped/hr)	Peak Hour Factor	Peak Time Segment
85%	North	9.00	1.00	SecondQuarter
85%	West	6.00	1.00	SecondQuarter
85%	South	4.00	1.00	SecondQuarter
85%	East	8.00	1.00	SecondQuarter

90%	North	9.00	1.00	SecondQuarter
90%	West	6.00	1.00	SecondQuarter
90%	South	4.00	1.00	SecondQuarter
90%	East	8.00	1.00	SecondQuarter

Turning Proportions

Turning Counts / Proportions (Veh/hr) - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.000	23.000	41.000	28.000
	West	11.000	1.000	32.000	273.000
	South	23.000	30.000	0.000	77.000
	East	41.000	554.000	137.000	0.000

Turning Proportions (Veh) - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.00	0.25	0.45	0.30
	West	0.03	0.00	0.10	0.86
	South	0.18	0.23	0.00	0.59
	East	0.06	0.76	0.19	0.00

Turning Counts / Proportions (Veh/hr) - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.000	23.000	41.000	28.000
	West	11.000	1.000	32.000	273.000
	South	23.000	30.000	0.000	77.000
	East	41.000	554.000	137.000	0.000

Turning Proportions (Veh) - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.00	0.25	0.45	0.30
	West	0.03	0.00	0.10	0.86
	South	0.18	0.23	0.00	0.59
	East	0.06	0.76	0.19	0.00

Vehicle Mix

Average PCE Per Vehicle - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	1.000	1.000	1.030	1.000
	West	1.000	1.000	1.000	1.020
	South	1.000	1.000	1.000	1.000
	East	1.000	1.010	1.000	1.000

Truck Percentages - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.0	0.0	3.0	0.0
	West	0.0	0.0	0.0	2.0
	South	0.0	0.0	0.0	0.0
	East	0.0	1.0	0.0	0.0

Average PCE Per Vehicle - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	1.000	1.000	1.030	1.000
	West	1.000	1.000	1.000	1.020
	South	1.000	1.000	1.000	1.000
	East	1.000	1.010	1.000	1.000

Truck Percentages - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.0	0.0	3.0	0.0
	West	0.0	0.0	0.0	2.0
	South	0.0	0.0	0.0	0.0
	East	0.0	1.0	0.0	0.0

Results

Results Summary for whole modelled period

Intersection	Leg	Max V/C Ratio	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Intersection Arrivals (Veh)	Total Queueing Delay (Veh-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (Veh-min/min)	Inclusive Total Queueing Delay (Veh-min)	Inclusive Average Queueing Delay (s)
85%	North	0.16	6.97	0.19	~1	A	92.00	92.00	9.76	6.36	0.16	9.76	6.36
85%	West	0.35	5.53	0.52	1.00	A	317.00	317.00	27.53	5.21	0.46	27.54	5.21
85%	South	0.15	4.63	0.18	~1	A	130.00	130.00	9.62	4.44	0.16	9.62	4.44
85%	East	0.72	11.46	2.49	5.00	B	732.00	732.00	117.93	9.67	1.97	118.01	9.67
90%	North	0.15	6.25	0.17	~1	A	92.00	92.00	8.80	5.74	0.15	8.80	5.74
90%	West	0.32	5.02	0.48	1.00	A	317.00	317.00	25.12	4.75	0.42	25.13	4.76
90%	South	0.14	4.27	0.17	~1	A	130.00	130.00	8.89	4.10	0.15	8.89	4.10
90%	East	0.68	9.48	2.06	4.00	A	732.00	732.00	99.83	8.18	1.66	99.88	8.19

Main Results for each time segment

Main results: (16:00-16:15)

Intersection	Leg	Total Demand (Veh/hr)	Intersection Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	V/C Ratio	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
85%	North	86.67	21.67	86.10	70.13	673.94	9.00	692.62	396.95	0.125	0.00	0.14	5.931	A
85%	West	298.62	74.66	296.97	567.61	192.43	6.00	1015.26	814.30	0.294	0.00	0.41	5.001	A
85%	South	122.46	30.62	121.88	196.20	293.19	4.00	954.65	452.03	0.128	0.00	0.15	4.320	A
85%	East	689.56	172.39	683.14	354.14	60.93	8.00	1108.50	1014.28	0.622	0.00	1.61	8.344	A
90%	North	86.67	21.67	86.15	70.19	674.76	9.00	754.62	405.13	0.115	0.00	0.13	5.382	A
90%	West	298.62	74.66	297.11	568.28	192.63	6.00	1081.44	864.52	0.276	0.00	0.38	4.582	A
90%	South	122.46	30.62	121.92	196.40	293.33	4.00	1020.87	458.19	0.120	0.00	0.14	4.002	A
90%	East	689.56	172.39	684.00	354.31	60.95	8.00	1175.79	1078.37	0.586	0.00	1.39	7.241	A

Main results: (16:15-16:30)

Intersection	Leg	Total Demand (Veh/hr)	Intersection Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	V/C Ratio	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
85%	North	100.00	25.00	99.80	81.28	781.43	9.00	615.68	396.95	0.162	0.14	0.19	6.973	A
85%	West	344.57	86.14	344.12	658.12	223.10	6.00	995.04	814.30	0.346	0.41	0.52	5.527	A
85%	South	141.30	35.33	141.17	227.47	339.75	4.00	918.68	452.03	0.154	0.15	0.18	4.630	A
85%	East	795.65	198.91	792.13	410.34	70.58	8.00	1102.57	1014.28	0.722	1.61	2.49	11.460	B
90%	North	100.00	25.00	99.83	81.34	782.22	9.00	675.95	405.13	0.148	0.13	0.17	6.247	A
90%	West	344.57	86.14	344.17	658.76	223.28	6.00	1061.08	864.51	0.325	0.38	0.48	5.019	A
90%	South	141.30	35.33	141.18	227.64	339.81	4.00	984.36	458.19	0.144	0.14	0.17	4.269	A
90%	East	795.65	198.91	792.97	410.41	70.59	8.00	1169.85	1078.37	0.680	1.39	2.06	9.481	A

Main results: (16:30-16:45)

Intersection	Leg	Total Demand (Veh/hr)	Intersection Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	V/C Ratio	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
85%	North	94.67	23.67	94.74	77.25	744.00	9.00	642.51	396.95	0.147	0.19	0.17	6.572	A
85%	West	326.19	81.55	326.34	626.50	212.23	6.00	1002.25	814.30	0.325	0.52	0.49	5.327	A
85%	South	133.77	33.44	133.82	216.35	322.23	4.00	932.36	452.03	0.143	0.18	0.17	4.509	A
85%	East	753.22	188.30	754.34	389.14	66.91	8.00	1104.82	1014.28	0.682	2.49	2.20	10.313	B
90%	North	94.67	23.67	94.73	77.24	743.78	9.00	704.16	405.13	0.134	0.17	0.16	5.907	A
90%	West	326.19	81.55	326.33	626.33	212.19	6.00	1068.50	864.51	0.305	0.48	0.44	4.853	A
90%	South	133.77	33.44	133.81	216.30	322.22	4.00	998.33	458.19	0.134	0.17	0.16	4.165	A
90%	East	753.22	188.30	754.11	389.12	66.91	8.00	1172.12	1078.37	0.643	2.06	1.84	8.636	A

Main results: (16:45-17:00)

Intersection	Leg	Total Demand (Veh/hr)	Intersection Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	V/C Ratio	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
85%	North	86.67	21.67	86.78	70.79	682.13	9.00	686.80	396.95	0.126	0.17	0.15	6.000	A
85%	West	298.62	74.66	298.89	574.38	194.53	6.00	1013.89	814.30	0.295	0.49	0.42	5.038	A
85%	South	122.46	30.62	122.54	198.29	295.13	4.00	953.19	452.03	0.128	0.17	0.15	4.334	A
85%	East	689.56	172.39	691.64	356.40	61.27	8.00	1108.29	1014.28	0.622	2.20	1.69	8.685	A
90%	North	86.67	21.67	86.77	70.76	681.65	9.00	749.62	405.13	0.116	0.16	0.13	5.431	A
90%	West	298.62	74.66	298.86	573.99	194.43	6.00	1080.26	864.52	0.276	0.44	0.38	4.609	A
90%	South	122.46	30.62	122.54	198.19	295.09	4.00	1019.52	458.19	0.120	0.16	0.14	4.013	A
90%	East	689.56	172.39	691.14	356.36	61.27	8.00	1175.59	1078.37	0.587	1.84	1.45	7.455	A

Queueing Delay Results for each time segment

Queueing Delay results: (16:00-16:15)

Intersection	Leg	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	2.07	0.14	5.931	A	A
85%	West	6.02	0.40	5.001	A	A
85%	South	2.14	0.14	4.320	A	A
85%	East	22.56	1.50	8.344	A	A
90%	North	1.88	0.13	5.382	A	A
90%	West	5.53	0.37	4.582	A	A
90%	South	1.99	0.13	4.002	A	A
90%	East	19.73	1.32	7.241	A	A

Queueing Delay results: (16:15-16:30)

Intersection	Leg	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	2.82	0.19	6.973	A	A
85%	West	7.71	0.51	5.527	A	A
85%	South	2.67	0.18	4.630	A	A
85%	East	34.94	2.33	11.460	B	B
90%	North	2.53	0.17	6.247	A	A
90%	West	7.02	0.47	5.019	A	A
90%	South	2.46	0.16	4.269	A	A
90%	East	29.34	1.96	9.481	A	A

Queueing Delay results: (16:30-16:45)

Intersection	Leg	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	2.65	0.18	6.572	A	A
85%	West	7.39	0.49	5.327	A	A
85%	South	2.55	0.17	4.509	A	A
85%	East	34.08	2.27	10.313	B	B
90%	North	2.38	0.16	5.907	A	A
90%	West	6.72	0.45	4.853	A	A
90%	South	2.35	0.16	4.165	A	A
90%	East	28.32	1.89	8.636	A	A

Queueing Delay results: (16:45-17:00)

Intersection	Leg	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service

85%	North	2.22	0.15	6.000	A	A
85%	West	6.42	0.43	5.038	A	A
85%	South	2.25	0.15	4.334	A	A
85%	East	26.35	1.76	8.685	A	A
90%	North	2.01	0.13	5.431	A	A
90%	West	5.86	0.39	4.609	A	A
90%	South	2.08	0.14	4.013	A	A
90%	East	22.44	1.50	7.455	A	A

Queue Variation Results for each time segment

Queue Variation results: (16:00-16:15)

Intersection	Leg	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.14	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	0.41	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.15	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	1.61	0.00	0.00	3.00	4.00			N/A	N/A
90%	North	0.13	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	0.38	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.14	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	1.39	0.00	0.00	2.00	3.00			N/A	N/A

Queue Variation results: (16:15-16:30)

Intersection	Leg	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.19	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	0.52	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.18	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	2.49	0.00	0.00	0.00	5.00			N/A	N/A
90%	North	0.17	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	0.48	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.17	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	2.06	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (16:30-16:45)

Intersection	Leg	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.17	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	0.49	0.00	0.00	0.00	1.00			N/A	N/A
85%	South	0.17	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	2.20	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.16	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

90%	West	0.44	0.00	0.00	0.00	1.00			N/A	N/A
90%	South	0.16	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	1.84	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (16:45-17:00)

Intersection	Leg	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.15	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	0.42	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.15	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	1.69	0.00	0.00	3.00	5.00			N/A	N/A
90%	North	0.13	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	0.38	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.14	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	1.45	0.00	0.00	2.00	4.00			N/A	N/A

Appendix D

2022 Total Traffic Operations Reports

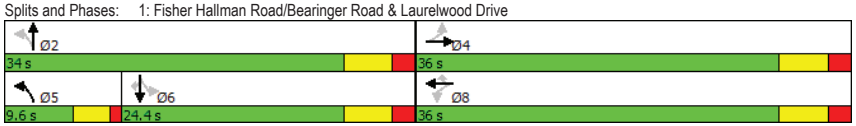


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	331	265	274	40	50	14	111	612	93	45	244	82
Future Volume (vph)	331	265	274	40	50	14	111	612	93	45	244	82
Ideal Flow (vphpl)	1775	1650	1650	1775	1900	1750	1775	1650	1650	1775	1900	1750
Storage Length (m)	85.0		0.0	90.0		90.0	90.0		0.0	60.0		60.0
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (m)	35.0			7.5			45.0			70.0		
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	0.98		1.00		0.98	1.00	1.00		1.00		0.98
Frt		0.924				0.850		0.980				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1653	1462	0	1188	1845	1488	1506	1565	0	1686	1881	1430
Flt Permitted	0.724			0.240			0.443			0.226		
Satd. Flow (perm)	1255	1462	0	299	1845	1452	701	1565	0	401	1881	1396
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		98				109		14				109
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		133.2			228.2			160.2			234.1	
Travel Time (s)		9.6			16.4			11.5			16.9	
Confl. Peds. (#/hr)	2		7	7		2	2		3	3		2
Peak Hour 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
Heavy Vehicles (%)	2%	1%	4%	42%	3%	0%	12%	1%	16%	0%	1%	4%
Adj. Flow (vph)	331	265	274	40	50	14	111	612	93	45	244	82
Shared Lane Traffic (%)												
Lane Group Flow (vph)	331	539	0	40	50	14	111	705	0	45	244	82
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA		Perm	NA	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8		8	2			6		6
Detector Phase	4	4		8	8	8	5	2		6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	24.0	24.0		30.0	30.0	30.0	9.5	24.0		24.0	24.0	24.0
Total Split (s)	36.0	36.0		36.0	36.0	36.0	9.6	34.0		24.4	24.4	24.4
Total Split (%)	51.4%	51.4%		51.4%	51.4%	51.4%	13.7%	48.6%		34.9%	34.9%	34.9%
Maximum Green (s)	30.0	30.0		30.0	30.0	30.0	5.6	28.0		18.4	18.4	18.4
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	3.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	1.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-2.0	0.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag							Lead			Lag	Lag	Lag
Lead-Lag Optimize?							Yes			Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None	None	None	Max		Max	Max	Max
Walk Time (s)	7.0	7.0		7.0	7.0	7.0		7.0		7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	11.0		11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0		0	0	0		0		0	0	0
Act Effct Green (s)	26.4	26.4		26.4	26.4	26.4	30.3	30.3		22.9	22.9	22.9
Actuated g/C Ratio	0.41	0.41		0.41	0.41	0.41	0.47	0.47		0.35	0.35	0.35
v/c Ratio	0.65	0.83		0.33	0.07	0.02	0.28	0.95		0.32	0.37	0.15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	21.7	25.7		21.1	11.2	0.1	13.8	45.0		27.3	20.6	3.4
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	21.7	25.7		21.1	11.2	0.1	13.8	45.0		27.3	20.6	3.4
LOS	C	C		C	B	A	B	D		C	C	A
Approach Delay		24.2			13.5			40.7			17.6	
Approach LOS		C			B			D			B	
Queue Length 50th (m)	32.0	47.7		3.3	3.7	0.0	8.3	87.1		4.6	25.5	0.0
Queue Length 95th (m)	57.5	#91.0		11.3	9.1	0.0	18.7	#170.1		15.1	46.9	6.2
Internal Link Dist (m)		109.2			204.2			136.2			210.1	
Turn Bay Length (m)	85.0			90.0		90.0	90.0			60.0		60.0
Base Capacity (vph)	625	778		149	920	778	397	739		141	664	563
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.53	0.69		0.27	0.05	0.02	0.28	0.95		0.32	0.37	0.15

Intersection Summary		
Area Type:	Other	
Cycle Length: 70		
Actuated Cycle Length: 64.7		
Natural Cycle: 65		
Control Type: Semi Act-Uncoord		
Maximum v/c Ratio: 0.95		
Intersection Signal Delay: 28.8		Intersection LOS: C
Intersection Capacity Utilization 93.5%		ICU Level of Service F
Analysis Period (min) 15		
# 95th percentile volume exceeds capacity, queue may be longer.		
Queue shown is maximum after two cycles.		

Splits and Phases: 1: Fisher Hallman Road/Bearinger Road & Laurelwood Drive





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	331	265	274	40	50	14	111	612	93	45	244	82
Future Volume (vph)	331	265	274	40	50	14	111	612	93	45	244	82
Ideal Flow (vphpl)	1775	1650	1650	1775	1900	1750	1775	1650	1650	1775	1900	1750
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.98		1.00	1.00	0.98	1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.92		1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1648	1462		1183	1845	1452	1504	1565		1684	1881	1397
Flt Permitted	0.72	1.00		0.24	1.00	1.00	0.44	1.00		0.23	1.00	1.00
Satd. Flow (perm)	1256	1462		299	1845	1452	702	1565		400	1881	1397
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	331	265	274	40	50	14	111	612	93	45	244	82
RTOR Reduction (vph)	0	59	0	0	0	8	0	7	0	0	0	53
Lane Group Flow (vph)	331	480	0	40	50	6	111	698	0	45	244	29
Confl. Peds. (#/hr)	2		7	7		2	2		3	3		2
Heavy Vehicles (%)	2%	1%	4%	42%	3%	0%	12%	1%	16%	0%	1%	4%
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA		Perm	NA	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8		8	2			6		6
Actuated Green, G (s)	24.4	24.4		24.4	24.4	24.4	29.1	29.1		20.8	20.8	20.8
Effective Green, g (s)	26.4	26.4		26.4	26.4	26.4	29.1	31.1		22.8	22.8	22.8
Actuated g/C Ratio	0.40	0.40		0.40	0.40	0.40	0.44	0.47		0.35	0.35	0.35
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0	4.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	506	589		120	743	585	364	743		139	654	486
v/s Ratio Prot		c0.33			0.03		0.02	c0.45			0.13	
v/s Ratio Perm	0.26			0.13		0.00	0.12			0.11		0.02
v/c Ratio	0.65	0.82		0.33	0.07	0.01	0.30	0.94		0.32	0.37	0.06
Uniform Delay, d1	15.8	17.4		13.5	12.0	11.7	11.3	16.3		15.7	16.0	14.2
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	3.0	8.5		1.6	0.0	0.0	0.5	21.1		6.1	1.6	0.2
Delay (s)	18.9	25.9		15.1	12.0	11.7	11.8	37.4		21.8	17.6	14.4
Level of Service	B	C		B	B	B	B	D		C	B	B
Approach Delay (s)		23.2			13.2			33.9			17.4	
Approach LOS		C			B			C			B	

Intersection Summary				
HCM 2000 Control Delay	25.8	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.95			
Actuated Cycle Length (s)	65.5	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	93.5%	ICU Level of Service	F	
Analysis Period (min)	15			

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	146	36	560	46	30	12	180	162	22	11	279	32
Future Volume (vph)	146	36	560	46	30	12	180	162	22	11	279	32
Ideal Flow (vphpl)	1650	1650	1750	1550	1550	1550	1775	1650	1650	1550	1550	1550
Storage Length (m)	0.0		25.0	0.0		0.0	25.0		0.0	0.0		0.0
Storage Lanes	0		1	0		0	1		0	0		0
Taper Length (m)	0.0			0.0			35.0			0.0		
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			0.850		0.982			0.982			0.987	
Flt Protected		0.961			0.975		0.950				0.998	
Satd. Flow (prot)	0	1528	1473	0	1449	0	1606	1556	0	0	1482	0
Flt Permitted		0.961			0.975		0.950				0.998	
Satd. Flow (perm)	0	1528	1473	0	1449	0	1606	1556	0	0	1482	0
Link Speed (k/h)		60			50			50			50	
Link Distance (m)		1012.1			151.5			558.2			326.3	
Travel Time (s)		60.7			10.9			40.2			23.5	
Confl. Peds. (#/hr)	3		1	1		3	3		1	1		3
Peak Hour 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
Heavy Vehicles (%)	4%	3%	1%	0%	7%	0%	5%	4%	5%	20%	2%	6%
Adj. Flow (vph)	146	36	560	46	30	12	180	162	22	11	279	32
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	182	560	0	88	0	180	184	0	0	322	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	75.6%	ICU Level of Service D	
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	146	36	560	46	30	12	180	162	22	11	279	32
Future Volume (vph)	146	36	560	46	30	12	180	162	22	11	279	32
Peak Hour 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
Hourly flow rate (vph)	146	36	560	46	30	12	180	162	22	11	279	32

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1
Volume Total (vph)	182	560	88	180	184	322
Volume Left (vph)	146	0	46	180	0	11
Volume Right (vph)	0	560	12	0	22	32
Hadj (s)	0.47	-0.68	0.06	0.58	-0.01	0.00
Departure Headway (s)	7.6	6.4	8.6	8.4	7.8	7.6
Degree Utilization, x	0.38	1.00	0.21	0.42	0.40	0.68
Capacity (veh/h)	467	560	387	428	460	472
Control Delay (s)	14.1	62.4	13.9	16.1	14.6	25.6
Approach Delay (s)	50.6		13.9	15.4		25.6
Approach LOS	F		B	C		D

Intersection Summary				
Delay	34.7			
Level of Service	D			
Intersection Capacity Utilization	75.6%	ICU Level of Service	D	
Analysis Period (min)	15			

Intersection	
Intersection Delay, s/veh	38.1
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	146	36	560	46	30	12	180	162	22	11	279	32
Future Vol, veh/h	146	36	560	46	30	12	180	162	22	11	279	32
Peak Hour 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
Heavy Vehicles, %	4	3	1	0	7	0	5	4	5	20	2	6
Mvmt Flow	146	36	560	46	30	12	180	162	22	11	279	32
Number of Lanes	0	1	1	0	1	0	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	2
HCM Control Delay	55.7	14.1	16.4	28.4
HCM LOS	F	B	C	D

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	100%	0%	80%	0%	52%	3%
Vol Thru, %	0%	88%	20%	0%	34%	87%
Vol Right, %	0%	12%	0%	100%	14%	10%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	180	184	182	560	88	322
LT Vol	180	0	146	0	46	11
Through Vol	0	162	36	0	30	279
RT Vol	0	22	0	560	12	32
Lane Flow Rate	180	184	182	560	88	322
Geometry Grp	7	7	7	7	6	6
Degree of Util (X)	0.418	0.396	0.389	1.02	0.211	0.708
Departure Headway (Hd)	8.527	7.907	7.7	6.555	8.795	8.089
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	425	458	470	554	411	451
Service Time	6.227	5.607	5.417	4.271	6.795	6.089
HCM Lane V/C Ratio	0.424	0.402	0.387	1.011	0.214	0.714
HCM Control Delay	17.2	15.7	15.2	68.9	14.1	28.4
HCM Lane LOS	C	C	C	F	B	D
HCM 95th-tile Q	2	1.9	1.8	15.2	0.8	5.4

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	168	88	136	60	30	326
Future Volume (vph)	168	88	136	60	30	326
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.954				0.876	
Flt Protected				0.966	0.996	
Satd. Flow (prot)	1513	0	0	1549	1495	0
Flt Permitted				0.966	0.996	
Satd. Flow (perm)	1513	0	0	1549	1495	0
Link Speed (k/h)	80			80	50	
Link Distance (m)	1516.2			424.2	223.3	
Travel Time (s)	68.2			19.1	16.1	
Confl. Peds. (#/hr)		1	1			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	6%	2%	5%	14%	2%
Adj. Flow (vph)	168	88	136	60	30	326
Shared Lane Traffic (%)						
Lane Group Flow (vph)	256	0	0	196	356	0
Sign Control	Free			Free	Stop	

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

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	168	88	136	60	30	326
Future Volume (Veh/h)	168	88	136	60	30	326
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	168	88	136	60	30	326
Pedestrians					1	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			257		545	213
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			257		545	213
tC, single (s)			4.1		6.5	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			90		93	61
cM capacity (veh/h)			1307		429	826

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	256	196	356
Volume Left	0	136	30
Volume Right	88	0	326
cSH	1700	1307	767
Volume to Capacity	0.15	0.10	0.46
Queue Length 95th (m)	0.0	2.8	19.9
Control Delay (s)	0.0	5.9	13.7
Lane LOS		A	B
Approach Delay (s)	0.0	5.9	13.7
Approach LOS			B

Intersection Summary			
Average Delay	7.5		
Intersection Capacity Utilization	62.2%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	14	73	101	44	174	66
Future Volume (vph)	14	73	101	44	174	66
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.887		0.959			
Flt Protected	0.992					0.965
Satd. Flow (prot)	1395	0	1470	0	0	1526
Flt Permitted	0.992					0.965
Satd. Flow (perm)	1395	0	1470	0	0	1526
Link Speed (k/h)	80		80			80
Link Distance (m)	1200.3		1761.7			72.7
Travel Time (s)	54.0		79.3			3.3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	8%	12%	11%	0%	3%	8%
Adj. Flow (vph)	14	73	101	44	174	66
Shared Lane Traffic (%)						
Lane Group Flow (vph)	87	0	145	0	0	240
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	40.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	14	73	101	44	174	66
Future Volume (Veh/h)	14	73	101	44	174	66
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	14	73	101	44	174	66
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	537	123			145	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	537	123			145	
tC, single (s)	6.5	6.3			4.1	
tC, 2 stage (s)						
tF (s)	3.6	3.4			2.2	
p0 queue free %	97	92			88	
cM capacity (veh/h)	434	902			1431	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	87	145	240
Volume Left	14	0	174
Volume Right	73	44	0
cSH	769	1700	1431
Volume to Capacity	0.11	0.09	0.12
Queue Length 95th (m)	3.0	0.0	3.3
Control Delay (s)	10.3	0.0	6.0
Lane LOS	B		A
Approach Delay (s)	10.3	0.0	6.0
Approach LOS	B		

Intersection Summary			
Average Delay	4.9		
Intersection Capacity Utilization	40.0%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	23	74	73	72	53	30
Future Volume (vph)	23	74	73	72	53	30
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.897		0.933			
Flt Protected	0.988					0.969
Satd. Flow (prot)	1437	0	1495	0	0	1501
Flt Permitted	0.988					0.969
Satd. Flow (perm)	1437	0	1495	0	0	1501
Link Speed (k/h)	80		80			80
Link Distance (m)	605.5		233.8			1761.7
Travel Time (s)	27.2		10.5			79.3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	5%	10%	3%	3%	8%	4%
Adj. Flow (vph)	23	74	73	72	53	30
Shared Lane Traffic (%)						
Lane Group Flow (vph)	97	0	145	0	0	83
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 31.0%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	23	74	73	72	53	30
Future Volume (Veh/h)	23	74	73	72	53	30
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	23	74	73	72	53	30
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	245	109			145	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	245	109			145	
tC, single (s)	6.4	6.3			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.4			2.3	
p0 queue free %	97	92			96	
cM capacity (veh/h)	709	923			1401	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	97	145	83
Volume Left	23	0	53
Volume Right	74	72	0
cSH	862	1700	1401
Volume to Capacity	0.11	0.09	0.04
Queue Length 95th (m)	3.0	0.0	0.9
Control Delay (s)	9.7	0.0	5.0
Lane LOS	A		A
Approach Delay (s)	9.7	0.0	5.0
Approach LOS	A		

Intersection Summary			
Average Delay	4.2		
Intersection Capacity Utilization	31.0%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	44	4	88	28	24	0	150	133	58	113	0
Future Volume (vph)	6	44	4	88	28	24	0	150	133	58	113	0
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.990			0.977			0.937				
Flt Protected		0.994			0.970						0.983	
Satd. Flow (prot)	0	1501	0	0	1406	0	0	1382	0	0	1429	0
Flt Permitted		0.994			0.970						0.983	
Satd. Flow (perm)	0	1501	0	0	1406	0	0	1382	0	0	1429	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		187.7			400.3			488.0			394.6	
Travel Time (s)		13.5			28.8			35.1			28.4	
Peak Hour 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
Heavy Vehicles (%)	0%	2%	0%	6%	0%	4%	0%	7%	3%	4%	8%	0%
Adj. Flow (vph)	6	44	4	88	28	24	0	150	133	58	113	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	54	0	0	140	0	0	283	0	0	171	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 57.1%		ICU Level of Service B	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	44	4	88	28	24	0	150	133	58	113	0
Future Volume (Veh/h)	6	44	4	88	28	24	0	150	133	58	113	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	6	44	4	88	28	24	0	150	133	58	113	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	484	512	113	472	446	216	113			283		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	484	512	113	472	446	216	113			283		
tC, single (s)	7.1	6.5	6.2	7.2	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.0	3.3	2.2			2.2		
p0 queue free %	99	90	100	80	94	97	100			95		
cM capacity (veh/h)	445	444	945	441	487	818	1489			1268		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	54	140	283	171
Volume Left	6	88	0	58
Volume Right	4	24	133	0
cSH	462	489	1489	1268
Volume to Capacity	0.12	0.29	0.00	0.05
Queue Length 95th (m)	3.1	9.4	0.0	1.1
Control Delay (s)	13.8	15.3	0.0	3.0
Lane LOS	B	C		A
Approach Delay (s)	13.8	15.3	0.0	3.0
Approach LOS	B	C		

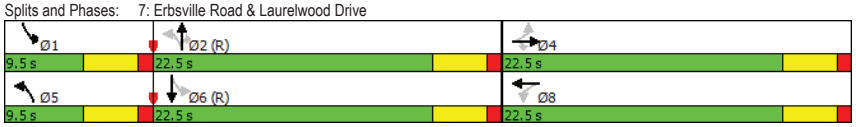
Intersection Summary				
Average Delay		5.2		
Intersection Capacity Utilization		57.1%	ICU Level of Service	B
Analysis Period (min)		15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	221	189	61	102	45	166	247	113	123	239	19
Future Volume (vph)	18	221	189	61	102	45	166	247	113	123	239	19
Ideal Flow (vphpl)	1775	1900	1750	1775	1650	1650	1775	1900	1750	1775	1650	1650
Storage Length (m)	20.0		20.0	25.0		0.0	65.0		30.0	25.0		0.0
Storage Lanes	1		1	1		0	1		1	1		0
Taper Length (m)	35.0			10.0			80.0			35.0		
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	0.90		0.95	0.97	0.96		0.99		0.94	0.97	1.00	
Frt			0.850		0.954				0.850		0.989	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1591	1810	1403	1561	1391	0	1606	1776	1430	1653	1524	0
Flt Permitted	0.663			0.599			0.546			0.562		
Satd. Flow (perm)	1002	1810	1327	960	1391	0	915	1776	1344	951	1524	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			189		44				120		8	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		123.5			178.3			236.9			930.8	
Travel Time (s)		8.9			12.8			17.1			67.0	
Confl. Peds. (#/hr)	79		23	23		79	9		27	27		9
Peak Hour 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
Heavy Vehicles (%)	6%	5%	6%	8%	9%	7%	5%	7%	4%	2%	6%	17%
Adj. Flow (vph)	18	221	189	61	102	45	166	247	113	123	239	19
Shared Lane Traffic (%)												
Lane Group Flow (vph)	18	221	189	61	147	0	166	247	113	123	258	0
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2		2	6		
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5		9.5	22.5	22.5	9.5	22.5	
Total Split (s)	22.5	22.5	22.5	22.5	22.5		9.5	22.5	22.5	9.5	22.5	
Total Split (%)	41.3%	41.3%	41.3%	41.3%	41.3%		17.4%	41.3%	41.3%	17.4%	41.3%	
Maximum Green (s)	18.0	18.0	18.0	18.0	18.0		5.0	18.0	18.0	5.0	18.0	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	
Walk Time (s)	7.0	7.0	7.0	7.0	7.0			7.0	7.0		7.0	
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0			11.0	11.0		11.0	
Pedestrian Calls (#/hr)	0	0	0	0	0			0	0		0	
Act Effct Green (s)	18.0	18.0	18.0	18.0	18.0		23.0	18.0	18.0	23.0	18.0	
Actuated g/C Ratio	0.33	0.33	0.33	0.33	0.33		0.42	0.33	0.33	0.42	0.33	
v/c Ratio	0.05	0.37	0.34	0.19	0.30		0.37	0.42	0.22	0.26	0.51	
Control Delay	13.2	16.2	4.5	15.0	11.8		10.6	16.9	4.2	9.1	18.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	13.2	16.2	4.5	15.0	11.8		10.6	16.9	4.2	9.1	18.5	
LOS	B	B	A	B	B		B	B	A	A	B	
Approach Delay		10.9			12.8			12.2			15.4	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		B			B			B			B	
Queue Length 50th (m)	1.3	17.1	0.0	4.4	7.6		8.7	19.5	0.0	6.2	20.3	
Queue Length 95th (m)	5.0	32.4	11.2	12.0	19.1		17.5	36.2	8.1	13.4	39.2	
Internal Link Dist (m)		99.5			154.3			212.9			906.8	
Turn Bay Length (m)	20.0		20.0	25.0			65.0		30.0	25.0		
Base Capacity (vph)	330	597	564	317	488		449	586	524	465	508	
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Reduced v/c Ratio	0.05	0.37	0.34	0.19	0.30		0.37	0.42	0.22	0.26	0.51	

Intersection Summary		
Area Type:	Other	
Cycle Length: 54.5		
Actuated Cycle Length: 54.5		
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green		
Natural Cycle: 55		
Control Type: Pretimed		
Maximum v/c Ratio: 0.51		
Intersection Signal Delay: 12.7	Intersection LOS: B	
Intersection Capacity Utilization 59.9%	ICU Level of Service B	
Analysis Period (min) 15		

Splits and Phases: 7: Erbsville Road & Laurelwood Drive



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	221	189	61	102	45	166	247	113	123	239	19
Future Volume (vph)	18	221	189	61	102	45	166	247	113	123	239	19
Ideal Flow (vphpl)	1775	1900	1750	1775	1650	1650	1775	1900	1750	1775	1650	1650
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.95	1.00	0.96		1.00	1.00	0.94	1.00	1.00	
Flpb, ped/bikes	0.90	1.00	1.00	0.97	1.00		1.00	1.00	1.00	0.98	1.00	
Frt	1.00	1.00	0.85	1.00	0.95		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1436	1810	1327	1522	1391		1598	1776	1344	1628	1524	
Flt Permitted	0.66	1.00	1.00	0.60	1.00		0.55	1.00	1.00	0.56	1.00	
Satd. Flow (perm)	1003	1810	1327	960	1391		919	1776	1344	963	1524	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	18	221	189	61	102	45	166	247	113	123	239	19
RTOR Reduction (vph)	0	0	127	0	29	0	0	0	76	0	5	0
Lane Group Flow (vph)	18	221	62	61	118	0	166	247	37	123	253	0
Confl. Peds. (#/hr)	79		23	23		79	9		27	27		9
Heavy Vehicles (%)	6%	5%	6%	8%	9%	7%	5%	7%	4%	2%	6%	17%
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2		2	6		
Actuated Green, G (s)	18.0	18.0	18.0	18.0	18.0		23.0	18.0	18.0	23.0	18.0	
Effective Green, g (s)	18.0	18.0	18.0	18.0	18.0		23.0	18.0	18.0	23.0	18.0	
Actuated g/C Ratio	0.33	0.33	0.33	0.33	0.33		0.42	0.33	0.33	0.42	0.33	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Lane Grp Cap (vph)	331	597	438	317	459		450	586	443	467	503	
v/s Ratio Prot		c0.12			0.08		c0.03	0.14		0.02	c0.17	
v/s Ratio Perm	0.02		0.05	0.06			0.12		0.03	0.09		
v/c Ratio	0.05	0.37	0.14	0.19	0.26		0.37	0.42	0.08	0.26	0.50	
Uniform Delay, d1	12.4	13.9	12.8	13.1	13.4		10.2	14.2	12.6	9.9	14.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.3	1.8	0.7	1.3	1.3		2.3	2.2	0.4	1.4	3.6	
Delay (s)	12.8	15.7	13.5	14.4	14.7		12.5	16.4	12.9	11.2	18.2	
Level of Service	B	B	B	B	B		B	B	B	B	B	
Approach Delay (s)		14.6			14.6			14.4			16.0	
Approach LOS		B			B			B			B	

Intersection Summary				
HCM 2000 Control Delay	14.9	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.43			
Actuated Cycle Length (s)	54.5	Sum of lost time (s)	13.5	
Intersection Capacity Utilization	59.9%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	535	83	35	170	76	54	36	190	117	19	16
Future Volume (vph)	32	535	83	35	170	76	54	36	190	117	19	16
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
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		0.983			0.963			0.908			0.986	
Flt Protected		0.998			0.994			0.990			0.963	
Satd. Flow (prot)	0	1484	0	0	1407	0	0	1368	0	0	1455	0
Flt Permitted		0.998			0.994			0.990			0.963	
Satd. Flow (perm)	0	1484	0	0	1407	0	0	1368	0	0	1455	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		213.7			555.1			104.8			136.8	
Travel Time (s)		15.4			40.0			7.5			9.8	
Confl. Peds. (#/hr)	10		4	4		10	7		10	10		7
Peak Hour 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
Heavy Vehicles (%)	0%	3%	0%	6%	6%	4%	0%	9%	1%	0%	0%	11%
Adj. Flow (vph)	32	535	83	35	170	76	54	36	190	117	19	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	650	0	0	281	0	0	280	0	0	152	0
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Roundabout			
Intersection Capacity Utilization	86.8%	ICU Level of Service	E
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Traffic Volume (veh/h)	32	535	83	35	170	76	54	36	190	117	19	16
Future Volume (veh/h)	32	535	83	35	170	76	54	36	190	117	19	16
Peak Hour 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
Hourly flow rate (vph)	32	535	83	35	170	76	54	36	190	117	19	16
Approach Volume (veh/h)		650			281			280			152	
Crossing Volume (veh/h)		171			122			684			259	
High Capacity (veh/h)		1211			1259			805			1130	
High v/c (veh/h)		0.54			0.22			0.35			0.13	
Low Capacity (veh/h)		1004			1047			641			931	
Low v/c (veh/h)		0.65			0.27			0.44			0.16	

Intersection Summary				
Maximum v/c High		0.54		
Maximum v/c Low		0.65		
Intersection Capacity Utilization		86.8%	ICU Level of Service	E



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	194	20	20	70	17	74
Future Volume (vph)	194	20	20	70	17	74
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.987				0.890	
Flt Protected				0.989	0.991	
Satd. Flow (prot)	1585	0	0	1478	1503	0
Flt Permitted				0.989	0.991	
Satd. Flow (perm)	1585	0	0	1478	1503	0
Link Speed (k/h)	80			80	50	
Link Distance (m)	1200.3			667.7	811.2	
Travel Time (s)	54.0			30.0	58.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	0%	5%	12%	6%	3%
Adj. Flow (vph)	194	20	20	70	17	74
Shared Lane Traffic (%)						
Lane Group Flow (vph)	214	0	0	90	91	0
Sign Control	Free			Free	Stop	

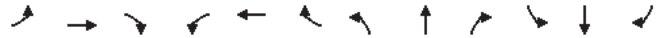
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	34.6%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	194	20	20	70	17	74
Future Volume (Veh/h)	194	20	20	70	17	74
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	194	20	20	70	17	74
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			214		314	204
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			214		314	204
tC, single (s)			4.1		6.5	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			99		97	91
cM capacity (veh/h)			1338		661	834

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	214	90	91
Volume Left	0	20	17
Volume Right	20	0	74
cSH	1700	1338	795
Volume to Capacity	0.13	0.01	0.11
Queue Length 95th (m)	0.0	0.4	3.1
Control Delay (s)	0.0	1.8	10.1
Lane LOS		A	B
Approach Delay (s)	0.0	1.8	10.1
Approach LOS			B

Intersection Summary			
Average Delay		2.7	
Intersection Capacity Utilization		34.6%	ICU Level of Service A
Analysis Period (min)		15	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	24	0	0	0	93	57	5	120	0
Future Volume (vph)	0	0	0	24	0	0	0	93	57	5	120	0
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt								0.949				
Flt Protected					0.950						0.998	
Satd. Flow (prot)	0	1550	0	0	1416	0	0	1444	0	0	1467	0
Flt Permitted					0.950						0.998	
Satd. Flow (perm)	0	1550	0	0	1416	0	0	1444	0	0	1467	0
Link Speed (k/h)		50			70			50			50	
Link Distance (m)		114.7			143.4			394.6			123.0	
Travel Time (s)		8.3			7.4			28.4			8.9	
Peak Hour 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
Heavy Vehicles (%)	0%	0%	0%	4%	0%	0%	0%	3%	0%	40%	4%	0%
Adj. Flow (vph)	0	0	0	24	0	0	0	93	57	5	120	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	24	0	0	150	0	0	125	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 22.7%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	24	0	0	0	93	57	5	120	0
Future Volume (Veh/h)	0	0	0	24	0	0	0	93	57	5	120	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	0	0	0	24	0	0	0	93	57	5	120	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	252	280	120	252	252	122	120			150		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	252	280	120	252	252	122	120			150		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.5		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.6		
p0 queue free %	100	100	100	97	100	100	100			100		
cM capacity (veh/h)	704	629	937	696	652	935	1480			1229		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	0	24	150	125
Volume Left	0	24	0	5
Volume Right	0	0	57	0
cSH	1700	696	1480	1229
Volume to Capacity	0.00	0.03	0.00	0.00
Queue Length 95th (m)	0.0	0.9	0.0	0.1
Control Delay (s)	0.0	10.4	0.0	0.4
Lane LOS	A	B		A
Approach Delay (s)	0.0	10.4	0.0	0.4
Approach LOS	A	B		

Intersection Summary					
Average Delay			1.0		
Intersection Capacity Utilization			22.7%	ICU Level of Service	A
Analysis Period (min)			15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	325	50	110	185	0	43	0	142	0	0	0
Future Volume (vph)	0	325	50	110	185	0	43	0	142	0	0	0
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.982						0.896				
Flt Protected					0.982			0.989				
Satd. Flow (prot)	0	1484	0	0	1472	0	0	1312	0	0	1550	0
Flt Permitted					0.982			0.989				
Satd. Flow (perm)	0	1484	0	0	1472	0	0	1312	0	0	1550	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		166.4			228.8			212.1			132.6	
Travel Time (s)		12.0			16.5			15.3			9.5	
Peak Hour 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
Heavy Vehicles (%)	0%	3%	0%	4%	3%	0%	7%	0%	4%	0%	0%	0%
Adj. Flow (vph)	0	325	50	110	185	0	43	0	142	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	375	0	0	295	0	0	185	0	0	0	0
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary					
Area Type:	Other				
Control Type: Roundabout					
Intersection Capacity Utilization 67.7%				ICU Level of Service C	
Analysis Period (min) 15					



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Traffic Volume (veh/h)	0	325	50	110	185	0	43	0	142	0	0	0
Future Volume (veh/h)	0	325	50	110	185	0	43	0	142	0	0	0
Peak Hour 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
Hourly flow rate (vph)	0	325	50	110	185	0	43	0	142	0	0	0
Approach Volume (veh/h)		375			295			185			0	
Crossing Volume (veh/h)		110			43			325			338	
High Capacity (veh/h)		1271			1339			1073			1062	
High v/c (veh/h)		0.30			0.22			0.17			0.00	
Low Capacity (veh/h)		1058			1120			879			869	
Low v/c (veh/h)		0.35			0.26			0.21			0.00	

Intersection Summary				
Maximum v/c High		0.30		
Maximum v/c Low		0.35		
Intersection Capacity Utilization		67.7%	ICU Level of Service	C



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	506	0	0	251	14	0	0	0	69	0	31
Future Volume (vph)	12	506	0	0	251	14	0	0	0	69	0	31
Ideal Flow (vphpl)	1650	1650	1900	1900	1650	1650	1900	1900	1900	1765	1900	1765
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					0.993						0.958	
Flt Protected		0.999									0.967	
Satd. Flow (prot)	0	1586	0	0	1601	0	0	1863	0	0	1760	0
Flt Permitted		0.999									0.967	
Satd. Flow (perm)	0	1586	0	0	1601	0	0	1863	0	0	1760	0
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		96.4			374.2			170.4			178.3	
Travel Time (s)		5.8			22.5			12.3			12.8	
Confl. Peds. (#/hr)	10					10						
Peak Hour 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
Heavy Vehicles (%)	0%	4%	2%	2%	2%	8%	2%	2%	2%	0%	2%	0%
Adj. Flow (vph)	12	506	0	0	251	14	0	0	0	69	0	31
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	518	0	0	265	0	0	0	0	0	100	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary				
Area Type:	Other			
Control Type: Unsignalized				
Intersection Capacity Utilization 54.2%			ICU Level of Service A	
Analysis Period (min) 15				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	506	0	0	251	14	0	0	0	69	0	31
Future Volume (Veh/h)	12	506	0	0	251	14	0	0	0	69	0	31
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	12	506	0	0	251	14	0	0	0	69	0	31
Pedestrians											10	
Lane Width (m)											3.6	
Walking Speed (m/s)											1.2	
Percent Blockage											1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	275			506			819	805	506	798	798	268
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	275			506			819	805	506	798	798	268
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			100	100	100	77	100	96
cM capacity (veh/h)	1289			1059			279	310	566	300	313	769

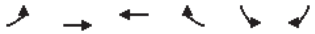
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	518	265	0	100
Volume Left	12	0	0	69
Volume Right	0	14	0	31
cSH	1289	1059	1700	370
Volume to Capacity	0.01	0.00	0.00	0.27
Queue Length 95th (m)	0.2	0.0	0.0	8.6
Control Delay (s)	0.3	0.0	0.0	18.3
Lane LOS	A		A	C
Approach Delay (s)	0.3	0.0	0.0	18.3
Approach LOS			A	C

Intersection Summary				
Average Delay			2.2	
Intersection Capacity Utilization			54.2%	ICU Level of Service
Analysis Period (min)			15	



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	15	561	237	25	63	29
Future Volume (vph)	15	561	237	25	63	29
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.987		0.957	
Flt Protected		0.999			0.967	
Satd. Flow (prot)	0	1602	1567	0	1611	0
Flt Permitted		0.999			0.967	
Satd. Flow (perm)	0	1602	1567	0	1611	0
Link Speed (k/h)		60	60		50	
Link Distance (m)		374.2	1012.1		87.7	
Travel Time (s)		22.5	60.7		6.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	3%	3%	13%	2%	0%
Adj. Flow (vph)	15	561	237	25	63	29
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	576	262	0	92	0
Sign Control		Free	Free		Stop	

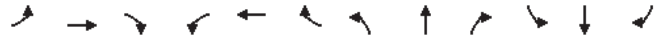
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 60.2%			ICU Level of Service B
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	15	561	237	25	63	29
Future Volume (Veh/h)	15	561	237	25	63	29
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	15	561	237	25	63	29
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	262				840	250
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	262				840	250
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				81	96
cM capacity (veh/h)	1314				331	794

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	576	262	92
Volume Left	15	0	63
Volume Right	0	25	29
cSH	1314	1700	406
Volume to Capacity	0.01	0.15	0.23
Queue Length 95th (m)	0.3	0.0	6.9
Control Delay (s)	0.3	0.0	16.4
Lane LOS	A		C
Approach Delay (s)	0.3	0.0	16.4
Approach LOS			C

Intersection Summary			
Average Delay		1.8	
Intersection Capacity Utilization		60.2%	ICU Level of Service B
Analysis Period (min)		15	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	83	5	68	30	2	7	21	339	4	5	231	20
Future Volume (vph)	83	5	68	30	2	7	21	339	4	5	231	20
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
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		0.941			0.976			0.999			0.989	
Flt Protected		0.974			0.963			0.997			0.999	
Satd. Flow (prot)	0	1402	0	0	1457	0	0	1511	0	0	1479	0
Flt Permitted		0.974			0.963			0.997			0.999	
Satd. Flow (perm)	0	1402	0	0	1457	0	0	1511	0	0	1479	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		77.1			66.0			326.3			223.3	
Travel Time (s)		5.6			4.8			23.5			16.1	
Confl. Peds. (#/hr)	7		1	1		7			5	5		
Peak Hour 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
Heavy Vehicles (%)	0%	0%	3%	0%	0%	0%	5%	2%	0%	0%	3%	11%
Adj. Flow (vph)	83	5	68	30	2	7	21	339	4	5	231	20
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	156	0	0	39	0	0	364	0	0	256	0
Sign Control		Free			Free			Stop			Stop	

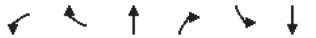
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 53.8%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	83	5	68	30	2	7	21	339	4	5	231	20
Future Volume (Veh/h)	83	5	68	30	2	7	21	339	4	5	231	20
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	83	5	68	30	2	7	21	339	4	5	231	20
Pedestrians					5			1			7	
Lane Width (m)					3.6			3.6			3.6	
Walking Speed (m/s)					1.2			1.2			1.2	
Percent Blockage					0			0			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	16			74			407	282	45	456	312	12
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	16			74			407	282	45	456	312	12
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.4
p0 queue free %	95			98			94	41	100	98	58	98
cM capacity (veh/h)	1605			1537			344	579	1025	259	555	1036

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	156	39	364	256
Volume Left	83	30	21	5
Volume Right	68	7	4	20
cSH	1605	1537	559	563
Volume to Capacity	0.05	0.02	0.65	0.45
Queue Length 95th (m)	1.3	0.5	37.5	18.9
Control Delay (s)	4.1	5.7	22.6	16.6
Lane LOS	A	A	C	C
Approach Delay (s)	4.1	5.7	22.6	16.6
Approach LOS			C	C

Intersection Summary				
Average Delay			16.4	
Intersection Capacity Utilization			53.8%	ICU Level of Service
Analysis Period (min)			15	



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	93	0	0	40
Future Volume (vph)	0	0	93	0	0	40
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1730	0	1618	0	0	1618
Flt Permitted						
Satd. Flow (perm)	1730	0	1618	0	0	1618
Link Speed (k/h)	50		50			50
Link Distance (m)	135.9		143.4			554.5
Travel Time (s)	9.8		10.3			39.9
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	93	0	0	40
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	93	0	0	40
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	9.0%		ICU Level of Service A
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	93	0	0	40
Future Volume (Veh/h)	0	0	93	0	0	40
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	93	0	0	40
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	133	93			93	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	133	93			93	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	861	964			1501	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	0	93	40
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	1700	1501
Volume to Capacity	0.00	0.05	0.00
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0
Lane LOS	A		
Approach Delay (s)	0.0	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay		0.0	
Intersection Capacity Utilization		9.0%	ICU Level of Service A
Analysis Period (min)		15	



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	244	0	0	144	0	0
Future Volume (vph)	244	0	0	144	0	0
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1618	0	0	1618	1730	0
Flt Permitted						
Satd. Flow (perm)	1618	0	0	1618	1730	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	400.3			181.6	225.5	
Travel Time (s)	28.8			13.1	16.2	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	244	0	0	144	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	244	0	0	144	0	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 18.1%			ICU Level of Service A
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	244	0	0	144	0	0
Future Volume (Veh/h)	244	0	0	144	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	244	0	0	144	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			244		388	244
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			244		388	244
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1322		616	795

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	244	144	0
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	1322	1700
Volume to Capacity	0.14	0.00	0.00
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0
Lane LOS			A
Approach Delay (s)	0.0	0.0	0.0
Approach LOS			A

Intersection Summary			
Average Delay		0.0	
Intersection Capacity Utilization		18.1%	ICU Level of Service A
Analysis Period (min)		15	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	244	0	0	144	0	0	0	0	0	0	0
Future Volume (vph)	0	244	0	0	144	0	0	0	0	0	0	0
Ideal Flow (vphpl)	1650	1650	1900	1900	1650	1650	1900	1900	1900	1765	1900	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt												
Flt Protected												
Satd. Flow (prot)	0	1618	0	0	1618	0	0	1863	0	0	1863	0
Flt Permitted												
Satd. Flow (perm)	0	1618	0	0	1618	0	0	1863	0	0	1863	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		181.6			170.9			157.9			161.8	
Travel Time (s)		13.1			12.3			11.4			11.6	
Peak Hour 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
Adj. Flow (vph)	0	244	0	0	144	0	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	244	0	0	144	0	0	0	0	0	0	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary				
Area Type:	Other			
Control Type: Unsignalized				
Intersection Capacity Utilization 18.1%			ICU Level of Service A	
Analysis Period (min) 15				

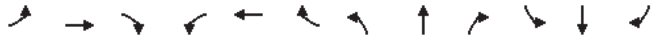
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	244	0	0	144	0	0	0	0	0	0	0
Future Volume (Veh/h)	0	244	0	0	144	0	0	0	0	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	244	0	0	144	0	0	0	0	0	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	144			244			388	388	244	388	388	144
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	144			244			388	388	244	388	388	144
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	100
cM capacity (veh/h)	1438			1322			571	547	795	571	547	903

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	244	144	0	0
Volume Left	0	0	0	0
Volume Right	0	0	0	0
cSH	1438	1322	1700	1700
Volume to Capacity	0.00	0.00	0.00	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0
Lane LOS			A	A
Approach Delay (s)	0.0	0.0	0.0	0.0
Approach LOS			A	A

Intersection Summary					
Average Delay			0.0		
Intersection Capacity Utilization			18.1%	ICU Level of Service	A
Analysis Period (min)			15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	239	5	93	135	0	9	0	136	0	0	0
Future Volume (vph)	0	239	5	93	135	0	9	0	136	0	0	0
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.997						0.873				
Flt Protected					0.980			0.997				
Satd. Flow (prot)	0	1515	0	0	1489	0	0	1323	0	0	1520	0
Flt Permitted					0.980			0.997				
Satd. Flow (perm)	0	1515	0	0	1489	0	0	1323	0	0	1520	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		377.6			166.4			109.1			148.1	
Travel Time (s)		27.2			12.0			7.9			10.7	
Peak Hour 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
Adj. Flow (vph)	0	239	5	93	135	0	9	0	136	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	244	0	0	228	0	0	145	0	0	0	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary					
Area Type:	Other				
Control Type: Unsignalized					
Intersection Capacity Utilization	51.7%			ICU Level of Service	A
Analysis Period (min)	15				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	239	5	93	135	0	9	0	136	0	0	0
Future Volume (Veh/h)	0	239	5	93	135	0	9	0	136	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	0	239	5	93	135	0	9	0	136	0	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	135			244			562	562	242	698	565	135
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	135			244			562	562	242	698	565	135
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			93			98	100	83	100	100	100
cM capacity (veh/h)	1449			1322			414	405	797	278	404	914

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	244	228	145	0
Volume Left	0	93	9	0
Volume Right	5	0	136	0
cSH	1449	1322	754	1700
Volume to Capacity	0.00	0.07	0.19	0.00
Queue Length 95th (m)	0.0	1.8	5.7	0.0
Control Delay (s)	0.0	3.6	10.9	0.0
Lane LOS		A	B	A
Approach Delay (s)	0.0	3.6	10.9	0.0
Approach LOS			B	A

Intersection Summary					
Average Delay			3.9		
Intersection Capacity Utilization			51.7%	ICU Level of Service	A
Analysis Period (min)			15		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	461	0	0	274	13	0	0	0	39	0	18
Future Volume (vph)	6	461	0	0	274	13	0	0	0	39	0	18
Ideal Flow (vphpl)	1650	1650	1900	1900	1650	1650	1900	1900	1900	1765	1900	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.994						0.957	
Flt Protected		0.999									0.967	
Satd. Flow (prot)	0	1616	0	0	1608	0	0	1863	0	0	1724	0
Flt Permitted		0.999									0.967	
Satd. Flow (perm)	0	1616	0	0	1608	0	0	1863	0	0	1724	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		228.8			210.5			130.2			114.8	
Travel Time (s)		16.5			15.2			9.4			8.3	
Peak Hour 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
Adj. Flow (vph)	6	461	0	0	274	13	0	0	0	39	0	18
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	467	0	0	287	0	0	0	0	0	57	0
Sign Control		Free			Free			Stop			Stop	

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

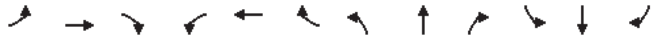
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	461	0	0	274	13	0	0	0	39	0	18
Future Volume (Veh/h)	6	461	0	0	274	13	0	0	0	39	0	18
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	6	461	0	0	274	13	0	0	0	39	0	18
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	287			461			772	760	461	754	754	280
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	287			461			772	760	461	754	754	280
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	88	100	98
cM capacity (veh/h)	1275			1100			308	334	600	325	337	758

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	467	287	0	57
Volume Left	6	0	0	39
Volume Right	0	13	0	18
cSH	1275	1100	1700	396
Volume to Capacity	0.00	0.00	0.00	0.14
Queue Length 95th (m)	0.1	0.0	0.0	4.0
Control Delay (s)	0.2	0.0	0.0	15.6
Lane LOS	A		A	C
Approach Delay (s)	0.2	0.0	0.0	15.6
Approach LOS			A	C

Intersection Summary					
Average Delay			1.2		
Intersection Capacity Utilization			43.5%	ICU Level of Service	A
Analysis Period (min)			15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	494	0	0	269	13	0	0	0	39	0	18
Future Volume (vph)	6	494	0	0	269	13	0	0	0	39	0	18
Ideal Flow (vphpl)	1650	1650	1900	1900	1650	1650	1900	1900	1900	1765	1900	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.994						0.957	
Flt Protected		0.999									0.967	
Satd. Flow (prot)	0	1616	0	0	1608	0	0	1863	0	0	1724	0
Flt Permitted		0.999									0.967	
Satd. Flow (perm)	0	1616	0	0	1608	0	0	1863	0	0	1724	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		210.5			96.4			148.9			129.5	
Travel Time (s)		15.2			6.9			10.7			9.3	
Peak Hour 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
Adj. Flow (vph)	6	494	0	0	269	13	0	0	0	39	0	18
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	500	0	0	282	0	0	0	0	0	57	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary					
Area Type:	Other				
Control Type: Unsignalized					
Intersection Capacity Utilization	45.5%			ICU Level of Service	A
Analysis Period (min)	15				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	494	0	0	269	13	0	0	0	39	0	18
Future Volume (Veh/h)	6	494	0	0	269	13	0	0	0	39	0	18
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	6	494	0	0	269	13	0	0	0	39	0	18
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	282			494			800	788	494	782	782	276
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	282			494			800	788	494	782	782	276
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	87	100	98
cM capacity (veh/h)	1280			1070			295	322	575	311	325	763

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	500	282	0	57
Volume Left	6	0	0	39
Volume Right	0	13	0	18
cSH	1280	1070	1700	382
Volume to Capacity	0.00	0.00	0.00	0.15
Queue Length 95th (m)	0.1	0.0	0.0	4.2
Control Delay (s)	0.1	0.0	0.0	16.1
Lane LOS	A		A	C
Approach Delay (s)	0.1	0.0	0.0	16.1
Approach LOS			A	C

Intersection Summary				
Average Delay			1.2	
Intersection Capacity Utilization			45.5%	ICU Level of Service
Analysis Period (min)			15	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	0	13	0	0	0	7	157	0	0	145	15
Future Volume (vph)	27	0	13	0	0	0	7	157	0	0	145	15
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.956									0.987	
Flt Protected		0.967						0.998				
Satd. Flow (prot)	0	1405	0	0	1520	0	0	1517	0	0	1500	0
Flt Permitted		0.967						0.998				
Satd. Flow (perm)	0	1405	0	0	1520	0	0	1517	0	0	1500	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		174.2			151.1			248.8			212.1	
Travel Time (s)		12.5			10.9			17.9			15.3	
Peak Hour 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
Adj. Flow (vph)	27	0	13	0	0	0	7	157	0	0	145	15
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	40	0	0	0	0	0	164	0	0	160	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary				
Area Type:	Other			
Control Type: Unsignalized				
Intersection Capacity Utilization	27.1%		ICU Level of Service A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	27	0	13	0	0	0	7	157	0	0	145	15
Future Volume (Veh/h)	27	0	13	0	0	0	7	157	0	0	145	15
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	27	0	13	0	0	0	7	157	0	0	145	15
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	324	324	152	336	331	157	160			157		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	324	324	152	336	331	157	160			157		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	96	100	99	100	100	100	100			100		
cM capacity (veh/h)	627	591	894	606	586	889	1419			1423		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	40	0	164	160
Volume Left	27	0	7	0
Volume Right	13	0	0	15
cSH	694	1700	1419	1423
Volume to Capacity	0.06	0.00	0.00	0.00
Queue Length 95th (m)	1.5	0.0	0.1	0.0
Control Delay (s)	10.5	0.0	0.4	0.0
Lane LOS	B	A	A	
Approach Delay (s)	10.5	0.0	0.4	0.0
Approach LOS	B	A		

Intersection Summary				
Average Delay			1.3	
Intersection Capacity Utilization			27.1%	ICU Level of Service
Analysis Period (min)			15	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	0	13	0	0	0	7	137	0	0	143	15
Future Volume (vph)	27	0	13	0	0	0	7	137	0	0	143	15
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.956									0.987	
Flt Protected		0.967						0.998				
Satd. Flow (prot)	0	1405	0	0	1520	0	0	1517	0	0	1500	0
Flt Permitted		0.967						0.998				
Satd. Flow (perm)	0	1405	0	0	1520	0	0	1517	0	0	1500	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		117.0			126.5			247.2			248.8	
Travel Time (s)		8.4			9.1			17.8			17.9	
Peak Hour 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
Adj. Flow (vph)	27	0	13	0	0	0	7	137	0	0	143	15
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	40	0	0	0	0	0	144	0	0	158	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary				
Area Type:	Other			
Control Type: Unsignalized				
Intersection Capacity Utilization	25.8%		ICU Level of Service A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	27	0	13	0	0	0	7	137	0	0	143	15
Future Volume (Veh/h)	27	0	13	0	0	0	7	137	0	0	143	15
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	27	0	13	0	0	0	7	137	0	0	143	15
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	302	302	150	314	309	137	158			137		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	302	302	150	314	309	137	158			137		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	96	100	99	100	100	100	100			100		
cM capacity (veh/h)	648	608	896	626	602	911	1422			1447		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	40	0	144	158
Volume Left	27	0	7	0
Volume Right	13	0	0	15
cSH	712	1700	1422	1447
Volume to Capacity	0.06	0.00	0.00	0.00
Queue Length 95th (m)	1.4	0.0	0.1	0.0
Control Delay (s)	10.4	0.0	0.4	0.0
Lane LOS	B	A	A	
Approach Delay (s)	10.4	0.0	0.4	0.0
Approach LOS	B	A		

Intersection Summary				
Average Delay			1.4	
Intersection Capacity Utilization			25.8%	ICU Level of Service
Analysis Period (min)			15	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	0	0	0	310	0	0	205	0
Future Volume (vph)	0	0	0	0	0	0	0	310	0	0	205	0
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt												
Flt Protected												
Satd. Flow (prot)	0	1520	0	0	1520	0	0	1520	0	0	1520	0
Flt Permitted												
Satd. Flow (perm)	0	1520	0	0	1520	0	0	1520	0	0	1520	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		128.4			112.6			130.6			488.0	
Travel Time (s)		9.2			8.1			9.4			35.1	
Peak Hour 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
Adj. Flow (vph)	0	0	0	0	0	0	0	310	0	0	205	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	0	0	0	310	0	0	205	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary				
Area Type:	Other			
Control Type: Unsignalized				
Intersection Capacity Utilization	23.3%		ICU Level of Service	A
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	0	0	0	0	310	0	0	205	0
Future Volume (Veh/h)	0	0	0	0	0	0	0	310	0	0	205	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	0	0	0	0	0	0	0	310	0	0	205	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	515	515	205	515	515	310	205			310		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	515	515	205	515	515	310	205			310		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	100	100	100	100			100		
cM capacity (veh/h)	470	464	836	470	464	730	1366			1250		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	0	0	310	205
Volume Left	0	0	0	0
Volume Right	0	0	0	0
cSH	1700	1700	1366	1250
Volume to Capacity	0.00	0.00	0.00	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0
Lane LOS	A	A		
Approach Delay (s)	0.0	0.0	0.0	0.0
Approach LOS	A	A		

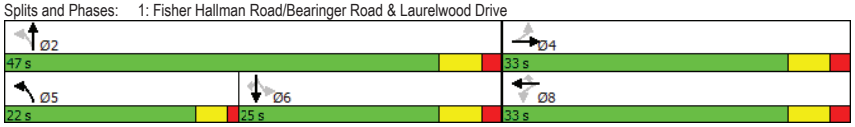
Intersection Summary					
Average Delay			0.0		
Intersection Capacity Utilization			23.3%	ICU Level of Service	A
Analysis Period (min)			15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	135	160	171	100	267	29	236	351	83	28	705	362
Future Volume (vph)	135	160	171	100	267	29	236	351	83	28	705	362
Ideal Flow (vphpl)	1775	1650	1650	1775	1900	1750	1775	1775	1775	1775	1900	1750
Storage Length (m)	85.0		0.0	90.0		90.0	90.0		0.0	60.0		60.0
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (m)	35.0			7.5			45.0			70.0		
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	0.98		0.99		0.98		0.99		1.00		0.98
Frt		0.923				0.850		0.971				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1653	1458	0	1188	1845	1488	1506	1651	0	1686	1881	1430
Flt Permitted	0.452			0.355			0.134			0.510		
Satd. Flow (perm)	784	1458	0	440	1845	1451	212	1651	0	902	1881	1395
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		75				95		23				266
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		133.2			228.2			160.2			234.1	
Travel Time (s)		9.6			16.4			11.5			16.9	
Confl. Peds. (#/hr)	2		7	7		2	2		3	3		2
Peak Hour 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
Heavy Vehicles (%)	2%	1%	4%	42%	3%	0%	12%	1%	16%	0%	1%	4%
Adj. Flow (vph)	135	160	171	100	267	29	236	351	83	28	705	362
Shared Lane Traffic (%)												
Lane Group Flow (vph)	135	331	0	100	267	29	236	434	0	28	705	362
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA		Perm	NA	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8		8	2			6		6
Detector Phase	4	4		8	8	8	5	2		6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	24.0	24.0		30.0	30.0	30.0	9.5	24.0		24.0	24.0	24.0
Total Split (s)	33.0	33.0		33.0	33.0	33.0	22.0	47.0		25.0	25.0	25.0
Total Split (%)	41.3%	41.3%		41.3%	41.3%	41.3%	27.5%	58.8%		31.3%	31.3%	31.3%
Maximum Green (s)	27.0	27.0		27.0	27.0	27.0	18.0	41.0		19.0	19.0	19.0
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	3.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	1.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-2.0	0.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag							Lead			Lag	Lag	Lag
Lead-Lag Optimize?							Yes			Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None	None	None	Max		Max	Max	Max
Walk Time (s)	7.0	7.0		7.0	7.0	7.0		7.0		7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	11.0		11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0		0	0	0		0		0	0	0
Act Effct Green (s)	20.6	20.6		20.6	20.6	20.6	43.3	43.3		27.8	27.8	27.8
Actuated g/C Ratio	0.29	0.29		0.29	0.29	0.29	0.60	0.60		0.39	0.39	0.39
v/c Ratio	0.60	0.70		0.80	0.51	0.06	0.71	0.43		0.08	0.97	0.52

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	33.7	25.8		65.6	24.4	0.2	25.0	10.3		20.3	54.9	9.7
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	33.7	25.8		65.6	24.4	0.2	25.0	10.3		20.3	54.9	9.7
LOS	C	C		E	C	A	C	B		C	D	A
Approach Delay		28.1			33.1			15.5			39.1	
Approach LOS		C			C			B			D	
Queue Length 50th (m)	16.3	31.8		13.0	31.3	0.0	16.2	27.9		2.4	94.2	8.6
Queue Length 95th (m)	34.0	58.7		#36.9	51.4	0.0	44.4	61.7		9.9	#220.1	40.8
Internal Link Dist (m)		109.2			204.2			136.2			210.1	
Turn Bay Length (m)	85.0			90.0		90.0	90.0			60.0		60.0
Base Capacity (vph)	318	636		178	748	645	453	1002		348	726	702
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.42	0.52		0.56	0.36	0.04	0.52	0.43		0.08	0.97	0.52

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 72			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.97			
Intersection Signal Delay: 30.2		Intersection LOS: C	
Intersection Capacity Utilization 92.5%		ICU Level of Service F	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 1: Fisher Hallman Road/Bearinger Road & Laurelwood Drive



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	135	160	171	100	267	29	236	351	83	28	705	362
Future Volume (vph)	135	160	171	100	267	29	236	351	83	28	705	362
Ideal Flow (vphpl)	1775	1650	1650	1775	1900	1750	1775	1775	1775	1775	1900	1750
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.98		1.00	1.00	0.98	1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		0.99	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.92		1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1649	1458		1179	1845	1452	1506	1652		1681	1881	1396
Flt Permitted	0.45	1.00		0.36	1.00	1.00	0.13	1.00		0.51	1.00	1.00
Satd. Flow (perm)	785	1458		441	1845	1452	213	1652		903	1881	1396
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	135	160	171	100	267	29	236	351	83	28	705	362
RTOR Reduction (vph)	0	54	0	0	0	21	0	9	0	0	0	163
Lane Group Flow (vph)	135	277	0	100	267	8	236	425	0	28	705	199
Confl. Peds. (#/hr)	2		7	7		2	2		3	3		2
Heavy Vehicles (%)	2%	1%	4%	42%	3%	0%	12%	1%	16%	0%	1%	4%
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA		Perm	NA	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8		8	2			6		6
Actuated Green, G (s)	18.6	18.6		18.6	18.6	18.6	41.3	41.3		25.8	25.8	25.8
Effective Green, g (s)	20.6	20.6		20.6	20.6	20.6	41.3	43.3		27.8	27.8	27.8
Actuated g/C Ratio	0.29	0.29		0.29	0.29	0.29	0.57	0.60		0.39	0.39	0.39
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0	4.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	224	417		126	528	416	329	994		349	727	539
v/s Ratio Prot		0.19			0.14		c0.11	0.26			c0.37	
v/s Ratio Perm	0.17			c0.23		0.01	0.30			0.03		0.14
v/c Ratio	0.60	0.67		0.79	0.51	0.02	0.72	0.43		0.08	0.97	0.37
Uniform Delay, d1	22.1	22.6		23.7	21.4	18.4	14.6	7.7		14.0	21.6	15.8
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	4.5	4.0		28.1	0.8	0.0	7.3	1.3		0.4	26.8	1.9
Delay (s)	26.6	26.6		51.8	22.2	18.4	21.9	9.0		14.4	48.4	17.7
Level of Service	C	C		D	C	B	C	A		B	D	B
Approach Delay (s)		26.6			29.4			13.6			37.4	
Approach LOS		C			C			B			D	

Intersection Summary					
HCM 2000 Control Delay	28.2	HCM 2000 Level of Service		C	
HCM 2000 Volume to Capacity ratio	0.86				
Actuated Cycle Length (s)	71.9	Sum of lost time (s)		12.0	
Intersection Capacity Utilization	92.5%	ICU Level of Service		F	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	63	33	299	19	31	13	551	281	40	8	311	177
Future Volume (vph)	63	33	299	19	31	13	551	281	40	8	311	177
Ideal Flow (vphpl)	1650	1650	1750	1550	1550	1550	1775	1650	1650	1550	1550	1550
Storage Length (m)	0.0		50.0	0.0		0.0	25.0		0.0	0.0		50.0
Storage Lanes	0		1	0		0	1		0	0		0
Taper Length (m)	0.0			0.0			35.0			0.0		
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			0.850		0.972			0.981			0.952	
Flt Protected		0.968			0.985		0.950				0.999	
Satd. Flow (prot)	0	1541	1473	0	1435	0	1606	1555	0	0	1421	0
Flt Permitted		0.968			0.985		0.950				0.999	
Satd. Flow (perm)	0	1541	1473	0	1435	0	1606	1555	0	0	1421	0
Link Speed (k/h)		60			50			50			50	
Link Distance (m)		1012.1			151.5			545.8			326.3	
Travel Time (s)		60.7			10.9			39.3			23.5	
Confl. Peds. (#/hr)	3		1	1		3	3		1	1		3
Peak Hour 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
Heavy Vehicles (%)	4%	3%	1%	0%	7%	0%	5%	4%	5%	20%	2%	6%
Adj. Flow (vph)	63	33	299	19	31	13	551	281	40	8	311	177
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	96	299	0	63	0	551	321	0	0	496	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	88.7%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	63	33	299	19	31	13	551	281	40	8	311	177
Future Volume (vph)	63	33	299	19	31	13	551	281	40	8	311	177
Peak Hour 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
Hourly flow rate (vph)	63	33	299	19	31	13	551	281	40	8	311	177

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1
Volume Total (vph)	96	299	63	551	321	496
Volume Left (vph)	63	0	19	551	0	8
Volume Right (vph)	0	299	13	0	40	177
Hadj (s)	0.39	-0.68	0.00	0.58	-0.02	-0.15
Departure Headway (s)	8.4	7.3	9.2	7.8	7.2	7.1
Degree Utilization, x	0.22	0.61	0.16	1.20	0.64	0.98
Capacity (veh/h)	422	477	374	464	487	496
Control Delay (s)	12.6	19.7	14.0	134.3	21.2	60.9
Approach Delay (s)	18.0		14.0	92.7		60.9
Approach LOS	C		B	F		F

Intersection Summary					
Delay	65.2				
Level of Service	F				
Intersection Capacity Utilization	88.7%	ICU Level of Service		E	
Analysis Period (min)	15				

Intersection	
Intersection Delay, s/veh	70.2
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	63	33	299	19	31	13	551	281	40	8	311	177
Future Vol, veh/h	63	33	299	19	31	13	551	281	40	8	311	177
Peak Hour 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
Heavy Vehicles, %	4	3	1	0	7	0	5	4	5	20	2	6
Mvmt Flow	63	33	299	19	31	13	551	281	40	8	311	177
Number of Lanes	0	1	1	0	1	0	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	2
HCM Control Delay	19.9	14.7	94.7	74.4
HCM LOS	C	B	F	F

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	100%	0%	66%	0%	30%	2%
Vol Thru, %	0%	88%	34%	0%	49%	63%
Vol Right, %	0%	12%	0%	100%	21%	36%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	551	321	96	299	63	496
LT Vol	551	0	63	0	19	8
Through Vol	0	281	33	0	31	311
RT Vol	0	40	0	299	13	177
Lane Flow Rate	551	321	96	299	63	496
Geometry Grp	7	7	7	7	6	6
Degree of Util (X)	1.204	0.646	0.224	0.612	0.163	1.019
Departure Headway (Hd)	7.867	7.246	8.768	7.683	9.79	7.679
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	463	494	412	472	369	476
Service Time	5.66	5.038	6.468	5.383	7.79	5.679
HCM Lane V/C Ratio	1.19	0.65	0.233	0.633	0.171	1.042
HCM Control Delay	136.7	22.5	14	21.8	14.7	74.4
HCM Lane LOS	F	C	B	C	B	F
HCM 95th-tile Q	21.2	4.5	0.8	4	0.6	14

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	89	55	528	208	76	197
Future Volume (vph)	89	55	528	208	76	197
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Storage Length (m)		0.0	0.0		0.0	30.0
Storage Lanes		0	0		1	0
Taper Length (m)			0.0		0.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.948				0.903	
Flt Protected				0.965	0.986	
Satd. Flow (prot)	1502	0	0	1548	1492	0
Flt Permitted				0.965	0.986	
Satd. Flow (perm)	1502	0	0	1548	1492	0
Link Speed (k/h)	80			80	50	
Link Distance (m)	1516.2			424.2	223.3	
Travel Time (s)	68.2			19.1	16.1	
Confl. Peds. (#/hr)		1	1			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	6%	2%	5%	14%	2%
Adj. Flow (vph)	89	55	528	208	76	197
Shared Lane Traffic (%)						
Lane Group Flow (vph)	144	0	0	736	273	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	83.3%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	89	55	528	208	76	197
Future Volume (Veh/h)	89	55	528	208	76	197
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	89	55	528	208	76	197
Pedestrians					1	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			145		1382	118
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			145		1382	118
tC, single (s)			4.1		6.5	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			63		20	79
cM capacity (veh/h)			1436		94	934

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	144	736	273
Volume Left	0	528	76
Volume Right	55	0	197
cSH	1700	1436	269
Volume to Capacity	0.08	0.37	1.02
Queue Length 95th (m)	0.0	13.7	83.1
Control Delay (s)	0.0	7.5	100.3
Lane LOS		A	F
Approach Delay (s)	0.0	7.5	100.3
Approach LOS			F

Intersection Summary			
Average Delay		28.5	
Intersection Capacity Utilization		83.3%	ICU Level of Service E
Analysis Period (min)		15	

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	56	165	100	15	103	162
Future Volume (vph)	56	165	100	15	103	162
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.899		0.982			
Flt Protected	0.987					0.981
Satd. Flow (prot)	1411	0	1479	0	0	1526
Flt Permitted	0.987					0.981
Satd. Flow (perm)	1411	0	1479	0	0	1526
Link Speed (k/h)	80		80			80
Link Distance (m)	1200.3		1761.7			72.7
Travel Time (s)	54.0		79.3			3.3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	8%	12%	11%	0%	3%	8%
Adj. Flow (vph)	56	165	100	15	103	162
Shared Lane Traffic (%)						
Lane Group Flow (vph)	221	0	115	0	0	265
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	44.0%		ICU Level of Service A
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	56	165	100	15	103	162
Future Volume (Veh/h)	56	165	100	15	103	162
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	56	165	100	15	103	162
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	476	108			115	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	476	108			115	
tC, single (s)	6.5	6.3			4.1	
tC, 2 stage (s)						
tF (s)	3.6	3.4			2.2	
p0 queue free %	89	82			93	
cM capacity (veh/h)	499	920			1468	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	221	115	265
Volume Left	56	0	103
Volume Right	165	15	0
cSH	758	1700	1468
Volume to Capacity	0.29	0.07	0.07
Queue Length 95th (m)	9.7	0.0	1.8
Control Delay (s)	11.7	0.0	3.3
Lane LOS	B		A
Approach Delay (s)	11.7	0.0	3.3
Approach LOS	B		

Intersection Summary			
Average Delay		5.8	
Intersection Capacity Utilization		44.0%	ICU Level of Service A
Analysis Period (min)		15	



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	76	68	41	34	118	104
Future Volume (vph)	76	68	41	34	118	104
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.936		0.939			
Flt Protected	0.974					0.974
Satd. Flow (prot)	1499	0	1504	0	0	1514
Flt Permitted	0.974					0.974
Satd. Flow (perm)	1499	0	1504	0	0	1514
Link Speed (k/h)	80		80			80
Link Distance (m)	605.5		233.8			1761.7
Travel Time (s)	27.2		10.5			79.3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	5%	10%	3%	3%	8%	4%
Adj. Flow (vph)	76	68	41	34	118	104
Shared Lane Traffic (%)						
Lane Group Flow (vph)	144	0	75	0	0	222
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 36.2%			ICU Level of Service A
Analysis Period (min) 15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	76	68	41	34	118	104
Future Volume (Veh/h)	76	68	41	34	118	104
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	76	68	41	34	118	104
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	398	58			75	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	398	58			75	
tC, single (s)	6.4	6.3			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.4			2.3	
p0 queue free %	86	93			92	
cM capacity (veh/h)	554	986			1487	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	144	75	222
Volume Left	76	0	118
Volume Right	68	34	0
cSH	698	1700	1487
Volume to Capacity	0.21	0.04	0.08
Queue Length 95th (m)	6.2	0.0	2.1
Control Delay (s)	11.5	0.0	4.4
Lane LOS	B		A
Approach Delay (s)	11.5	0.0	4.4
Approach LOS	B		

Intersection Summary			
Average Delay		5.9	
Intersection Capacity Utilization		36.2%	ICU Level of Service A
Analysis Period (min)		15	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	24	2	152	58	64	1	125	116	30	214	15
Future Volume (vph)	2	24	2	152	58	64	1	125	116	30	214	15
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		50.0	50.0		0.0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (m)	0.0			0.0			0.0			65.0		
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
Frt		0.990			0.968			0.935			0.992	
Flt Protected		0.996			0.973						0.994	
Satd. Flow (prot)	0	1503	0	0	1400	0	0	1380	0	0	1427	0
Flt Permitted		0.996			0.973						0.994	
Satd. Flow (perm)	0	1503	0	0	1400	0	0	1380	0	0	1427	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		187.7			400.3			488.0			394.6	
Travel Time (s)		13.5			28.8			35.1			28.4	
Peak Hour 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
Heavy Vehicles (%)	0%	2%	0%	6%	0%	4%	0%	7%	3%	4%	8%	0%
Adj. Flow (vph)	2	24	2	152	58	64	1	125	116	30	214	15
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	28	0	0	274	0	0	242	0	0	259	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	69.3%	ICU Level of Service C	
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	24	2	152	58	64	1	125	116	30	214	15
Future Volume (Veh/h)	2	24	2	152	58	64	1	125	116	30	214	15
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	2	24	2	152	58	64	1	125	116	30	214	15
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	560	524	222	480	474	183	229			241		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	560	524	222	480	474	183	229			241		
tC, single (s)	7.1	6.5	6.2	7.2	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.0	3.3	2.2			2.2		
p0 queue free %	99	95	100	67	88	93	100			98		
cM capacity (veh/h)	365	447	823	460	480	854	1351			1314		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	28	274	242	259
Volume Left	2	152	1	30
Volume Right	2	64	116	15
cSH	455	521	1351	1314
Volume to Capacity	0.06	0.53	0.00	0.02
Queue Length 95th (m)	1.6	24.3	0.0	0.6
Control Delay (s)	13.4	19.3	0.0	1.1
Lane LOS	B	C	A	A
Approach Delay (s)	13.4	19.3	0.0	1.1
Approach LOS	B	C		

Intersection Summary					
Average Delay			7.4		
Intersection Capacity Utilization			69.3%	ICU Level of Service	C
Analysis Period (min)			15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	96	116	148	178	106	129	248	153	42	254	23
Future Volume (vph)	14	96	116	148	178	106	129	248	153	42	254	23
Ideal Flow (vphpl)	1775	1900	1750	1775	1650	1650	1775	1900	1750	1775	1650	1650
Storage Length (m)	20.0		20.0	25.0		0.0	65.0		30.0	25.0		0.0
Storage Lanes	1		1	1		0	1		1	1		0
Taper Length (m)	35.0			10.0			80.0			35.0		
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	0.92		0.94	0.97	0.94		0.99		0.94	0.97	1.00	
Frt			0.850		0.944				0.850		0.988	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1591	1810	1403	1561	1359	0	1606	1776	1430	1653	1520	0
Flt Permitted	0.476			0.695			0.589			0.485		
Satd. Flow (perm)	733	1810	1323	1104	1359	0	986	1776	1339	820	1520	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			116		51				153		9	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		123.5			178.3			236.9			930.8	
Travel Time (s)		8.9			12.8			17.1			67.0	
Confl. Peds. (#/hr)	79		23	23		79	9		27	27		9
Peak Hour 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
Heavy Vehicles (%)	6%	5%	6%	8%	9%	7%	5%	7%	4%	2%	6%	17%
Adj. Flow (vph)	14	96	116	148	178	106	129	248	153	42	254	23
Shared Lane Traffic (%)												
Lane Group Flow (vph)	14	96	116	148	284	0	129	248	153	42	277	0
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2		2	6		
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5		9.5	22.5	22.5	9.5	22.5	
Total Split (s)	22.5	22.5	22.5	22.5	22.5		10.4	24.5	24.5	13.0	27.1	
Total Split (%)	37.5%	37.5%	37.5%	37.5%	37.5%		17.3%	40.8%	40.8%	21.7%	45.2%	
Maximum Green (s)	18.0	18.0	18.0	18.0	18.0		5.9	20.0	20.0	8.5	22.6	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	
Walk Time (s)	7.0	7.0	7.0	7.0	7.0			7.0	7.0		7.0	
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0			11.0	11.0		11.0	
Pedestrian Calls (#/hr)	0	0	0	0	0			0	0		0	
Act Effct Green (s)	18.0	18.0	18.0	18.0	18.0		25.9	20.0	20.0	31.1	22.6	
Actuated g/C Ratio	0.30	0.30	0.30	0.30	0.30		0.43	0.33	0.33	0.52	0.38	
v/c Ratio	0.06	0.18	0.24	0.45	0.64		0.27	0.42	0.28	0.08	0.48	
Control Delay	16.1	16.7	5.3	22.2	22.7		8.7	18.2	4.6	6.7	17.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	16.1	16.7	5.3	22.2	22.7		8.7	18.2	4.6	6.7	17.2	
LOS	B	B	A	C	C		A	B	A	A	B	
Approach Delay		10.8			22.6			11.9			15.8	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		B			C			B			B	
Queue Length 50th (m)	1.2	8.1	0.0	13.7	22.7		6.6	21.8	0.0	2.0	22.8	
Queue Length 95th (m)	4.8	17.9	9.8	29.0	#47.7		13.6	39.5	10.6	5.7	42.2	
Internal Link Dist (m)		99.5			154.3			212.9			906.8	
Turn Bay Length (m)	20.0		20.0	25.0			65.0		30.0	25.0		
Base Capacity (vph)	219	543	478	331	443		486	592	548	543	578	
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Reduced v/c Ratio	0.06	0.18	0.24	0.45	0.64		0.27	0.42	0.28	0.08	0.48	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 55			
Control Type: Pretimed			
Maximum v/c Ratio: 0.64			
Intersection Signal Delay: 15.6		Intersection LOS: B	
Intersection Capacity Utilization 56.2%		ICU Level of Service B	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 7: Erbsville Road & Laurelwood Drive



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	96	116	148	178	106	129	248	153	42	254	23
Future Volume (vph)	14	96	116	148	178	106	129	248	153	42	254	23
Ideal Flow (vphpl)	1775	1900	1750	1775	1650	1650	1775	1900	1750	1775	1650	1650
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.94	1.00	0.94		1.00	1.00	0.94	1.00	1.00	
Flpb, ped/bikes	0.92	1.00	1.00	0.97	1.00		0.99	1.00	1.00	0.99	1.00	
Frt	1.00	1.00	0.85	1.00	0.94		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1463	1810	1323	1509	1359		1597	1776	1339	1632	1520	
Flt Permitted	0.48	1.00	1.00	0.69	1.00		0.59	1.00	1.00	0.48	1.00	
Satd. Flow (perm)	733	1810	1323	1104	1359		990	1776	1339	833	1520	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	14	96	116	148	178	106	129	248	153	42	254	23
RTOR Reduction (vph)	0	0	81	0	36	0	0	0	102	0	6	0
Lane Group Flow (vph)	14	96	35	148	248	0	129	248	51	42	271	0
Confl. Peds. (#/hr)	79		23	23		79	9		27	27		9
Heavy Vehicles (%)	6%	5%	6%	8%	9%	7%	5%	7%	4%	2%	6%	17%
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2		2	6		
Actuated Green, G (s)	18.0	18.0	18.0	18.0	18.0		25.9	20.0	20.0	31.1	22.6	
Effective Green, g (s)	18.0	18.0	18.0	18.0	18.0		25.9	20.0	20.0	31.1	22.6	
Actuated g/C Ratio	0.30	0.30	0.30	0.30	0.30		0.43	0.33	0.33	0.52	0.38	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Lane Grp Cap (vph)	219	543	396	331	407		487	592	446	544	572	
v/s Ratio Prot		0.05			c0.18		c0.03	0.14		c0.01	c0.18	
v/s Ratio Perm	0.02		0.03	0.13			0.09		0.04	0.03		
v/c Ratio	0.06	0.18	0.09	0.45	0.61		0.26	0.42	0.11	0.08	0.47	
Uniform Delay, d1	15.0	15.5	15.1	17.0	18.0		10.5	15.5	13.9	7.3	14.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.6	0.7	0.4	4.3	6.7		1.3	2.2	0.5	0.3	2.8	
Delay (s)	15.5	16.2	15.5	21.3	24.7		11.9	17.7	14.4	7.6	17.0	
Level of Service	B	B	B	C	C		B	B	B	A	B	
Approach Delay (s)		15.8			23.5			15.3			15.8	
Approach LOS		B			C			B			B	

Intersection Summary					
HCM 2000 Control Delay	17.8	HCM 2000 Level of Service		B	
HCM 2000 Volume to Capacity ratio	0.50				
Actuated Cycle Length (s)	60.0	Sum of lost time (s)		13.5	
Intersection Capacity Utilization	56.2%	ICU Level of Service		B	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	273	32	137	554	137	30	23	77	95	41	27
Future Volume (vph)	15	273	32	137	554	137	30	23	77	95	41	27
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
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		0.986			0.978			0.920			0.978	
Flt Protected		0.998			0.992			0.989			0.972	
Satd. Flow (prot)	0	1487	0	0	1423	0	0	1380	0	0	1447	0
Flt Permitted		0.998			0.992			0.989			0.972	
Satd. Flow (perm)	0	1487	0	0	1423	0	0	1380	0	0	1447	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		213.7			555.1			104.8			136.8	
Travel Time (s)		15.4			40.0			7.5			9.8	
Confl. Peds. (#/hr)	10		4	4		10	7		10	10		7
Peak Hour 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
Heavy Vehicles (%)	0%	3%	0%	6%	6%	4%	0%	9%	1%	0%	0%	11%
Adj. Flow (vph)	15	273	32	137	554	137	30	23	77	95	41	27
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	320	0	0	828	0	0	130	0	0	163	0
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Roundabout			
Intersection Capacity Utilization	104.4%	ICU Level of Service	G
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Traffic Volume (veh/h)	15	273	32	137	554	137	30	23	77	95	41	27
Future Volume (veh/h)	15	273	32	137	554	137	30	23	77	95	41	27
Peak Hour 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
Hourly flow rate (vph)	15	273	32	137	554	137	30	23	77	95	41	27
Approach Volume (veh/h)		320			828			130			163	
Crossing Volume (veh/h)		273			68			383			721	
High Capacity (veh/h)		1118			1313			1025			781	
High v/c (veh/h)		0.29			0.63			0.13			0.21	
Low Capacity (veh/h)		919			1096			836			620	
Low v/c (veh/h)		0.35			0.76			0.16			0.26	

Intersection Summary					
Maximum v/c High		0.63			
Maximum v/c Low		0.76			
Intersection Capacity Utilization	104.4%	ICU Level of Service		G	

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	98	21	83	194	18	24
Future Volume (vph)	98	21	83	194	18	24
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.976				0.923	
Flt Protected				0.985	0.979	
Satd. Flow (prot)	1572	0	0	1479	1529	0
Flt Permitted				0.985	0.979	
Satd. Flow (perm)	1572	0	0	1479	1529	0
Link Speed (k/h)	80			80	50	
Link Distance (m)	1200.3			667.7	811.2	
Travel Time (s)	54.0			30.0	58.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	0%	5%	12%	6%	3%
Adj. Flow (vph)	98	21	83	194	18	24
Shared Lane Traffic (%)						
Lane Group Flow (vph)	119	0	0	277	42	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 33.7%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	98	21	83	194	18	24
Future Volume (Veh/h)	98	21	83	194	18	24
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	98	21	83	194	18	24
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			119		468	108
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			119		468	108
tC, single (s)			4.1		6.5	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			94		97	97
cM capacity (veh/h)			1451		515	943

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	119	277	42
Volume Left	0	83	18
Volume Right	21	0	24
cSH	1700	1451	695
Volume to Capacity	0.07	0.06	0.06
Queue Length 95th (m)	0.0	1.5	1.5
Control Delay (s)	0.0	2.6	10.5
Lane LOS		A	B
Approach Delay (s)	0.0	2.6	10.5
Approach LOS			B

Intersection Summary			
Average Delay	2.7		
Intersection Capacity Utilization	33.7%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	80	0	5	0	151	56	1	124	0
Future Volume (vph)	0	0	0	80	0	5	0	151	56	1	124	0
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Storage Length (m)	0.0		0.0	50.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (m)	0.0			50.0			0.0			0.0		
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
Frt					0.992			0.963				
Flt Protected					0.955							
Satd. Flow (prot)	0	1550	0	0	1415	0	0	1461	0	0	1486	0
Flt Permitted					0.955							
Satd. Flow (perm)	0	1550	0	0	1415	0	0	1461	0	0	1486	0
Link Speed (k/h)		50			70			50			50	
Link Distance (m)		114.7			143.4			394.6			123.0	
Travel Time (s)		8.3			7.4			28.4			8.9	
Peak Hour 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
Heavy Vehicles (%)	0%	0%	0%	4%	0%	0%	0%	3%	0%	40%	4%	0%
Adj. Flow (vph)	0	0	0	80	0	5	0	151	56	1	124	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	85	0	0	207	0	0	125	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	26.4%	ICU Level of Service A	
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	80	0	5	0	151	56	1	124	0
Future Volume (Veh/h)	0	0	0	80	0	5	0	151	56	1	124	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	0	0	0	80	0	5	0	151	56	1	124	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	310	333	124	305	305	179	124			207		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	310	333	124	305	305	179	124			207		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.5		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.6		
p0 queue free %	100	100	100	88	100	99	100			100		
cM capacity (veh/h)	642	590	932	643	611	869	1475			1168		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	0	85	207	125
Volume Left	0	80	0	1
Volume Right	0	5	56	0
cSH	1700	653	1475	1168
Volume to Capacity	0.00	0.13	0.00	0.00
Queue Length 95th (m)	0.0	3.6	0.0	0.0
Control Delay (s)	0.0	11.3	0.0	0.1
Lane LOS	A	B		A
Approach Delay (s)	0.0	11.3	0.0	0.1
Approach LOS	A	B		

Intersection Summary				
Average Delay		2.3		
Intersection Capacity Utilization		26.4%	ICU Level of Service	A
Analysis Period (min)		15		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	262	45	176	358	0	63	0	140	0	0	0
Future Volume (vph)	0	262	45	176	358	0	63	0	140	0	0	0
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.980						0.907				
Flt Protected					0.984			0.985				
Satd. Flow (prot)	0	1481	0	0	1476	0	0	1320	0	0	1550	0
Flt Permitted					0.984			0.985				
Satd. Flow (perm)	0	1481	0	0	1476	0	0	1320	0	0	1550	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		166.4			228.8			212.1			132.6	
Travel Time (s)		12.0			16.5			15.3			9.5	
Peak Hour 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
Heavy Vehicles (%)	0%	3%	0%	4%	3%	0%	7%	0%	4%	0%	0%	0%
Adj. Flow (vph)	0	262	45	176	358	0	63	0	140	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	307	0	0	534	0	0	203	0	0	0	0
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Roundabout			
Intersection Capacity Utilization	80.1%	ICU Level of Service	D
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Traffic Volume (veh/h)	0	262	45	176	358	0	63	0	140	0	0	0
Future Volume (veh/h)	0	262	45	176	358	0	63	0	140	0	0	0
Peak Hour 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
Hourly flow rate (vph)	0	262	45	176	358	0	63	0	140	0	0	0
Approach Volume (veh/h)		307			534			203			0	
Crossing Volume (veh/h)		176			63			262			597	
High Capacity (veh/h)		1207			1318			1128			864	
High v/c (veh/h)		0.25			0.41			0.18			0.00	
Low Capacity (veh/h)		999			1101			928			693	
Low v/c (veh/h)		0.31			0.49			0.22			0.00	

Intersection Summary			
Maximum v/c High	0.41		
Maximum v/c Low	0.49		
Intersection Capacity Utilization	80.1%	ICU Level of Service	D

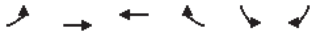
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	397	0	0	523	54	0	0	0	21	0	28
Future Volume (vph)	38	397	0	0	523	54	0	0	0	21	0	28
Ideal Flow (vphpl)	1650	1650	1900	1900	1650	1650	1900	1900	1900	1765	1900	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt					0.987						0.923	
Flt Protected		0.996									0.979	
Satd. Flow (prot)	0	1586	0	0	1588	0	0	1863	0	0	1717	0
Flt Permitted		0.996									0.979	
Satd. Flow (perm)	0	1586	0	0	1588	0	0	1863	0	0	1717	0
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		96.4			374.2			130.3			178.3	
Travel Time (s)		5.8			22.5			9.4			12.8	
Confl. Peds. (#/hr)	10					10						
Peak Hour 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
Heavy Vehicles (%)	0%	4%	2%	2%	2%	8%	2%	2%	2%	0%	2%	0%
Adj. Flow (vph)	38	397	0	0	523	54	0	0	0	21	0	28
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	435	0	0	577	0	0	0	0	0	49	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 70.4%		ICU Level of Service C	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	38	397	0	0	523	54	0	0	0	21	0	28
Future Volume (Veh/h)	38	397	0	0	523	54	0	0	0	21	0	28
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	38	397	0	0	523	54	0	0	0	21	0	28
Pedestrians											10	
Lane Width (m)											3.6	
Walking Speed (m/s)											1.2	
Percent Blockage											1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	587			397			1051	1060	397	1033	1033	560
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	587			397			1051	1060	397	1033	1033	560
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	96			100			100	100	100	90	100	95
cM capacity (veh/h)	990			1162			187	214	652	203	222	527

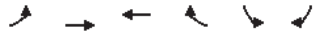
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	435	577	0	49
Volume Left	38	0	0	21
Volume Right	0	54	0	28
cSH	990	1162	1700	313
Volume to Capacity	0.04	0.00	0.00	0.16
Queue Length 95th (m)	1.0	0.0	0.0	4.4
Control Delay (s)	1.2	0.0	0.0	18.6
Lane LOS	A		A	C
Approach Delay (s)	1.2	0.0	0.0	18.6
Approach LOS			A	C

Intersection Summary				
Average Delay		1.3		
Intersection Capacity Utilization		70.4%	ICU Level of Service	C
Analysis Period (min)		15		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	24	399	560	50	24	24
Future Volume (vph)	24	399	560	50	24	24
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.989		0.932	
Flt Protected		0.997			0.976	
Satd. Flow (prot)	0	1600	1572	0	1590	0
Flt Permitted		0.997			0.976	
Satd. Flow (perm)	0	1600	1572	0	1590	0
Link Speed (k/h)		60	60		50	
Link Distance (m)		374.2	1012.1		87.7	
Travel Time (s)		22.5	60.7		6.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	3%	3%	13%	2%	0%
Adj. Flow (vph)	24	399	560	50	24	24
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	423	610	0	48	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 56.8%		ICU Level of Service B	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	24	399	560	50	24	24
Future Volume (Veh/h)	24	399	560	50	24	24
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	24	399	560	50	24	24
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	610				1032	585
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	610				1032	585
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				90	95
cM capacity (veh/h)	979				252	515

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	423	610	48
Volume Left	24	0	24
Volume Right	0	50	24
cSH	979	1700	338
Volume to Capacity	0.02	0.36	0.14
Queue Length 95th (m)	0.6	0.0	3.9
Control Delay (s)	0.8	0.0	17.4
Lane LOS	A		C
Approach Delay (s)	0.8	0.0	17.4
Approach LOS			C

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	56.8%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	10	63	12	5	7	90	214	33	6	356	104
Future Volume (vph)	21	10	63	12	5	7	90	214	33	6	356	104
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Storage Length (m)	0.0		0.0	0.0		0.0	30.0		0.0	0.0		0.0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (m)	0.0			0.0			25.0			0.0		
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		0.910			0.961			0.987			0.970	
Flt Protected		0.989			0.976			0.987			0.999	
Satd. Flow (prot)	0	1367	0	0	1454	0	0	1472	0	0	1434	0
Flt Permitted		0.989			0.976			0.987			0.999	
Satd. Flow (perm)	0	1367	0	0	1454	0	0	1472	0	0	1434	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		77.1			66.0			326.3			223.3	
Travel Time (s)		5.6			4.8			23.5			16.1	
Confl. Peds. (#/hr)	7		1	1		7			5	5		
Peak Hour 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
Heavy Vehicles (%)	0%	0%	3%	0%	0%	0%	5%	2%	0%	0%	3%	11%
Adj. Flow (vph)	21	10	63	12	5	7	90	214	33	6	356	104
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	94	0	0	24	0	0	337	0	0	466	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	71.0%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	21	10	63	12	5	7	90	214	33	6	356	104
Future Volume (Veh/h)	21	10	63	12	5	7	90	214	33	6	356	104
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	21	10	63	12	5	7	90	214	33	6	356	104
Pedestrians					5			1			7	
Lane Width (m)					3.6			3.6			3.6	
Walking Speed (m/s)					1.2			1.2			1.2	
Percent Blockage					0			0			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	19			74			399	128	48	268	156	16
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	19			74			399	128	48	268	156	16
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.4
p0 queue free %	99			99			70	71	97	99	50	90
cM capacity (veh/h)	1601			1537			298	742	1022	503	715	1032

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	94	24	337	466
Volume Left	21	12	90	6
Volume Right	63	7	33	104
cSH	1601	1537	541	763
Volume to Capacity	0.01	0.01	0.62	0.61
Queue Length 95th (m)	0.3	0.2	34.0	33.8
Control Delay (s)	1.7	3.7	22.0	16.8
Lane LOS	A	A	C	C
Approach Delay (s)	1.7	3.7	22.0	16.8
Approach LOS			C	C

Intersection Summary				
Average Delay	16.8			
Intersection Capacity Utilization	71.0%	ICU Level of Service	C	
Analysis Period (min)	15			



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	156	0	0	104
Future Volume (vph)	0	0	156	0	0	104
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1730	0	1618	0	0	1618
Flt Permitted						
Satd. Flow (perm)	1730	0	1618	0	0	1618
Link Speed (k/h)	50		50			50
Link Distance (m)	135.9		143.4			554.5
Travel Time (s)	9.8		10.3			39.9
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	156	0	0	104
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	156	0	0	104
Sign Control	Stop		Free			Free

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



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	156	0	0	104
Future Volume (Veh/h)	0	0	156	0	0	104
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	156	0	0	104
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	260	156			156	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	260	156			156	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	729	890			1424	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	0	156	104
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	1700	1424
Volume to Capacity	0.00	0.09	0.00
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0
Lane LOS	A		
Approach Delay (s)	0.0	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	12.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	179	0	0	276	1	2
Future Volume (vph)	179	0	0	276	1	2
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.910	
Flt Protected					0.984	
Satd. Flow (prot)	1618	0	0	1618	1549	0
Flt Permitted					0.984	
Satd. Flow (perm)	1618	0	0	1618	1549	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	400.3			181.6	225.5	
Travel Time (s)	28.8			13.1	16.2	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	179	0	0	276	1	2
Shared Lane Traffic (%)						
Lane Group Flow (vph)	179	0	0	276	3	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	26.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	179	0	0	276	1	2
Future Volume (Veh/h)	179	0	0	276	1	2
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	179	0	0	276	1	2
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			179		455	179
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			179		455	179
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1397		563	864

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	179	276	3
Volume Left	0	0	1
Volume Right	0	0	2
cSH	1700	1397	733
Volume to Capacity	0.11	0.00	0.00
Queue Length 95th (m)	0.0	0.0	0.1
Control Delay (s)	0.0	0.0	9.9
Lane LOS			A
Approach Delay (s)	0.0	0.0	9.9
Approach LOS			A

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	26.7%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	181	0	0	275	0	1	0	2	0	0	0
Future Volume (vph)	0	181	0	0	275	0	1	0	2	0	0	0
Ideal Flow (vphpl)	1650	1650	1900	1900	1650	1650	1900	1900	1900	1765	1900	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt								0.910				
Flt Protected								0.984				
Satd. Flow (prot)	0	1618	0	0	1618	0	0	1668	0	0	1863	0
Flt Permitted								0.984				
Satd. Flow (perm)	0	1618	0	0	1618	0	0	1668	0	0	1863	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		181.6			170.9			154.4			161.8	
Travel Time (s)		13.1			12.3			11.1			11.6	
Peak Hour 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
Adj. Flow (vph)	0	181	0	0	275	0	1	0	2	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	181	0	0	275	0	0	3	0	0	0	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	26.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	181	0	0	275	0	1	0	2	0	0	0
Future Volume (Veh/h)	0	181	0	0	275	0	1	0	2	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	0	181	0	0	275	0	1	0	2	0	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	275			181			456	456	181	458	456	275
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	275			181			456	456	181	458	456	275
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	100	100	100
cM capacity (veh/h)	1288			1394			515	501	862	512	501	764

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	181	275	3	0
Volume Left	0	0	1	0
Volume Right	0	0	2	0
cSH	1288	1394	704	1700
Volume to Capacity	0.00	0.00	0.00	0.00
Queue Length 95th (m)	0.0	0.0	0.1	0.0
Control Delay (s)	0.0	0.0	10.1	0.0
Lane LOS			B	A
Approach Delay (s)	0.0	0.0	10.1	0.0
Approach LOS			B	A

Intersection Summary				
Average Delay	0.1			
Intersection Capacity Utilization	26.7%	ICU Level of Service		A
Analysis Period (min)	15			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	174	9	179	242	0	33	0	133	0	0	0
Future Volume (vph)	0	174	9	179	242	0	33	0	133	0	0	0
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.993						0.892				
Flt Protected					0.979			0.990				
Satd. Flow (prot)	0	1509	0	0	1488	0	0	1342	0	0	1520	0
Flt Permitted					0.979			0.990				
Satd. Flow (perm)	0	1509	0	0	1488	0	0	1342	0	0	1520	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		377.6			166.4			109.1			148.1	
Travel Time (s)		27.2			12.0			7.9			10.7	
Peak Hour 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
Adj. Flow (vph)	0	174	9	179	242	0	33	0	133	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	183	0	0	421	0	0	166	0	0	0	0
Sign Control		Free			Free			Stop			Stop	

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	174	9	179	242	0	33	0	133	0	0	0
Future Volume (Veh/h)	0	174	9	179	242	0	33	0	133	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	0	174	9	179	242	0	33	0	133	0	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	242			183			778	778	178	912	783	242
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	242			183			778	778	178	912	783	242
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			87			88	100	85	100	100	100
cM capacity (veh/h)	1324			1392			283	285	864	194	284	797

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	183	421	166	0
Volume Left	0	179	33	0
Volume Right	9	0	133	0
cSH	1324	1392	613	1700
Volume to Capacity	0.00	0.13	0.27	0.00
Queue Length 95th (m)	0.0	3.5	8.7	0.0
Control Delay (s)	0.0	4.1	13.0	0.0
Lane LOS		A	B	A
Approach Delay (s)	0.0	4.1	13.0	0.0
Approach LOS			B	A

Intersection Summary				
Average Delay	5.0			
Intersection Capacity Utilization	61.9%	ICU Level of Service		B
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	385	0	0	486	37	0	0	0	22	0	9
Future Volume (vph)	17	385	0	0	486	37	0	0	0	22	0	9
Ideal Flow (vphpl)	1650	1650	1900	1900	1650	1650	1900	1900	1900	1765	1900	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.990						0.961	
Flt Protected		0.998									0.966	
Satd. Flow (prot)	0	1614	0	0	1601	0	0	1863	0	0	1729	0
Flt Permitted		0.998									0.966	
Satd. Flow (perm)	0	1614	0	0	1601	0	0	1863	0	0	1729	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		228.8			210.5			133.9			114.8	
Travel Time (s)		16.5			15.2			9.6			8.3	
Peak Hour 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
Adj. Flow (vph)	17	385	0	0	486	37	0	0	0	22	0	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	402	0	0	523	0	0	0	0	0	31	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	49.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	17	385	0	0	486	37	0	0	0	22	0	9
Future Volume (Veh/h)	17	385	0	0	486	37	0	0	0	22	0	9
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	17	385	0	0	486	37	0	0	0	22	0	9
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	523			385			932	942	385	924	924	504
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	523			385			932	942	385	924	924	504
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			100			100	100	100	91	100	98
cM capacity (veh/h)	1043			1173			240	259	663	247	265	567

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	402	523	0	31
Volume Left	17	0	0	22
Volume Right	0	37	0	9
cSH	1043	1173	1700	295
Volume to Capacity	0.02	0.00	0.00	0.10
Queue Length 95th (m)	0.4	0.0	0.0	2.8
Control Delay (s)	0.5	0.0	0.0	18.6
Lane LOS	A		A	C
Approach Delay (s)	0.5	0.0	0.0	18.6
Approach LOS			A	C

Intersection Summary				
Average Delay		0.8		
Intersection Capacity Utilization		49.2%	ICU Level of Service	A
Analysis Period (min)		15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	390	0	0	514	37	0	0	0	22	0	9
Future Volume (vph)	17	390	0	0	514	37	0	0	0	22	0	9
Ideal Flow (vphpl)	1650	1650	1900	1900	1650	1650	1900	1900	1900	1765	1900	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.991						0.961	
Flt Protected		0.998									0.966	
Satd. Flow (prot)	0	1614	0	0	1603	0	0	1863	0	0	1729	0
Flt Permitted		0.998									0.966	
Satd. Flow (perm)	0	1614	0	0	1603	0	0	1863	0	0	1729	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		210.5			96.4			108.7			129.5	
Travel Time (s)		15.2			6.9			7.8			9.3	
Peak Hour 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
Adj. Flow (vph)	17	390	0	0	514	37	0	0	0	22	0	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	407	0	0	551	0	0	0	0	0	31	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	49.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	17	390	0	0	514	37	0	0	0	22	0	9
Future Volume (Veh/h)	17	390	0	0	514	37	0	0	0	22	0	9
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	17	390	0	0	514	37	0	0	0	22	0	9
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	551			390			966	975	390	956	956	532
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	551			390			966	975	390	956	956	532
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			100			100	100	100	91	100	98
cM capacity (veh/h)	1019			1169			227	247	658	234	254	547

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	407	551	0	31
Volume Left	17	0	0	22
Volume Right	0	37	0	9
cSH	1019	1169	1700	281
Volume to Capacity	0.02	0.00	0.00	0.11
Queue Length 95th (m)	0.4	0.0	0.0	2.9
Control Delay (s)	0.5	0.0	0.0	19.4
Lane LOS	A		A	C
Approach Delay (s)	0.5	0.0	0.0	19.4
Approach LOS			A	C

Intersection Summary				
Average Delay		0.8		
Intersection Capacity Utilization		49.5%	ICU Level of Service	A
Analysis Period (min)		15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	0	14	0	0	0	14	172	0	0	189	32
Future Volume (vph)	25	0	14	0	0	0	14	172	0	0	189	32
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.952									0.980	
Flt Protected		0.969						0.996				
Satd. Flow (prot)	0	1402	0	0	1520	0	0	1514	0	0	1489	0
Flt Permitted		0.969						0.996				
Satd. Flow (perm)	0	1402	0	0	1520	0	0	1514	0	0	1489	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		174.2			151.1			248.8			212.1	
Travel Time (s)		12.5			10.9			17.9			15.3	
Peak Hour 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
Adj. Flow (vph)	25	0	14	0	0	0	14	172	0	0	189	32
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	39	0	0	0	0	0	186	0	0	221	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	35.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	0	14	0	0	0	14	172	0	0	189	32
Future Volume (Veh/h)	25	0	14	0	0	0	14	172	0	0	189	32
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	25	0	14	0	0	0	14	172	0	0	189	32
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	405	405	205	419	421	172	221			172		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	405	405	205	419	421	172	221			172		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	95	100	98	100	100	100	99			100		
cM capacity (veh/h)	552	529	836	531	518	872	1348			1405		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	39	0	186	221
Volume Left	25	0	14	0
Volume Right	14	0	0	32
cSH	628	1700	1348	1405
Volume to Capacity	0.06	0.00	0.01	0.00
Queue Length 95th (m)	1.6	0.0	0.3	0.0
Control Delay (s)	11.1	0.0	0.7	0.0
Lane LOS	B	A	A	
Approach Delay (s)	11.1	0.0	0.7	0.0
Approach LOS	B	A		

Intersection Summary				
Average Delay	1.2			
Intersection Capacity Utilization	35.3%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	0	14	0	0	0	14	161	0	0	171	32
Future Volume (vph)	25	0	14	0	0	0	14	161	0	0	171	32
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.952									0.979	
Flt Protected		0.969						0.996				
Satd. Flow (prot)	0	1402	0	0	1520	0	0	1514	0	0	1488	0
Flt Permitted		0.969						0.996				
Satd. Flow (perm)	0	1402	0	0	1520	0	0	1514	0	0	1488	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		117.0			126.5			247.2			248.8	
Travel Time (s)		8.4			9.1			17.8			17.9	
Peak Hour 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
Adj. Flow (vph)	25	0	14	0	0	0	14	161	0	0	171	32
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	39	0	0	0	0	0	175	0	0	203	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 34.6%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	0	14	0	0	0	14	161	0	0	171	32
Future Volume (Veh/h)	25	0	14	0	0	0	14	161	0	0	171	32
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	25	0	14	0	0	0	14	161	0	0	171	32
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	376	376	187	390	392	161	203			161		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	376	376	187	390	392	161	203			161		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	96	100	98	100	100	100	99			100		
cM capacity (veh/h)	577	550	855	555	538	884	1369			1418		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	39	0	175	203
Volume Left	25	0	14	0
Volume Right	14	0	0	32
cSH	653	1700	1369	1418
Volume to Capacity	0.06	0.00	0.01	0.00
Queue Length 95th (m)	1.5	0.0	0.2	0.0
Control Delay (s)	10.9	0.0	0.7	0.0
Lane LOS	B	A	A	
Approach Delay (s)	10.9	0.0	0.7	0.0
Approach LOS	B	A		

Intersection Summary				
Average Delay		1.3		
Intersection Capacity Utilization		34.6%	ICU Level of Service	A
Analysis Period (min)		15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	0	0	0	368	0	0	368	0
Future Volume (vph)	0	0	0	0	0	0	0	368	0	0	368	0
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt												
Flt Protected												
Satd. Flow (prot)	0	1520	0	0	1520	0	0	1520	0	0	1520	0
Flt Permitted												
Satd. Flow (perm)	0	1520	0	0	1520	0	0	1520	0	0	1520	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		128.4			112.6			130.6			488.0	
Travel Time (s)		9.2			8.1			9.4			35.1	
Peak Hour 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
Adj. Flow (vph)	0	0	0	0	0	0	0	368	0	0	368	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	0	0	0	368	0	0	368	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	27.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	0	0	0	0	368	0	0	368	0
Future Volume (Veh/h)	0	0	0	0	0	0	0	368	0	0	368	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	0	0	0	0	0	0	0	368	0	0	368	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	736	736	368	736	736	368	368			368		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	736	736	368	736	736	368	368			368		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	100	100	100	100			100		
cM capacity (veh/h)	335	346	677	335	346	677	1191			1191		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	0	0	368	368
Volume Left	0	0	0	0
Volume Right	0	0	0	0
cSH	1700	1700	1191	1191
Volume to Capacity	0.00	0.00	0.00	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0
Lane LOS	A	A		
Approach Delay (s)	0.0	0.0	0.0	0.0
Approach LOS	A	A		

Intersection Summary				
Average Delay		0.0		
Intersection Capacity Utilization		27.1%	ICU Level of Service	A
Analysis Period (min)		15		

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]
© Copyright TRL Limited, 2020

For sales and distribution information, program advice and maintenance, contact TRL:
Tel: +44 (0)1344 770758 email: software@trl.co.uk Web: http://www.trlsoftware.co.uk

The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: Laurelwood & Beaver Creek.arc8
Path: C:\Users\AdamMorrison\Paradigm\Projects - 170278 Beaver Creek Area TES\C5 - Analysis and Evaluation\Arcady
Report generation date: 2020-07-21 4:12:02 PM

Summary of intersection performance

There are warnings associated with this model run - see the 'Data Errors and Warnings' tables.

	AM					
	Queue (Veh)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS
	All - Total 2022					
Intersection 85% - Leg North	0.19	4.48	0.16	A	9.77	A
Intersection 85% - Leg West	2.16	11.23	0.69	B		
Intersection 85% - Leg South	1.14	13.75	0.54	B		
Intersection 85% - Leg East	0.38	4.92	0.28	A		
Intersection 90% - Leg North	0.19	4.20	0.16	A	8.36	A
Intersection 90% - Leg West	1.84	9.52	0.65	A		
Intersection 90% - Leg South	0.98	11.77	0.50	B		
Intersection 90% - Leg East	0.39	4.66	0.28	A		

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Intersection LOS and Intersection Delay are demand-weighted averages.

"D1 - Existing, AM" model duration: 8:00 AM - 9:00 AM
"D2 - Existing, PM" model duration: 4:00 PM - 5:00 PM
"D3 - Background 2022, AM" model duration: 8:00 AM - 9:00 AM
"D4 - Background 2022, PM" model duration: 4:00 PM - 5:00 PM
"D5 - Total 2022, AM " model duration: 8:00 AM - 9:00 AM
"D6 - Total 2022, PM" model duration: 4:00 PM - 5:00 PM
"D7 - Background 2025, AM" model duration: 8:00 AM - 9:00 AM
"D8 - Background 2025, PM" model duration: 4:00 PM - 5:00 PM
"D9 - Total 2025, AM" model duration: 8:00 AM - 9:00 AM
"D10 - Total 2025, PM" model duration: 4:00 PM - 5:00 PM
"D11 - Background 2027, AM" model duration: 8:00 AM - 9:00 AM
"D12 - Background 2027, PM" model duration: 4:00 PM - 5:00 PM
"D13 - Total 2027, AM" model duration: 8:00 AM - 9:00 AM
"D14 - Total 2027, PM" model duration: 4:00 PM - 5:00 PM
"D15 - Background 2032, AM" model duration: 8:00 AM - 9:00 AM
"D16 - Background 2032, PM" model duration: 4:00 PM - 5:00 PM
"D17 - Total 2032, AM" model duration: 8:00 AM - 9:00 AM
"D18 - Total 2032, PM" model duration: 4:00 PM - 5:00 PM

Run using Junctions 8.0.6.541 at 2020-07-21 4:12:01 PM

File summary

Title	Laurelwood & Beaver Creek
Location	Waterloo
Site Number	
Date	2017-12-05
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	170278
Analyst	Matt
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)
7.50	✓		N/A	0.90	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	Veh	Veh	perHour	s	-Min	perMin

All - Total 2022, AM

Data Errors and Warnings

Severity	Area	Item	Description
Last Run	Last Run	Intersection 85% - Leg East - Capacity	Pedestrian Crossing causes blocking on previous leg due to traffic queing to leave the intersection in 4 timesegment(s).
Last Run	Last Run	Intersection 90% - Leg East - Capacity	Pedestrian Crossing causes blocking on previous leg due to traffic queing to leave the intersection in 4 timesegment(s).

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
All	ARCADY		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
Total 2022, AM	Total 2022	AM		PHF	08:00	09:00	60	15				✓		

Intersection Network

Intersections

Junction	Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Do Geometric Delay	Intersection Delay (s)	Intersection LOS
85%	85%	Existing	Roundabout	North,West,South,East				9.77	A
90%	90%	Future	Roundabout	North,West,South,East				8.36	A

Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

Legs

Legs

Intersection	Leg	Leg	Name	Description
85%	**North**	North	Beaver Creek SB	
85%	**West**	West	Laurelwood EB	
85%	**South**	South	Beaver Creek NB	
85%	**East**	East	Laurelwood WB	
90%	**North**	North	Beaver Creek SB	
90%	**West**	West	Laurelwood EB	

90%	South	South	Beaver Creek NB	
90%	East	East	Laurelwood WB	

Capacity Options

Intersection	Leg	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)	Assume Flat Start Profile	Initial Queue (PCE)
85%	North	0.00	99999.00		0.00
85%	West	0.00	99999.00		0.00
85%	South	0.00	99999.00		0.00
85%	East	0.00	99999.00		0.00
90%	North	0.00	99999.00		0.00
90%	West	0.00	99999.00		0.00
90%	South	0.00	99999.00		0.00
90%	East	0.00	99999.00		0.00

Roundabout Geometry

Intersection	Leg	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
85%	North	3.50	4.50	30.00	20.00	30.00	25.00	
85%	West	3.50	4.50	30.00	20.00	30.00	25.00	
85%	South	3.50	4.50	30.00	20.00	30.00	25.00	
85%	East	3.50	4.50	30.00	20.00	30.00	25.00	
90%	North	3.50	4.50	30.00	20.00	30.00	25.00	
90%	West	3.50	4.50	30.00	20.00	30.00	25.00	
90%	South	3.50	4.50	30.00	20.00	30.00	25.00	
90%	East	3.50	4.50	30.00	20.00	30.00	25.00	

Pedestrian Crossings

Intersection	Leg	Crossing Type
85%	North	Unsignalled Pedestrian Crossing
85%	West	Unsignalled Pedestrian Crossing
85%	South	Unsignalled Pedestrian Crossing
85%	East	Unsignalled Pedestrian Crossing
90%	North	Unsignalled Pedestrian Crossing
90%	West	Unsignalled Pedestrian Crossing
90%	South	Unsignalled Pedestrian Crossing
90%	East	Unsignalled Pedestrian Crossing

Unsignalled Pedestrian Crossing Crossings

Intersection	Leg	Space between crossing and intersection entry (PCE)	Vehicles queueing on exit (PCE)	Central Refuge	Crossing Data Type	Crossing length (m)	Crossing time (s)	Crossing length (entry side) (m)	Crossing time (entry side) (s)	Crossing length (exit side) (m)	Crossing time (exit side) (s)
85%	North	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
85%	West	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
85%	South	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
85%	East	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
90%	North	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
90%	West	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
90%	South	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
90%	East	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50

Slope / Intercept / Capacity

Leg Intercept Adjustments

Intersection	Leg	Type	Reason	Direct Intercept Adjustment (PCE/hr)	Percentage Intercept Adjustment (%)
85%	North	Percentage	Region of Waterloo - Requirement		85.00
85%	West	Percentage	Region of Waterloo - Requirement		85.00
85%	South	Percentage	Region of Waterloo - Requirement		85.00
85%	East	Percentage	Region of Waterloo - Requirement		85.00
90%	North	Percentage	Region of Waterloo - Requirement		90.00

90%	West	Percentage	Region of Waterloo - Requirement		90.00
90%	South	Percentage	Region of Waterloo - Requirement		90.00
90%	East	Percentage	Region of Waterloo - Requirement		90.00

Roundabout Slope and Intercept used in model

Intersection	Leg	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
85%	North		(calculated)	(calculated)	0.593	1153.828
85%	West		(calculated)	(calculated)	0.593	1153.828
85%	South		(calculated)	(calculated)	0.593	1153.828
85%	East		(calculated)	(calculated)	0.593	1153.828
90%	North		(calculated)	(calculated)	0.593	1221.701
90%	West		(calculated)	(calculated)	0.593	1221.701
90%	South		(calculated)	(calculated)	0.593	1221.701
90%	East		(calculated)	(calculated)	0.593	1221.701

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCE Factor for a Truck (PCE)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Intersection	Leg	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
85%	North	PHF	✓	142.00	100.000
85%	West	PHF	✓	648.00	100.000
85%	South	PHF	✓	280.00	100.000
85%	East	PHF	✓	261.00	100.000
90%	North	PHF	✓	152.00	100.000
90%	West	PHF	✓	650.00	100.000
90%	South	PHF	✓	280.00	100.000
90%	East	PHF	✓	281.00	100.000

Peak Hour Factor Data

Intersection	Leg	Hourly Volume (Veh/hr)	Peak Hour Factor	Peak Time Segment
85%	North	142.00	0.92	SecondQuarter
85%	West	648.00	0.92	SecondQuarter
85%	South	280.00	0.92	SecondQuarter
85%	East	261.00	0.92	SecondQuarter
90%	North	152.00	0.92	SecondQuarter
90%	West	650.00	0.92	SecondQuarter
90%	South	280.00	0.92	SecondQuarter
90%	East	281.00	0.92	SecondQuarter

Pedestrian Flows

General Flows Data

Intersection	Leg	Profile Type	Average Pedestrian Flow (Ped/hr)

85%	North	PHF	10.00
85%	West	PHF	7.00
85%	South	PHF	4.00
85%	East	PHF	10.00
90%	North	PHF	10.00
90%	West	PHF	7.00
90%	South	PHF	4.00
90%	East	PHF	10.00

Peak Hour Factor Data

Intersection	Leg	Hourly Volume (Ped/hr)	Peak Hour Factor	Peak Time Segment
85%	North	10.00	1.00	SecondQuarter
85%	West	7.00	1.00	SecondQuarter
85%	South	4.00	1.00	SecondQuarter
85%	East	10.00	1.00	SecondQuarter
90%	North	10.00	1.00	SecondQuarter
90%	West	7.00	1.00	SecondQuarter
90%	South	4.00	1.00	SecondQuarter
90%	East	10.00	1.00	SecondQuarter

Turning Proportions

Turning Counts / Proportions (Veh/hr) - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.000	14.000	19.000	109.000
	West	30.000	0.000	83.000	535.000
	South	36.000	54.000	0.000	190.000
	East	56.000	170.000	35.000	0.000

Turning Proportions (Veh) - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.00	0.10	0.13	0.77
	West	0.05	0.00	0.13	0.83
	South	0.13	0.19	0.00	0.68
	East	0.21	0.65	0.13	0.00

Turning Counts / Proportions (Veh/hr) - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.000	16.000	19.000	117.000
	West	32.000	0.000	83.000	535.000
	South	36.000	54.000	0.000	190.000
	East	76.000	170.000	35.000	0.000

Turning Proportions (Veh) - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.00	0.11	0.13	0.77
	West	0.05	0.00	0.13	0.82
	South	0.13	0.19	0.00	0.68
	East	0.27	0.60	0.12	0.00

Vehicle Mix

Average PCE Per Vehicle - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	1.000	1.110	1.000	1.000
	West	1.000	1.000	1.000	1.030
	South	1.090	1.000	1.000	1.010
	East	1.040	1.060	1.060	1.000

Truck Percentages - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.0	11.0	0.0	0.0
	West	0.0	0.0	0.0	3.0
	South	9.0	0.0	0.0	1.0
	East	4.0	6.0	6.0	0.0

Average PCE Per Vehicle - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	1.000	1.110	1.000	1.000
	West	1.000	1.000	1.000	1.030
	South	1.090	1.000	1.000	1.010
	East	1.040	1.060	1.060	1.000

Truck Percentages - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.0	11.0	0.0	0.0
	West	0.0	0.0	0.0	3.0
	South	9.0	0.0	0.0	1.0
	East	4.0	6.0	6.0	0.0

Results

Results Summary for whole modelled period

Intersection	Leg	Max V/C Ratio	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Intersection Arrivals (Veh)	Total Queueing Delay (Veh-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (Veh-min/min)	Inclusive Total Queueing Delay (Veh-min)	Inclusive Average Queueing Delay (s)
85%	North	0.16	4.48	0.19	~1	A	142.00	142.00	10.23	4.32	0.17	10.23	4.32
85%	West	0.69	11.23	2.16	4.00	B	648.00	648.00	102.88	9.53	1.71	102.94	9.53
85%	South	0.54	13.75	1.14	?	B	280.00	280.00	51.47	11.03	0.86	51.49	11.03
85%	East	0.28	4.92	0.38	~1	A	261.00	261.00	20.53	4.72	0.34	20.54	4.72
90%	North	0.16	4.20	0.19	~1	A	152.00	152.00	10.27	4.05	0.17	10.27	4.05
90%	West	0.65	9.52	1.84	3.00	A	650.00	650.00	89.13	8.23	1.49	89.18	8.23
90%	South	0.50	11.77	0.98	~1	B	280.00	280.00	44.85	9.61	0.75	44.87	9.62
90%	East	0.28	4.66	0.39	~1	A	281.00	281.00	20.93	4.47	0.35	20.93	4.47

Main Results for each time segment

Main results: (08:00-08:15)

Intersection	Leg	Total Demand (Veh/hr)	Intersection Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	V/C Ratio	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
85%	North	133.77	33.44	133.14	114.05	242.49	10.00	984.09	530.96	0.136	0.00	0.16	4.228	A
85%	West	610.43	152.61	604.80	222.81	152.82	7.00	1033.86	754.21	0.590	0.00	1.41	8.285	A

85%	South	263.77	65.94	261.10	128.08	629.53	4.00	652.85	302.83	0.404	0.00	0.67	9.129	A
85%	East	245.87	61.47	244.62	778.71	111.93	10.00	1026.31	1001.45	0.240	0.00	0.31	4.597	A
90%	North	143.19	35.80	142.56	134.76	242.60	10.00	1049.66	599.93	0.136	0.00	0.16	3.966	A
90%	West	612.32	153.08	607.35	224.79	160.37	7.00	1095.64	787.48	0.559	0.00	1.24	7.302	A
90%	South	263.77	65.94	261.40	128.19	639.52	4.00	702.52	286.30	0.375	0.00	0.59	8.120	A
90%	East	264.71	66.18	263.43	787.00	113.92	10.00	1089.58	1056.19	0.243	0.00	0.32	4.352	A

Main results: (08:15-08:30)

Intersection	Leg	Total Demand (Veh/hr)	Intersection Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	V/C Ratio	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
85%	North	154.35	38.59	154.21	132.16	280.93	10.00	957.51	530.96	0.161	0.16	0.19	4.481	A
85%	West	704.35	176.09	701.35	258.13	177.01	7.00	1018.78	754.21	0.691	1.41	2.16	11.229	B
85%	South	304.35	76.09	302.44	148.47	729.89	4.00	562.31	302.83	0.541	0.67	1.14	13.750	B
85%	East	283.70	70.92	283.41	902.65	129.68	10.00	1015.35	1001.45	0.279	0.31	0.38	4.916	A
90%	North	165.22	41.30	165.08	156.12	281.01	10.00	1022.83	599.93	0.162	0.16	0.19	4.197	A
90%	West	706.52	176.63	704.14	260.38	185.71	7.00	1079.85	787.48	0.654	1.24	1.84	9.518	A
90%	South	304.35	76.09	302.80	148.56	741.30	4.00	607.16	286.30	0.501	0.59	0.98	11.767	B
90%	East	305.43	76.36	305.14	912.10	131.99	10.00	1078.05	1056.19	0.283	0.32	0.39	4.658	A

Main results: (08:30-08:45)

Intersection	Leg	Total Demand (Veh/hr)	Intersection Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	V/C Ratio	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
85%	North	146.12	36.53	146.16	125.70	266.72	10.00	967.39	530.96	0.151	0.19	0.18	4.385	A
85%	West	666.78	166.70	667.76	245.11	167.78	7.00	1024.53	754.21	0.651	2.16	1.91	10.126	B
85%	South	288.12	72.03	288.84	141.12	694.42	4.00	594.21	302.83	0.485	1.14	0.96	11.822	B
85%	East	268.56	67.14	268.66	859.51	123.76	10.00	1019.04	1001.45	0.264	0.38	0.36	4.799	A
90%	North	156.41	39.10	156.45	148.32	266.70	10.00	1032.89	599.93	0.151	0.19	0.18	4.107	A
90%	West	668.84	167.21	669.65	247.14	176.01	7.00	1085.89	787.48	0.616	1.84	1.64	8.670	A
90%	South	288.12	72.03	288.71	141.09	704.56	4.00	641.56	286.30	0.449	0.98	0.83	10.223	B
90%	East	289.15	72.29	289.25	867.51	125.77	10.00	1082.07	1056.19	0.267	0.39	0.37	4.542	A

Main results: (08:45-09:00)

Intersection	Leg	Total Demand (Veh/hr)	Intersection Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	V/C Ratio	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
85%	North	133.77	33.44	133.85	115.18	244.32	10.00	982.85	530.96	0.136	0.18	0.16	4.242	A
85%	West	610.43	152.61	612.19	224.52	153.65	7.00	1033.32	754.21	0.591	1.91	1.47	8.587	A
85%	South	263.77	65.94	264.81	129.32	636.52	4.00	646.41	302.83	0.408	0.96	0.70	9.459	A
85%	East	245.87	61.47	246.04	787.87	113.46	10.00	1025.38	1001.45	0.240	0.36	0.32	4.621	A
90%	North	143.19	35.80	143.27	135.88	244.28	10.00	1048.50	599.93	0.137	0.18	0.16	3.978	A
90%	West	612.32	153.08	613.71	226.37	161.18	7.00	1095.12	787.48	0.559	1.64	1.29	7.502	A
90%	South	263.77	65.94	264.62	129.27	645.62	4.00	696.69	286.30	0.379	0.83	0.62	8.349	A
90%	East	264.71	66.18	264.89	794.97	115.27	10.00	1088.75	1056.19	0.243	0.37	0.32	4.370	A

Queueing Delay Results for each time segment

Queueing Delay results: (08:00-08:15)

Intersection	Leg	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	2.29	0.15	4.228	A	A
85%	West	19.87	1.32	8.285	A	A
85%	South	9.49	0.63	9.129	A	A
85%	East	4.57	0.30	4.597	A	A
90%	North	2.31	0.15	3.966	A	A
90%	West	17.68	1.18	7.302	A	A
90%	South	8.48	0.57	8.120	A	A
90%	East	4.66	0.31	4.352	A	A

Queueing Delay results: (08:15-08:30)

Intersection	Leg	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service

85%	North	2.82	0.19	4.481	A	A
85%	West	30.47	2.03	11.229	B	B
85%	South	16.15	1.08	13.750	B	B
85%	East	5.67	0.38	4.916	A	A
90%	North	2.83	0.19	4.197	A	A
90%	West	26.23	1.75	9.518	A	A
90%	South	13.97	0.93	11.767	B	B
90%	East	5.79	0.39	4.658	A	A

Queueing Delay results: (08:30-08:45)

Intersection	Leg	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	2.71	0.18	4.385	A	A
85%	West	29.54	1.97	10.126	B	B
85%	South	14.92	0.99	11.822	B	B
85%	East	5.46	0.36	4.799	A	A
90%	North	2.72	0.18	4.107	A	A
90%	West	25.21	1.68	8.670	A	A
90%	South	12.82	0.85	10.223	B	B
90%	East	5.56	0.37	4.542	A	A

Queueing Delay results: (08:45-09:00)

Intersection	Leg	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	2.41	0.16	4.242	A	A
85%	West	23.00	1.53	8.587	A	A
85%	South	10.91	0.73	9.459	A	A
85%	East	4.83	0.32	4.621	A	A
90%	North	2.41	0.16	3.978	A	A
90%	West	20.02	1.33	7.502	A	A
90%	South	9.58	0.64	8.349	A	A
90%	East	4.92	0.33	4.370	A	A

Queue Variation Results for each time segment

Queue Variation results: (08:00-08:15)

Intersection	Leg	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.16	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	1.41	0.00	0.00	2.00	3.00			N/A	N/A
85%	South	0.67	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	0.31	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.16	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	1.24	0.00	0.00	2.00	2.00			N/A	N/A
90%	South	0.59	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.32	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:15-08:30)

Intersection	Leg	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.19	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	2.16	0.00	0.00	0.00	4.00			N/A	N/A

85%	South	1.14	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	0.38	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.19	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	1.84	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.98	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.39	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:30-08:45)

Intersection	Leg	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.18	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	1.91	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.96	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	0.36	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.18	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	1.64	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.83	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.37	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:45-09:00)

Intersection	Leg	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.16	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	1.47	0.00	0.00	3.00	4.00			N/A	N/A
85%	South	0.70	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	0.32	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.16	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	1.29	0.00	0.00	2.00	3.00			N/A	N/A
90%	South	0.62	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.32	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]
© Copyright TRL Limited, 2020

For sales and distribution information, program advice and maintenance, contact TRL:
Tel: +44 (0)1344 770758 email: software@trl.co.uk Web: http://www.trlsoftware.co.uk

The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: Laurelwood & Beaver Creek.arc8
Path: C:\Users\AdamMorrison\Paradigm\Projects - 170278 Beaver Creek Area TES\C5 - Analysis and Evaluation\Arcady
Report generation date: 2020-07-21 4:12:26 PM

Summary of intersection performance

	PM					
	Queue (Veh)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS
	All - Total 2022					
Intersection 85% - Leg North	0.37	7.98	0.27	A	12.08	B
Intersection 85% - Leg West	0.57	5.90	0.36	A		
Intersection 85% - Leg South	0.19	4.95	0.16	A		
Intersection 85% - Leg East	3.98	16.43	0.81	C		
Intersection 90% - Leg North	0.35	7.14	0.26	A	9.97	A
Intersection 90% - Leg West	0.52	5.36	0.34	A		
Intersection 90% - Leg South	0.18	4.58	0.15	A		
Intersection 90% - Leg East	3.23	13.17	0.77	B		

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Intersection LOS and Intersection Delay are demand-weighted averages.

"D1 - Existing, AM" model duration: 8:00 AM - 9:00 AM
"D2 - Existing, PM" model duration: 4:00 PM - 5:00 PM
"D3 - Background 2022, AM" model duration: 8:00 AM - 9:00 AM
"D4 - Background 2022, PM" model duration: 4:00 PM - 5:00 PM
"D5 - Total 2022, AM" model duration: 8:00 AM - 9:00 AM
"D6 - Total 2022, PM " model duration: 4:00 PM - 5:00 PM
"D7 - Background 2025, AM" model duration: 8:00 AM - 9:00 AM
"D8 - Background 2025, PM" model duration: 4:00 PM - 5:00 PM
"D9 - Total 2025, AM" model duration: 8:00 AM - 9:00 AM
"D10 - Total 2025, PM" model duration: 4:00 PM - 5:00 PM
"D11 - Background 2027, AM" model duration: 8:00 AM - 9:00 AM
"D12 - Background 2027, PM" model duration: 4:00 PM - 5:00 PM
"D13 - Total 2027, AM" model duration: 8:00 AM - 9:00 AM
"D14 - Total 2027, PM" model duration: 4:00 PM - 5:00 PM
"D15 - Background 2032, AM" model duration: 8:00 AM - 9:00 AM
"D16 - Background 2032, PM" model duration: 4:00 PM - 5:00 PM
"D17 - Total 2032, AM" model duration: 8:00 AM - 9:00 AM
"D18 - Total 2032, PM" model duration: 4:00 PM - 5:00 PM

Run using Junctions 8.0.6.541 at 2020-07-21 4:12:25 PM

File summary

Title	Laurelwood & Beaver Creek
Location	Waterloo
Site Number	
Date	2017-12-05
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	170278
Analyst	Matt
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)
7.50	✓		N/A	0.90	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	Veh	Veh	perHour	s	-Min	perMin

All - Total 2022, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
All	ARCADY		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
Total 2022, PM	Total 2022	PM		PHF	16:00	17:00	60	15				✓		

Intersection Network

Intersections

Junction	Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Do Geometric Delay	Intersection Delay (s)	Intersection LOS
85%	85%	Existing	Roundabout	North,West,South,East				12.08	B
90%	90%	Future	Roundabout	North,West,South,East				9.97	A

Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

Legs

Legs

Intersection	Leg	Leg	Name	Description
85%	**North**	North	Beaver Creek SB	
85%	**West**	West	Laurelwood EB	
85%	**South**	South	Beaver Creek NB	
85%	**East**	East	Laurelwood WB	
90%	**North**	North	Beaver Creek SB	
90%	**West**	West	Laurelwood EB	
90%	**South**	South	Beaver Creek NB	
90%	**East**	East	Laurelwood WB	

Capacity Options

Intersection	Leg	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)	Assume Flat Start Profile	Initial Queue (PCE)
85%	**North**	0.00	99999.00		0.00
85%	**West**	0.00	99999.00		0.00
85%	**South**	0.00	99999.00		0.00
85%	**East**	0.00	99999.00		0.00
90%	**North**	0.00	99999.00		0.00
90%	**West**	0.00	99999.00		0.00
90%	**South**	0.00	99999.00		0.00
90%	**East**	0.00	99999.00		0.00

Roundabout Geometry

Intersection	Leg	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
85%	**North**	3.50	4.50	30.00	20.00	30.00	25.00	
85%	**West**	3.50	4.50	30.00	20.00	30.00	25.00	
85%	**South**	3.50	4.50	30.00	20.00	30.00	25.00	
85%	**East**	3.50	4.50	30.00	20.00	30.00	25.00	
90%	**North**	3.50	4.50	30.00	20.00	30.00	25.00	
90%	**West**	3.50	4.50	30.00	20.00	30.00	25.00	
90%	**South**	3.50	4.50	30.00	20.00	30.00	25.00	
90%	**East**	3.50	4.50	30.00	20.00	30.00	25.00	

Pedestrian Crossings

Intersection	Leg	Crossing Type
85%	**North**	Unsignalled Pedestrian Crossing
85%	**West**	Unsignalled Pedestrian Crossing
85%	**South**	Unsignalled Pedestrian Crossing
85%	**East**	Unsignalled Pedestrian Crossing
90%	**North**	Unsignalled Pedestrian Crossing
90%	**West**	Unsignalled Pedestrian Crossing
90%	**South**	Unsignalled Pedestrian Crossing
90%	**East**	Unsignalled Pedestrian Crossing

Unsignalled Pedestrian Crossing Crossings

Intersection	Leg	Space between crossing and intersection entry (PCE)	Vehicles queueing on exit (PCE)	Central Refuge	Crossing Data Type	Crossing length (m)	Crossing time (s)	Crossing length (entry side) (m)	Crossing time (entry side) (s)	Crossing length (exit side) (m)	Crossing time (exit side) (s)
85%	**North**	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
85%	**West**	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
85%	**South**	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
85%	**East**	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
90%	**North**	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
90%	**West**	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
90%	**South**	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
90%	**East**	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50

Slope / Intercept / Capacity

Leg Intercept Adjustments

Intersection	Leg	Type	Reason	Direct Intercept Adjustment (PCE/hr)	Percentage Intercept Adjustment (%)
85%	**North**	Percentage	Region of Waterloo - Requirement		85.00
85%	**West**	Percentage	Region of Waterloo - Requirement		85.00
85%	**South**	Percentage	Region of Waterloo - Requirement		85.00
85%	**East**	Percentage	Region of Waterloo - Requirement		85.00
90%	**North**	Percentage	Region of Waterloo - Requirement		90.00
90%	**West**	Percentage	Region of Waterloo - Requirement		90.00
90%	**South**	Percentage	Region of Waterloo - Requirement		90.00
90%	**East**	Percentage	Region of Waterloo - Requirement		90.00

Roundabout Slope and Intercept used in model

Intersection	Leg	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
85%	North		(calculated)	(calculated)	0.593	1153.828
85%	West		(calculated)	(calculated)	0.593	1153.828
85%	South		(calculated)	(calculated)	0.593	1153.828
85%	East		(calculated)	(calculated)	0.593	1153.828
90%	North		(calculated)	(calculated)	0.593	1221.701
90%	West		(calculated)	(calculated)	0.593	1221.701
90%	South		(calculated)	(calculated)	0.593	1221.701
90%	East		(calculated)	(calculated)	0.593	1221.701

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCE Factor for a Truck (PCE)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Intersection	Leg	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
85%	North	PHF	✓	156.00	100.000
85%	West	PHF	✓	321.00	100.000
85%	South	PHF	✓	130.00	100.000
85%	East	PHF	✓	820.00	100.000
90%	North	PHF	✓	163.00	100.000
90%	West	PHF	✓	321.00	100.000
90%	South	PHF	✓	130.00	100.000
90%	East	PHF	✓	828.00	100.000

Peak Hour Factor Data

Intersection	Leg	Hourly Volume (Veh/hr)	Peak Hour Factor	Peak Time Segment
85%	North	156.00	0.92	SecondQuarter
85%	West	321.00	0.92	SecondQuarter
85%	South	130.00	0.92	SecondQuarter
85%	East	820.00	0.92	SecondQuarter
90%	North	163.00	0.92	SecondQuarter
90%	West	321.00	0.92	SecondQuarter
90%	South	130.00	0.92	SecondQuarter
90%	East	828.00	0.92	SecondQuarter

Pedestrian Flows

General Flows Data

Intersection	Leg	Profile Type	Average Pedestrian Flow (Ped/hr)
85%	North	PHF	9.00
85%	West	PHF	6.00
85%	South	PHF	4.00
85%	East	PHF	8.00
90%	North	PHF	9.00
90%	West	PHF	6.00
90%	South	PHF	4.00
90%	East	PHF	8.00

Peak Hour Factor Data

Intersection	Leg	Hourly Volume (Ped/hr)	Peak Hour Factor	Peak Time Segment
85%	North	9.00	1.00	SecondQuarter
85%	West	6.00	1.00	SecondQuarter
85%	South	4.00	1.00	SecondQuarter
85%	East	8.00	1.00	SecondQuarter
90%	North	9.00	1.00	SecondQuarter
90%	West	6.00	1.00	SecondQuarter
90%	South	4.00	1.00	SecondQuarter
90%	East	8.00	1.00	SecondQuarter

Turning Proportions

Turning Counts / Proportions (Veh/hr) - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.000	27.000	41.000	88.000
	West	15.000	1.000	32.000	273.000
	South	23.000	30.000	0.000	77.000
	East	129.000	554.000	137.000	0.000

Turning Proportions (Veh) - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.00	0.17	0.26	0.56
	West	0.05	0.00	0.10	0.85
	South	0.18	0.23	0.00	0.59
	East	0.16	0.68	0.17	0.00

Turning Counts / Proportions (Veh/hr) - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.000	27.000	41.000	95.000
	West	15.000	1.000	32.000	273.000
	South	23.000	30.000	0.000	77.000
	East	137.000	554.000	137.000	0.000

Turning Proportions (Veh) - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.00	0.17	0.25	0.58
	West	0.05	0.00	0.10	0.85
	South	0.18	0.23	0.00	0.59
	East	0.17	0.67	0.17	0.00

Vehicle Mix

Average PCE Per Vehicle - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	1.000	1.000	1.030	1.000
	West	1.000	1.000	1.000	1.020

	South	1.000	1.000	1.000	1.000
	East	1.000	1.010	1.000	1.000

Truck Percentages - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.0	0.0	3.0	0.0
	West	0.0	0.0	0.0	2.0
	South	0.0	0.0	0.0	0.0
	East	0.0	1.0	0.0	0.0

Average PCE Per Vehicle - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	1.000	1.000	1.030	1.000
	West	1.000	1.000	1.000	1.020
	South	1.000	1.000	1.000	1.000
	East	1.000	1.010	1.000	1.000

Truck Percentages - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.0	0.0	3.0	0.0
	West	0.0	0.0	0.0	2.0
	South	0.0	0.0	0.0	0.0
	East	0.0	1.0	0.0	0.0

Results

Results Summary for whole modelled period

Intersection	Leg	Max V/C Ratio	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Intersection Arrivals (Veh)	Total Queueing Delay (Veh-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (Veh-min/min)	Inclusive Total Queueing Delay (Veh-min)	Inclusive Average Queueing Delay (s)
85%	North	0.27	7.98	0.37	~1	A	156.00	156.00	18.57	7.14	0.31	18.57	7.14
85%	West	0.36	5.90	0.57	1.00	A	321.00	321.00	29.54	5.52	0.49	29.54	5.52
85%	South	0.16	4.95	0.19	~1	A	130.00	130.00	10.21	4.71	0.17	10.21	4.71
85%	East	0.81	16.43	3.98	14.00	C	820.00	820.00	177.44	12.98	2.96	177.60	12.99
90%	North	0.26	7.14	0.35	~1	A	163.00	163.00	17.49	6.44	0.29	17.49	6.44
90%	West	0.34	5.36	0.52	1.00	A	321.00	321.00	26.97	5.04	0.45	26.97	5.04
90%	South	0.15	4.58	0.18	~1	A	130.00	130.00	9.46	4.37	0.16	9.46	4.37
90%	East	0.77	13.17	3.23	9.00	B	828.00	828.00	147.81	10.71	2.46	147.92	10.72

Main Results for each time segment

Main results: (16:00-16:15)

Intersection	Leg	Total Demand (Veh/hr)	Intersection Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	V/C Ratio	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
85%	North	146.96	36.74	145.90	155.72	672.44	9.00	696.74	483.45	0.211	0.00	0.26	6.524	A
85%	West	302.39	75.60	300.63	570.13	248.21	6.00	983.16	779.18	0.308	0.00	0.44	5.260	A
85%	South	122.46	30.62	121.85	195.87	352.96	4.00	911.68	376.87	0.134	0.00	0.15	4.558	A
85%	East	772.46	193.12	763.49	410.15	64.66	8.00	1103.91	1020.64	0.700	0.00	2.24	10.322	B
90%	North	153.55	38.39	152.54	163.40	673.54	9.00	759.08	507.40	0.202	0.00	0.25	5.925	A
90%	West	302.39	75.60	300.78	571.03	255.05	6.00	1045.50	823.84	0.289	0.00	0.40	4.823	A
90%	South	122.46	30.62	121.89	196.13	359.70	4.00	972.35	372.51	0.126	0.00	0.14	4.230	A

90%	East	780.00	195.00	772.25	416.90	64.69	8.00	1170.65	1084.80	0.666	0.00	1.94	8.872	A

Main results: (16:15-16:30)

Intersection	Leg	Total Demand (Veh/hr)	Intersection Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	V/C Ratio	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
85%	North	169.57	42.39	169.14	180.37	778.88	9.00	619.92	483.45	0.274	0.26	0.37	7.979	A
85%	West	348.91	87.23	348.41	660.40	287.61	6.00	957.98	779.18	0.364	0.44	0.57	5.900	A
85%	South	141.30	35.33	141.15	226.93	409.08	4.00	867.63	376.88	0.163	0.15	0.19	4.954	A
85%	East	891.30	222.83	884.34	475.32	74.91	8.00	1096.37	1020.64	0.813	2.24	3.98	16.428	C
90%	North	177.17	44.29	176.78	189.32	780.45	9.00	680.13	507.40	0.261	0.25	0.35	7.141	A
90%	West	348.91	87.23	348.47	661.67	295.56	6.00	1019.53	823.84	0.342	0.40	0.52	5.361	A
90%	South	141.30	35.33	141.16	227.27	416.76	4.00	926.59	372.52	0.153	0.14	0.18	4.583	A
90%	East	900.00	225.00	894.84	483.01	74.92	8.00	1162.85	1084.80	0.774	1.94	3.23	13.168	B

Main results: (16:30-16:45)

Intersection	Leg	Total Demand (Veh/hr)	Intersection Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	V/C Ratio	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
85%	North	160.52	40.13	160.67	172.18	744.67	9.00	644.68	483.45	0.249	0.37	0.33	7.439	A
85%	West	330.30	82.58	330.48	631.17	274.18	6.00	966.59	779.18	0.342	0.57	0.52	5.662	A
85%	South	133.77	33.44	133.82	216.49	388.17	4.00	884.22	376.87	0.151	0.19	0.18	4.799	A
85%	East	843.76	210.94	845.82	450.96	71.03	8.00	1099.18	1020.64	0.768	3.98	3.47	14.365	B
90%	North	167.72	41.93	167.86	180.36	744.31	9.00	706.91	507.40	0.237	0.35	0.31	6.679	A
90%	West	330.30	82.58	330.46	630.87	281.30	6.00	1028.70	823.84	0.321	0.52	0.48	5.156	A
90%	South	133.77	33.44	133.82	216.41	395.35	4.00	943.95	372.51	0.142	0.18	0.17	4.443	A
90%	East	852.00	213.00	853.64	458.14	71.03	8.00	1165.79	1084.80	0.731	3.23	2.82	11.612	B

Main results: (16:45-17:00)

Intersection	Leg	Total Demand (Veh/hr)	Intersection Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	V/C Ratio	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
85%	North	146.96	36.74	147.20	158.01	683.71	9.00	688.67	483.45	0.213	0.33	0.27	6.650	A
85%	West	302.39	75.60	302.69	579.43	251.48	6.00	981.07	779.18	0.308	0.52	0.45	5.308	A
85%	South	122.46	30.62	122.56	198.62	355.55	4.00	909.69	376.88	0.135	0.18	0.16	4.575	A
85%	East	772.46	193.12	776.67	413.06	65.05	8.00	1103.54	1020.64	0.700	3.47	2.42	11.158	B
90%	North	153.55	38.39	153.77	165.39	682.71	9.00	752.37	507.40	0.204	0.31	0.26	6.015	A
90%	West	302.39	75.60	302.65	578.62	257.86	6.00	1043.70	823.84	0.290	0.48	0.41	4.861	A
90%	South	122.46	30.62	122.55	198.41	362.10	4.00	970.47	372.52	0.126	0.17	0.15	4.245	A
90%	East	780.00	195.00	783.05	419.60	65.05	8.00	1170.31	1084.80	0.666	2.82	2.06	9.372	A

Queueing Delay Results for each time segment

Queueing Delay results: (16:00-16:15)

Intersection	Leg	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	3.84	0.26	6.524	A	A
85%	West	6.40	0.43	5.260	A	A
85%	South	2.26	0.15	4.558	A	A
85%	East	30.84	2.06	10.322	B	B
90%	North	3.66	0.24	5.925	A	A
90%	West	5.88	0.39	4.823	A	A
90%	South	2.10	0.14	4.230	A	A
90%	East	27.01	1.80	8.872	A	A

Queueing Delay results: (16:15-16:30)

Intersection	Leg	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	5.43	0.36	7.979	A	A
85%	West	8.31	0.55	5.900	A	A
85%	South	2.85	0.19	4.954	A	A
85%	East	53.87	3.59	16.428	C	B
90%	North	5.10	0.34	7.141	A	A

90%	West	7.58	0.51	5.361	A	A
90%	South	2.64	0.18	4.583	A	A
90%	East	44.61	2.97	13.168	B	B

Queueing Delay results: (16:30-16:45)

Intersection	Leg	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	5.11	0.34	7.439	A	A
85%	West	7.96	0.53	5.662	A	A
85%	South	2.72	0.18	4.799	A	A
85%	East	54.20	3.61	14.365	B	B
90%	North	4.78	0.32	6.679	A	A
90%	West	7.24	0.48	5.156	A	A
90%	South	2.52	0.17	4.443	A	A
90%	East	43.81	2.92	11.612	B	B

Queueing Delay results: (16:45-17:00)

Intersection	Leg	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	4.19	0.28	6.650	A	A
85%	West	6.86	0.46	5.308	A	A
85%	South	2.38	0.16	4.575	A	A
85%	East	38.52	2.57	11.158	B	B
90%	North	3.95	0.26	6.015	A	A
90%	West	6.26	0.42	4.861	A	A
90%	South	2.21	0.15	4.245	A	A
90%	East	32.38	2.16	9.372	A	A

Queue Variation Results for each time segment

Queue Variation results: (16:00-16:15)

Intersection	Leg	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.26	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	0.44	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.15	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	2.24	0.00	0.00	5.00	7.00			N/A	N/A
90%	North	0.25	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	0.40	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.14	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	1.94	0.00	0.00	4.00	6.00			N/A	N/A

Queue Variation results: (16:15-16:30)

Intersection	Leg	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.37	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	0.57	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.19	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	3.98	0.00	0.00	5.00	14.00			N/A	N/A

90%	North	0.35	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	0.52	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.18	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	3.23	0.00	0.00	2.00	9.00			N/A	N/A

Queue Variation results: (16:30-16:45)

Intersection	Leg	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.33	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	0.52	0.00	0.00	0.00	1.00			N/A	N/A
85%	South	0.18	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	3.47	0.00	0.00	0.00	4.00			N/A	N/A
90%	North	0.31	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	0.48	0.00	0.00	0.00	1.00			N/A	N/A
90%	South	0.17	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	2.82	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (16:45-17:00)

Intersection	Leg	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.27	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	0.45	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.16	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	2.42	0.00	0.00	5.00	8.00			N/A	N/A
90%	North	0.26	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	0.41	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.15	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	2.06	0.00	0.00	4.00	7.00			N/A	N/A

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]
© Copyright TRL Limited, 2020

For sales and distribution information, program advice and maintenance, contact TRL:
Tel: +44 (0)1344 770758 email: software@trl.co.uk Web: http://www.trlsoftware.co.uk

The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: Conservation & Beaver Creek.arc8
Path: C:\Users\AdamMorrison\Paradigm\Projects - 170278 Beaver Creek Area TES\C5 - Analysis and Evaluation\Arcady
Report generation date: 2020-07-21 4:24:13 PM

Summary of intersection performance

	AM					
	Queue (PCE)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS
	All - Total 2022					
Intersection 85% - Leg North	0.00	0.00	0.00	A	4.93	A
Intersection 85% - Leg West	0.59	5.35	0.37	A		
Intersection 85% - Leg South	0.24	4.72	0.19	A		
Intersection 85% - Leg East	0.34	4.45	0.24	A		
Intersection 90% - Leg North	0.00	0.00	0.00	A	4.67	A
Intersection 90% - Leg West	0.57	5.00	0.36	A		
Intersection 90% - Leg South	0.25	4.47	0.20	A		
Intersection 90% - Leg East	0.39	4.39	0.27	A		

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Intersection LOS and Intersection Delay are demand-weighted averages.

"D1 - Existing, AM" model duration: 8:00 AM - 9:30 AM
"D2 - Existing, PM" model duration: 5:00 PM - 6:30 PM
"D3 - Background 2022, AM" model duration: 8:00 AM - 9:30 AM
"D4 - Background 2022, PM" model duration: 5:00 PM - 6:30 PM
"D5 - Total 2022, AM " model duration: 8:00 AM - 9:30 AM
"D6 - Total 2022, PM" model duration: 5:00 PM - 6:30 PM
"D7 - Background 2025, AM" model duration: 8:00 AM - 9:30 AM
"D8 - Background 2025, PM" model duration: 5:00 PM - 6:30 PM
"D9 - Total 2025, AM" model duration: 8:00 AM - 9:30 AM
"D10 - Total 2025, PM" model duration: 5:00 PM - 6:30 PM
"D11 - Background 2027, AM" model duration: 8:00 AM - 9:30 AM
"D12 - Background 2027, PM" model duration: 5:00 PM - 6:30 PM
"D13 - Total 2027, AM" model duration: 8:00 AM - 9:30 AM
"D14 - Total 2027, PM" model duration: 5:00 PM - 6:30 PM
"D15 - Background 2032, AM" model duration: 8:00 AM - 9:30 AM
"D16 - Background 2032, PM" model duration: 5:00 PM - 6:30 PM
"D17 - Total 2032, AM" model duration: 8:00 AM - 9:30 AM
"D18 - Total 2032, PM" model duration: 5:00 PM - 6:30 PM

Run using Junctions 8.0.6.541 at 2020-07-21 4:24:12 PM

File summary

Title	(untitled)
Location	
Site Number	
Date	2018-09-11
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	170278
Analyst	AdamMorrison
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)
7.50	✓		N/A	0.85	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	PCE	PCE	perHour	s	-Min	perMin

All - Total 2022, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
All	ARCADY		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
Total 2022, AM	Total 2022	AM		ONE HOUR	08:00	09:30	90	15				✓		

Intersection Network

Intersections

Junction	Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Do Geometric Delay	Intersection Delay (s)	Intersection LOS
85%	85%	Conservation Drive & Beaver Creek Road	Roundabout	North,West,South,East				4.93	A
90%	90%	Conservation Drive & Beaver Creek Road	Roundabout	North,West,South,East				4.67	A

Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

Legs

Legs

Intersection	Leg	Leg	Name	Description
85%	**North**	North	Beaver Creek Road	
85%	**West**	West	Conservation Drive	
85%	**South**	South	Beaver Creek Road	
85%	**East**	East	Conservation Drive	
90%	**North**	North	Beaver Creek Road	
90%	**West**	West	Conservation Drive	
90%	**South**	South	Beaver Creek Road	
90%	**East**	East	Conservation Drive	

Capacity Options

Intersection	Leg	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)	Assume Flat Start Profile	Initial Queue (PCE)
85%	North	0.00	99999.00		0.00
85%	West	0.00	99999.00		0.00
85%	South	0.00	99999.00		0.00
85%	East	0.00	99999.00		0.00
90%	North	0.00	99999.00		0.00
90%	West	0.00	99999.00		0.00
90%	South	0.00	99999.00		0.00
90%	East	0.00	99999.00		0.00

Roundabout Geometry

Intersection	Leg	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
85%	North	3.50	4.50	30.00	20.00	40.00	25.00	
85%	West	3.50	4.50	30.00	20.00	40.00	25.00	
85%	South	3.50	4.50	30.00	20.00	40.00	25.00	
85%	East	3.50	4.50	30.00	20.00	40.00	25.00	
90%	North	3.50	4.50	30.00	20.00	40.00	25.00	
90%	West	3.50	4.50	30.00	20.00	40.00	25.00	
90%	South	3.50	4.50	30.00	20.00	40.00	25.00	
90%	East	3.50	4.50	30.00	20.00	40.00	25.00	

Slope / Intercept / Capacity

Leg Intercept Adjustments

Intersection	Leg	Type	Reason	Direct Intercept Adjustment (PCE/hr)	Percentage Intercept Adjustment (%)
85%	North	Percentage	Region of Waterloo		85.00
85%	West	Percentage	Region of Waterloo		85.00
85%	South	Percentage	Region of Waterloo		85.00
85%	East	Percentage	Region of Waterloo		85.00
90%	North	Percentage	Region of Waterloo		90.00
90%	West	Percentage	Region of Waterloo		90.00
90%	South	Percentage	Region of Waterloo		90.00
90%	East	Percentage	Region of Waterloo		90.00

Roundabout Slope and Intercept used in model

Intersection	Leg	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
85%	North		(calculated)	(calculated)	0.579	1153.828
85%	West		(calculated)	(calculated)	0.579	1153.828
85%	South		(calculated)	(calculated)	0.579	1153.828
85%	East		(calculated)	(calculated)	0.579	1153.828
90%	North		(calculated)	(calculated)	0.579	1221.701
90%	West		(calculated)	(calculated)	0.579	1221.701
90%	South		(calculated)	(calculated)	0.579	1221.701
90%	East		(calculated)	(calculated)	0.579	1221.701

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCE Factor for a Truck (PCE)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Intersection	Leg	Profile Type	Use Turning Counts	Average Demand Flow (PCE/hr)	Flow Scaling Factor (%)
85%	North	ONE HOUR	✓	0.00	100.000
85%	West	ONE HOUR	✓	365.00	100.000
85%	South	ONE HOUR	✓	167.00	100.000
85%	East	ONE HOUR	✓	252.00	100.000
90%	North	ONE HOUR	✓	0.00	100.000
90%	West	ONE HOUR	✓	375.00	100.000
90%	South	ONE HOUR	✓	185.00	100.000
90%	East	ONE HOUR	✓	295.00	100.000

Turning Proportions

Turning Counts / Proportions (PCE/hr) - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.000	0.000	0.000	0.000
	West	0.000	0.000	48.000	317.000
	South	0.000	31.000	0.000	136.000
	East	0.000	156.000	96.000	0.000

Turning Proportions (PCE) - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.25	0.25	0.25	0.25
	West	0.00	0.00	0.13	0.87
	South	0.00	0.19	0.00	0.81
	East	0.00	0.62	0.38	0.00

Turning Counts / Proportions (PCE/hr) - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.000	0.000	0.000	0.000
	West	0.000	0.000	50.000	325.000
	South	0.000	43.000	0.000	142.000
	East	0.000	185.000	110.000	0.000

Turning Proportions (PCE) - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.25	0.25	0.25	0.25
	West	0.00	0.00	0.13	0.87
	South	0.00	0.23	0.00	0.77
	East	0.00	0.63	0.37	0.00

Vehicle Mix

Average PCE Per Vehicle - Intersection 85% (for whole period)

		To			
		North	West	South	East

From	North	1.000	1.110	1.000	1.000
	West	1.000	1.000	1.000	1.030
	South	1.090	1.000	1.000	1.010
	East	1.040	1.060	1.060	1.000

Truck Percentages - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.0	11.0	0.0	0.0
	West	0.0	0.0	0.0	3.0
	South	9.0	0.0	0.0	1.0
	East	4.0	6.0	6.0	0.0

Average PCE Per Vehicle - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	1.000	1.110	1.000	1.000
	West	1.000	1.000	1.000	1.030
	South	1.090	1.000	1.000	1.010
	East	1.040	1.060	1.060	1.000

Truck Percentages - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.0	11.0	0.0	0.0
	West	0.0	0.0	0.0	3.0
	South	9.0	0.0	0.0	1.0
	East	4.0	6.0	6.0	0.0

Results

Results Summary for whole modelled period

Intersection	Leg	Max V/C Ratio	Max Delay (s)	Max Queue (PCE)	Max 95th percentile Queue (PCE)	Max LOS	Average Demand (PCE/hr)	Total Intersection Arrivals (PCE)	Total Queueing Delay (PCE-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCE-min/min)	Inclusive Total Queueing Delay (PCE-min)	Inclusive Average Queueing Delay (s)
85%	North	0.00	0.00	0.00	~1	A	0.00	0.00	0.00	0.00	0.00	0.00	0.00
85%	West	0.37	5.35	0.59	1.03	A	334.93	502.40	40.67	4.86	0.45	40.67	4.86
85%	South	0.19	4.72	0.24	~1	A	153.24	229.86	16.81	4.39	0.19	16.81	4.39
85%	East	0.24	4.45	0.34	~1	A	231.24	346.86	24.39	4.22	0.27	24.40	4.22
90%	North	0.00	0.00	0.00	~1	A	0.00	0.00	0.00	0.00	0.00	0.00	0.00
90%	West	0.36	5.00	0.57	1.03	A	344.11	516.16	39.17	4.55	0.44	39.17	4.55
90%	South	0.20	4.47	0.25	~1	A	169.76	254.64	17.63	4.15	0.20	17.63	4.15
90%	East	0.27	4.39	0.39	~1	A	270.70	406.05	27.92	4.13	0.31	27.92	4.13

Main Results for each time segment

Main results: (08:00-08:15)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	0.00	0.00	0.00	0.00	212.11	0.00	1031.07	498.33	0.000	0.00	0.00	0.000	A
85%	West	274.79	68.70	273.45	140.16	71.95	0.00	1112.18	714.43	0.247	0.00	0.33	4.396	A
85%	South	125.73	31.43	125.16	107.91	237.49	0.00	1016.38	650.51	0.124	0.00	0.14	4.069	A
85%	East	189.72	47.43	188.88	339.42	23.23	0.00	1140.38	1011.84	0.166	0.00	0.21	4.007	A
90%	North	0.00	0.00	0.00	0.00	253.37	0.00	1075.06	519.25	0.000	0.00	0.00	0.000	A

90%	West	282.32	70.58	281.03	170.91	82.46	0.00	1173.98	768.78	0.240	0.00	0.32	4.130	A
90%	South	139.28	34.82	138.68	119.93	243.56	0.00	1080.74	685.83	0.129	0.00	0.15	3.848	A
90%	East	222.09	55.52	221.14	350.01	32.23	0.00	1203.04	1054.31	0.185	0.00	0.24	3.883	A

Main results: (08:15-08:30)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	0.00	0.00	0.00	0.00	254.18	0.00	1006.72	498.33	0.000	0.00	0.00	0.000	A
85%	West	328.13	82.03	327.74	167.95	86.22	0.00	1103.93	714.43	0.297	0.33	0.43	4.756	A
85%	South	150.13	37.53	149.98	129.32	284.64	0.00	989.09	650.51	0.152	0.14	0.18	4.325	A
85%	East	226.54	56.64	226.34	406.78	27.84	0.00	1137.72	1011.84	0.199	0.21	0.26	4.186	A
90%	North	0.00	0.00	0.00	0.00	303.58	0.00	1046.00	519.25	0.000	0.00	0.00	0.000	A
90%	West	337.12	84.28	336.75	204.78	98.80	0.00	1164.52	768.78	0.289	0.32	0.42	4.459	A
90%	South	166.31	41.58	166.15	143.70	291.85	0.00	1052.79	685.83	0.158	0.15	0.19	4.091	A
90%	East	265.20	66.30	264.96	419.38	38.62	0.00	1199.35	1054.31	0.221	0.24	0.30	4.083	A

Main results: (08:30-08:45)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	0.00	0.00	0.00	0.00	311.23	0.00	973.70	498.33	0.000	0.00	0.00	0.000	A
85%	West	401.87	100.47	401.23	205.65	105.58	0.00	1092.72	714.43	0.368	0.43	0.59	5.337	A
85%	South	183.87	45.97	183.63	158.34	348.47	0.00	952.15	650.51	0.193	0.18	0.24	4.721	A
85%	East	277.46	69.36	277.14	498.01	34.09	0.00	1134.10	1011.84	0.245	0.26	0.34	4.452	A
90%	North	0.00	0.00	0.00	0.00	371.71	0.00	1006.57	519.25	0.000	0.00	0.00	0.000	A
90%	West	412.88	103.22	412.27	250.74	120.97	0.00	1151.69	768.78	0.359	0.42	0.57	4.990	A
90%	South	203.69	50.92	203.44	175.94	357.30	0.00	1014.91	685.83	0.201	0.19	0.25	4.469	A
90%	East	324.80	81.20	324.42	513.45	47.28	0.00	1194.33	1054.31	0.272	0.30	0.39	4.384	A

Main results: (08:45-09:00)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	0.00	0.00	0.00	0.00	311.58	0.00	973.50	498.33	0.000	0.00	0.00	0.000	A
85%	West	401.87	100.47	401.86	205.89	105.70	0.00	1092.66	714.43	0.368	0.59	0.59	5.346	A
85%	South	183.87	45.97	183.87	158.54	349.01	0.00	951.83	650.51	0.193	0.24	0.24	4.725	A
85%	East	277.46	69.36	277.45	498.75	34.13	0.00	1134.07	1011.84	0.245	0.34	0.34	4.454	A
90%	North	0.00	0.00	0.00	0.00	372.14	0.00	1006.32	519.25	0.000	0.00	0.00	0.000	A
90%	West	412.88	103.22	412.87	251.03	121.11	0.00	1151.61	768.78	0.359	0.57	0.57	4.998	A
90%	South	203.69	50.92	203.69	176.16	357.82	0.00	1014.61	685.83	0.201	0.25	0.25	4.473	A
90%	East	324.80	81.20	324.80	514.17	47.34	0.00	1194.30	1054.31	0.272	0.39	0.39	4.388	A

Main results: (09:00-09:15)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	0.00	0.00	0.00	0.00	254.76	0.00	1006.38	498.33	0.000	0.00	0.00	0.000	A
85%	West	328.13	82.03	328.76	168.34	86.42	0.00	1103.81	714.43	0.297	0.59	0.44	4.770	A
85%	South	150.13	37.53	150.37	129.65	285.52	0.00	988.58	650.51	0.152	0.24	0.18	4.330	A
85%	East	226.54	56.64	226.85	407.98	27.91	0.00	1137.67	1011.84	0.199	0.34	0.27	4.192	A
90%	North	0.00	0.00	0.00	0.00	304.28	0.00	1045.60	519.25	0.000	0.00	0.00	0.000	A
90%	West	337.12	84.28	337.72	205.26	99.02	0.00	1164.39	768.78	0.290	0.57	0.42	4.472	A
90%	South	166.31	41.58	166.56	144.05	292.69	0.00	1052.30	685.83	0.158	0.25	0.19	4.097	A
90%	East	265.20	66.30	265.57	420.53	38.71	0.00	1199.29	1054.31	0.221	0.39	0.30	4.089	A

Main results: (09:15-09:30)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	0.00	0.00	0.00	0.00	213.30	0.00	1030.38	498.33	0.000	0.00	0.00	0.000	A
85%	West	274.79	68.70	275.18	140.94	72.35	0.00	1111.95	714.43	0.247	0.44	0.34	4.415	A
85%	South	125.73	31.43	125.88	108.54	239.00	0.00	1015.51	650.51	0.124	0.18	0.14	4.079	A
85%	East	189.72	47.43	189.93	341.51	23.37	0.00	1140.30	1011.84	0.166	0.27	0.21	4.017	A

90%	North	0.00	0.00	0.00	0.00	254.75	0.00	1074.26	519.25	0.000	0.00	0.00	0.000	A
90%	West	282.32	70.58	282.70	171.84	82.91	0.00	1173.72	768.78	0.241	0.42	0.33	4.146	A
90%	South	139.28	34.82	139.44	120.60	245.00	0.00	1079.90	685.83	0.129	0.19	0.15	3.859	A
90%	East	222.09	55.52	222.34	352.03	32.41	0.00	1202.94	1054.31	0.185	0.30	0.24	3.893	A

Queueing Delay Results for each time segment

Queueing Delay results: (08:00-08:15)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	0.00	0.00	0.000	A	A
85%	West	4.89	0.33	4.396	A	A
85%	South	2.08	0.14	4.069	A	A
85%	East	3.09	0.21	4.007	A	A
90%	North	0.00	0.00	0.000	A	A
90%	West	4.72	0.31	4.130	A	A
90%	South	2.18	0.15	3.848	A	A
90%	East	3.50	0.23	3.883	A	A

Queueing Delay results: (08:15-08:30)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	0.00	0.00	0.000	A	A
85%	West	6.34	0.42	4.756	A	A
85%	South	2.65	0.18	4.325	A	A
85%	East	3.87	0.26	4.186	A	A
90%	North	0.00	0.00	0.000	A	A
90%	West	6.12	0.41	4.459	A	A
90%	South	2.78	0.19	4.091	A	A
90%	East	4.42	0.29	4.083	A	A

Queueing Delay results: (08:30-08:45)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	0.00	0.00	0.000	A	A
85%	West	8.67	0.58	5.337	A	A
85%	South	3.53	0.24	4.721	A	A
85%	East	5.03	0.34	4.452	A	A
90%	North	0.00	0.00	0.000	A	A
90%	West	8.34	0.56	4.990	A	A
90%	South	3.71	0.25	4.469	A	A
90%	East	5.80	0.39	4.384	A	A

Queueing Delay results: (08:45-09:00)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	0.00	0.00	0.000	A	A
85%	West	8.90	0.59	5.346	A	A
85%	South	3.60	0.24	4.725	A	A
85%	East	5.13	0.34	4.454	A	A
90%	North	0.00	0.00	0.000	A	A
90%	West	8.55	0.57	4.998	A	A
90%	South	3.78	0.25	4.473	A	A
90%	East	5.91	0.39	4.388	A	A

Queueing Delay results: (09:00-09:15)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	0.00	0.00	0.000	A	A
85%	West	6.70	0.45	4.770	A	A
85%	South	2.77	0.18	4.330	A	A
85%	East	4.04	0.27	4.192	A	A

90%	North	0.00	0.00	0.000	A	A
90%	West	6.44	0.43	4.472	A	A
90%	South	2.90	0.19	4.097	A	A
90%	East	4.62	0.31	4.089	A	A

Queueing Delay results: (09:15-09:30)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	0.00	0.00	0.000	A	A
85%	West	5.18	0.35	4.415	A	A
85%	South	2.18	0.15	4.079	A	A
85%	East	3.24	0.22	4.017	A	A
90%	North	0.00	0.00	0.000	A	A
90%	West	4.99	0.33	4.146	A	A
90%	South	2.28	0.15	3.859	A	A
90%	East	3.67	0.24	3.893	A	A

Queue Variation Results for each time segment

Queue Variation results: (08:00-08:15)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.00	~1	~1	~1	~1			N/A	N/A
85%	West	0.33	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.14	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	0.21	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.00	~1	~1	~1	~1			N/A	N/A
90%	West	0.32	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.15	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.24	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:15-08:30)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.00	~1	~1	~1	~1			N/A	N/A
85%	West	0.43	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.18	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	0.26	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.00	~1	~1	~1	~1			N/A	N/A
90%	West	0.42	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.19	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.30	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:30-08:45)

		Mean	Q05	Q50	Q90	Q95		Marker	Probability Of	Probability Of

Intersection	Leg	(PCE)	(PCE)	(PCE)	(PCE)	(PCE)	Percentile Message	Message	Reaching Or Exceeding Marker	Exactly Reaching Marker
85%	North	0.00	~1	~1	~1	~1			N/A	N/A
85%	West	0.59	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.24	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	0.34	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.00	~1	~1	~1	~1			N/A	N/A
90%	West	0.57	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.25	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.39	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:45-09:00)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.00	~1	~1	~1	~1			N/A	N/A
85%	West	0.59	0.00	0.00	0.00	1.03			N/A	N/A
85%	South	0.24	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	0.34	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.00	~1	~1	~1	~1			N/A	N/A
90%	West	0.57	0.00	0.00	0.00	1.03			N/A	N/A
90%	South	0.25	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.39	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (09:00-09:15)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.00	~1	~1	~1	~1			N/A	N/A
85%	West	0.44	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.18	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	0.27	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.00	~1	~1	~1	~1			N/A	N/A
90%	West	0.42	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.19	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.30	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (09:15-09:30)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.00	~1	~1	~1	~1			N/A	N/A
85%	West	0.34	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue		N/A	N/A

							is very small or very big.			
85%	South	0.14	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	0.21	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.00	~1	~1	~1	~1			N/A	N/A
90%	West	0.33	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.15	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.24	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]
© Copyright TRL Limited, 2020

For sales and distribution information, program advice and maintenance, contact TRL:
Tel: +44 (0)1344 770758 email: software@trl.co.uk Web: http://www.trlsoftware.co.uk

The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: Conservation & Beaver Creek.arc8
Path: C:\Users\AdamMorrison\Paradigm\Projects - 170278 Beaver Creek Area TES\C5 - Analysis and Evaluation\Arcady
Report generation date: 2020-07-21 4:24:52 PM

Summary of intersection performance

	PM					
	Queue (PCE)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS
	All - Total 2022					
Intersection 85% - Leg North	0.00	0.00	0.00	A	5.75	A
Intersection 85% - Leg West	0.44	5.02	0.30	A		
Intersection 85% - Leg South	0.27	4.59	0.21	A		
Intersection 85% - Leg East	1.03	6.60	0.51	A		
Intersection 90% - Leg North	0.00	0.00	0.00	A	5.36	A
Intersection 90% - Leg West	0.44	4.74	0.30	A		
Intersection 90% - Leg South	0.27	4.33	0.21	A		
Intersection 90% - Leg East	0.99	6.10	0.50	A		

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Intersection LOS and Intersection Delay are demand-weighted averages.

"D1 - Existing, AM" model duration: 8:00 AM - 9:30 AM
"D2 - Existing, PM" model duration: 5:00 PM - 6:30 PM
"D3 - Background 2022, AM" model duration: 8:00 AM - 9:30 AM
"D4 - Background 2022, PM" model duration: 5:00 PM - 6:30 PM
"D5 - Total 2022, AM" model duration: 8:00 AM - 9:30 AM
"D6 - Total 2022, PM " model duration: 5:00 PM - 6:30 PM
"D7 - Background 2025, AM" model duration: 8:00 AM - 9:30 AM
"D8 - Background 2025, PM" model duration: 5:00 PM - 6:30 PM
"D9 - Total 2025, AM" model duration: 8:00 AM - 9:30 AM
"D10 - Total 2025, PM" model duration: 5:00 PM - 6:30 PM
"D11 - Background 2027, AM" model duration: 8:00 AM - 9:30 AM
"D12 - Background 2027, PM" model duration: 5:00 PM - 6:30 PM
"D13 - Total 2027, AM" model duration: 8:00 AM - 9:30 AM
"D14 - Total 2027, PM" model duration: 5:00 PM - 6:30 PM
"D15 - Background 2032, AM" model duration: 8:00 AM - 9:30 AM
"D16 - Background 2032, PM" model duration: 5:00 PM - 6:30 PM
"D17 - Total 2032, AM" model duration: 8:00 AM - 9:30 AM
"D18 - Total 2032, PM" model duration: 5:00 PM - 6:30 PM

Run using Junctions 8.0.6.541 at 2020-07-21 4:24:50 PM

File summary

Title	(untitled)
Location	
Site Number	
Date	2018-09-11
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	170278
Analyst	AdamMorrison
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)
7.50	✓		N/A	0.85	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	PCE	PCE	perHour	s	-Min	perMin

All - Total 2022, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
All	ARCADY		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
Total 2022, PM	Total 2022	PM		ONE HOUR	17:00	18:30	90	15				✓		

Intersection Network

Intersections

Junction	Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Do Geometric Delay	Intersection Delay (s)	Intersection LOS
85%	85%	Conservation Drive & Beaver Creek Road	Roundabout	North,West,South,East				5.75	A
90%	90%	Conservation Drive & Beaver Creek Road	Roundabout	North,West,South,East				5.36	A

Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

Legs

Legs

Intersection	Leg	Leg	Name	Description
85%	**North**	North	Beaver Creek Road	
85%	**West**	West	Conservation Drive	
85%	**South**	South	Beaver Creek Road	
85%	**East**	East	Conservation Drive	
90%	**North**	North	Beaver Creek Road	
90%	**West**	West	Conservation Drive	
90%	**South**	South	Beaver Creek Road	
90%	**East**	East	Conservation Drive	

Capacity Options

Intersection	Leg	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)	Assume Flat Start Profile	Initial Queue (PCE)
85%	North	0.00	99999.00		0.00
85%	West	0.00	99999.00		0.00
85%	South	0.00	99999.00		0.00
85%	East	0.00	99999.00		0.00
90%	North	0.00	99999.00		0.00
90%	West	0.00	99999.00		0.00
90%	South	0.00	99999.00		0.00
90%	East	0.00	99999.00		0.00

Roundabout Geometry

Intersection	Leg	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
85%	North	3.50	4.50	30.00	20.00	40.00	25.00	
85%	West	3.50	4.50	30.00	20.00	40.00	25.00	
85%	South	3.50	4.50	30.00	20.00	40.00	25.00	
85%	East	3.50	4.50	30.00	20.00	40.00	25.00	
90%	North	3.50	4.50	30.00	20.00	40.00	25.00	
90%	West	3.50	4.50	30.00	20.00	40.00	25.00	
90%	South	3.50	4.50	30.00	20.00	40.00	25.00	
90%	East	3.50	4.50	30.00	20.00	40.00	25.00	

Slope / Intercept / Capacity

Leg Intercept Adjustments

Intersection	Leg	Type	Reason	Direct Intercept Adjustment (PCE/hr)	Percentage Intercept Adjustment (%)
85%	North	Percentage	Region of Waterloo		85.00
85%	West	Percentage	Region of Waterloo		85.00
85%	South	Percentage	Region of Waterloo		85.00
85%	East	Percentage	Region of Waterloo		85.00
90%	North	Percentage	Region of Waterloo		90.00
90%	West	Percentage	Region of Waterloo		90.00
90%	South	Percentage	Region of Waterloo		90.00
90%	East	Percentage	Region of Waterloo		90.00

Roundabout Slope and Intercept used in model

Intersection	Leg	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
85%	North		(calculated)	(calculated)	0.579	1153.828
85%	West		(calculated)	(calculated)	0.579	1153.828
85%	South		(calculated)	(calculated)	0.579	1153.828
85%	East		(calculated)	(calculated)	0.579	1153.828
90%	North		(calculated)	(calculated)	0.579	1221.701
90%	West		(calculated)	(calculated)	0.579	1221.701
90%	South		(calculated)	(calculated)	0.579	1221.701
90%	East		(calculated)	(calculated)	0.579	1221.701

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCE Factor for a Truck (PCE)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Intersection	Leg	Profile Type	Use Turning Counts	Average Demand Flow (PCE/hr)	Flow Scaling Factor (%)
85%	North	ONE HOUR	✓	0.00	100.000
85%	West	ONE HOUR	✓	287.00	100.000
85%	South	ONE HOUR	✓	193.00	100.000
85%	East	ONE HOUR	✓	515.00	100.000
90%	North	ONE HOUR	✓	0.00	100.000
90%	West	ONE HOUR	✓	307.00	100.000
90%	South	ONE HOUR	✓	203.00	100.000
90%	East	ONE HOUR	✓	534.00	100.000

Turning Proportions

Turning Counts / Proportions (PCE/hr) - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.000	0.000	0.000	0.000
	West	0.000	0.000	40.000	247.000
	South	0.000	59.000	0.000	134.000
	East	0.000	345.000	170.000	0.000

Turning Proportions (PCE) - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.25	0.25	0.25	0.25
	West	0.00	0.00	0.14	0.86
	South	0.00	0.31	0.00	0.69
	East	0.00	0.67	0.33	0.00

Turning Counts / Proportions (PCE/hr) - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.000	0.000	0.000	0.000
	West	0.000	0.000	45.000	262.000
	South	0.000	63.000	0.000	140.000
	East	0.000	358.000	176.000	0.000

Turning Proportions (PCE) - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.25	0.25	0.25	0.25
	West	0.00	0.00	0.15	0.85
	South	0.00	0.31	0.00	0.69
	East	0.00	0.67	0.33	0.00

Vehicle Mix

Average PCE Per Vehicle - Intersection 85% (for whole period)

		To			
		North	West	South	East

From	North	1.000	1.000	1.030	1.000
	West	1.000	1.000	1.000	1.020
	South	1.000	1.000	1.000	1.000
	East	1.000	1.010	1.000	1.000

Truck Percentages - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.0	0.0	3.0	0.0
	West	0.0	0.0	0.0	2.0
	South	0.0	0.0	0.0	0.0
	East	0.0	1.0	0.0	0.0

Average PCE Per Vehicle - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	1.000	1.000	1.030	1.000
	West	1.000	1.000	1.000	1.020
	South	1.000	1.000	1.000	1.000
	East	1.000	1.010	1.000	1.000

Truck Percentages - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.0	0.0	3.0	0.0
	West	0.0	0.0	0.0	2.0
	South	0.0	0.0	0.0	0.0
	East	0.0	1.0	0.0	0.0

Results

Results Summary for whole modelled period

Intersection	Leg	Max V/C Ratio	Max Delay (s)	Max Queue (PCE)	Max 95th percentile Queue (PCE)	Max LOS	Average Demand (PCE/hr)	Total Intersection Arrivals (PCE)	Total Queueing Delay (PCE-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCE-min/min)	Inclusive Total Queueing Delay (PCE-min)	Inclusive Average Queueing Delay (s)
85%	North	0.00	0.00	0.00	~1	A	0.00	0.00	0.00	0.00	0.00	0.00	0.00
85%	West	0.30	5.02	0.44	1.02	A	263.36	395.03	30.37	4.61	0.34	30.37	4.61
85%	South	0.21	4.59	0.27	~1	A	177.10	265.65	18.96	4.28	0.21	18.96	4.28
85%	East	0.51	6.60	1.03	?	A	472.57	708.86	67.29	5.70	0.75	67.30	5.70
90%	North	0.00	0.00	0.00	~1	A	0.00	0.00	0.00	0.00	0.00	0.00	0.00
90%	West	0.30	4.74	0.44	1.02	A	281.71	422.56	30.71	4.36	0.34	30.71	4.36
90%	South	0.21	4.33	0.27	~1	A	186.28	279.41	18.81	4.04	0.21	18.81	4.04
90%	East	0.50	6.10	0.99	~1	A	490.01	735.01	64.91	5.30	0.72	64.91	5.30

Main Results for each time segment

Main results: (17:00-17:15)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	0.00	0.00	0.00	0.00	429.85	0.00	905.05	478.69	0.000	0.00	0.00	0.000	A
85%	West	216.07	54.02	215.06	302.56	127.29	0.00	1080.16	760.36	0.200	0.00	0.25	4.229	A
85%	South	145.30	36.33	144.66	157.27	185.08	0.00	1046.71	636.57	0.139	0.00	0.16	3.988	A
85%	East	387.72	96.93	385.63	285.52	44.22	0.00	1128.23	971.94	0.344	0.00	0.52	4.866	A
90%	North	0.00	0.00	0.00	0.00	447.23	0.00	962.86	505.76	0.000	0.00	0.00	0.000	A

90%	West	231.13	57.78	230.10	315.39	131.83	0.00	1145.40	806.28	0.202	0.00	0.26	3.996	A
90%	South	152.83	38.21	152.19	165.56	196.37	0.00	1108.05	677.10	0.138	0.00	0.16	3.764	A
90%	East	402.02	100.51	400.00	301.33	47.23	0.00	1194.36	1026.91	0.337	0.00	0.51	4.552	A

Main results: (17:15-17:30)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	0.00	0.00	0.00	0.00	515.26	0.00	855.62	478.69	0.000	0.00	0.00	0.000	A
85%	West	258.01	64.50	257.73	362.66	152.59	0.00	1065.51	760.36	0.242	0.25	0.32	4.532	A
85%	South	173.50	43.38	173.33	188.51	221.81	0.00	1025.46	636.57	0.169	0.16	0.20	4.223	A
85%	East	462.97	115.74	462.27	342.15	52.99	0.00	1123.16	971.94	0.412	0.52	0.70	5.478	A
90%	North	0.00	0.00	0.00	0.00	535.96	0.00	911.51	505.76	0.000	0.00	0.00	0.000	A
90%	West	275.99	69.00	275.70	377.97	158.00	0.00	1130.26	806.28	0.244	0.26	0.33	4.283	A
90%	South	182.49	45.62	182.33	198.41	235.29	0.00	1085.52	677.10	0.168	0.16	0.20	3.986	A
90%	East	480.06	120.01	479.38	361.03	56.58	0.00	1188.95	1026.91	0.404	0.51	0.68	5.103	A

Main results: (17:30-17:45)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	0.00	0.00	0.00	0.00	630.60	0.00	788.86	478.68	0.000	0.00	0.00	0.000	A
85%	West	315.99	79.00	315.54	443.86	186.74	0.00	1045.75	760.36	0.302	0.32	0.44	5.011	A
85%	South	212.50	53.12	212.23	230.72	271.56	0.00	996.66	636.57	0.213	0.20	0.27	4.588	A
85%	East	567.03	141.76	565.72	418.91	64.88	0.00	1116.28	971.94	0.508	0.70	1.02	6.566	A
90%	North	0.00	0.00	0.00	0.00	655.99	0.00	842.04	505.75	0.000	0.00	0.00	0.000	A
90%	West	338.01	84.50	337.55	462.62	193.37	0.00	1109.78	806.28	0.305	0.33	0.44	4.737	A
90%	South	223.51	55.88	223.24	242.85	288.07	0.00	1054.98	677.10	0.212	0.20	0.27	4.327	A
90%	East	587.94	146.99	586.71	442.03	69.28	0.00	1181.60	1026.91	0.498	0.68	0.98	6.080	A

Main results: (17:45-18:00)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	0.00	0.00	0.00	0.00	631.96	0.00	788.08	478.68	0.000	0.00	0.00	0.000	A
85%	West	315.99	79.00	315.99	444.79	187.16	0.00	1045.51	760.36	0.302	0.44	0.44	5.019	A
85%	South	212.50	53.12	212.49	231.20	271.95	0.00	996.44	636.57	0.213	0.27	0.27	4.591	A
85%	East	567.03	141.76	567.00	419.48	64.96	0.00	1116.23	971.94	0.508	1.02	1.03	6.597	A
90%	North	0.00	0.00	0.00	0.00	657.28	0.00	841.29	505.75	0.000	0.00	0.00	0.000	A
90%	West	338.01	84.50	338.01	463.51	193.77	0.00	1109.55	806.28	0.305	0.44	0.44	4.744	A
90%	South	223.51	55.88	223.50	243.32	288.46	0.00	1054.75	677.10	0.212	0.27	0.27	4.330	A
90%	East	587.94	146.99	587.92	442.60	69.36	0.00	1181.56	1026.91	0.498	0.98	0.99	6.104	A

Main results: (18:00-18:15)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	0.00	0.00	0.00	0.00	517.37	0.00	854.40	478.69	0.000	0.00	0.00	0.000	A
85%	West	258.01	64.50	258.45	364.12	153.25	0.00	1065.14	760.36	0.242	0.44	0.33	4.543	A
85%	South	173.50	43.38	173.76	189.27	222.43	0.00	1025.09	636.57	0.169	0.27	0.20	4.231	A
85%	East	462.97	115.74	464.25	343.08	53.12	0.00	1123.08	971.94	0.412	1.03	0.71	5.510	A
90%	North	0.00	0.00	0.00	0.00	537.98	0.00	910.34	505.76	0.000	0.00	0.00	0.000	A
90%	West	275.99	69.00	276.44	379.36	158.62	0.00	1129.90	806.28	0.244	0.44	0.33	4.293	A
90%	South	182.49	45.62	182.75	199.14	235.92	0.00	1085.16	677.10	0.168	0.27	0.20	3.990	A
90%	East	480.06	120.01	481.26	361.95	56.72	0.00	1188.88	1026.91	0.404	0.99	0.69	5.129	A

Main results: (18:15-18:30)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	0.00	0.00	0.00	0.00	432.92	0.00	903.27	478.69	0.000	0.00	0.00	0.000	A
85%	West	216.07	54.02	216.35	304.69	128.22	0.00	1079.62	760.36	0.200	0.33	0.26	4.244	A
85%	South	145.30	36.33	145.47	158.38	186.20	0.00	1046.06	636.57	0.139	0.20	0.16	3.999	A
85%	East	387.72	96.93	388.45	287.20	44.47	0.00	1128.09	971.94	0.344	0.71	0.53	4.906	A

90%	North	0.00	0.00	0.00	0.00	450.20	0.00	961.14	505.76	0.000	0.00	0.00	0.000	A
90%	West	231.13	57.78	231.41	317.47	132.73	0.00	1144.88	806.28	0.202	0.33	0.26	4.010	A
90%	South	152.83	38.21	153.00	166.65	197.49	0.00	1107.40	677.10	0.138	0.20	0.16	3.774	A
90%	East	402.02	100.51	402.72	303.01	47.48	0.00	1194.22	1026.91	0.337	0.69	0.51	4.584	A

Queueing Delay Results for each time segment

Queueing Delay results: (17:00-17:15)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	0.00	0.00	0.000	A	A
85%	West	3.70	0.25	4.229	A	A
85%	South	2.35	0.16	3.988	A	A
85%	East	7.60	0.51	4.866	A	A
90%	North	0.00	0.00	0.000	A	A
90%	West	3.75	0.25	3.996	A	A
90%	South	2.34	0.16	3.764	A	A
90%	East	7.39	0.49	4.552	A	A

Queueing Delay results: (17:15-17:30)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	0.00	0.00	0.000	A	A
85%	West	4.76	0.32	4.532	A	A
85%	South	2.99	0.20	4.223	A	A
85%	East	10.23	0.68	5.478	A	A
90%	North	0.00	0.00	0.000	A	A
90%	West	4.82	0.32	4.283	A	A
90%	South	2.97	0.20	3.986	A	A
90%	East	9.90	0.66	5.103	A	A

Queueing Delay results: (17:30-17:45)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	0.00	0.00	0.000	A	A
85%	West	6.42	0.43	5.011	A	A
85%	South	3.97	0.26	4.588	A	A
85%	East	14.87	0.99	6.566	A	A
90%	North	0.00	0.00	0.000	A	A
90%	West	6.50	0.43	4.737	A	A
90%	South	3.94	0.26	4.327	A	A
90%	East	14.31	0.95	6.080	A	A

Queueing Delay results: (17:45-18:00)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	0.00	0.00	0.000	A	A
85%	West	6.57	0.44	5.019	A	A
85%	South	4.05	0.27	4.591	A	A
85%	East	15.43	1.03	6.597	A	A
90%	North	0.00	0.00	0.000	A	A
90%	West	6.65	0.44	4.744	A	A
90%	South	4.02	0.27	4.330	A	A
90%	East	14.82	0.99	6.104	A	A

Queueing Delay results: (18:00-18:15)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	0.00	0.00	0.000	A	A
85%	West	5.01	0.33	4.543	A	A
85%	South	3.13	0.21	4.231	A	A
85%	East	11.01	0.73	5.510	A	A

90%	North	0.00	0.00	0.000	A	A
90%	West	5.06	0.34	4.293	A	A
90%	South	3.10	0.21	3.990	A	A
90%	East	10.60	0.71	5.129	A	A

Queueing Delay results: (18:15-18:30)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	0.00	0.00	0.000	A	A
85%	West	3.91	0.26	4.244	A	A
85%	South	2.47	0.16	3.999	A	A
85%	East	8.15	0.54	4.906	A	A
90%	North	0.00	0.00	0.000	A	A
90%	West	3.94	0.26	4.010	A	A
90%	South	2.45	0.16	3.774	A	A
90%	East	7.89	0.53	4.584	A	A

Queue Variation Results for each time segment

Queue Variation results: (17:00-17:15)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.00	~1	~1	~1	~1			N/A	N/A
85%	West	0.25	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.16	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	0.52	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.00	~1	~1	~1	~1			N/A	N/A
90%	West	0.26	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.16	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.51	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (17:15-17:30)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.00	~1	~1	~1	~1			N/A	N/A
85%	West	0.32	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.20	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	0.70	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.00	~1	~1	~1	~1			N/A	N/A
90%	West	0.33	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.20	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.68	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (17:30-17:45)

		Mean	Q05	Q50	Q90	Q95		Marker	Probability Of	Probability Of

Intersection	Leg	(PCE)	(PCE)	(PCE)	(PCE)	(PCE)	Percentile Message	Message	Reaching Or Exceeding Marker	Exactly Reaching Marker
85%	North	0.00	~1	~1	~1	~1			N/A	N/A
85%	West	0.44	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.27	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	1.02	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.00	~1	~1	~1	~1			N/A	N/A
90%	West	0.44	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.27	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.98	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (17:45-18:00)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.00	~1	~1	~1	~1			N/A	N/A
85%	West	0.44	0.00	0.00	0.00	1.02			N/A	N/A
85%	South	0.27	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	1.03	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.00	~1	~1	~1	~1			N/A	N/A
90%	West	0.44	0.00	0.00	0.00	1.02			N/A	N/A
90%	South	0.27	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.99	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (18:00-18:15)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.00	~1	~1	~1	~1			N/A	N/A
85%	West	0.33	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.20	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	0.71	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.00	~1	~1	~1	~1			N/A	N/A
90%	West	0.33	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.20	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.69	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (18:15-18:30)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.00	~1	~1	~1	~1			N/A	N/A
85%	West	0.26	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue		N/A	N/A

							is very small or very big.			
85%	South	0.16	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	0.53	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.00	~1	~1	~1	~1			N/A	N/A
90%	West	0.26	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.16	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.51	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Appendix E

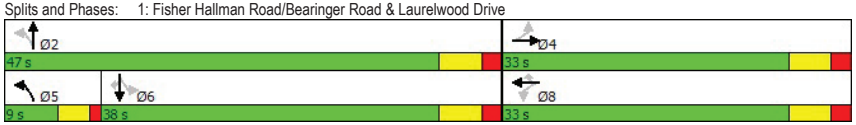
2025 Background Traffic Operations Reports

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	346	254	225	42	39	14	77	640	98	47	255	85
Future Volume (vph)	346	254	225	42	39	14	77	640	98	47	255	85
Ideal Flow (vphpl)	1775	1650	1650	1775	1900	1750	1775	1650	1650	1775	1900	1750
Storage Length (m)	85.0		0.0	90.0		90.0	90.0		0.0	60.0		60.0
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (m)	35.0			7.5			45.0			70.0		
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	0.98		1.00		0.98	1.00	1.00		1.00		0.98
Frt		0.930				0.850		0.980				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1653	1476	0	1188	1845	1488	1506	1565	0	1686	1881	1430
Flt Permitted	0.732			0.229			0.515			0.248		
Satd. Flow (perm)	1269	1476	0	285	1845	1452	815	1565	0	440	1881	1398
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		60				95		14				95
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		133.2			228.2			160.2			234.1	
Travel Time (s)		9.6			16.4			11.5			16.9	
Confl. Peds. (#/hr)	2		7	7		2	2		3	3		2
Peak Hour 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
Heavy Vehicles (%)	2%	1%	4%	42%	3%	0%	12%	1%	16%	0%	1%	4%
Adj. Flow (vph)	346	254	225	42	39	14	77	640	98	47	255	85
Shared Lane Traffic (%)												
Lane Group Flow (vph)	346	479	0	42	39	14	77	738	0	47	255	85
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA		Perm	NA	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8		8	2			6		6
Detector Phase	4	4		8	8	8	5	2		6	6	6
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0	8.0	5.0	30.0		30.0	30.0	30.0
Minimum Split (s)	14.0	14.0		14.0	14.0	14.0	9.0	36.0		36.0	36.0	36.0
Total Split (s)	33.0	33.0		33.0	33.0	33.0	9.0	47.0		38.0	38.0	38.0
Total Split (%)	41.3%	41.3%		41.3%	41.3%	41.3%	11.3%	58.8%		47.5%	47.5%	47.5%
Maximum Green (s)	27.0	27.0		27.0	27.0	27.0	5.0	41.0		32.0	32.0	32.0
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	3.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	1.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0	4.0	6.0		6.0	6.0	6.0
Lead/Lag							Lead			Lag	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None	None	None	Max		Max	Max	Max
Walk Time (s)	12.0	12.0		12.0	12.0	12.0		9.0		9.0	9.0	9.0
Flash Dont Walk (s)	10.0	10.0		10.0	10.0	10.0		21.0		21.0	21.0	21.0
Pedestrian Calls (#/hr)	0	0		0	0	0		0		0	0	0
Act Effct Green (s)	25.4	25.4		25.4	25.4	25.4	43.1	41.1		34.0	34.0	34.0
Actuated g/C Ratio	0.32	0.32		0.32	0.32	0.32	0.55	0.52		0.43	0.43	0.43
v/c Ratio	0.84	0.92		0.46	0.07	0.03	0.16	0.90		0.25	0.31	0.13

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	44.9	48.8		39.4	18.4	0.1	9.9	33.4		20.6	17.4	3.7
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	44.9	48.8		39.4	18.4	0.1	9.9	33.4		20.6	17.4	3.7
LOS	D	D		D	B	A	A	C		C	B	A
Approach Delay		47.2			25.0			31.1			14.8	
Approach LOS		D			C			C			B	
Queue Length 50th (m)	49.7	63.7		5.2	4.2	0.0	5.6	100.2		4.9	27.6	0.0
Queue Length 95th (m)	#95.3	#122.4		#18.6	10.7	0.0	12.1	#178.9		13.9	45.7	7.2
Internal Link Dist (m)		109.2			204.2			136.2			210.1	
Turn Bay Length (m)	85.0			90.0		90.0	90.0			60.0		60.0
Base Capacity (vph)	437	547		98	635	561	491	824		190	814	659
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.79	0.88		0.43	0.06	0.02	0.16	0.90		0.25	0.31	0.13

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 78.5			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.92			
Intersection Signal Delay: 34.1		Intersection LOS: C	
Intersection Capacity Utilization 115.9%		ICU Level of Service H	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 1: Fisher Hallman Road/Bearinger Road & Laurelwood Drive



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	346	254	225	42	39	14	77	640	98	47	255	85
Future Volume (vph)	346	254	225	42	39	14	77	640	98	47	255	85
Ideal Flow (vphpl)	1775	1650	1650	1775	1900	1750	1775	1650	1650	1775	1900	1750
Total Lost time (s)	6.0	6.0		6.0	6.0	6.0	4.0	6.0		6.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.98		1.00	1.00	0.98	1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.93		1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1648	1475		1182	1845	1452	1504	1565		1684	1881	1398
Flt Permitted	0.73	1.00		0.23	1.00	1.00	0.51	1.00		0.25	1.00	1.00
Satd. Flow (perm)	1269	1475		284	1845	1452	815	1565		440	1881	1398
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	346	254	225	42	39	14	77	640	98	47	255	85
RTOR Reduction (vph)	0	41	0	0	0	10	0	7	0	0	0	49
Lane Group Flow (vph)	346	438	0	42	39	4	77	731	0	47	255	36
Confl. Peds. (#/hr)	2		7	7		2	2		3	3		2
Heavy Vehicles (%)	2%	1%	4%	42%	3%	0%	12%	1%	16%	0%	1%	4%
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA		Perm	NA	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8		8	2			6		6
Actuated Green, G (s)	25.4	25.4		25.4	25.4	25.4	41.9	41.9		34.0	34.0	34.0
Effective Green, g (s)	25.4	25.4		25.4	25.4	25.4	41.9	41.9		34.0	34.0	34.0
Actuated g/C Ratio	0.32	0.32		0.32	0.32	0.32	0.53	0.53		0.43	0.43	0.43
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0	4.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	406	472		90	590	465	464	826		188	806	599
v/s Ratio Prot		c0.30			0.02		0.01	c0.47			0.14	
v/s Ratio Perm	0.27			0.15		0.00	0.08			0.11		0.03
v/c Ratio	0.85	0.93		0.47	0.07	0.01	0.17	0.89		0.25	0.32	0.06
Uniform Delay, d1	25.2	26.1		21.5	18.7	18.4	9.5	16.6		14.5	15.0	13.3
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	15.7	24.5		3.8	0.0	0.0	0.2	13.4		3.2	1.0	0.2
Delay (s)	40.9	50.6		25.3	18.8	18.4	9.7	29.9		17.7	16.0	13.5
Level of Service	D	D		C	B	B	A	C		B	B	B
Approach Delay (s)		46.5			21.6			28.0			15.6	
Approach LOS		D			C			C			B	

Intersection Summary			
HCM 2000 Control Delay	32.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	79.3	Sum of lost time (s)	16.0
Intersection Capacity Utilization	115.9%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	130	38	363	48	31	12	74	170	23	11	292	20
Future Volume (vph)	130	38	363	48	31	12	74	170	23	11	292	20
Ideal Flow (vphpl)	1650	1650	1750	1550	1550	1550	1775	1650	1650	1550	1550	1550
Storage Length (m)	0.0		25.0	0.0		0.0	25.0		0.0	0.0		0.0
Storage Lanes	0		1	0		0	1		0	0		0
Taper Length (m)	0.0			0.0			35.0			0.0		
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			0.850		0.982			0.982			0.992	
Flt Protected		0.963			0.974		0.950				0.998	
Satd. Flow (prot)	0	1531	1473	0	1448	0	1606	1556	0	0	1492	0
Flt Permitted		0.963			0.974		0.950				0.998	
Satd. Flow (perm)	0	1531	1473	0	1448	0	1606	1556	0	0	1492	0
Link Speed (k/h)		60			50			50			50	
Link Distance (m)		1012.1			151.5			558.2			326.3	
Travel Time (s)		60.7			10.9			40.2			23.5	
Confl. Peds. (#/hr)	3		1	1		3	3		1	1		3
Peak Hour 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
Heavy Vehicles (%)	4%	3%	1%	0%	7%	0%	5%	4%	5%	20%	2%	6%
Adj. Flow (vph)	130	38	363	48	31	12	74	170	23	11	292	20
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	168	363	0	91	0	74	193	0	0	323	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	62.5%	ICU Level of Service	B
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	130	38	363	48	31	12	74	170	23	11	292	20
Future Volume (vph)	130	38	363	48	31	12	74	170	23	11	292	20
Peak Hour 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
Hourly flow rate (vph)	130	38	363	48	31	12	74	170	23	11	292	20

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1
Volume Total (vph)	168	363	91	74	193	323
Volume Left (vph)	130	0	48	74	0	11
Volume Right (vph)	0	363	12	0	23	20
Hadj (s)	0.45	-0.68	0.07	0.58	-0.01	0.02
Departure Headway (s)	7.1	6.0	7.6	7.6	7.0	6.8
Degree Utilization, x	0.33	0.60	0.19	0.16	0.37	0.61
Capacity (veh/h)	486	574	414	446	474	509
Control Delay (s)	12.4	16.3	12.3	10.8	12.9	19.9
Approach Delay (s)	15.1		12.3	12.3		19.9
Approach LOS	C		B	B		C

Intersection Summary				
Delay	15.6			
Level of Service	C			
Intersection Capacity Utilization	62.5%	ICU Level of Service		B
Analysis Period (min)	15			

Intersection	
Intersection Delay, s/veh	17.2
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	130	38	363	48	31	12	74	170	23	11	292	20
Future Vol, veh/h	130	38	363	48	31	12	74	170	23	11	292	20
Peak Hour 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
Heavy Vehicles, %	4	3	1	0	7	0	5	4	5	20	2	6
Mvmt Flow	130	38	363	48	31	12	74	170	23	11	292	20
Number of Lanes	0	1	1	0	1	0	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	2
HCM Control Delay	16.7	12.6	13.5	22.5
HCM LOS	C	B	B	C

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	100%	0%	77%	0%	53%	3%
Vol Thru, %	0%	88%	23%	0%	34%	90%
Vol Right, %	0%	12%	0%	100%	13%	6%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	74	193	168	363	91	323
LT Vol	74	0	130	0	48	11
Through Vol	0	170	38	0	31	292
RT Vol	0	23	0	363	12	20
Lane Flow Rate	74	193	168	363	91	323
Geometry Grp	7	7	7	7	6	6
Degree of Util (X)	0.158	0.379	0.337	0.616	0.195	0.647
Departure Headway (Hd)	7.684	7.069	7.232	6.107	7.695	7.21
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	467	510	499	592	466	504
Service Time	5.429	4.814	4.95	3.824	5.75	5.231
HCM Lane V/C Ratio	0.158	0.378	0.337	0.613	0.195	0.641
HCM Control Delay	11.9	14.1	13.6	18.1	12.6	22.5
HCM Lane LOS	B	B	B	C	B	C
HCM 95th-tile Q	0.6	1.8	1.5	4.2	0.7	4.6

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	175	92	129	63	31	317
Future Volume (vph)	175	92	129	63	31	317
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.953				0.877	
Flt Protected				0.967	0.996	
Satd. Flow (prot)	1511	0	0	1549	1496	0
Flt Permitted				0.967	0.996	
Satd. Flow (perm)	1511	0	0	1549	1496	0
Link Speed (k/h)	80			80	50	
Link Distance (m)	1516.2			424.2	223.3	
Travel Time (s)	68.2			19.1	16.1	
Confl. Peds. (#/hr)		1	1			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	6%	2%	5%	14%	2%
Adj. Flow (vph)	175	92	129	63	31	317
Shared Lane Traffic (%)						
Lane Group Flow (vph)	267	0	0	192	348	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 62.1%		ICU Level of Service B	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	175	92	129	63	31	317
Future Volume (Veh/h)	175	92	129	63	31	317
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	175	92	129	63	31	317
Pedestrians					1	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			268		543	222
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			268		543	222
tC, single (s)			4.1		6.5	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			90		93	61
cM capacity (veh/h)			1295		432	817

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	267	192	348
Volume Left	0	129	31
Volume Right	92	0	317
cSH	1700	1295	757
Volume to Capacity	0.16	0.10	0.46
Queue Length 95th (m)	0.0	2.7	19.5
Control Delay (s)	0.0	5.7	13.7
Lane LOS		A	B
Approach Delay (s)	0.0	5.7	13.7
Approach LOS			B

Intersection Summary			
Average Delay	7.3		
Intersection Capacity Utilization	62.1%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	14	77	105	46	182	69
Future Volume (vph)	14	77	105	46	182	69
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.886		0.959			
Flt Protected	0.992					0.965
Satd. Flow (prot)	1393	0	1470	0	0	1526
Flt Permitted	0.992					0.965
Satd. Flow (perm)	1393	0	1470	0	0	1526
Link Speed (k/h)	80		80			80
Link Distance (m)	1200.3		1761.7			383.9
Travel Time (s)	54.0		79.3			17.3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	8%	12%	11%	0%	3%	8%
Adj. Flow (vph)	14	77	105	46	182	69
Shared Lane Traffic (%)						
Lane Group Flow (vph)	91	0	151	0	0	251
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	41.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	14	77	105	46	182	69
Future Volume (Veh/h)	14	77	105	46	182	69
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	14	77	105	46	182	69
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	561	128			151	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	561	128			151	
tC, single (s)	6.5	6.3			4.1	
tC, 2 stage (s)						
tF (s)	3.6	3.4			2.2	
p0 queue free %	97	91			87	
cM capacity (veh/h)	418	896			1424	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	91	151	251
Volume Left	14	0	182
Volume Right	77	46	0
cSH	762	1700	1424
Volume to Capacity	0.12	0.09	0.13
Queue Length 95th (m)	3.2	0.0	3.5
Control Delay (s)	10.4	0.0	6.0
Lane LOS	B		A
Approach Delay (s)	10.4	0.0	6.0
Approach LOS	B		

Intersection Summary			
Average Delay	5.0		
Intersection Capacity Utilization	41.3%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	24	78	77	75	55	31
Future Volume (vph)	24	78	77	75	55	31
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.897		0.933			
Flt Protected	0.988					0.969
Satd. Flow (prot)	1437	0	1495	0	0	1500
Flt Permitted	0.988					0.969
Satd. Flow (perm)	1437	0	1495	0	0	1500
Link Speed (k/h)	80		80			80
Link Distance (m)	605.5		233.8			1761.7
Travel Time (s)	27.2		10.5			79.3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	5%	10%	3%	3%	8%	4%
Adj. Flow (vph)	24	78	77	75	55	31
Shared Lane Traffic (%)						
Lane Group Flow (vph)	102	0	152	0	0	86
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 31.9%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	24	78	77	75	55	31
Future Volume (Veh/h)	24	78	77	75	55	31
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	24	78	77	75	55	31
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	256	114			152	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	256	114			152	
tC, single (s)	6.4	6.3			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.4			2.3	
p0 queue free %	97	91			96	
cM capacity (veh/h)	698	917			1393	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	102	152	86
Volume Left	24	0	55
Volume Right	78	75	0
cSH	854	1700	1393
Volume to Capacity	0.12	0.09	0.04
Queue Length 95th (m)	3.2	0.0	1.0
Control Delay (s)	9.8	0.0	5.0
Lane LOS	A		A
Approach Delay (s)	9.8	0.0	5.0
Approach LOS	A		

Intersection Summary			
Average Delay	4.2		
Intersection Capacity Utilization	31.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	46	4	75	28	26	0	156	134	61	118	0
Future Volume (vph)	7	46	4	75	28	26	0	156	134	61	118	0
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.991			0.973			0.938				
Flt Protected		0.994			0.972						0.983	
Satd. Flow (prot)	0	1503	0	0	1406	0	0	1383	0	0	1429	0
Flt Permitted		0.994			0.972						0.983	
Satd. Flow (perm)	0	1503	0	0	1406	0	0	1383	0	0	1429	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		187.7			400.3			618.6			394.6	
Travel Time (s)		13.5			28.8			44.5			28.4	
Peak Hour 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
Heavy Vehicles (%)	0%	2%	0%	6%	0%	4%	0%	7%	3%	4%	8%	0%
Adj. Flow (vph)	7	46	4	75	28	26	0	156	134	61	118	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	57	0	0	129	0	0	290	0	0	179	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 57.4%		ICU Level of Service B	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	46	4	75	28	26	0	156	134	61	118	0
Future Volume (Veh/h)	7	46	4	75	28	26	0	156	134	61	118	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	7	46	4	75	28	26	0	156	134	61	118	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	503	530	118	490	463	223	118			290		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	503	530	118	490	463	223	118			290		
tC, single (s)	7.1	6.5	6.2	7.2	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.0	3.3	2.2			2.2		
p0 queue free %	98	89	100	82	94	97	100			95		
cM capacity (veh/h)	429	433	939	425	475	812	1483			1260		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	57	129	290	179
Volume Left	7	75	0	61
Volume Right	4	26	134	0
cSH	449	482	1483	1260
Volume to Capacity	0.13	0.27	0.00	0.05
Queue Length 95th (m)	3.5	8.6	0.0	1.2
Control Delay (s)	14.2	15.2	0.0	3.0
Lane LOS	B	C		A
Approach Delay (s)	14.2	15.2	0.0	3.0
Approach LOS	B	C		

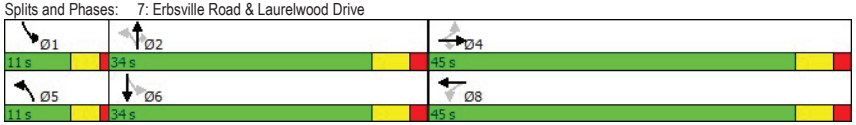
Intersection Summary				
Average Delay		5.0		
Intersection Capacity Utilization		57.4%	ICU Level of Service	B
Analysis Period (min)		15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	231	198	58	107	47	173	253	117	129	233	20
Future Volume (vph)	19	231	198	58	107	47	173	253	117	129	233	20
Ideal Flow (vphpl)	1775	1900	1750	1775	1650	1650	1775	1900	1750	1775	1650	1650
Storage Length (m)	20.0		20.0	25.0		0.0	65.0		30.0	25.0		0.0
Storage Lanes	1		1	1		0	1		1	1		0
Taper Length (m)	35.0			10.0			80.0			35.0		
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	0.84		0.92	0.96	0.93		0.99		0.91	0.96	1.00	
Frt			0.850		0.954				0.850		0.988	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1591	1810	1403	1561	1358	0	1606	1776	1430	1653	1520	0
Flt Permitted	0.659			0.540			0.571			0.602		
Satd. Flow (perm)	928	1810	1296	852	1358	0	952	1776	1307	1004	1520	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			198		31				117		5	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		123.5			178.3			236.9			930.8	
Travel Time (s)		8.9			12.8			17.1			67.0	
Confl. Peds. (#/hr)	79		23	23		79	9		27	27		9
Peak Hour 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
Heavy Vehicles (%)	6%	5%	6%	8%	9%	7%	5%	7%	4%	2%	6%	17%
Adj. Flow (vph)	19	231	198	58	107	47	173	253	117	129	233	20
Shared Lane Traffic (%)												
Lane Group Flow (vph)	19	231	198	58	154	0	173	253	117	129	253	0
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2		2	6		
Detector Phase	4	4	4	8	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0		5.0	28.0	28.0	5.0	28.0	
Minimum Split (s)	14.0	14.0	14.0	14.0	14.0		9.0	34.0	34.0	9.0	34.0	
Total Split (s)	45.0	45.0	45.0	45.0	45.0		11.0	34.0	34.0	11.0	34.0	
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%		12.2%	37.8%	37.8%	12.2%	37.8%	
Maximum Green (s)	39.0	39.0	39.0	39.0	39.0		7.0	28.0	28.0	7.0	28.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		1.0	2.0	2.0	1.0	2.0	
Lost Time Adjust (s)	0.0	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	6.0		4.0	6.0	6.0	4.0	6.0	
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?								Yes	Yes	Yes		
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	None	None		None	Max	Max	None	Max	
Walk Time (s)	7.0	7.0	7.0	7.0	7.0			7.0	7.0		7.0	
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0			11.0	11.0		11.0	
Pedestrian Calls (#/hr)	0	0	0	0	0			0	0		0	
Act Effct Green (s)	13.5	13.5	13.5	13.5	13.5		38.0	30.5	30.5	36.8	28.1	
Actuated g/C Ratio	0.21	0.21	0.21	0.21	0.21		0.59	0.47	0.47	0.57	0.43	
v/c Ratio	0.10	0.61	0.46	0.33	0.50		0.27	0.30	0.17	0.20	0.38	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	21.1	30.4	7.5	26.6	23.5		7.0	13.9	3.8	6.5	15.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	21.1	30.4	7.5	26.6	23.5		7.0	13.9	3.8	6.5	15.2	
LOS	C	C	A	C	C		A	B	A	A	B	
Approach Delay		19.9			24.4			9.5			12.3	
Approach LOS		B			C			A			B	
Queue Length 50th (m)	2.0	26.5	0.0	6.2	13.6		7.5	19.9	0.0	5.4	20.0	
Queue Length 95th (m)	6.8	46.4	14.3	15.8	29.3		18.9	41.3	9.1	14.5	42.8	
Internal Link Dist (m)		99.5			154.3			212.9			906.8	
Turn Bay Length (m)	20.0		20.0	25.0			65.0		30.0	25.0		
Base Capacity (vph)	562	1096	862	516	834		631	838	678	647	663	
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Reduced v/c Ratio	0.03	0.21	0.23	0.11	0.18		0.27	0.30	0.17	0.20	0.38	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 64.6			
Natural Cycle: 60			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.61			
Intersection Signal Delay: 15.1		Intersection LOS: B	
Intersection Capacity Utilization 73.3%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 7: Erbsville Road & Laurelwood Drive



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	231	198	58	107	47	173	253	117	129	233	20
Future Volume (vph)	19	231	198	58	107	47	173	253	117	129	233	20
Ideal Flow (vphpl)	1775	1900	1750	1775	1650	1650	1775	1900	1750	1775	1650	1650
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0		4.0	6.0	6.0	4.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.94	1.00	0.95		1.00	1.00	0.93	1.00	1.00	
Flpb, ped/bikes	0.88	1.00	1.00	0.97	1.00		0.99	1.00	1.00	0.98	1.00	
Frt	1.00	1.00	0.85	1.00	0.95		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1406	1810	1318	1516	1381		1596	1776	1333	1620	1521	
Flt Permitted	0.66	1.00	1.00	0.54	1.00		0.57	1.00	1.00	0.60	1.00	
Satd. Flow (perm)	976	1810	1318	862	1381		959	1776	1333	1027	1521	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	19	231	198	58	107	47	173	253	117	129	233	20
RTOR Reduction (vph)	0	0	157	0	25	0	0	0	62	0	3	0
Lane Group Flow (vph)	19	231	41	58	129	0	173	253	55	129	250	0
Confl. Peds. (#/hr)	79		23	23		79	9		27	27		9
Heavy Vehicles (%)	6%	5%	6%	8%	9%	7%	5%	7%	4%	2%	6%	17%
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2		2	6		
Actuated Green, G (s)	13.5	13.5	13.5	13.5	13.5		37.5	30.5	30.5	34.3	28.9	
Effective Green, g (s)	13.5	13.5	13.5	13.5	13.5		37.5	30.5	30.5	34.3	28.9	
Actuated g/C Ratio	0.21	0.21	0.21	0.21	0.21		0.57	0.47	0.47	0.52	0.44	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		4.0	6.0	6.0	4.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	201	373	272	177	285		618	828	621	587	672	
v/s Ratio Prot		c0.13			0.09		c0.03	0.14		0.02	c0.16	
v/s Ratio Perm	0.02		0.03	0.07			0.13		0.04	0.10		
v/c Ratio	0.09	0.62	0.15	0.33	0.45		0.28	0.31	0.09	0.22	0.37	
Uniform Delay, d1	21.0	23.6	21.3	22.1	22.7		6.7	10.9	9.7	8.0	12.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.2	3.1	0.3	1.1	1.2		0.2	1.0	0.3	0.2	1.6	
Delay (s)	21.2	26.7	21.5	23.2	23.9		6.9	11.8	10.0	8.2	13.8	
Level of Service	C	C	C	C	C		A	B	A	A	B	
Approach Delay (s)		24.2			23.7			9.9			11.9	
Approach LOS		C			C			A			B	

Intersection Summary				
HCM 2000 Control Delay	16.2	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.43			
Actuated Cycle Length (s)	65.4	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	73.3%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	559	87	37	178	27	57	38	199	38	20	10
Future Volume (vph)	31	559	87	37	178	27	57	38	199	38	20	10
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
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		0.983			0.985			0.909			0.980	
Flt Protected		0.998			0.992			0.990			0.973	
Satd. Flow (prot)	0	1484	0	0	1432	0	0	1370	0	0	1454	0
Flt Permitted		0.998			0.992			0.990			0.973	
Satd. Flow (perm)	0	1484	0	0	1432	0	0	1370	0	0	1454	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		213.7			555.1			104.8			136.8	
Travel Time (s)		15.4			40.0			7.5			9.8	
Confl. Peds. (#/hr)	10		4	4		10	7		10	10		7
Peak Hour 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
Heavy Vehicles (%)	0%	3%	0%	6%	6%	4%	0%	9%	1%	0%	0%	11%
Adj. Flow (vph)	31	559	87	37	178	27	57	38	199	38	20	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	677	0	0	242	0	0	294	0	0	68	0
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Roundabout			
Intersection Capacity Utilization	77.5%	ICU Level of Service	D
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Traffic Volume (veh/h)	31	559	87	37	178	27	57	38	199	38	20	10
Future Volume (veh/h)	31	559	87	37	178	27	57	38	199	38	20	10
Peak Hour 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
Hourly flow rate (vph)	31	559	87	37	178	27	57	38	199	38	20	10
Approach Volume (veh/h)		677			242			294			68	
Crossing Volume (veh/h)		95			126			628			272	
High Capacity (veh/h)		1286			1255			842			1119	
High v/c (veh/h)		0.53			0.19			0.35			0.06	
Low Capacity (veh/h)		1071			1043			674			920	
Low v/c (veh/h)		0.63			0.23			0.44			0.07	

Intersection Summary				
Maximum v/c High		0.53		
Maximum v/c Low		0.63		
Intersection Capacity Utilization		77.5%	ICU Level of Service	D



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	203	21	21	73	18	78
Future Volume (vph)	203	21	21	73	18	78
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.987				0.890	
Flt Protected				0.989	0.991	
Satd. Flow (prot)	1585	0	0	1478	1503	0
Flt Permitted				0.989	0.991	
Satd. Flow (perm)	1585	0	0	1478	1503	0
Link Speed (k/h)	80			80	50	
Link Distance (m)	1200.3			667.7	811.2	
Travel Time (s)	54.0			30.0	58.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	0%	5%	12%	6%	3%
Adj. Flow (vph)	203	21	21	73	18	78
Shared Lane Traffic (%)						
Lane Group Flow (vph)	224	0	0	94	96	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	35.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	203	21	21	73	18	78
Future Volume (Veh/h)	203	21	21	73	18	78
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	203	21	21	73	18	78
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			224		328	214
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			224		328	214
tC, single (s)			4.1		6.5	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			98		97	91
cM capacity (veh/h)			1327		647	824

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	224	94	96
Volume Left	0	21	18
Volume Right	21	0	78
cSH	1700	1327	784
Volume to Capacity	0.13	0.02	0.12
Queue Length 95th (m)	0.0	0.4	3.3
Control Delay (s)	0.0	1.8	10.2
Lane LOS		A	B
Approach Delay (s)	0.0	1.8	10.2
Approach LOS			B

Intersection Summary			
Average Delay		2.8	
Intersection Capacity Utilization		35.8%	ICU Level of Service A
Analysis Period (min)		15	

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	26	0	98	60	6	125
Future Volume (vph)	26	0	98	60	6	125
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.949			
Flt Protected	0.950					0.998
Satd. Flow (prot)	1612	0	1537	0	0	1559
Flt Permitted	0.950					0.998
Satd. Flow (perm)	1612	0	1537	0	0	1559
Link Speed (k/h)	70		50			50
Link Distance (m)	143.4		394.6			123.0
Travel Time (s)	7.4		28.4			8.9
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	4%	0%	3%	0%	40%	4%
Adj. Flow (vph)	26	0	98	60	6	125
Shared Lane Traffic (%)						
Lane Group Flow (vph)	26	0	158	0	0	131
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 23.2%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	26	0	98	60	6	125
Future Volume (Veh/h)	26	0	98	60	6	125
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	26	0	98	60	6	125
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	265	128			158	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	265	128			158	
tC, single (s)	6.4	6.2			4.5	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.6	
p0 queue free %	96	100			100	
cM capacity (veh/h)	716	927			1220	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	26	158	131
Volume Left	26	0	6
Volume Right	0	60	0
cSH	716	1700	1220
Volume to Capacity	0.04	0.09	0.00
Queue Length 95th (m)	0.9	0.0	0.1
Control Delay (s)	10.2	0.0	0.4
Lane LOS	B		A
Approach Delay (s)	10.2	0.0	0.4
Approach LOS	B		

Intersection Summary			
Average Delay		1.0	
Intersection Capacity Utilization		23.2%	ICU Level of Service A
Analysis Period (min)		15	

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	232	18	54	117	17	80
Future Volume (vph)	232	18	54	117	17	80
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.990				0.889	
Flt Protected				0.984	0.991	
Satd. Flow (prot)	1589	0	0	1571	1488	0
Flt Permitted				0.984	0.991	
Satd. Flow (perm)	1589	0	0	1571	1488	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	166.4			228.8	212.1	
Travel Time (s)	12.0			16.5	15.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	0%	4%	3%	7%	4%
Adj. Flow (vph)	232	18	54	117	17	80
Shared Lane Traffic (%)						
Lane Group Flow (vph)	250	0	0	171	97	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	42.2%		ICU Level of Service A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	232	18	54	117	17	80
Future Volume (Veh/h)	232	18	54	117	17	80
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	232	18	54	117	17	80
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			250		466	241
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			250		466	241
tC, single (s)			4.1		6.5	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			96		97	90
cM capacity (veh/h)			1304		523	793

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	250	171	97
Volume Left	0	54	17
Volume Right	18	0	80
cSH	1700	1304	727
Volume to Capacity	0.15	0.04	0.13
Queue Length 95th (m)	0.0	1.0	3.7
Control Delay (s)	0.0	2.7	10.7
Lane LOS		A	B
Approach Delay (s)	0.0	2.7	10.7
Approach LOS			B

Intersection Summary			
Average Delay		2.9	
Intersection Capacity Utilization		42.2%	ICU Level of Service A
Analysis Period (min)		15	

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	12	283	135	14	72	32
Future Volume (vph)	12	283	135	14	72	32
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.987		0.958	
Flt Protected		0.998			0.967	
Satd. Flow (prot)	0	1586	1588	0	1635	0
Flt Permitted		0.998			0.967	
Satd. Flow (perm)	0	1586	1588	0	1635	0
Link Speed (k/h)		60	60		50	
Link Distance (m)		98.4	372.2		168.6	
Travel Time (s)		5.9	22.3		12.1	
Confl. Peds. (#/hr)	10			10		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	4%	2%	8%	0%	0%
Adj. Flow (vph)	12	283	135	14	72	32
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	295	149	0	104	0
Sign Control		Free	Free		Stop	

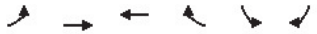
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 41.4%			ICU Level of Service A
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	12	283	135	14	72	32
Future Volume (Veh/h)	12	283	135	14	72	32
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	12	283	135	14	72	32
Pedestrians					10	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	159				459	152
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	159				459	152
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				87	96
cM capacity (veh/h)	1421				554	892

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	295	149	104
Volume Left	12	0	72
Volume Right	0	14	32
cSH	1421	1700	627
Volume to Capacity	0.01	0.09	0.17
Queue Length 95th (m)	0.2	0.0	4.7
Control Delay (s)	0.4	0.0	11.9
Lane LOS	A		B
Approach Delay (s)	0.4	0.0	11.9
Approach LOS			B

Intersection Summary			
Average Delay		2.5	
Intersection Capacity Utilization		41.4%	ICU Level of Service A
Analysis Period (min)		15	



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	16	341	120	27	65	30
Future Volume (vph)	16	341	120	27	65	30
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.975		0.957	
Flt Protected		0.998			0.967	
Satd. Flow (prot)	0	1601	1535	0	1611	0
Flt Permitted		0.998			0.967	
Satd. Flow (perm)	0	1601	1535	0	1611	0
Link Speed (k/h)		60	60		50	
Link Distance (m)		372.2	1012.1		87.7	
Travel Time (s)		22.3	60.7		6.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	3%	3%	13%	2%	0%
Adj. Flow (vph)	16	341	120	27	65	30
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	357	147	0	95	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 46.7%			ICU Level of Service A
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	16	341	120	27	65	30
Future Volume (Veh/h)	16	341	120	27	65	30
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	16	341	120	27	65	30
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	147				506	134
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	147				506	134
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				87	97
cM capacity (veh/h)	1447				520	921

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	357	147	95
Volume Left	16	0	65
Volume Right	0	27	30
cSH	1447	1700	603
Volume to Capacity	0.01	0.09	0.16
Queue Length 95th (m)	0.3	0.0	4.5
Control Delay (s)	0.4	0.0	12.1
Lane LOS	A		B
Approach Delay (s)	0.4	0.0	12.1
Approach LOS			B

Intersection Summary			
Average Delay		2.2	
Intersection Capacity Utilization		46.7%	ICU Level of Service A
Analysis Period (min)		15	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	87	6	71	31	2	8	22	332	4	6	228	21
Future Volume (vph)	87	6	71	31	2	8	22	332	4	6	228	21
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
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		0.942			0.974			0.998			0.989	
Flt Protected		0.974			0.964			0.997			0.999	
Satd. Flow (prot)	0	1404	0	0	1455	0	0	1510	0	0	1478	0
Flt Permitted		0.974			0.964			0.997			0.999	
Satd. Flow (perm)	0	1404	0	0	1455	0	0	1510	0	0	1478	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		77.1			66.0			326.3			223.3	
Travel Time (s)		5.6			4.8			23.5			16.1	
Confl. Peds. (#/hr)	7		1	1		7			5	5		
Peak Hour 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
Heavy Vehicles (%)	0%	0%	3%	0%	0%	0%	5%	2%	0%	0%	3%	11%
Adj. Flow (vph)	87	6	71	31	2	8	22	332	4	6	228	21
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	164	0	0	41	0	0	358	0	0	255	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 53.7%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	87	6	71	31	2	8	22	332	4	6	228	21
Future Volume (Veh/h)	87	6	71	31	2	8	22	332	4	6	228	21
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	87	6	71	31	2	8	22	332	4	6	228	21
Pedestrians					5			1			7	
Lane Width (m)					3.6			3.6			3.6	
Walking Speed (m/s)					1.2			1.2			1.2	
Percent Blockage					0			0			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	17			78			420	296	48	466	327	13
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	17			78			420	296	48	466	327	13
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.4
p0 queue free %	95			98			93	41	100	98	58	98
cM capacity (veh/h)	1604			1532			335	567	1022	255	543	1036

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	164	41	358	255
Volume Left	87	31	22	6
Volume Right	71	8	4	21
cSH	1604	1532	546	550
Volume to Capacity	0.05	0.02	0.66	0.46
Queue Length 95th (m)	1.4	0.5	38.0	19.5
Control Delay (s)	4.1	5.6	23.2	17.1
Lane LOS	A	A	C	C
Approach Delay (s)	4.1	5.6	23.2	17.1
Approach LOS			C	C

Intersection Summary				
Average Delay			16.6	
Intersection Capacity Utilization			53.7%	ICU Level of Service
Analysis Period (min)			15	

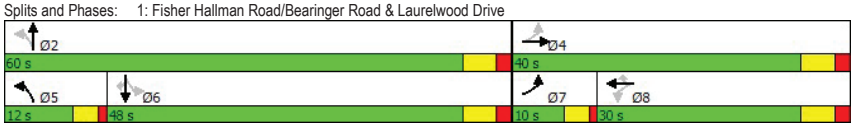


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	141	148	129	104	253	30	172	367	87	29	737	378
Future Volume (vph)	141	148	129	104	253	30	172	367	87	29	737	378
Ideal Flow (vphpl)	1775	1650	1650	1775	1900	1750	1775	1650	1650	1775	1900	1750
Storage Length (m)	85.0		0.0	90.0		90.0	90.0		0.0	60.0		60.0
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (m)	35.0			7.5			45.0			70.0		
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		0.96		0.98		1.00		1.00		0.98
Frt		0.930				0.850		0.971				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1670	1463	0	1686	1900	1488	1637	1595	0	1686	1900	1488
Flt Permitted	0.261			0.589			0.099			0.501		
Satd. Flow (perm)	458	1463	0	1008	1900	1454	171	1595	0	888	1900	1456
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		49				120		19				280
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		133.2			228.2			160.2			234.1	
Travel Time (s)		9.6			16.4			11.5			16.9	
Confl. Peds. (#/hr)	1		23	23		1	1		2	2		1
Peak Hour 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
Heavy Vehicles (%)	1%	0%	3%	0%	0%	0%	3%	0%	0%	0%	0%	0%
Adj. Flow (vph)	141	148	129	104	253	30	172	367	87	29	737	378
Shared Lane Traffic (%)												
Lane Group Flow (vph)	141	277	0	104	253	30	172	454	0	29	737	378
Turn Type	pm+pt	NA		Perm	NA	Perm	pm+pt	NA		Perm	NA	Perm
Protected Phases	7	4			8		5	2			6	
Permitted Phases	4			8		8	2			6		6
Detector Phase	7	4		8	8	8	5	2		6	6	6
Switch Phase												
Minimum Initial (s)	5.0	8.0		8.0	8.0	8.0	5.0	37.0		37.0	37.0	37.0
Minimum Split (s)	9.5	14.0		14.0	14.0	14.0	9.0	43.0		43.0	43.0	43.0
Total Split (s)	10.0	40.0		30.0	30.0	30.0	12.0	60.0		48.0	48.0	48.0
Total Split (%)	10.0%	40.0%		30.0%	30.0%	30.0%	12.0%	60.0%		48.0%	48.0%	48.0%
Maximum Green (s)	6.0	34.0		24.0	24.0	24.0	8.0	54.0		42.0	42.0	42.0
Yellow Time (s)	3.0	4.0		4.0	4.0	4.0	3.0	4.0		4.0	4.0	4.0
All-Red Time (s)	1.0	2.0		2.0	2.0	2.0	1.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	-2.0		-2.0	-2.0	-2.0	0.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lead			Lag	Lag	Lag	Lead			Lag	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None	None	Max	None		Max	Max	Max
Walk Time (s)		12.0		12.0	12.0	12.0		16.0		16.0	16.0	16.0
Flash Dont Walk (s)		10.0		10.0	10.0	10.0		21.0		21.0	21.0	21.0
Pedestrian Calls (#/hr)		0		0	0	0		0		0	0	0
Act Effct Green (s)	29.4	29.4		19.4	19.4	19.4	56.1	56.1		44.1	44.1	44.1
Actuated g/C Ratio	0.31	0.31		0.21	0.21	0.21	0.60	0.60		0.47	0.47	0.47
v/c Ratio	0.64	0.56		0.50	0.64	0.08	0.75	0.47		0.07	0.82	0.45

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	38.2	26.3		41.2	41.7	0.4	36.8	12.7		15.7	31.9	6.8
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	38.2	26.3		41.2	41.7	0.4	36.8	12.7		15.7	31.9	6.8
LOS	D	C		D	D	A	D	B		B	C	A
Approach Delay		30.3			38.3			19.3			23.2	
Approach LOS		C			D			B			C	
Queue Length 50th (m)	19.9	35.5		17.5	44.1	0.0	13.6	42.3		2.9	116.4	10.2
Queue Length 95th (m)	34.7	60.7		34.3	69.3	0.0	#52.5	77.8		9.0	#207.9	34.3
Internal Link Dist (m)		109.2			204.2			136.2			210.1	
Turn Bay Length (m)	85.0			90.0		90.0	90.0			60.0		60.0
Base Capacity (vph)	222	594		280	529	491	228	963		418	895	834
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.64	0.47		0.37	0.48	0.06	0.75	0.47		0.07	0.82	0.45

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 93.6			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay: 25.7		Intersection LOS: C	
Intersection Capacity Utilization 100.7%		ICU Level of Service G	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 1: Fisher Hallman Road/Bearinger Road & Laurelwood Drive



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	141	148	129	104	253	30	172	367	87	29	737	378
Future Volume (vph)	141	148	129	104	253	30	172	367	87	29	737	378
Ideal Flow (vphpl)	1775	1650	1650	1775	1900	1750	1775	1650	1650	1775	1900	1750
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.97		1.00	1.00	0.98	1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		0.97	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.93		1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1669	1466		1630	1900	1455	1637	1596		1684	1900	1456
Flt Permitted	0.26	1.00		0.59	1.00	1.00	0.10	1.00		0.50	1.00	1.00
Satd. Flow (perm)	459	1466		1011	1900	1455	171	1596		888	1900	1456
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	141	148	129	104	253	30	172	367	87	29	737	378
RTOR Reduction (vph)	0	34	0	0	0	24	0	8	0	0	0	148
Lane Group Flow (vph)	141	243	0	104	253	6	172	446	0	29	737	230
Confl. Peds. (#/hr)	1		23	23		1	1		2	2		1
Heavy Vehicles (%)	1%	0%	3%	0%	0%	0%	3%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA		Perm	NA	Perm	pm+pt	NA		Perm	NA	Perm
Protected Phases	7	4			8		5	2			6	
Permitted Phases	4			8		8	2			6		6
Actuated Green, G (s)	27.4	27.4		17.4	17.4	17.4	54.1	54.1		42.1	42.1	42.1
Effective Green, g (s)	27.4	29.4		19.4	19.4	19.4	54.1	56.1		44.1	44.1	44.1
Actuated g/C Ratio	0.29	0.31		0.21	0.21	0.21	0.58	0.60		0.47	0.47	0.47
Clearance Time (s)	4.0	6.0		6.0	6.0	6.0	4.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	212	460		209	394	301	224	957		418	896	686
v/s Ratio Prot	c0.04	0.17			0.13		c0.07	0.28			c0.39	
v/s Ratio Perm	c0.15			0.10		0.00	0.38			0.03		0.16
v/c Ratio	0.67	0.53		0.50	0.64	0.02	0.77	0.47		0.07	0.82	0.34
Uniform Delay, d1	26.6	26.4		32.7	33.9	29.5	17.9	10.4		13.5	21.3	15.5
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	7.6	1.1		1.9	3.6	0.0	14.6	0.4		0.3	8.4	1.3
Delay (s)	34.2	27.5		34.6	37.4	29.5	32.5	10.7		13.8	29.7	16.8
Level of Service	C	C		C	D	C	C	B		B	C	B
Approach Delay (s)		29.7			36.1			16.7			25.1	
Approach LOS		C			D			B			C	

Intersection Summary					
HCM 2000 Control Delay	25.4	HCM 2000 Level of Service		C	
HCM 2000 Volume to Capacity ratio	0.77				
Actuated Cycle Length (s)	93.5	Sum of lost time (s)		16.0	
Intersection Capacity Utilization	100.7%	ICU Level of Service		G	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	46	34	131	20	32	13	347	294	42	9	325	159
Future Volume (vph)	46	34	131	20	32	13	347	294	42	9	325	159
Ideal Flow (vphpl)	1650	1650	1750	1550	1550	1550	1775	1650	1650	1550	1550	1550
Storage Length (m)	0.0		25.0	0.0		0.0	25.0		0.0	0.0		0.0
Storage Lanes	0		1	0		0	1		0	0		0
Taper Length (m)	0.0			0.0			35.0			0.0		
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			0.850		0.973			0.981			0.956	
Flt Protected		0.972			0.985		0.950				0.999	
Satd. Flow (prot)	0	1542	1473	0	1436	0	1653	1605	0	0	1464	0
Flt Permitted		0.972			0.985		0.950				0.999	
Satd. Flow (perm)	0	1542	1473	0	1436	0	1653	1605	0	0	1464	0
Link Speed (k/h)		60			50			50			50	
Link Distance (m)		1012.1			151.5			558.2			326.3	
Travel Time (s)		60.7			10.9			40.2			23.5	
Confl. Peds. (#/hr)	1					1						
Peak Hour 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
Heavy Vehicles (%)	7%	0%	1%	0%	7%	0%	2%	1%	0%	25%	1%	0%
Adj. Flow (vph)	46	34	131	20	32	13	347	294	42	9	325	159
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	80	131	0	65	0	347	336	0	0	493	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	75.4%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	46	34	131	20	32	13	347	294	42	9	325	159
Future Volume (vph)	46	34	131	20	32	13	347	294	42	9	325	159
Peak Hour 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
Hourly flow rate (vph)	46	34	131	20	32	13	347	294	42	9	325	159

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1
Volume Total (vph)	80	131	65	347	336	493
Volume Left (vph)	46	0	20	347	0	9
Volume Right (vph)	0	131	13	0	42	159
Hadj (s)	0.36	-0.68	0.00	0.53	-0.07	-0.17
Departure Headway (s)	8.0	7.0	8.1	6.8	6.2	6.2
Degree Utilization, x	0.18	0.25	0.15	0.66	0.58	0.85
Capacity (veh/h)	429	491	413	512	569	567
Control Delay (s)	11.6	11.1	12.5	20.8	16.2	35.2
Approach Delay (s)	11.3		12.5	18.6		35.2
Approach LOS	B		B	C		E

Intersection Summary					
Delay	22.9				
Level of Service	C				
Intersection Capacity Utilization	75.4%	ICU Level of Service		D	
Analysis Period (min)	15				

Intersection	
Intersection Delay, s/veh	27.2
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	46	34	131	20	32	13	347	294	42	9	325	159
Future Vol, veh/h	46	34	131	20	32	13	347	294	42	9	325	159
Peak Hour 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
Heavy Vehicles, %	7	0	1	0	7	0	2	1	0	25	1	0
Mvmt Flow	46	34	131	20	32	13	347	294	42	9	325	159
Number of Lanes	0	1	1	0	1	0	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	2
HCM Control Delay	12.4	12.8	19.8	45.8
HCM LOS	B	B	C	E

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	100%	0%	57%	0%	31%	2%
Vol Thru, %	0%	88%	43%	0%	49%	66%
Vol Right, %	0%	12%	0%	100%	20%	32%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	347	336	80	131	65	493
LT Vol	347	0	46	0	20	9
Through Vol	0	294	34	0	32	325
RT Vol	0	42	0	131	13	159
Lane Flow Rate	347	336	80	131	65	493
Geometry Grp	7	7	7	7	6	6
Degree of Util (X)	0.66	0.581	0.183	0.258	0.15	0.91
Departure Headway (Hd)	6.948	6.332	8.235	7.094	8.314	6.647
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	524	575	438	510	434	542
Service Time	4.648	4.032	5.935	4.794	6.325	4.738
HCM Lane V/C Ratio	0.662	0.584	0.183	0.257	0.15	0.91
HCM Control Delay	22.1	17.4	12.8	12.2	12.8	45.8
HCM Lane LOS	C	C	B	B	B	E
HCM 95th-tile Q	4.8	3.7	0.7	1	0.5	10.8

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	93	58	526	218	80	186
Future Volume (vph)	93	58	526	218	80	186
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.948				0.906	
Flt Protected				0.966	0.985	
Satd. Flow (prot)	1504	0	0	1594	1529	0
Flt Permitted				0.966	0.985	
Satd. Flow (perm)	1504	0	0	1594	1529	0
Link Speed (k/h)	80			80	50	
Link Distance (m)	1516.2			424.2	223.3	
Travel Time (s)	68.2			19.1	16.1	
Confl. Peds. (#/hr)		1	1			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	4%	4%	0%	0%	3%	3%
Adj. Flow (vph)	93	58	526	218	80	186
Shared Lane Traffic (%)						
Lane Group Flow (vph)	151	0	0	744	266	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 83.7%		ICU Level of Service E	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	93	58	526	218	80	186
Future Volume (Veh/h)	93	58	526	218	80	186
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	93	58	526	218	80	186
Pedestrians					1	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			152		1393	123
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			152		1393	123
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			63		19	80
cM capacity (veh/h)			1440		99	924

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	151	744	266
Volume Left	0	526	80
Volume Right	58	0	186
cSH	1700	1440	263
Volume to Capacity	0.09	0.37	1.01
Queue Length 95th (m)	0.0	13.6	81.6
Control Delay (s)	0.0	7.4	100.7
Lane LOS		A	F
Approach Delay (s)	0.0	7.4	100.7
Approach LOS			F

Intersection Summary			
Average Delay		27.8	
Intersection Capacity Utilization		83.7%	ICU Level of Service E
Analysis Period (min)		15	

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	59	172	104	16	108	170
Future Volume (vph)	59	172	104	16	108	170
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.899		0.982			
Flt Protected	0.987					0.981
Satd. Flow (prot)	1555	0	1566	0	0	1572
Flt Permitted	0.987					0.981
Satd. Flow (perm)	1555	0	1566	0	0	1572
Link Speed (k/h)	80		80			80
Link Distance (m)	1200.3		1761.7			383.9
Travel Time (s)	54.0		79.3			17.3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	4%	0%	3%	3%
Adj. Flow (vph)	59	172	104	16	108	170
Shared Lane Traffic (%)						
Lane Group Flow (vph)	231	0	120	0	0	278
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 45.4%			ICU Level of Service A
Analysis Period (min) 15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	59	172	104	16	108	170
Future Volume (Veh/h)	59	172	104	16	108	170
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	59	172	104	16	108	170
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	498	112			120	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	498	112			120	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	88	82			93	
cM capacity (veh/h)	496	944			1462	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	231	120	278
Volume Left	59	0	108
Volume Right	172	16	0
cSH	767	1700	1462
Volume to Capacity	0.30	0.07	0.07
Queue Length 95th (m)	10.2	0.0	1.9
Control Delay (s)	11.7	0.0	3.4
Lane LOS	B		A
Approach Delay (s)	11.7	0.0	3.4
Approach LOS	B		

Intersection Summary			
Average Delay		5.8	
Intersection Capacity Utilization		45.4%	ICU Level of Service A
Analysis Period (min)		15	

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	80	71	43	36	123	109
Future Volume (vph)	80	71	43	36	123	109
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.937		0.938			
Flt Protected	0.974					0.974
Satd. Flow (prot)	1588	0	1507	0	0	1558
Flt Permitted	0.974					0.974
Satd. Flow (perm)	1588	0	1507	0	0	1558
Link Speed (k/h)	80		80			80
Link Distance (m)	605.5		233.8			1761.7
Travel Time (s)	27.2		10.5			79.3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	3%	5%	0%	5%	1%
Adj. Flow (vph)	80	71	43	36	123	109
Shared Lane Traffic (%)						
Lane Group Flow (vph)	151	0	79	0	0	232
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 37.2%			ICU Level of Service A
Analysis Period (min) 15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	80	71	43	36	123	109
Future Volume (Veh/h)	80	71	43	36	123	109
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	80	71	43	36	123	109
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	416	61			79	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	416	61			79	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	85	93			92	
cM capacity (veh/h)	548	1001			1500	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	151	79	232
Volume Left	80	0	123
Volume Right	71	36	0
cSH	696	1700	1500
Volume to Capacity	0.22	0.05	0.08
Queue Length 95th (m)	6.6	0.0	2.1
Control Delay (s)	11.6	0.0	4.3
Lane LOS	B		A
Approach Delay (s)	11.6	0.0	4.3
Approach LOS	B		

Intersection Summary			
Average Delay		6.0	
Intersection Capacity Utilization		37.2%	ICU Level of Service A
Analysis Period (min)		15	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	26	2	143	60	67	1	131	109	31	224	16
Future Volume (vph)	2	26	2	143	60	67	1	131	109	31	224	16
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.991			0.966			0.939			0.992	
Flt Protected		0.997			0.974						0.994	
Satd. Flow (prot)	0	1531	0	0	1426	0	0	1422	0	0	1485	0
Flt Permitted		0.997			0.974						0.994	
Satd. Flow (perm)	0	1531	0	0	1426	0	0	1422	0	0	1485	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		187.7			400.3			618.6			394.6	
Travel Time (s)		13.5			28.8			44.5			28.4	
Peak Hour 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
Heavy Vehicles (%)	0%	0%	0%	1%	0%	7%	0%	1%	4%	4%	3%	0%
Adj. Flow (vph)	2	26	2	143	60	67	1	131	109	31	224	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	30	0	0	270	0	0	241	0	0	271	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 69.7%		ICU Level of Service C	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	26	2	143	60	67	1	131	109	31	224	16
Future Volume (Veh/h)	2	26	2	143	60	67	1	131	109	31	224	16
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	2	26	2	143	60	67	1	131	109	31	224	16
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	578	536	232	496	490	186	240			240		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	578	536	232	496	490	186	240			240		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.3	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.4	2.2			2.2		
p0 queue free %	99	94	100	69	87	92	100			98		
cM capacity (veh/h)	350	443	812	454	470	844	1339			1315		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	30	270	241	271
Volume Left	2	143	1	31
Volume Right	2	67	109	16
cSH	448	517	1339	1315
Volume to Capacity	0.07	0.52	0.00	0.02
Queue Length 95th (m)	1.7	23.9	0.0	0.6
Control Delay (s)	13.6	19.3	0.0	1.1
Lane LOS	B	C	A	A
Approach Delay (s)	13.6	19.3	0.0	1.1
Approach LOS	B	C		

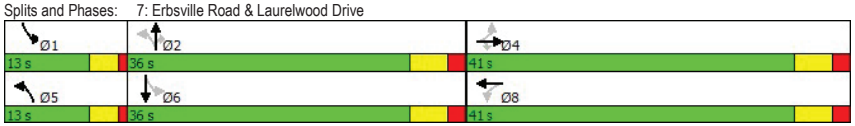
Intersection Summary					
Average Delay			7.3		
Intersection Capacity Utilization			69.7%	ICU Level of Service	C
Analysis Period (min)			15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	100	121	151	186	111	135	246	155	44	250	24
Future Volume (vph)	14	100	121	151	186	111	135	246	155	44	250	24
Ideal Flow (vphpl)	1775	1900	1750	1775	1650	1650	1775	1900	1750	1775	1650	1650
Storage Length (m)	20.0		20.0	25.0		0.0	65.0		30.0	25.0		0.0
Storage Lanes	1		1	1		0	1		1	1		0
Taper Length (m)	35.0			10.0			80.0			35.0		
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	0.98		0.97	0.99	0.98		0.99		0.97	0.99	1.00	
Frt			0.850		0.944				0.850		0.987	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1686	1776	1417	1670	1513	0	1621	1881	1488	1686	1610	0
Flt Permitted	0.426			0.692			0.525			0.606		
Satd. Flow (perm)	744	1776	1371	1203	1513	0	890	1881	1442	1068	1610	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			121		39				155		6	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		123.5			178.3			236.9			930.8	
Travel Time (s)		8.9			12.8			17.1			67.0	
Confl. Peds. (#/hr)	20		10	10		20	7		7	7		7
Peak Hour 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
Heavy Vehicles (%)	0%	7%	5%	1%	2%	0%	4%	1%	0%	0%	1%	0%
Adj. Flow (vph)	14	100	121	151	186	111	135	246	155	44	250	24
Shared Lane Traffic (%)												
Lane Group Flow (vph)	14	100	121	151	297	0	135	246	155	44	274	0
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2		2	6		
Detector Phase	4	4	4	8	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0		5.0	30.0	30.0	5.0	30.0	
Minimum Split (s)	14.0	14.0	14.0	14.0	14.0		9.0	36.0	36.0	9.0	36.0	
Total Split (s)	41.0	41.0	41.0	41.0	41.0		13.0	36.0	36.0	13.0	36.0	
Total Split (%)	45.6%	45.6%	45.6%	45.6%	45.6%		14.4%	40.0%	40.0%	14.4%	40.0%	
Maximum Green (s)	35.0	35.0	35.0	35.0	35.0		9.0	30.0	30.0	9.0	30.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		1.0	2.0	2.0	1.0	2.0	
Lost Time Adjust (s)	0.0	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	6.0		4.0	6.0	6.0	4.0	6.0	
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	None	None		None	Max	Max	None	Max	
Walk Time (s)	15.0	15.0	15.0	15.0	15.0			12.0	12.0		12.0	
Flash Dont Walk (s)	21.0	21.0	21.0	21.0	21.0			18.0	18.0		18.0	
Pedestrian Calls (#/hr)	0	0	0	0	0			0	0		0	
Act Effct Green (s)	17.7	17.7	17.7	17.7	17.7		41.0	34.2	34.2	37.8	30.7	
Actuated g/C Ratio	0.25	0.25	0.25	0.25	0.25		0.58	0.49	0.49	0.54	0.44	
v/c Ratio	0.07	0.22	0.28	0.50	0.72		0.22	0.27	0.20	0.07	0.39	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	20.9	22.3	6.2	28.9	31.8		8.4	14.7	3.8	7.8	18.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	20.9	22.3	6.2	28.9	31.8		8.4	14.7	3.8	7.8	18.0	
LOS	C	C	A	C	C		A	B	A	A	B	
Approach Delay		13.9			30.8			10.0			16.6	
Approach LOS		B			C			A			B	
Queue Length 50th (m)	1.5	11.4	0.0	18.5	33.8		7.1	21.2	0.0	2.2	25.6	
Queue Length 95th (m)	5.9	22.9	11.1	35.4	60.0		19.4	47.2	11.6	7.8	56.0	
Internal Link Dist (m)		99.5			154.3			212.9			906.8	
Turn Bay Length (m)	20.0		20.0	25.0			65.0		30.0	25.0		
Base Capacity (vph)	379	907	759	614	791		618	916	781	683	708	
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Reduced v/c Ratio	0.04	0.11	0.16	0.25	0.38		0.22	0.27	0.20	0.06	0.39	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 70.2			
Natural Cycle: 60			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 18.0		Intersection LOS: B	
Intersection Capacity Utilization 71.1%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 7: Erbsville Road & Laurelwood Drive



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	100	121	151	186	111	135	246	155	44	250	24
Future Volume (vph)	14	100	121	151	186	111	135	246	155	44	250	24
Ideal Flow (vphpl)	1775	1900	1750	1775	1650	1650	1775	1900	1750	1775	1650	1650
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0		4.0	6.0	6.0	4.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	0.99		1.00	1.00	0.97	1.00	1.00	
Flpb, ped/bikes	0.99	1.00	1.00	0.99	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.94		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1665	1776	1375	1655	1516		1617	1881	1446	1680	1610	
Flt Permitted	0.43	1.00	1.00	0.69	1.00		0.53	1.00	1.00	0.61	1.00	
Satd. Flow (perm)	747	1776	1375	1206	1516		894	1881	1446	1072	1610	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	14	100	121	151	186	111	135	246	155	44	250	24
RTOR Reduction (vph)	0	0	91	0	29	0	0	0	81	0	3	0
Lane Group Flow (vph)	14	100	30	151	268	0	135	246	74	44	271	0
Confl. Peds. (#/hr)	20		10	10		20	7		7	7		7
Heavy Vehicles (%)	0%	7%	5%	1%	2%	0%	4%	1%	0%	0%	1%	0%
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2		2	6		
Actuated Green, G (s)	17.7	17.7	17.7	17.7	17.7		40.6	34.2	34.2	35.4	31.6	
Effective Green, g (s)	17.7	17.7	17.7	17.7	17.7		40.6	34.2	34.2	35.4	31.6	
Actuated g/C Ratio	0.25	0.25	0.25	0.25	0.25		0.57	0.48	0.48	0.49	0.44	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		4.0	6.0	6.0	4.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	184	438	339	297	374		570	897	689	561	709	
v/s Ratio Prot		0.06			c0.18		c0.02	0.13		0.00	c0.17	
v/s Ratio Perm	0.02		0.02	0.13			0.11		0.05	0.03		
v/c Ratio	0.08	0.23	0.09	0.51	0.72		0.24	0.27	0.11	0.08	0.38	
Uniform Delay, d1	20.7	21.5	20.8	23.3	24.7		7.5	11.3	10.3	9.4	13.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.2	0.3	0.1	1.4	6.4		0.2	0.8	0.3	0.1	1.6	
Delay (s)	20.9	21.8	20.9	24.6	31.1		7.7	12.0	10.6	9.5	15.0	
Level of Service	C	C	C	C	C		A	B	B	A	B	
Approach Delay (s)		21.3			28.9			10.5			14.3	
Approach LOS		C			C			B			B	

Intersection Summary					
HCM 2000 Control Delay	18.3	HCM 2000 Level of Service		B	
HCM 2000 Volume to Capacity ratio	0.47				
Actuated Cycle Length (s)	71.7	Sum of lost time (s)		16.0	
Intersection Capacity Utilization	71.1%	ICU Level of Service		C	
Analysis Period (min)	15				

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	285	33	143	579	43	31	24	81	29	43	24
Future Volume (vph)	11	285	33	143	579	43	31	24	81	29	43	24
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
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		0.986			0.992			0.920			0.966	
Flt Protected		0.998			0.991			0.989			0.985	
Satd. Flow (prot)	0	1499	0	0	1512	0	0	1410	0	0	1455	0
Flt Permitted		0.998			0.991			0.989			0.985	
Satd. Flow (perm)	0	1499	0	0	1512	0	0	1410	0	0	1455	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		213.7			555.1			104.8			136.8	
Travel Time (s)		15.4			40.0			7.5			9.8	
Confl. Peds. (#/hr)	9		4	4		9	6		8	8		6
Peak Hour 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
Heavy Vehicles (%)	0%	2%	0%	0%	1%	0%	0%	0%	0%	0%	3%	0%
Adj. Flow (vph)	11	285	33	143	579	43	31	24	81	29	43	24
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	329	0	0	765	0	0	136	0	0	96	0
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Roundabout			
Intersection Capacity Utilization	94.5%	ICU Level of Service	F
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Traffic Volume (veh/h)	11	285	33	143	579	43	31	24	81	29	43	24
Future Volume (veh/h)	11	285	33	143	579	43	31	24	81	29	43	24
Peak Hour 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
Hourly flow rate (vph)	11	285	33	143	579	43	31	24	81	29	43	24
Approach Volume (veh/h)		329			765			136			96	
Crossing Volume (veh/h)		215			66			325			753	
High Capacity (veh/h)		1170			1315			1073			761	
High v/c (veh/h)		0.28			0.58			0.13			0.13	
Low Capacity (veh/h)		967			1098			879			603	
Low v/c (veh/h)		0.34			0.70			0.15			0.16	

Intersection Summary					
Maximum v/c High		0.58			
Maximum v/c Low		0.70			
Intersection Capacity Utilization	94.5%	ICU Level of Service		F	

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	102	22	87	203	19	26
Future Volume (vph)	102	22	87	203	19	26
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.976				0.922	
Flt Protected				0.985	0.979	
Satd. Flow (prot)	1584	0	0	1609	1593	0
Flt Permitted				0.985	0.979	
Satd. Flow (perm)	1584	0	0	1609	1593	0
Link Speed (k/h)	80			80	50	
Link Distance (m)	1200.3			667.7	811.2	
Travel Time (s)	54.0			30.0	58.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	0%	1%	1%	0%	0%
Adj. Flow (vph)	102	22	87	203	19	26
Shared Lane Traffic (%)						
Lane Group Flow (vph)	124	0	0	290	45	0
Sign Control	Free			Free	Stop	

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

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	102	22	87	203	19	26
Future Volume (Veh/h)	102	22	87	203	19	26
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	102	22	87	203	19	26
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			124		490	113
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			124		490	113
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			94		96	97
cM capacity (veh/h)			1469		509	945

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	124	290	45
Volume Left	0	87	19
Volume Right	22	0	26
cSH	1700	1469	694
Volume to Capacity	0.07	0.06	0.06
Queue Length 95th (m)	0.0	1.5	1.7
Control Delay (s)	0.0	2.6	10.5
Lane LOS		A	B
Approach Delay (s)	0.0	2.6	10.5
Approach LOS			B

Intersection Summary			
Average Delay	2.7		
Intersection Capacity Utilization	38.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	83	6	158	59	1	130
Future Volume (vph)	83	6	158	59	1	130
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.991		0.963			
Flt Protected	0.955					
Satd. Flow (prot)	1625	0	1577	0	0	1650
Flt Permitted	0.955					
Satd. Flow (perm)	1625	0	1577	0	0	1650
Link Speed (k/h)	70		50			50
Link Distance (m)	143.4		394.6			123.0
Travel Time (s)	7.4		28.4			8.9
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	0%	1%	0%	0%	0%
Adj. Flow (vph)	83	6	158	59	1	130
Shared Lane Traffic (%)						
Lane Group Flow (vph)	89	0	217	0	0	131
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	25.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	83	6	158	59	1	130
Future Volume (Veh/h)	83	6	158	59	1	130
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	83	6	158	59	1	130
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	320	188			217	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	320	188			217	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	88	99			100	
cM capacity (veh/h)	671	860			1365	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	89	217	131
Volume Left	83	0	1
Volume Right	6	59	0
cSH	681	1700	1365
Volume to Capacity	0.13	0.13	0.00
Queue Length 95th (m)	3.6	0.0	0.0
Control Delay (s)	11.1	0.0	0.1
Lane LOS	B		A
Approach Delay (s)	11.1	0.0	0.1
Approach LOS	B		

Intersection Summary			
Average Delay	2.3		
Intersection Capacity Utilization	25.7%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	164	10	109	253	20	64
Future Volume (vph)	164	10	109	253	20	64
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.992				0.897	
Flt Protected				0.985	0.988	
Satd. Flow (prot)	1607	0	0	1598	1542	0
Flt Permitted				0.985	0.988	
Satd. Flow (perm)	1607	0	0	1598	1542	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	166.4			228.8	212.1	
Travel Time (s)	12.0			16.5	15.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	0%	1%	2%	6%	0%
Adj. Flow (vph)	164	10	109	253	20	64
Shared Lane Traffic (%)						
Lane Group Flow (vph)	174	0	0	362	84	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	48.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	164	10	109	253	20	64
Future Volume (Veh/h)	164	10	109	253	20	64
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	164	10	109	253	20	64
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			174		640	169
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			174		640	169
tC, single (s)			4.1		6.5	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			92		95	93
cM capacity (veh/h)			1409		400	880

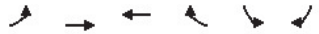
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	174	362	84
Volume Left	0	109	20
Volume Right	10	0	64
cSH	1700	1409	684
Volume to Capacity	0.10	0.08	0.12
Queue Length 95th (m)	0.0	2.0	3.3
Control Delay (s)	0.0	2.8	11.0
Lane LOS		A	B
Approach Delay (s)	0.0	2.8	11.0
Approach LOS			B

Intersection Summary			
Average Delay	3.1		
Intersection Capacity Utilization	48.3%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	40	213	292	57	22	29
Future Volume (vph)	40	213	292	57	22	29
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.978		0.923	
Flt Protected		0.992			0.979	
Satd. Flow (prot)	0	1623	1600	0	1561	0
Flt Permitted		0.992			0.979	
Satd. Flow (perm)	0	1623	1600	0	1561	0
Link Speed (k/h)		60	60		50	
Link Distance (m)		98.4	372.2		168.6	
Travel Time (s)		5.9	22.3		12.1	
Confl. Peds. (#/hr)	1			1		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	1%	0%	5%	0%
Adj. Flow (vph)	40	213	292	57	22	29
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	253	349	0	51	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 50.5%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	40	213	292	57	22	29
Future Volume (Veh/h)	40	213	292	57	22	29
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	40	213	292	57	22	29
Pedestrians					1	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	350				614	322
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	350				614	322
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				95	96
cM capacity (veh/h)	1219				435	723

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	253	349	51
Volume Left	40	0	22
Volume Right	0	57	29
cSH	1219	1700	563
Volume to Capacity	0.03	0.21	0.09
Queue Length 95th (m)	0.8	0.0	2.4
Control Delay (s)	1.5	0.0	12.0
Lane LOS	A		B
Approach Delay (s)	1.5	0.0	12.0
Approach LOS			B

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	50.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	26	215	331	52	26	26
Future Volume (vph)	26	215	331	52	26	26
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.982		0.932	
Flt Protected		0.995			0.976	
Satd. Flow (prot)	0	1613	1598	0	1606	0
Flt Permitted		0.995			0.976	
Satd. Flow (perm)	0	1613	1598	0	1606	0
Link Speed (k/h)		60	60		50	
Link Distance (m)		372.2	1012.1		87.7	
Travel Time (s)		22.3	60.7		6.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	2%	1%	4%	0%	0%
Adj. Flow (vph)	26	215	331	52	26	26
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	241	383	0	52	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 48.1%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	26	215	331	52	26	26
Future Volume (Veh/h)	26	215	331	52	26	26
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	26	215	331	52	26	26
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	383				624	357
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	383				624	357
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				94	96
cM capacity (veh/h)	1187				443	692

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	241	383	52
Volume Left	26	0	26
Volume Right	0	52	26
cSH	1187	1700	540
Volume to Capacity	0.02	0.23	0.10
Queue Length 95th (m)	0.5	0.0	2.5
Control Delay (s)	1.1	0.0	12.4
Lane LOS	A		B
Approach Delay (s)	1.1	0.0	12.4
Approach LOS			B

Intersection Summary				
Average Delay		1.3		
Intersection Capacity Utilization		48.1%	ICU Level of Service	A
Analysis Period (min)		15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	10	65	12	6	8	94	204	34	7	346	109
Future Volume (vph)	22	10	65	12	6	8	94	204	34	7	346	109
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
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		0.910			0.958			0.986			0.968	
Flt Protected		0.989			0.977			0.986			0.999	
Satd. Flow (prot)	0	1367	0	0	1451	0	0	1498	0	0	1499	0
Flt Permitted		0.989			0.977			0.986			0.999	
Satd. Flow (perm)	0	1367	0	0	1451	0	0	1498	0	0	1499	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		77.1			66.0			326.3			223.3	
Travel Time (s)		5.6			4.8			23.5			16.1	
Confl. Peds. (#/hr)	4					4			1	1		
Peak Hour 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
Heavy Vehicles (%)	0%	0%	3%	0%	0%	0%	0%	1%	0%	0%	0%	0%
Adj. Flow (vph)	22	10	65	12	6	8	94	204	34	7	346	109
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	97	0	0	26	0	0	332	0	0	462	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	70.6%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	10	65	12	6	8	94	204	34	7	346	109
Future Volume (Veh/h)	22	10	65	12	6	8	94	204	34	7	346	109
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	22	10	65	12	6	8	94	204	34	7	346	109
Pedestrians					1						4	
Lane Width (m)					3.6						3.6	
Walking Speed (m/s)					1.2						1.2	
Percent Blockage					0						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	18			75			402	128	44	262	157	14
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	18			75			402	128	44	262	157	14
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			70	73	97	99	52	90
cM capacity (veh/h)	1607			1537			309	745	1032	519	720	1068

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	97	26	332	462
Volume Left	22	12	94	7
Volume Right	65	8	34	109
cSH	1607	1537	543	775
Volume to Capacity	0.01	0.01	0.61	0.60
Queue Length 95th (m)	0.3	0.2	32.7	32.1
Control Delay (s)	1.7	3.4	21.5	16.2
Lane LOS	A	A	C	C
Approach Delay (s)	1.7	3.4	21.5	16.2
Approach LOS			C	C

Intersection Summary				
Average Delay	16.2			
Intersection Capacity Utilization	70.6%	ICU Level of Service		C
Analysis Period (min)	15			

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]
© Copyright TRL Limited, 2020

For sales and distribution information, program advice and maintenance, contact TRL:
Tel: +44 (0)1344 770758 email: software@trl.co.uk Web: http://www.trlsoftware.co.uk

The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: Laurelwood & Beaver Creek.arc8
Path: C:\Users\AdamMorrison\Paradigm\Projects - 170278 Beaver Creek Area TES\C5 - Analysis and Evaluation\Arcady
Report generation date: 2020-07-21 4:12:51 PM

Summary of intersection performance

There are warnings associated with this model run - see the 'Data Errors and Warnings' tables.

	AM					
	Queue (Veh)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS
	All - Background 2025					
Intersection 85% - Leg North	0.08	4.14	0.08	A	9.76	A
Intersection 85% - Leg West	2.18	10.87	0.69	B		
Intersection 85% - Leg South	1.11	12.71	0.53	B		
Intersection 85% - Leg East	0.35	4.81	0.26	A		
Intersection 90% - Leg North	0.08	3.85	0.07	A	8.28	A
Intersection 90% - Leg West	1.83	9.10	0.65	A		
Intersection 90% - Leg South	0.94	10.69	0.49	B		
Intersection 90% - Leg East	0.32	4.43	0.24	A		

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Intersection LOS and Intersection Delay are demand-weighted averages.

"D1 - Existing, AM" model duration: 8:00 AM - 9:00 AM
"D2 - Existing, PM" model duration: 4:00 PM - 5:00 PM
"D3 - Background 2022, AM" model duration: 8:00 AM - 9:00 AM
"D4 - Background 2022, PM" model duration: 4:00 PM - 5:00 PM
"D5 - Total 2022, AM" model duration: 8:00 AM - 9:00 AM
"D6 - Total 2022, PM" model duration: 4:00 PM - 5:00 PM
"D7 - Background 2025, AM " model duration: 8:00 AM - 9:00 AM
"D8 - Background 2025, PM" model duration: 4:00 PM - 5:00 PM
"D9 - Total 2025, AM" model duration: 8:00 AM - 9:00 AM
"D10 - Total 2025, PM" model duration: 4:00 PM - 5:00 PM
"D11 - Background 2027, AM" model duration: 8:00 AM - 9:00 AM
"D12 - Background 2027, PM" model duration: 4:00 PM - 5:00 PM
"D13 - Total 2027, AM" model duration: 8:00 AM - 9:00 AM
"D14 - Total 2027, PM" model duration: 4:00 PM - 5:00 PM
"D15 - Background 2032, AM" model duration: 8:00 AM - 9:00 AM
"D16 - Background 2032, PM" model duration: 4:00 PM - 5:00 PM
"D17 - Total 2032, AM" model duration: 8:00 AM - 9:00 AM
"D18 - Total 2032, PM" model duration: 4:00 PM - 5:00 PM

Run using Junctions 8.0.6.541 at 2020-07-21 4:12:49 PM

File summary

Title	Laurelwood & Beaver Creek
Location	Waterloo
Site Number	
Date	2017-12-05
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	170278
Analyst	Matt
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)
7.50	✓		N/A	0.90	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	Veh	Veh	perHour	s	-Min	perMin

All - Background 2025, AM

Data Errors and Warnings

Severity	Area	Item	Description
Last Run	Last Run	Intersection 85% - Leg East - Capacity	Pedestrian Crossing causes blocking on previous leg due to traffic queing to leave the intersection in 4 timesegment(s).
Last Run	Last Run	Intersection 90% - Leg East - Capacity	Pedestrian Crossing causes blocking on previous leg due to traffic queing to leave the intersection in 4 timesegment(s).

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
All	ARCADY		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
Background 2025, AM	Background 2025	AM		PHF	08:00	09:00	60	15				✓		

Intersection Network

Intersections

Junction	Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Do Geometric Delay	Intersection Delay (s)	Intersection LOS
85%	85%	Existing	Roundabout	North,West,South,East				9.76	A
90%	90%	Future	Roundabout	North,West,South,East				8.28	A

Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

Legs

Legs

Intersection	Leg	Leg	Name	Description
85%	**North**	North	Beaver Creek SB	
85%	**West**	West	Laurelwood EB	
85%	**South**	South	Beaver Creek NB	
85%	**East**	East	Laurelwood WB	
90%	**North**	North	Beaver Creek SB	
90%	**West**	West	Laurelwood EB	
90%	**South**	South	Beaver Creek NB	
90%	**East**	East	Laurelwood WB	

Capacity Options

Intersection	Leg	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)	Assume Flat Start Profile	Initial Queue (PCE)
85%	North	0.00	99999.00		0.00
85%	West	0.00	99999.00		0.00
85%	South	0.00	99999.00		0.00
85%	East	0.00	99999.00		0.00
90%	North	0.00	99999.00		0.00
90%	West	0.00	99999.00		0.00
90%	South	0.00	99999.00		0.00
90%	East	0.00	99999.00		0.00

Roundabout Geometry

Intersection	Leg	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
85%	North	3.50	4.50	30.00	20.00	30.00	25.00	
85%	West	3.50	4.50	30.00	20.00	30.00	25.00	
85%	South	3.50	4.50	30.00	20.00	30.00	25.00	
85%	East	3.50	4.50	30.00	20.00	30.00	25.00	
90%	North	3.50	4.50	30.00	20.00	30.00	25.00	
90%	West	3.50	4.50	30.00	20.00	30.00	25.00	
90%	South	3.50	4.50	30.00	20.00	30.00	25.00	
90%	East	3.50	4.50	30.00	20.00	30.00	25.00	

Pedestrian Crossings

Intersection	Leg	Crossing Type
85%	North	Unsignalled Pedestrian Crossing
85%	West	Unsignalled Pedestrian Crossing
85%	South	Unsignalled Pedestrian Crossing
85%	East	Unsignalled Pedestrian Crossing
90%	North	Unsignalled Pedestrian Crossing
90%	West	Unsignalled Pedestrian Crossing
90%	South	Unsignalled Pedestrian Crossing
90%	East	Unsignalled Pedestrian Crossing

Unsignalled Pedestrian Crossing Crossings

Intersection	Leg	Space between crossing and intersection entry (PCE)	Vehicles queueing on exit (PCE)	Central Refuge	Crossing Data Type	Crossing length (m)	Crossing time (s)	Crossing length (entry side) (m)	Crossing time (entry side) (s)	Crossing length (exit side) (m)	Crossing time (exit side) (s)
85%	North	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
85%	West	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
85%	South	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
85%	East	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
90%	North	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
90%	West	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
90%	South	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
90%	East	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50

Slope / Intercept / Capacity

Leg Intercept Adjustments

Intersection	Leg	Type	Reason	Direct Intercept Adjustment (PCE/hr)	Percentage Intercept Adjustment (%)
85%	North	Percentage	Region of Waterloo - Requirement		85.00
85%	West	Percentage	Region of Waterloo - Requirement		85.00
85%	South	Percentage	Region of Waterloo - Requirement		85.00
85%	East	Percentage	Region of Waterloo - Requirement		85.00
90%	North	Percentage	Region of Waterloo - Requirement		90.00
90%	West	Percentage	Region of Waterloo - Requirement		90.00
90%	South	Percentage	Region of Waterloo - Requirement		90.00
90%	East	Percentage	Region of Waterloo - Requirement		90.00

Roundabout Slope and Intercept used in model

Intersection	Leg	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
85%	North		(calculated)	(calculated)	0.593	1153.828
85%	West		(calculated)	(calculated)	0.593	1153.828
85%	South		(calculated)	(calculated)	0.593	1153.828
85%	East		(calculated)	(calculated)	0.593	1153.828
90%	North		(calculated)	(calculated)	0.593	1221.701
90%	West		(calculated)	(calculated)	0.593	1221.701
90%	South		(calculated)	(calculated)	0.593	1221.701
90%	East		(calculated)	(calculated)	0.593	1221.701

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCE Factor for a Truck (PCE)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Intersection	Leg	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
85%	North	PHF	✓	68.00	100.000
85%	West	PHF	✓	677.00	100.000
85%	South	PHF	✓	294.00	100.000
85%	East	PHF	✓	242.00	100.000
90%	North	PHF	✓	68.00	100.000
90%	West	PHF	✓	677.00	100.000
90%	South	PHF	✓	294.00	100.000
90%	East	PHF	✓	242.00	100.000

Peak Hour Factor Data

Intersection	Leg	Hourly Volume (Veh/hr)	Peak Hour Factor	Peak Time Segment
85%	North	68.00	0.92	SecondQuarter
85%	West	677.00	0.92	SecondQuarter
85%	South	294.00	0.92	SecondQuarter
85%	East	242.00	0.92	SecondQuarter
90%	North	68.00	0.92	SecondQuarter
90%	West	677.00	0.92	SecondQuarter
90%	South	294.00	0.92	SecondQuarter
90%	East	242.00	0.92	SecondQuarter

Pedestrian Flows

General Flows Data

Intersection	Leg	Profile Type	Average Pedestrian Flow (Ped/hr)
85%	North	PHF	10.00
85%	West	PHF	7.00
85%	South	PHF	4.00
85%	East	PHF	10.00
90%	North	PHF	10.00
90%	West	PHF	7.00
90%	South	PHF	4.00
90%	East	PHF	10.00

Peak Hour Factor Data

Intersection	Leg	Hourly Volume (Ped/hr)	Peak Hour Factor	Peak Time Segment
85%	North	10.00	1.00	SecondQuarter
85%	West	7.00	1.00	SecondQuarter
85%	South	4.00	1.00	SecondQuarter
85%	East	10.00	1.00	SecondQuarter
90%	North	10.00	1.00	SecondQuarter
90%	West	7.00	1.00	SecondQuarter
90%	South	4.00	1.00	SecondQuarter
90%	East	10.00	1.00	SecondQuarter

Turning Proportions

Turning Counts / Proportions (Veh/hr) - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.000	10.000	20.000	38.000
	West	31.000	0.000	87.000	559.000
	South	38.000	57.000	0.000	199.000
	East	27.000	178.000	37.000	0.000

Turning Proportions (Veh) - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.00	0.15	0.29	0.56
	West	0.05	0.00	0.13	0.83
	South	0.13	0.19	0.00	0.68
	East	0.11	0.74	0.15	0.00

Turning Counts / Proportions (Veh/hr) - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.000	10.000	20.000	38.000
	West	31.000	0.000	87.000	559.000
	South	38.000	57.000	0.000	199.000
	East	27.000	178.000	37.000	0.000

Turning Proportions (Veh) - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.00	0.15	0.29	0.56
	West	0.05	0.00	0.13	0.83
	South	0.13	0.19	0.00	0.68
	East	0.11	0.74	0.15	0.00

Vehicle Mix

Average PCE Per Vehicle - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	1.000	1.110	1.000	1.000
	West	1.000	1.000	1.000	1.030
	South	1.090	1.000	1.000	1.010
	East	1.040	1.060	1.060	1.000

Truck Percentages - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.0	11.0	0.0	0.0
	West	0.0	0.0	0.0	3.0
	South	9.0	0.0	0.0	1.0
	East	4.0	6.0	6.0	0.0

Average PCE Per Vehicle - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	1.000	1.110	1.000	1.000
	West	1.000	1.000	1.000	1.030
	South	1.090	1.000	1.000	1.010
	East	1.040	1.060	1.060	1.000

Truck Percentages - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.0	11.0	0.0	0.0
	West	0.0	0.0	0.0	3.0
	South	9.0	0.0	0.0	1.0
	East	4.0	6.0	6.0	0.0

Results

Results Summary for whole modelled period

Intersection	Leg	Max V/C Ratio	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Intersection Arrivals (Veh)	Total Queueing Delay (Veh-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (Veh-min/min)	Inclusive Total Queueing Delay (Veh-min)	Inclusive Average Queueing Delay (s)
85%	North	0.08	4.14	0.08	~1	A	68.00	68.00	4.57	4.03	0.08	4.57	4.03
85%	West	0.69	10.87	2.18	4.00	B	677.00	677.00	104.67	9.28	1.74	104.73	9.28
85%	South	0.53	12.71	1.11	?	B	294.00	294.00	50.79	10.37	0.85	50.81	10.37
85%	East	0.26	4.81	0.35	~1	A	242.00	242.00	18.68	4.63	0.31	18.69	4.63
90%	North	0.07	3.85	0.08	~1	A	68.00	68.00	4.25	3.75	0.07	4.25	3.75
90%	West	0.65	9.10	1.83	3.00	A	677.00	677.00	89.41	7.92	1.49	89.45	7.93
90%	South	0.49	10.69	0.94	200.00	B	294.00	294.00	43.62	8.90	0.73	43.64	8.91
90%	East	0.24	4.43	0.32	~1	A	242.00	242.00	17.26	4.28	0.29	17.26	4.28

Main Results for each time segment

Main results: (08:00-08:15)

Intersection	Leg	Total Demand (Veh/hr)	Intersection Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	V/C Ratio	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
85%	North	64.06	16.01	63.78	89.70	254.70	10.00	970.99	442.69	0.066	0.00	0.07	3.967	A
85%	West	637.75	159.44	631.99	229.40	89.08	7.00	1070.30	791.86	0.596	0.00	1.44	8.111	A
85%	South	276.96	69.24	274.28	134.65	586.41	4.00	684.76	378.40	0.404	0.00	0.67	8.715	A
85%	East	227.97	56.99	226.83	743.13	117.57	10.00	1021.83	993.11	0.223	0.00	0.29	4.522	A
90%	North	64.06	16.01	63.80	89.78	254.84	10.00	1037.08	454.77	0.062	0.00	0.07	3.698	A
90%	West	637.75	159.44	632.73	229.53	89.11	7.00	1136.32	842.06	0.561	0.00	1.26	7.081	A
90%	South	276.96	69.24	274.61	134.77	587.07	4.00	742.47	380.84	0.373	0.00	0.59	7.657	A
90%	East	227.97	56.99	226.91	743.97	117.71	10.00	1085.82	1054.39	0.210	0.00	0.26	4.186	A

Main results: (08:15-08:30)

Intersection	Leg	Total Demand (Veh/hr)	Intersection Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	V/C Ratio	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
85%	North	73.91	18.48	73.86	103.96	295.08	10.00	943.20	442.69	0.078	0.07	0.08	4.141	A
85%	West	735.87	183.97	732.91	265.77	103.17	7.00	1060.90	791.86	0.694	1.44	2.18	10.872	B
85%	South	319.57	79.89	317.80	156.09	679.99	4.00	599.16	378.40	0.533	0.67	1.11	12.713	B
85%	East	263.04	65.76	262.79	861.54	136.25	10.00	1010.67	993.11	0.260	0.29	0.35	4.812	A
90%	North	73.91	18.48	73.86	104.04	295.18	10.00	1009.09	454.77	0.073	0.07	0.08	3.849	A

90%	West	735.87	183.97	733.57	265.86	103.18	7.00	1126.86	842.06	0.653	1.26	1.83	9.097	A
90%	South	319.57	79.89	318.17	156.17	680.58	4.00	653.55	380.84	0.489	0.59	0.94	10.689	B
90%	East	263.04	65.76	262.81	862.34	136.40	10.00	1074.62	1054.39	0.245	0.26	0.32	4.433	A

Main results: (08:30-08:45)

Intersection	Leg	Total Demand (Veh/hr)	Intersection Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	V/C Ratio	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
85%	North	69.97	17.49	69.99	98.92	280.09	10.00	953.58	442.69	0.073	0.08	0.08	4.074	A
85%	West	696.62	174.16	697.58	252.30	97.78	7.00	1064.49	791.86	0.654	2.18	1.94	9.845	A
85%	South	302.52	75.63	303.18	148.32	647.05	4.00	629.33	378.40	0.481	1.11	0.95	11.062	B
85%	East	249.01	62.25	249.10	820.32	129.91	10.00	1014.47	993.11	0.245	0.35	0.33	4.703	A
90%	North	69.97	17.49	69.99	98.90	280.06	10.00	1019.64	454.77	0.069	0.08	0.07	3.789	A
90%	West	696.62	174.16	697.40	252.27	97.78	7.00	1130.50	842.06	0.616	1.83	1.64	8.331	A
90%	South	302.52	75.63	303.05	148.29	646.88	4.00	685.72	380.84	0.441	0.94	0.80	9.421	A
90%	East	249.01	62.25	249.09	820.08	129.86	10.00	1078.55	1054.39	0.231	0.32	0.30	4.342	A

Main results: (08:45-09:00)

Intersection	Leg	Total Demand (Veh/hr)	Intersection Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	V/C Ratio	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
85%	North	64.06	16.01	64.09	90.66	256.56	10.00	969.73	442.69	0.066	0.08	0.07	3.974	A
85%	West	637.75	159.44	639.50	231.10	89.55	7.00	1069.96	791.86	0.596	1.94	1.51	8.400	A
85%	South	276.96	69.24	277.93	135.91	593.13	4.00	678.57	378.40	0.408	0.95	0.70	9.007	A
85%	East	227.97	56.99	228.12	751.97	119.09	10.00	1020.93	993.11	0.223	0.33	0.29	4.541	A
90%	North	64.06	16.01	64.09	90.61	256.50	10.00	1035.94	454.77	0.062	0.07	0.07	3.706	A
90%	West	637.75	159.44	639.10	231.05	89.54	7.00	1136.01	842.06	0.561	1.64	1.30	7.264	A
90%	South	276.96	69.24	277.73	135.86	592.78	4.00	737.01	380.84	0.376	0.80	0.61	7.853	A
90%	East	227.97	56.99	228.11	751.50	119.01	10.00	1085.04	1054.39	0.210	0.30	0.27	4.201	A

Queueing Delay Results for each time segment

Queueing Delay results: (08:00-08:15)

Intersection	Leg	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	1.03	0.07	3.967	A	A
85%	West	20.34	1.36	8.111	A	A
85%	South	9.53	0.64	8.715	A	A
85%	East	4.17	0.28	4.522	A	A
90%	North	0.96	0.06	3.698	A	A
90%	West	17.87	1.19	7.081	A	A
90%	South	8.42	0.56	7.657	A	A
90%	East	3.87	0.26	4.186	A	A

Queueing Delay results: (08:15-08:30)

Intersection	Leg	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	1.25	0.08	4.141	A	A
85%	West	30.86	2.06	10.872	B	B
85%	South	15.76	1.05	12.713	B	B
85%	East	5.15	0.34	4.812	A	A
90%	North	1.17	0.08	3.849	A	A
90%	West	26.17	1.74	9.097	A	A
90%	South	13.40	0.89	10.689	B	B
90%	East	4.75	0.32	4.433	A	A

Queueing Delay results: (08:30-08:45)

Intersection	Leg	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	1.20	0.08	4.074	A	A
85%	West	29.98	2.00	9.845	A	A
85%	South	14.62	0.97	11.062	B	B
85%	East	4.96	0.33	4.703	A	A
90%	North	1.12	0.07	3.789	A	A
90%	West	25.19	1.68	8.331	A	A
90%	South	12.37	0.82	9.421	A	A

90%	East	4.57	0.30	4.342	A	A

Queueing Delay results: (08:45-09:00)

Intersection	Leg	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	1.08	0.07	3.974	A	A
85%	West	23.49	1.57	8.400	A	A
85%	South	10.89	0.73	9.007	A	A
85%	East	4.40	0.29	4.541	A	A
90%	North	1.00	0.07	3.706	A	A
90%	West	20.17	1.34	7.264	A	A
90%	South	9.43	0.63	7.853	A	A
90%	East	4.06	0.27	4.201	A	A

Queue Variation Results for each time segment

Queue Variation results: (08:00-08:15)

Intersection	Leg	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.07	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	1.44	0.00	0.00	2.00	3.00			N/A	N/A
85%	South	0.67	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	0.29	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.07	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	1.26	0.00	0.00	2.00	2.00			N/A	N/A
90%	South	0.59	0.00	0.00	0.00	>199			N/A	N/A
90%	East	0.26	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:15-08:30)

Intersection	Leg	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.08	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	2.18	0.00	0.00	0.00	4.00			N/A	N/A
85%	South	1.11	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	0.35	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.08	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	1.83	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.94	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.32	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:30-08:45)

Intersection	Leg	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.08	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	1.94	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.95	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very		N/A	N/A

							small or very big.			
85%	**East**	0.33	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	**North**	0.07	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	**West**	1.64	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	**South**	0.80	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	**East**	0.30	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:45-09:00)

Intersection	Leg	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	**North**	0.07	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	**West**	1.51	0.00	0.00	3.00	4.00			N/A	N/A
85%	**South**	0.70	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	**East**	0.29	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	**North**	0.07	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	**West**	1.30	0.00	0.00	2.00	3.00			N/A	N/A
90%	**South**	0.61	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	**East**	0.27	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]
© Copyright TRL Limited, 2020

For sales and distribution information, program advice and maintenance, contact TRL:
Tel: +44 (0)1344 770758 email: software@trl.co.uk Web: http://www.trlsoftware.co.uk

The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: Laurelwood & Beaver Creek.arc8
Path: C:\Users\AdamMorrison\Paradigm\Projects - 170278 Beaver Creek Area TES\C5 - Analysis and Evaluation\Arcady
Report generation date: 2020-07-21 4:14:13 PM

Summary of intersection performance

	PM					
	Queue (Veh)	**Delay (s)**	**V/C Ratio**	**LOS**	**Intersection Delay (s)**	**Intersection LOS**
	All - Background 2025					
Intersection 85% - Leg North	0.21	7.39	0.18	A	9.88	A
Intersection 85% - Leg West	0.56	5.71	0.36	A		
Intersection 85% - Leg South	0.19	4.74	0.16	A		
Intersection 85% - Leg East	2.92	12.91	0.76	B		
Intersection 90% - Leg North	0.19	6.58	0.16	A	8.24	A
Intersection 90% - Leg West	0.51	5.17	0.34	A		
Intersection 90% - Leg South	0.18	4.36	0.15	A		
Intersection 90% - Leg East	2.38	10.47	0.71	B		

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Intersection LOS and Intersection Delay are demand-weighted averages.

"D1 - Existing, AM" model duration: 8:00 AM - 9:00 AM
"D2 - Existing, PM" model duration: 4:00 PM - 5:00 PM
"D3 - Background 2022, AM" model duration: 8:00 AM - 9:00 AM
"D4 - Background 2022, PM" model duration: 4:00 PM - 5:00 PM
"D5 - Total 2022, AM" model duration: 8:00 AM - 9:00 AM
"D6 - Total 2022, PM" model duration: 4:00 PM - 5:00 PM
"D7 - Background 2025, AM" model duration: 8:00 AM - 9:00 AM
"D8 - Background 2025, PM " model duration: 4:00 PM - 5:00 PM
"D9 - Total 2025, AM" model duration: 8:00 AM - 9:00 AM
"D10 - Total 2025, PM" model duration: 4:00 PM - 5:00 PM
"D11 - Background 2027, AM" model duration: 8:00 AM - 9:00 AM
"D12 - Background 2027, PM" model duration: 4:00 PM - 5:00 PM
"D13 - Total 2027, AM" model duration: 8:00 AM - 9:00 AM
"D14 - Total 2027, PM" model duration: 4:00 PM - 5:00 PM
"D15 - Background 2032, AM" model duration: 8:00 AM - 9:00 AM
"D16 - Background 2032, PM" model duration: 4:00 PM - 5:00 PM
"D17 - Total 2032, AM" model duration: 8:00 AM - 9:00 AM
"D18 - Total 2032, PM" model duration: 4:00 PM - 5:00 PM

Run using Junctions 8.0.6.541 at 2020-07-21 4:14:12 PM

File summary

Title	Laurelwood & Beaver Creek
Location	Waterloo
Site Number	
Date	2017-12-05
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	170278
Analyst	Matt
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)

7.50	✓		N/A	0.90	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	Veh	Veh	perHour	s	-Min	perMin

All - Background 2025, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
All	ARCADY		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
Background 2025, PM	Background 2025	PM		PHF	16:00	17:00	60	15				✓		

Intersection Network

Intersections

Junction	Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Do Geometric Delay	Intersection Delay (s)	Intersection LOS
85%	85%	Existing	Roundabout	North,West,South,East				9.88	A
90%	90%	Future	Roundabout	North,West,South,East				8.24	A

Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

Legs

Legs

Intersection	Leg	Leg	Name	Description
85%	**North**	North	Beaver Creek SB	
85%	**West**	West	Laurelwood EB	
85%	**South**	South	Beaver Creek NB	
85%	**East**	East	Laurelwood WB	
90%	**North**	North	Beaver Creek SB	
90%	**West**	West	Laurelwood EB	
90%	**South**	South	Beaver Creek NB	
90%	**East**	East	Laurelwood WB	

Capacity Options

Intersection	Leg	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)	Assume Flat Start Profile	Initial Queue (PCE)
85%	**North**	0.00	99999.00		0.00
85%	**West**	0.00	99999.00		0.00
85%	**South**	0.00	99999.00		0.00
85%	**East**	0.00	99999.00		0.00

90%	**North**	0.00	99999.00		0.00
90%	**West**	0.00	99999.00		0.00
90%	**South**	0.00	99999.00		0.00
90%	**East**	0.00	99999.00		0.00

Roundabout Geometry

Intersection	Leg	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
85%	**North**	3.50	4.50	30.00	20.00	30.00	25.00	
85%	**West**	3.50	4.50	30.00	20.00	30.00	25.00	
85%	**South**	3.50	4.50	30.00	20.00	30.00	25.00	
85%	**East**	3.50	4.50	30.00	20.00	30.00	25.00	
90%	**North**	3.50	4.50	30.00	20.00	30.00	25.00	
90%	**West**	3.50	4.50	30.00	20.00	30.00	25.00	
90%	**South**	3.50	4.50	30.00	20.00	30.00	25.00	
90%	**East**	3.50	4.50	30.00	20.00	30.00	25.00	

Pedestrian Crossings

Intersection	Leg	Crossing Type
85%	**North**	Unsignalled Pedestrian Crossing
85%	**West**	Unsignalled Pedestrian Crossing
85%	**South**	Unsignalled Pedestrian Crossing
85%	**East**	Unsignalled Pedestrian Crossing
90%	**North**	Unsignalled Pedestrian Crossing
90%	**West**	Unsignalled Pedestrian Crossing
90%	**South**	Unsignalled Pedestrian Crossing
90%	**East**	Unsignalled Pedestrian Crossing

Unsignalled Pedestrian Crossing Crossings

Intersection	Leg	Space between crossing and intersection entry (PCE)	Vehicles queueing on exit (PCE)	Central Refuge	Crossing Data Type	Crossing length (m)	Crossing time (s)	Crossing length (entry side) (m)	Crossing time (entry side) (s)	Crossing length (exit side) (m)	Crossing time (exit side) (s)
85%	**North**	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
85%	**West**	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
85%	**South**	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
85%	**East**	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
90%	**North**	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
90%	**West**	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
90%	**South**	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
90%	**East**	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50

Slope / Intercept / Capacity

Leg Intercept Adjustments

Intersection	Leg	Type	Reason	Direct Intercept Adjustment (PCE/hr)	Percentage Intercept Adjustment (%)
85%	**North**	Percentage	Region of Waterloo - Requirement		85.00
85%	**West**	Percentage	Region of Waterloo - Requirement		85.00
85%	**South**	Percentage	Region of Waterloo - Requirement		85.00
85%	**East**	Percentage	Region of Waterloo - Requirement		85.00
90%	**North**	Percentage	Region of Waterloo - Requirement		90.00
90%	**West**	Percentage	Region of Waterloo - Requirement		90.00
90%	**South**	Percentage	Region of Waterloo - Requirement		90.00
90%	**East**	Percentage	Region of Waterloo - Requirement		90.00

Roundabout Slope and Intercept used in model

Intersection	Leg	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
85%	**North**		(calculated)	(calculated)	0.593	1153.828
85%	**West**		(calculated)	(calculated)	0.593	1153.828
85%	**South**		(calculated)	(calculated)	0.593	1153.828
85%	**East**		(calculated)	(calculated)	0.593	1153.828
90%	**North**		(calculated)	(calculated)	0.593	1221.701
90%	**West**		(calculated)	(calculated)	0.593	1221.701

90%	South		(calculated)	(calculated)	0.593	1221.701
90%	East		(calculated)	(calculated)	0.593	1221.701

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCE Factor for a Truck (PCE)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Intersection	Leg	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
85%	North	PHF	✓	96.00	100.000
85%	West	PHF	✓	330.00	100.000
85%	South	PHF	✓	136.00	100.000
85%	East	PHF	✓	765.00	100.000
90%	North	PHF	✓	96.00	100.000
90%	West	PHF	✓	330.00	100.000
90%	South	PHF	✓	136.00	100.000
90%	East	PHF	✓	765.00	100.000

Peak Hour Factor Data

Intersection	Leg	Hourly Volume (Veh/hr)	Peak Hour Factor	Peak Time Segment
85%	North	96.00	0.92	SecondQuarter
85%	West	330.00	0.92	SecondQuarter
85%	South	136.00	0.92	SecondQuarter
85%	East	765.00	0.92	SecondQuarter
90%	North	96.00	0.92	SecondQuarter
90%	West	330.00	0.92	SecondQuarter
90%	South	136.00	0.92	SecondQuarter
90%	East	765.00	0.92	SecondQuarter

Pedestrian Flows

General Flows Data

Intersection	Leg	Profile Type	Average Pedestrian Flow (Ped/hr)
85%	North	PHF	9.00
85%	West	PHF	6.00
85%	South	PHF	4.00
85%	East	PHF	8.00
90%	North	PHF	9.00
90%	West	PHF	6.00
90%	South	PHF	4.00
90%	East	PHF	8.00

Peak Hour Factor Data

Intersection	Leg	Hourly Volume (Ped/hr)	Peak Hour Factor	Peak Time Segment
85%	North	9.00	1.00	SecondQuarter
85%	West	6.00	1.00	SecondQuarter
85%	South	4.00	1.00	SecondQuarter
85%	East	8.00	1.00	SecondQuarter

90%	North	9.00	1.00	SecondQuarter
90%	West	6.00	1.00	SecondQuarter
90%	South	4.00	1.00	SecondQuarter
90%	East	8.00	1.00	SecondQuarter

Turning Proportions

Turning Counts / Proportions (Veh/hr) - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.000	24.000	43.000	29.000
	West	11.000	1.000	33.000	285.000
	South	24.000	31.000	0.000	81.000
	East	43.000	579.000	143.000	0.000

Turning Proportions (Veh) - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.00	0.25	0.45	0.30
	West	0.03	0.00	0.10	0.86
	South	0.18	0.23	0.00	0.60
	East	0.06	0.76	0.19	0.00

Turning Counts / Proportions (Veh/hr) - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.000	24.000	43.000	29.000
	West	11.000	1.000	33.000	285.000
	South	24.000	31.000	0.000	81.000
	East	43.000	579.000	143.000	0.000

Turning Proportions (Veh) - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.00	0.25	0.45	0.30
	West	0.03	0.00	0.10	0.86
	South	0.18	0.23	0.00	0.60
	East	0.06	0.76	0.19	0.00

Vehicle Mix

Average PCE Per Vehicle - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	1.000	1.000	1.030	1.000
	West	1.000	1.000	1.000	1.020
	South	1.000	1.000	1.000	1.000
	East	1.000	1.010	1.000	1.000

Truck Percentages - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.0	0.0	3.0	0.0
	West	0.0	0.0	0.0	2.0
	South	0.0	0.0	0.0	0.0
	East	0.0	1.0	0.0	0.0

Average PCE Per Vehicle - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	1.000	1.000	1.030	1.000
	West	1.000	1.000	1.000	1.020
	South	1.000	1.000	1.000	1.000
	East	1.000	1.010	1.000	1.000

Truck Percentages - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.0	0.0	3.0	0.0
	West	0.0	0.0	0.0	2.0
	South	0.0	0.0	0.0	0.0
	East	0.0	1.0	0.0	0.0

Results

Results Summary for whole modelled period

Intersection	Leg	Max V/C Ratio	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Intersection Arrivals (Veh)	Total Queueing Delay (Veh-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (Veh-min/min)	Inclusive Total Queueing Delay (Veh-min)	Inclusive Average Queueing Delay (s)
85%	North	0.18	7.39	0.21	~1	A	96.00	96.00	10.70	6.68	0.18	10.70	6.69
85%	West	0.36	5.71	0.56	1.00	A	330.00	330.00	29.47	5.36	0.49	29.48	5.36
85%	South	0.16	4.74	0.19	~1	A	136.00	136.00	10.27	4.53	0.17	10.27	4.53
85%	East	0.76	12.91	2.92	8.00	B	765.00	765.00	135.96	10.66	2.27	136.06	10.67
90%	North	0.16	6.58	0.19	~1	A	96.00	96.00	9.60	6.00	0.16	9.60	6.00
90%	West	0.34	5.17	0.51	1.00	A	330.00	330.00	26.83	4.88	0.45	26.84	4.88
90%	South	0.15	4.36	0.18	~1	A	136.00	136.00	9.48	4.18	0.16	9.48	4.18
90%	East	0.71	10.47	2.38	5.00	B	765.00	765.00	113.28	8.89	1.89	113.35	8.89

Main Results for each time segment

Main results: (16:00-16:15)

Intersection	Leg	Total Demand (Veh/hr)	Intersection Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	V/C Ratio	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
85%	North	90.43	22.61	89.82	72.90	703.30	9.00	671.57	396.96	0.135	0.00	0.15	6.181	A
85%	West	310.87	77.72	309.11	592.41	200.72	6.00	1009.79	814.14	0.308	0.00	0.44	5.126	A
85%	South	128.12	32.03	127.49	204.50	305.33	4.00	945.20	451.33	0.136	0.00	0.16	4.400	A
85%	East	720.65	180.16	713.41	370.02	62.80	8.00	1107.34	1016.09	0.651	0.00	1.81	8.982	A
90%	North	90.43	22.61	89.88	72.97	704.29	9.00	732.99	405.12	0.123	0.00	0.14	5.593	A
90%	West	310.87	77.72	309.26	593.21	200.96	6.00	1075.90	864.36	0.289	0.00	0.40	4.686	A
90%	South	128.12	32.03	127.54	204.73	305.48	4.00	1011.24	457.34	0.127	0.00	0.14	4.071	A
90%	East	720.65	180.16	714.44	370.20	62.82	8.00	1174.63	1080.29	0.614	0.00	1.55	7.723	A

Main results: (16:15-16:30)

Intersection	Leg	Total Demand (Veh/hr)	Intersection Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	V/C Ratio	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
85%	North	104.35	26.09	104.12	84.49	815.33	9.00	591.34	396.96	0.176	0.15	0.21	7.385	A
85%	West	358.70	89.67	358.21	686.75	232.69	6.00	988.61	814.14	0.363	0.44	0.56	5.705	A
85%	South	147.83	36.96	147.68	237.06	353.83	4.00	907.34	451.32	0.163	0.16	0.19	4.737	A
85%	East	831.52	207.88	827.07	428.76	72.75	8.00	1101.21	1016.09	0.755	1.81	2.92	12.912	B
90%	North	104.35	26.09	104.15	84.56	816.42	9.00	650.77	405.12	0.160	0.14	0.19	6.584	A
90%	West	358.70	89.67	358.27	687.64	232.93	6.00	1054.55	864.36	0.340	0.40	0.51	5.166	A
90%	South	147.83	36.96	147.69	237.29	353.90	4.00	972.78	457.34	0.152	0.14	0.18	4.363	A
90%	East	831.52	207.88	828.22	428.84	72.76	8.00	1168.48	1080.29	0.712	1.55	2.38	10.474	B

Main results: (16:30-16:45)

Intersection	Leg	Total Demand (Veh/hr)	Intersection Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	V/C Ratio	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
85%	North	98.78	24.70	98.86	80.35	777.18	9.00	618.69	396.96	0.160	0.21	0.19	6.928	A
85%	West	339.57	84.89	339.74	654.49	221.55	6.00	996.03	814.14	0.341	0.56	0.52	5.486	A
85%	South	139.94	34.99	140.00	225.66	335.63	4.00	921.70	451.33	0.152	0.19	0.18	4.605	A
85%	East	787.17	196.79	788.56	406.65	68.97	8.00	1103.54	1016.09	0.713	2.92	2.58	11.494	B
90%	North	98.78	24.70	98.85	80.34	776.89	9.00	679.81	405.12	0.145	0.19	0.17	6.196	A
90%	West	339.57	84.89	339.72	654.26	221.49	6.00	1062.24	864.36	0.320	0.51	0.47	4.983	A
90%	South	139.94	34.99	139.99	225.60	335.61	4.00	987.48	457.35	0.142	0.18	0.17	4.247	A
90%	East	787.17	196.79	788.26	406.63	68.97	8.00	1170.83	1080.29	0.672	2.38	2.11	9.445	A

Main results: (16:45-17:00)

Intersection	Leg	Total Demand (Veh/hr)	Intersection Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	V/C Ratio	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
85%	North	90.43	22.61	90.57	73.65	712.80	9.00	664.80	396.96	0.136	0.19	0.16	6.272	A
85%	West	310.87	77.72	311.16	600.24	203.13	6.00	1008.21	814.14	0.308	0.52	0.45	5.168	A
85%	South	128.12	32.03	128.20	206.89	307.40	4.00	943.61	451.33	0.136	0.18	0.16	4.416	A
85%	East	720.65	180.16	723.29	372.44	63.16	8.00	1107.11	1016.09	0.651	2.58	1.92	9.445	A
90%	North	90.43	22.61	90.55	73.61	712.14	9.00	727.28	405.12	0.124	0.17	0.14	5.654	A
90%	West	310.87	77.72	311.12	599.70	202.98	6.00	1074.57	864.36	0.289	0.47	0.41	4.718	A
90%	South	128.12	32.03	128.20	206.74	307.37	4.00	1009.78	457.35	0.127	0.17	0.15	4.085	A
90%	East	720.65	180.16	722.59	372.40	63.16	8.00	1174.41	1080.29	0.614	2.11	1.62	8.004	A

Queueing Delay Results for each time segment

Queueing Delay results: (16:00-16:15)

Intersection	Leg	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	2.25	0.15	6.181	A	A
85%	West	6.42	0.43	5.126	A	A
85%	South	2.28	0.15	4.400	A	A
85%	East	25.27	1.68	8.982	A	A
90%	North	2.04	0.14	5.593	A	A
90%	West	5.88	0.39	4.686	A	A
90%	South	2.12	0.14	4.071	A	A
90%	East	21.91	1.46	7.723	A	A

Queueing Delay results: (16:15-16:30)

Intersection	Leg	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	3.11	0.21	7.385	A	A
85%	West	8.27	0.55	5.705	A	A
85%	South	2.86	0.19	4.737	A	A
85%	East	40.63	2.71	12.912	B	B
90%	North	2.78	0.19	6.584	A	A
90%	West	7.51	0.50	5.166	A	A
90%	South	2.63	0.18	4.363	A	A
90%	East	33.57	2.24	10.474	B	B

Queueing Delay results: (16:30-16:45)

Intersection	Leg	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	2.92	0.19	6.928	A	A
85%	West	7.93	0.53	5.486	A	A
85%	South	2.73	0.18	4.605	A	A
85%	East	39.95	2.66	11.494	B	B
90%	North	2.61	0.17	6.196	A	A
90%	West	7.19	0.48	4.983	A	A
90%	South	2.51	0.17	4.247	A	A
90%	East	32.52	2.17	9.445	A	A

Queueing Delay results: (16:45-17:00)

Intersection	Leg	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service

85%	North	2.43	0.16	6.272	A	A
85%	West	6.86	0.46	5.168	A	A
85%	South	2.40	0.16	4.416	A	A
85%	East	30.12	2.01	9.445	A	A
90%	North	2.18	0.15	5.654	A	A
90%	West	6.25	0.42	4.718	A	A
90%	South	2.22	0.15	4.085	A	A
90%	East	25.29	1.69	8.004	A	A

Queue Variation Results for each time segment

Queue Variation results: (16:00-16:15)

Intersection	Leg	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.15	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	0.44	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.16	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	1.81	0.00	0.00	3.00	5.00			N/A	N/A
90%	North	0.14	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	0.40	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.14	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	1.55	0.00	0.00	3.00	4.00			N/A	N/A

Queue Variation results: (16:15-16:30)

Intersection	Leg	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.21	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	0.56	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.19	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	2.92	0.00	0.00	1.00	8.00			N/A	N/A
90%	North	0.19	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	0.51	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.18	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	2.38	0.00	0.00	0.00	4.00			N/A	N/A

Queue Variation results: (16:30-16:45)

Intersection	Leg	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.19	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	0.52	0.00	0.00	0.00	1.00			N/A	N/A
85%	South	0.18	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	2.58	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.17	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	0.47	0.00	0.00	0.00	1.00			N/A	N/A

90%	South	0.17	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	2.11	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (16:45-17:00)

Intersection	Leg	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.16	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	0.45	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.16	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	1.92	0.00	0.00	4.00	6.00			N/A	N/A
90%	North	0.14	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	0.41	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.15	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	1.62	0.00	0.00	3.00	5.00			N/A	N/A

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]
© Copyright TRL Limited, 2020

For sales and distribution information, program advice and maintenance, contact TRL:
Tel: +44 (0)1344 770758 email: software@trl.co.uk Web: http://www.trlsoftware.co.uk

The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: Conservation & Beaver Creek.arc8
Path: C:\Users\AdamMorrison\Paradigm\Projects - 170278 Beaver Creek Area TES\C5 - Analysis and Evaluation\Arcady
Report generation date: 2020-07-21 4:25:37 PM

Summary of intersection performance

	AM					
	Queue (PCE)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS
	All - Background 2025					
Intersection 85% - Leg North	0.00	0.00	0.00	A	4.19	A
Intersection 85% - Leg West	0.33	4.38	0.25	A		
Intersection 85% - Leg South	0.12	4.04	0.11	A		
Intersection 85% - Leg East	0.21	4.00	0.16	A		
Intersection 90% - Leg North	0.00	0.00	0.00	A	3.89	A
Intersection 90% - Leg West	0.31	4.06	0.23	A		
Intersection 90% - Leg South	0.11	3.75	0.10	A		
Intersection 90% - Leg East	0.19	3.73	0.16	A		

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Intersection LOS and Intersection Delay are demand-weighted averages.

"D1 - Existing, AM" model duration: 8:00 AM - 9:30 AM
"D2 - Existing, PM" model duration: 5:00 PM - 6:30 PM
"D3 - Background 2022, AM" model duration: 8:00 AM - 9:30 AM
"D4 - Background 2022, PM" model duration: 5:00 PM - 6:30 PM
"D5 - Total 2022, AM" model duration: 8:00 AM - 9:30 AM
"D6 - Total 2022, PM" model duration: 5:00 PM - 6:30 PM
"D7 - Background 2025, AM " model duration: 8:00 AM - 9:30 AM
"D8 - Background 2025, PM" model duration: 5:00 PM - 6:30 PM
"D9 - Total 2025, AM" model duration: 8:00 AM - 9:30 AM
"D10 - Total 2025, PM" model duration: 5:00 PM - 6:30 PM
"D11 - Background 2027, AM" model duration: 8:00 AM - 9:30 AM
"D12 - Background 2027, PM" model duration: 5:00 PM - 6:30 PM
"D13 - Total 2027, AM" model duration: 8:00 AM - 9:30 AM
"D14 - Total 2027, PM" model duration: 5:00 PM - 6:30 PM
"D15 - Background 2032, AM" model duration: 8:00 AM - 9:30 AM
"D16 - Background 2032, PM" model duration: 5:00 PM - 6:30 PM
"D17 - Total 2032, AM" model duration: 8:00 AM - 9:30 AM
"D18 - Total 2032, PM" model duration: 5:00 PM - 6:30 PM

Run using Junctions 8.0.6.541 at 2020-07-21 4:25:35 PM

File summary

Title	(untitled)
Location	
Site Number	
Date	2018-09-11
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	170278
Analyst	AdamMorrison
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)
7.50	✓		N/A	0.85	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	PCE	PCE	perHour	s	-Min	perMin

All - Background 2025, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
All	ARCADY		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
Background 2025, AM	Background 2025	AM		ONE HOUR	08:00	09:30	90	15				✓		

Intersection Network

Intersections

Junction	Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Do Geometric Delay	Intersection Delay (s)	Intersection LOS
85%	85%	Conservation Drive & Beaver Creek Road	Roundabout	North,West,South,East				4.19	A
90%	90%	Conservation Drive & Beaver Creek Road	Roundabout	North,West,South,East				3.89	A

Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

Legs

Legs

Intersection	Leg	Leg	Name	Description
85%	**North**	North	Beaver Creek Road	
85%	**West**	West	Conservation Drive	
85%	**South**	South	Beaver Creek Road	
85%	**East**	East	Conservation Drive	
90%	**North**	North	Beaver Creek Road	
90%	**West**	West	Conservation Drive	
90%	**South**	South	Beaver Creek Road	
90%	**East**	East	Conservation Drive	

Capacity Options

Intersection	Leg	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)	Assume Flat Start Profile	Initial Queue (PCE)
85%	**North**	0.00	99999.00		0.00
85%	**West**	0.00	99999.00		0.00
85%	**South**	0.00	99999.00		0.00

85%	East	0.00	99999.00		0.00
90%	North	0.00	99999.00		0.00
90%	West	0.00	99999.00		0.00
90%	South	0.00	99999.00		0.00
90%	East	0.00	99999.00		0.00

Roundabout Geometry

Intersection	Leg	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
85%	North	3.50	4.50	30.00	20.00	40.00	25.00	
85%	West	3.50	4.50	30.00	20.00	40.00	25.00	
85%	South	3.50	4.50	30.00	20.00	40.00	25.00	
85%	East	3.50	4.50	30.00	20.00	40.00	25.00	
90%	North	3.50	4.50	30.00	20.00	40.00	25.00	
90%	West	3.50	4.50	30.00	20.00	40.00	25.00	
90%	South	3.50	4.50	30.00	20.00	40.00	25.00	
90%	East	3.50	4.50	30.00	20.00	40.00	25.00	

Slope / Intercept / Capacity

Leg Intercept Adjustments

Intersection	Leg	Type	Reason	Direct Intercept Adjustment (PCE/hr)	Percentage Intercept Adjustment (%)
85%	North	Percentage	Region of Waterloo		85.00
85%	West	Percentage	Region of Waterloo		85.00
85%	South	Percentage	Region of Waterloo		85.00
85%	East	Percentage	Region of Waterloo		85.00
90%	North	Percentage	Region of Waterloo		90.00
90%	West	Percentage	Region of Waterloo		90.00
90%	South	Percentage	Region of Waterloo		90.00
90%	East	Percentage	Region of Waterloo		90.00

Roundabout Slope and Intercept used in model

Intersection	Leg	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
85%	North		(calculated)	(calculated)	0.579	1153.828
85%	West		(calculated)	(calculated)	0.579	1153.828
85%	South		(calculated)	(calculated)	0.579	1153.828
85%	East		(calculated)	(calculated)	0.579	1153.828
90%	North		(calculated)	(calculated)	0.579	1221.701
90%	West		(calculated)	(calculated)	0.579	1221.701
90%	South		(calculated)	(calculated)	0.579	1221.701
90%	East		(calculated)	(calculated)	0.579	1221.701

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCE Factor for a Truck (PCE)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Intersection	Leg	Profile Type	Use Turning Counts	Average Demand Flow (PCE/hr)	Flow Scaling Factor (%)
85%	North	ONE HOUR	✓	0.00	100.000
85%	West	ONE HOUR	✓	250.00	100.000
85%	South	ONE HOUR	✓	97.00	100.000

85%	East	ONE HOUR	✓	171.00	100.000
90%	North	ONE HOUR	✓	0.00	100.000
90%	West	ONE HOUR	✓	250.00	100.000
90%	South	ONE HOUR	✓	97.00	100.000
90%	East	ONE HOUR	✓	171.00	100.000

Turning Proportions

Turning Counts / Proportions (PCE/hr) - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.000	0.000	0.000	0.000
	West	0.000	0.000	18.000	232.000
	South	0.000	17.000	0.000	80.000
	East	0.000	117.000	54.000	0.000

Turning Proportions (PCE) - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.25	0.25	0.25	0.25
	West	0.00	0.00	0.07	0.93
	South	0.00	0.18	0.00	0.82
	East	0.00	0.68	0.32	0.00

Turning Counts / Proportions (PCE/hr) - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.000	0.000	0.000	0.000
	West	0.000	0.000	18.000	232.000
	South	0.000	17.000	0.000	80.000
	East	0.000	117.000	54.000	0.000

Turning Proportions (PCE) - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.25	0.25	0.25	0.25
	West	0.00	0.00	0.07	0.93
	South	0.00	0.18	0.00	0.82
	East	0.00	0.68	0.32	0.00

Vehicle Mix

Average PCE Per Vehicle - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	1.000	1.110	1.000	1.000
	West	1.000	1.000	1.000	1.030
	South	1.090	1.000	1.000	1.010
	East	1.040	1.060	1.060	1.000

Truck Percentages - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.0	11.0	0.0	0.0
	West	0.0	0.0	0.0	3.0
	South	9.0	0.0	0.0	1.0
	East	4.0	6.0	6.0	0.0

Average PCE Per Vehicle - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	1.000	1.110	1.000	1.000
	West	1.000	1.000	1.000	1.030
	South	1.090	1.000	1.000	1.010
	East	1.040	1.060	1.060	1.000

Truck Percentages - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.0	11.0	0.0	0.0
	West	0.0	0.0	0.0	3.0
	South	9.0	0.0	0.0	1.0
	East	4.0	6.0	6.0	0.0

Results

Results Summary for whole modelled period

Intersection	Leg	Max V/C Ratio	Max Delay (s)	Max Queue (PCE)	Max 95th percentile Queue (PCE)	Max LOS	Average Demand (PCE/hr)	Total Intersection Arrivals (PCE)	Total Queueing Delay (PCE-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCE-min/min)	Inclusive Total Queueing Delay (PCE-min)	Inclusive Average Queueing Delay (s)
85%	North	0.00	0.00	0.00	~1	A	0.00	0.00	0.00	0.00	0.00	0.00	0.00
85%	West	0.25	4.38	0.33	~1	A	229.40	344.11	23.75	4.14	0.26	23.75	4.14
85%	South	0.11	4.04	0.12	~1	A	89.01	133.51	8.59	3.86	0.10	8.59	3.86
85%	East	0.16	4.00	0.21	~1	A	156.91	235.37	15.14	3.86	0.17	15.14	3.86
90%	North	0.00	0.00	0.00	~1	A	0.00	0.00	0.00	0.00	0.00	0.00	0.00
90%	West	0.23	4.06	0.31	~1	A	229.40	344.11	22.07	3.85	0.25	22.07	3.85
90%	South	0.10	3.75	0.11	~1	A	89.01	133.51	8.01	3.60	0.09	8.01	3.60
90%	East	0.16	3.73	0.19	~1	A	156.91	235.37	14.17	3.61	0.16	14.17	3.61

Main Results for each time segment

Main results: (08:00-08:15)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	0.00	0.00	0.00	0.00	140.95	0.00	1072.25	502.21	0.000	0.00	0.00	0.000	A
85%	West	188.21	47.05	187.40	100.46	40.49	0.00	1130.40	749.47	0.167	0.00	0.20	3.920	A
85%	South	73.03	18.26	72.73	53.98	173.90	0.00	1053.18	605.97	0.069	0.00	0.07	3.702	A
85%	East	128.74	32.18	128.20	233.89	12.75	0.00	1146.45	1019.70	0.112	0.00	0.13	3.745	A
90%	North	0.00	0.00	0.00	0.00	140.99	0.00	1140.10	531.75	0.000	0.00	0.00	0.000	A
90%	West	188.21	47.05	187.45	100.49	40.50	0.00	1198.26	793.56	0.157	0.00	0.19	3.659	A
90%	South	73.03	18.26	72.75	53.99	173.95	0.00	1121.02	641.61	0.065	0.00	0.07	3.462	A
90%	East	128.74	32.18	128.24	233.95	12.75	0.00	1214.32	1079.68	0.106	0.00	0.13	3.511	A

Main results: (08:15-08:30)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	0.00	0.00	0.00	0.00	168.88	0.00	1056.09	502.21	0.000	0.00	0.00	0.000	A
85%	West	224.74	56.19	224.54	120.37	48.51	0.00	1125.75	749.47	0.200	0.20	0.25	4.104	A
85%	South	87.20	21.80	87.13	64.67	208.38	0.00	1033.23	605.97	0.084	0.07	0.09	3.835	A
85%	East	153.73	38.43	153.60	280.23	15.27	0.00	1144.99	1019.70	0.134	0.13	0.16	3.849	A
90%	North	0.00	0.00	0.00	0.00	168.88	0.00	1123.96	531.75	0.000	0.00	0.00	0.000	A
90%	West	224.74	56.19	224.56	120.38	48.51	0.00	1193.63	793.56	0.188	0.19	0.24	3.817	A
90%	South	87.20	21.80	87.14	64.68	208.39	0.00	1101.09	641.61	0.079	0.07	0.09	3.579	A
90%	East	153.73	38.43	153.61	280.25	15.27	0.00	1212.86	1079.68	0.127	0.13	0.15	3.602	A

Main results: (08:30-08:45)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	0.00	0.00	0.00	0.00	206.80	0.00	1034.14	502.21	0.000	0.00	0.00	0.000	A
85%	West	275.26	68.81	274.94	147.40	59.40	0.00	1119.45	749.47	0.246	0.25	0.33	4.380	A
85%	South	106.80	26.70	106.69	79.19	255.15	0.00	1006.16	605.97	0.106	0.09	0.12	4.035	A
85%	East	188.27	47.07	188.10	343.14	18.70	0.00	1143.01	1019.70	0.165	0.16	0.21	3.996	A
90%	North	0.00	0.00	0.00	0.00	206.81	0.00	1102.01	531.75	0.000	0.00	0.00	0.000	A
90%	West	275.26	68.81	274.97	147.41	59.40	0.00	1187.32	793.56	0.232	0.24	0.31	4.054	A
90%	South	106.80	26.70	106.70	79.20	255.17	0.00	1074.02	641.61	0.099	0.09	0.11	3.751	A
90%	East	188.27	47.07	188.11	343.17	18.70	0.00	1210.88	1079.68	0.155	0.15	0.19	3.730	A

Main results: (08:45-09:00)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	0.00	0.00	0.00	0.00	206.99	0.00	1034.03	502.21	0.000	0.00	0.00	0.000	A
85%	West	275.26	68.81	275.25	147.54	59.45	0.00	1119.42	749.47	0.246	0.33	0.33	4.382	A
85%	South	106.80	26.70	106.80	79.27	255.43	0.00	1005.99	605.97	0.106	0.12	0.12	4.036	A
85%	East	188.27	47.07	188.27	343.51	18.72	0.00	1143.00	1019.70	0.165	0.21	0.21	3.996	A
90%	North	0.00	0.00	0.00	0.00	206.99	0.00	1101.90	531.75	0.000	0.00	0.00	0.000	A
90%	West	275.26	68.81	275.25	147.54	59.45	0.00	1187.29	793.56	0.232	0.31	0.31	4.056	A
90%	South	106.80	26.70	106.80	79.27	255.43	0.00	1073.87	641.61	0.099	0.11	0.11	3.752	A
90%	East	188.27	47.07	188.27	343.51	18.72	0.00	1210.87	1079.68	0.155	0.19	0.19	3.730	A

Main results: (09:00-09:15)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	0.00	0.00	0.00	0.00	169.20	0.00	1055.90	502.21	0.000	0.00	0.00	0.000	A
85%	West	224.74	56.19	225.05	120.60	48.60	0.00	1125.70	749.47	0.200	0.33	0.26	4.109	A
85%	South	87.20	21.80	87.31	64.80	208.85	0.00	1032.96	605.97	0.084	0.12	0.09	3.840	A
85%	East	153.73	38.43	153.90	280.85	15.30	0.00	1144.97	1019.70	0.134	0.21	0.17	3.850	A
90%	North	0.00	0.00	0.00	0.00	169.19	0.00	1123.78	531.75	0.000	0.00	0.00	0.000	A
90%	West	224.74	56.19	225.02	120.59	48.60	0.00	1193.58	793.56	0.188	0.31	0.24	3.820	A
90%	South	87.20	21.80	87.30	64.80	208.82	0.00	1100.84	641.61	0.079	0.11	0.09	3.583	A
90%	East	153.73	38.43	153.89	280.82	15.30	0.00	1212.85	1079.68	0.127	0.19	0.15	3.606	A

Main results: (09:15-09:30)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	0.00	0.00	0.00	0.00	141.67	0.00	1071.84	502.21	0.000	0.00	0.00	0.000	A
85%	West	188.21	47.05	188.42	100.98	40.69	0.00	1130.28	749.47	0.167	0.26	0.21	3.930	A
85%	South	73.03	18.26	73.10	54.26	174.85	0.00	1052.63	605.97	0.069	0.09	0.08	3.707	A
85%	East	128.74	32.18	128.86	235.14	12.81	0.00	1146.41	1019.70	0.112	0.17	0.13	3.749	A
90%	North	0.00	0.00	0.00	0.00	141.66	0.00	1139.71	531.75	0.000	0.00	0.00	0.000	A
90%	West	188.21	47.05	188.40	100.97	40.69	0.00	1198.15	793.56	0.157	0.24	0.19	3.664	A
90%	South	73.03	18.26	73.09	54.25	174.84	0.00	1120.51	641.61	0.065	0.09	0.07	3.464	A
90%	East	128.74	32.18	128.85	235.12	12.81	0.00	1214.29	1079.68	0.106	0.15	0.13	3.515	A

Queueing Delay Results for each time segment

Queueing Delay results: (08:00-08:15)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	0.00	0.00	0.000	A	A
85%	West	3.00	0.20	3.920	A	A
85%	South	1.10	0.07	3.702	A	A
85%	East	1.96	0.13	3.745	A	A
90%	North	0.00	0.00	0.000	A	A
90%	West	2.80	0.19	3.659	A	A
90%	South	1.03	0.07	3.462	A	A
90%	East	1.84	0.12	3.511	A	A

Queueing Delay results: (08:15-08:30)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	0.00	0.00	0.000	A	A
85%	West	3.77	0.25	4.104	A	A
85%	South	1.37	0.09	3.835	A	A
85%	East	2.42	0.16	3.849	A	A
90%	North	0.00	0.00	0.000	A	A
90%	West	3.51	0.23	3.817	A	A
90%	South	1.28	0.09	3.579	A	A
90%	East	2.27	0.15	3.602	A	A

Queueing Delay results: (08:30-08:45)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	0.00	0.00	0.000	A	A
85%	West	4.91	0.33	4.380	A	A
85%	South	1.76	0.12	4.035	A	A
85%	East	3.07	0.20	3.996	A	A
90%	North	0.00	0.00	0.000	A	A
90%	West	4.55	0.30	4.054	A	A
90%	South	1.64	0.11	3.751	A	A
90%	East	2.87	0.19	3.730	A	A

Queueing Delay results: (08:45-09:00)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	0.00	0.00	0.000	A	A
85%	West	5.00	0.33	4.382	A	A
85%	South	1.79	0.12	4.036	A	A
85%	East	3.12	0.21	3.996	A	A
90%	North	0.00	0.00	0.000	A	A
90%	West	4.63	0.31	4.056	A	A
90%	South	1.66	0.11	3.752	A	A
90%	East	2.92	0.19	3.730	A	A

Queueing Delay results: (09:00-09:15)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	0.00	0.00	0.000	A	A
85%	West	3.93	0.26	4.109	A	A
85%	South	1.42	0.09	3.840	A	A
85%	East	2.51	0.17	3.850	A	A
90%	North	0.00	0.00	0.000	A	A
90%	West	3.65	0.24	3.820	A	A
90%	South	1.32	0.09	3.583	A	A
90%	East	2.35	0.16	3.606	A	A

Queueing Delay results: (09:15-09:30)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	0.00	0.00	0.000	A	A
85%	West	3.14	0.21	3.930	A	A
85%	South	1.15	0.08	3.707	A	A
85%	East	2.05	0.14	3.749	A	A
90%	North	0.00	0.00	0.000	A	A
90%	West	2.93	0.20	3.664	A	A
90%	South	1.07	0.07	3.464	A	A
90%	East	1.92	0.13	3.515	A	A

Queue Variation Results for each time segment

Queue Variation results: (08:00-08:15)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.00	~1	~1	~1	~1			N/A	N/A
85%	West	0.20	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.07	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	0.13	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.00	~1	~1	~1	~1			N/A	N/A
90%	West	0.19	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.07	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.13	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:15-08:30)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.00	~1	~1	~1	~1			N/A	N/A
85%	West	0.25	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.09	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	0.16	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.00	~1	~1	~1	~1			N/A	N/A
90%	West	0.24	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.09	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.15	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:30-08:45)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.00	~1	~1	~1	~1			N/A	N/A
85%	West	0.33	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.12	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	0.21	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.00	~1	~1	~1	~1			N/A	N/A
90%	West	0.31	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.11	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.19	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:45-09:00)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.00	~1	~1	~1	~1			N/A	N/A
85%	West	0.33	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.12	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

85%	East	0.21	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.00	~1	~1	~1	~1			N/A	N/A
90%	West	0.31	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.11	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.19	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (09:00-09:15)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.00	~1	~1	~1	~1			N/A	N/A
85%	West	0.26	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.09	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	0.17	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.00	~1	~1	~1	~1			N/A	N/A
90%	West	0.24	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.09	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.15	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (09:15-09:30)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.00	~1	~1	~1	~1			N/A	N/A
85%	West	0.21	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.08	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	0.13	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.00	~1	~1	~1	~1			N/A	N/A
90%	West	0.19	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.07	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.13	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]
© Copyright TRL Limited, 2020

For sales and distribution information, program advice and maintenance, contact TRL:
Tel: +44 (0)1344 770758 email: software@trl.co.uk Web: http://www.trlsoftware.co.uk

The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: Conservation & Beaver Creek.arc8
Path: C:\Users\AdamMorrison\Paradigm\Projects - 170278 Beaver Creek Area TES\C5 - Analysis and Evaluation\Arcady
Report generation date: 2020-07-21 4:26:09 PM

Summary of intersection performance

	PM					
	Queue (PCE)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS
	All - Background 2025					
Intersection 85% - Leg North	0.00	0.00	0.00	A	4.51	A
Intersection 85% - Leg West	0.22	4.11	0.18	A		
Intersection 85% - Leg South	0.10	3.76	0.09	A		
Intersection 85% - Leg East	0.54	4.88	0.35	A		
Intersection 90% - Leg North	0.00	0.00	0.00	A	4.16	A
Intersection 90% - Leg West	0.20	3.82	0.17	A		
Intersection 90% - Leg South	0.09	3.51	0.08	A		
Intersection 90% - Leg East	0.49	4.47	0.33	A		

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Intersection LOS and Intersection Delay are demand-weighted averages.

"D1 - Existing, AM" model duration: 8:00 AM - 9:30 AM
"D2 - Existing, PM" model duration: 5:00 PM - 6:30 PM
"D3 - Background 2022, AM" model duration: 8:00 AM - 9:30 AM
"D4 - Background 2022, PM" model duration: 5:00 PM - 6:30 PM
"D5 - Total 2022, AM" model duration: 8:00 AM - 9:30 AM
"D6 - Total 2022, PM" model duration: 5:00 PM - 6:30 PM
"D7 - Background 2025, AM" model duration: 8:00 AM - 9:30 AM
"D8 - Background 2025, PM " model duration: 5:00 PM - 6:30 PM
"D9 - Total 2025, AM" model duration: 8:00 AM - 9:30 AM
"D10 - Total 2025, PM" model duration: 5:00 PM - 6:30 PM
"D11 - Background 2027, AM" model duration: 8:00 AM - 9:30 AM
"D12 - Background 2027, PM" model duration: 5:00 PM - 6:30 PM
"D13 - Total 2027, AM" model duration: 8:00 AM - 9:30 AM
"D14 - Total 2027, PM" model duration: 5:00 PM - 6:30 PM
"D15 - Background 2032, AM" model duration: 8:00 AM - 9:30 AM
"D16 - Background 2032, PM" model duration: 5:00 PM - 6:30 PM
"D17 - Total 2032, AM" model duration: 8:00 AM - 9:30 AM
"D18 - Total 2032, PM" model duration: 5:00 PM - 6:30 PM

Run using Junctions 8.0.6.541 at 2020-07-21 4:26:06 PM

File summary

Title	(untitled)
Location	
Site Number	
Date	2018-09-11
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	170278
Analyst	AdamMorrison
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)

7.50	✓		N/A	0.85	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	PCE	PCE	perHour	s	-Min	perMin

All - Background 2025, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
All	ARCADY		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
Background 2025, PM	Background 2025	PM		ONE HOUR	17:00	18:30	90	15				✓		

Intersection Network

Intersections

Junction	Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Do Geometric Delay	Intersection Delay (s)	Intersection LOS
85%	85%	Conservation Drive & Beaver Creek Road	Roundabout	North,West,South,East				4.51	A
90%	90%	Conservation Drive & Beaver Creek Road	Roundabout	North,West,South,East				4.16	A

Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

Legs

Legs

Intersection	Leg	Leg	Name	Description
85%	**North**	North	Beaver Creek Road	
85%	**West**	West	Conservation Drive	
85%	**South**	South	Beaver Creek Road	
85%	**East**	East	Conservation Drive	
90%	**North**	North	Beaver Creek Road	
90%	**West**	West	Conservation Drive	
90%	**South**	South	Beaver Creek Road	
90%	**East**	East	Conservation Drive	

Capacity Options

Intersection	Leg	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)	Assume Flat Start Profile	Initial Queue (PCE)
85%	**North**	0.00	99999.00		0.00
85%	**West**	0.00	99999.00		0.00
85%	**South**	0.00	99999.00		0.00
85%	**East**	0.00	99999.00		0.00
90%	**North**	0.00	99999.00		0.00
90%	**West**	0.00	99999.00		0.00
90%	**South**	0.00	99999.00		0.00
90%	**East**	0.00	99999.00		0.00

Roundabout Geometry

Intersection	Leg	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
85%	**North**	3.50	4.50	30.00	20.00	40.00	25.00	
85%	**West**	3.50	4.50	30.00	20.00	40.00	25.00	
85%	**South**	3.50	4.50	30.00	20.00	40.00	25.00	
85%	**East**	3.50	4.50	30.00	20.00	40.00	25.00	
90%	**North**	3.50	4.50	30.00	20.00	40.00	25.00	
90%	**West**	3.50	4.50	30.00	20.00	40.00	25.00	
90%	**South**	3.50	4.50	30.00	20.00	40.00	25.00	
90%	**East**	3.50	4.50	30.00	20.00	40.00	25.00	

Slope / Intercept / Capacity

Leg Intercept Adjustments

Intersection	Leg	Type	Reason	Direct Intercept Adjustment (PCE/hr)	Percentage Intercept Adjustment (%)
85%	**North**	Percentage	Region of Waterloo		85.00
85%	**West**	Percentage	Region of Waterloo		85.00
85%	**South**	Percentage	Region of Waterloo		85.00
85%	**East**	Percentage	Region of Waterloo		85.00
90%	**North**	Percentage	Region of Waterloo		90.00
90%	**West**	Percentage	Region of Waterloo		90.00
90%	**South**	Percentage	Region of Waterloo		90.00
90%	**East**	Percentage	Region of Waterloo		90.00

Roundabout Slope and Intercept used in model

Intersection	Leg	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
85%	**North**		(calculated)	(calculated)	0.579	1153.828
85%	**West**		(calculated)	(calculated)	0.579	1153.828
85%	**South**		(calculated)	(calculated)	0.579	1153.828
85%	**East**		(calculated)	(calculated)	0.579	1153.828
90%	**North**		(calculated)	(calculated)	0.579	1221.701
90%	**West**		(calculated)	(calculated)	0.579	1221.701
90%	**South**		(calculated)	(calculated)	0.579	1221.701
90%	**East**		(calculated)	(calculated)	0.579	1221.701

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCE Factor for a Truck (PCE)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Intersection	Leg	Profile Type	Use Turning Counts	Average Demand Flow (PCE/hr)	Flow Scaling Factor (%)
85%	**North**	ONE HOUR	✓	0.00	100.000
85%	**West**	ONE HOUR	✓	174.00	100.000
85%	**South**	ONE HOUR	✓	84.00	100.000

85%	East	ONE HOUR	✓	362.00	100.000
90%	North	ONE HOUR	✓	0.00	100.000
90%	West	ONE HOUR	✓	174.00	100.000
90%	South	ONE HOUR	✓	84.00	100.000
90%	East	ONE HOUR	✓	362.00	100.000

Turning Proportions

Turning Counts / Proportions (PCE/hr) - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.000	0.000	0.000	0.000
	West	0.000	0.000	10.000	164.000
	South	0.000	20.000	0.000	64.000
	East	0.000	253.000	109.000	0.000

Turning Proportions (PCE) - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.25	0.25	0.25	0.25
	West	0.00	0.00	0.06	0.94
	South	0.00	0.24	0.00	0.76
	East	0.00	0.70	0.30	0.00

Turning Counts / Proportions (PCE/hr) - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.000	0.000	0.000	0.000
	West	0.000	0.000	10.000	164.000
	South	0.000	20.000	0.000	64.000
	East	0.000	253.000	109.000	0.000

Turning Proportions (PCE) - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.25	0.25	0.25	0.25
	West	0.00	0.00	0.06	0.94
	South	0.00	0.24	0.00	0.76
	East	0.00	0.70	0.30	0.00

Vehicle Mix

Average PCE Per Vehicle - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	1.000	1.000	1.030	1.000
	West	1.000	1.000	1.000	1.020
	South	1.000	1.000	1.000	1.000
	East	1.000	1.010	1.000	1.000

Truck Percentages - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.0	0.0	3.0	0.0
	West	0.0	0.0	0.0	2.0
	South	0.0	0.0	0.0	0.0
	East	0.0	1.0	0.0	0.0

Average PCE Per Vehicle - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	1.000	1.000	1.030	1.000
	West	1.000	1.000	1.000	1.020
	South	1.000	1.000	1.000	1.000
	East	1.000	1.010	1.000	1.000

Truck Percentages - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.0	0.0	3.0	0.0
	West	0.0	0.0	0.0	2.0
	South	0.0	0.0	0.0	0.0
	East	0.0	1.0	0.0	0.0

Results

Results Summary for whole modelled period

Intersection	Leg	Max V/C Ratio	Max Delay (s)	Max Queue (PCE)	Max 95th percentile Queue (PCE)	Max LOS	Average Demand (PCE/hr)	Total Intersection Arrivals (PCE)	Total Queueing Delay (PCE-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCE-min/min)	Inclusive Total Queueing Delay (PCE-min)	Inclusive Average Queueing Delay (s)
85%	North	0.00	0.00	0.00	~1	A	0.00	0.00	0.00	0.00	0.00	0.00	0.00
85%	West	0.18	4.11	0.22	~1	A	159.67	239.50	15.66	3.92	0.17	15.66	3.92
85%	South	0.09	3.76	0.10	~1	A	77.08	115.62	7.01	3.64	0.08	7.01	3.64
85%	East	0.35	4.88	0.54	1.01	A	332.18	498.27	37.37	4.50	0.42	37.38	4.50
90%	North	0.00	0.00	0.00	~1	A	0.00	0.00	0.00	0.00	0.00	0.00	0.00
90%	West	0.17	3.82	0.20	~1	A	159.67	239.50	14.60	3.66	0.16	14.60	3.66
90%	South	0.08	3.51	0.09	~1	A	77.08	115.62	6.56	3.40	0.07	6.56	3.40
90%	East	0.33	4.47	0.49	1.01	A	332.18	498.27	34.46	4.15	0.38	34.46	4.15

Main Results for each time segment

Main results: (17:00-17:15)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	0.00	0.00	0.00	0.00	286.28	0.00	988.14	492.86	0.000	0.00	0.00	0.000	A
85%	West	131.00	32.75	130.45	204.60	81.68	0.00	1106.55	765.50	0.118	0.00	0.14	3.755	A
85%	South	63.24	15.81	62.99	89.18	122.95	0.00	1082.67	593.63	0.058	0.00	0.06	3.530	A
85%	East	272.53	68.13	271.28	170.95	15.00	0.00	1145.15	1000.72	0.238	0.00	0.31	4.142	A
90%	North	0.00	0.00	0.00	0.00	286.37	0.00	1055.96	521.85	0.000	0.00	0.00	0.000	A
90%	West	131.00	32.75	130.49	204.66	81.71	0.00	1174.41	810.53	0.112	0.00	0.13	3.511	A
90%	South	63.24	15.81	63.01	89.21	122.99	0.00	1150.52	628.54	0.055	0.00	0.06	3.310	A
90%	East	272.53	68.13	271.37	170.99	15.00	0.00	1213.02	1059.58	0.225	0.00	0.29	3.845	A

Main results: (17:15-17:30)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	0.00	0.00	0.00	0.00	343.06	0.00	955.28	492.86	0.000	0.00	0.00	0.000	A
85%	West	156.42	39.11	156.29	245.17	97.89	0.00	1097.18	765.50	0.143	0.14	0.17	3.898	A
85%	South	75.51	18.88	75.46	106.87	147.31	0.00	1068.57	593.63	0.071	0.06	0.08	3.624	A
85%	East	325.43	81.36	325.09	204.80	17.97	0.00	1143.43	1000.72	0.285	0.31	0.40	4.427	A
90%	North	0.00	0.00	0.00	0.00	343.09	0.00	1023.14	521.85	0.000	0.00	0.00	0.000	A
90%	West	156.42	39.11	156.30	245.19	97.90	0.00	1165.04	810.53	0.134	0.13	0.16	3.635	A
90%	South	75.51	18.88	75.46	106.88	147.32	0.00	1136.44	628.54	0.066	0.06	0.07	3.392	A
90%	East	325.43	81.36	325.12	204.81	17.97	0.00	1211.30	1059.58	0.269	0.29	0.37	4.090	A

Main results: (17:30-17:45)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	0.00	0.00	0.00	0.00	420.02	0.00	910.74	492.85	0.000	0.00	0.00	0.000	A
85%	West	191.58	47.89	191.38	300.17	119.84	0.00	1084.47	765.50	0.177	0.17	0.22	4.105	A
85%	South	92.49	23.12	92.40	130.84	180.38	0.00	1049.43	593.63	0.088	0.08	0.10	3.761	A
85%	East	398.57	99.64	398.02	250.79	22.00	0.00	1141.10	1000.72	0.349	0.40	0.54	4.875	A
90%	North	0.00	0.00	0.00	0.00	420.08	0.00	978.58	521.85	0.000	0.00	0.00	0.000	A
90%	West	191.58	47.89	191.40	300.21	119.86	0.00	1152.33	810.53	0.166	0.16	0.20	3.816	A
90%	South	92.49	23.12	92.41	130.86	180.40	0.00	1117.29	628.54	0.083	0.07	0.09	3.511	A
90%	East	398.57	99.64	398.07	250.81	22.00	0.00	1208.97	1059.58	0.330	0.37	0.49	4.467	A

Main results: (17:45-18:00)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	0.00	0.00	0.00	0.00	420.58	0.00	910.41	492.85	0.000	0.00	0.00	0.000	A
85%	West	191.58	47.89	191.58	300.57	120.01	0.00	1084.37	765.50	0.177	0.22	0.22	4.107	A
85%	South	92.49	23.12	92.48	131.02	180.57	0.00	1049.32	593.63	0.088	0.10	0.10	3.761	A
85%	East	398.57	99.64	398.56	251.03	22.02	0.00	1141.08	1000.72	0.349	0.54	0.54	4.881	A
90%	North	0.00	0.00	0.00	0.00	420.58	0.00	978.28	521.85	0.000	0.00	0.00	0.000	A
90%	West	191.58	47.89	191.58	300.57	120.01	0.00	1152.24	810.53	0.166	0.20	0.20	3.816	A
90%	South	92.49	23.12	92.48	131.02	180.57	0.00	1117.20	628.54	0.083	0.09	0.09	3.512	A
90%	East	398.57	99.64	398.56	251.03	22.02	0.00	1208.96	1059.58	0.330	0.49	0.49	4.472	A

Main results: (18:00-18:15)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	0.00	0.00	0.00	0.00	343.97	0.00	954.75	492.86	0.000	0.00	0.00	0.000	A
85%	West	156.42	39.11	156.61	245.82	98.15	0.00	1097.02	765.50	0.143	0.22	0.17	3.900	A
85%	South	75.51	18.88	75.59	107.15	147.61	0.00	1068.40	593.63	0.071	0.10	0.08	3.625	A
85%	East	325.43	81.36	325.97	205.21	18.00	0.00	1143.41	1000.72	0.285	0.54	0.40	4.437	A
90%	North	0.00	0.00	0.00	0.00	343.91	0.00	1022.66	521.85	0.000	0.00	0.00	0.000	A
90%	West	156.42	39.11	156.60	245.78	98.13	0.00	1164.90	810.53	0.134	0.20	0.16	3.640	A
90%	South	75.51	18.88	75.59	107.13	147.60	0.00	1136.28	628.54	0.066	0.09	0.07	3.396	A
90%	East	325.43	81.36	325.92	205.19	18.00	0.00	1211.28	1059.58	0.269	0.49	0.37	4.096	A

Main results: (18:15-18:30)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	0.00	0.00	0.00	0.00	287.95	0.00	987.17	492.86	0.000	0.00	0.00	0.000	A
85%	West	131.00	32.75	131.13	205.79	82.17	0.00	1106.27	765.50	0.118	0.17	0.14	3.763	A
85%	South	63.24	15.81	63.30	89.70	123.59	0.00	1082.30	593.63	0.058	0.08	0.06	3.534	A
85%	East	272.53	68.13	272.88	171.82	15.07	0.00	1145.11	1000.72	0.238	0.40	0.32	4.157	A
90%	North	0.00	0.00	0.00	0.00	287.92	0.00	1055.07	521.85	0.000	0.00	0.00	0.000	A
90%	West	131.00	32.75	131.12	205.76	82.16	0.00	1174.15	810.53	0.112	0.16	0.13	3.518	A
90%	South	63.24	15.81	63.29	89.69	123.58	0.00	1150.18	628.54	0.055	0.07	0.06	3.311	A
90%	East	272.53	68.13	272.85	171.80	15.07	0.00	1212.98	1059.58	0.225	0.37	0.29	3.857	A

Queueing Delay Results for each time segment

Queueing Delay results: (17:00-17:15)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	0.00	0.00	0.000	A	A
85%	West	2.00	0.13	3.755	A	A
85%	South	0.91	0.06	3.530	A	A
85%	East	4.57	0.30	4.142	A	A
90%	North	0.00	0.00	0.000	A	A
90%	West	1.87	0.12	3.511	A	A
90%	South	0.85	0.06	3.310	A	A
90%	East	4.25	0.28	3.845	A	A

Queueing Delay results: (17:15-17:30)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	0.00	0.00	0.000	A	A
85%	West	2.49	0.17	3.898	A	A
85%	South	1.12	0.07	3.624	A	A
85%	East	5.86	0.39	4.427	A	A
90%	North	0.00	0.00	0.000	A	A
90%	West	2.33	0.16	3.635	A	A
90%	South	1.05	0.07	3.392	A	A
90%	East	5.43	0.36	4.090	A	A

Queueing Delay results: (17:30-17:45)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	0.00	0.00	0.000	A	A
85%	West	3.21	0.21	4.105	A	A
85%	South	1.42	0.09	3.761	A	A
85%	East	7.87	0.52	4.875	A	A
90%	North	0.00	0.00	0.000	A	A
90%	West	2.99	0.20	3.816	A	A
90%	South	1.33	0.09	3.511	A	A
90%	East	7.23	0.48	4.467	A	A

Queueing Delay results: (17:45-18:00)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	0.00	0.00	0.000	A	A
85%	West	3.27	0.22	4.107	A	A
85%	South	1.45	0.10	3.761	A	A
85%	East	8.06	0.54	4.881	A	A
90%	North	0.00	0.00	0.000	A	A
90%	West	3.04	0.20	3.816	A	A
90%	South	1.35	0.09	3.512	A	A
90%	East	7.39	0.49	4.472	A	A

Queueing Delay results: (18:00-18:15)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	0.00	0.00	0.000	A	A
85%	West	2.59	0.17	3.900	A	A
85%	South	1.16	0.08	3.625	A	A
85%	East	6.17	0.41	4.437	A	A
90%	North	0.00	0.00	0.000	A	A
90%	West	2.42	0.16	3.640	A	A
90%	South	1.09	0.07	3.396	A	A
90%	East	5.69	0.38	4.096	A	A

Queueing Delay results: (18:15-18:30)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	0.00	0.00	0.000	A	A
85%	West	2.09	0.14	3.763	A	A
85%	South	0.95	0.06	3.534	A	A
85%	East	4.83	0.32	4.157	A	A
90%	North	0.00	0.00	0.000	A	A
90%	West	1.95	0.13	3.518	A	A
90%	South	0.89	0.06	3.311	A	A
90%	East	4.47	0.30	3.857	A	A

Queue Variation Results for each time segment

Queue Variation results: (17:00-17:15)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.00	~1	~1	~1	~1			N/A	N/A

85%	West	0.14	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.06	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	0.31	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.00	~1	~1	~1	~1			N/A	N/A
90%	West	0.13	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.06	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.29	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (17:15-17:30)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.00	~1	~1	~1	~1			N/A	N/A
85%	West	0.17	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.08	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	0.40	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.00	~1	~1	~1	~1			N/A	N/A
90%	West	0.16	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.07	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.37	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (17:30-17:45)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.00	~1	~1	~1	~1			N/A	N/A
85%	West	0.22	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.10	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	0.54	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.00	~1	~1	~1	~1			N/A	N/A
90%	West	0.20	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.09	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.49	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (17:45-18:00)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.00	~1	~1	~1	~1			N/A	N/A
85%	West	0.22	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.10	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

85%	East	0.54	0.00	0.00	0.00	1.01			N/A	N/A
90%	North	0.00	~1	~1	~1	~1			N/A	N/A
90%	West	0.20	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.09	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.49	0.00	0.00	0.00	1.01			N/A	N/A

Queue Variation results: (18:00-18:15)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.00	~1	~1	~1	~1			N/A	N/A
85%	West	0.17	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.08	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	0.40	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.00	~1	~1	~1	~1			N/A	N/A
90%	West	0.16	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.07	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.37	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (18:15-18:30)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.00	~1	~1	~1	~1			N/A	N/A
85%	West	0.14	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.06	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	0.32	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.00	~1	~1	~1	~1			N/A	N/A
90%	West	0.13	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.06	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.29	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Appendix F

2025 Total Traffic Operations Reports

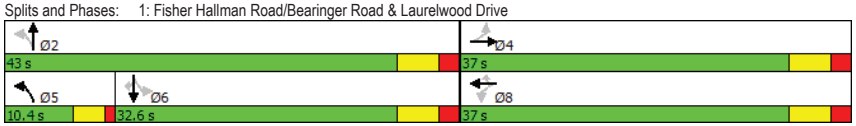


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	346	296	343	42	59	14	138	640	98	47	255	85
Future Volume (vph)	346	296	343	42	59	14	138	640	98	47	255	85
Ideal Flow (vphpl)	1775	1650	1650	1775	1900	1750	1775	1650	1650	1775	1900	1750
Storage Length (m)	85.0		0.0	90.0		90.0	90.0		0.0	60.0		60.0
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (m)	35.0			7.5			45.0			70.0		
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	0.98				0.98	1.00	1.00		1.00		0.98
Frt		0.919				0.850		0.980				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1653	1450	0	1188	1845	1488	1506	1564	0	1686	1881	1430
Flt Permitted	0.719			0.142			0.435			0.195		
Satd. Flow (perm)	1246	1450	0	178	1845	1451	688	1564	0	346	1881	1395
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		89				95		13				95
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		133.2			228.2			160.2			234.1	
Travel Time (s)		9.6			16.4			11.5			16.9	
Confl. Peds. (#/hr)	2		7	7		2	2		3	3		2
Peak Hour 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
Heavy Vehicles (%)	2%	1%	4%	42%	3%	0%	12%	1%	16%	0%	1%	4%
Adj. Flow (vph)	346	296	343	42	59	14	138	640	98	47	255	85
Shared Lane Traffic (%)												
Lane Group Flow (vph)	346	639	0	42	59	14	138	738	0	47	255	85
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA		Perm	NA	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8		8	2			6		6
Detector Phase	4	4		8	8	8	5	2		6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	24.0	24.0		30.0	30.0	30.0	9.5	24.0		24.0	24.0	24.0
Total Split (s)	37.0	37.0		37.0	37.0	37.0	10.4	43.0		32.6	32.6	32.6
Total Split (%)	46.3%	46.3%		46.3%	46.3%	46.3%	13.0%	53.8%		40.8%	40.8%	40.8%
Maximum Green (s)	31.0	31.0		31.0	31.0	31.0	6.4	37.0		26.6	26.6	26.6
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	3.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	1.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-2.0	0.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag							Lead			Lag	Lag	Lag
Lead-Lag Optimize?							Yes			Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None	None	None	Max		Max	Max	Max
Walk Time (s)	7.0	7.0		7.0	7.0	7.0		7.0		7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	11.0		11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0		0	0	0		0		0	0	0
Act Effct Green (s)	33.0	33.0		33.0	33.0	33.0	39.0	39.0		28.6	28.6	28.6
Actuated g/C Ratio	0.41	0.41		0.41	0.41	0.41	0.49	0.49		0.36	0.36	0.36
v/c Ratio	0.67	0.98		0.58	0.08	0.02	0.34	0.96		0.38	0.38	0.15

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	27.1	53.9		54.3	14.7	0.1	14.3	45.7		30.2	21.2	4.3
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	27.1	53.9		54.3	14.7	0.1	14.3	45.7		30.2	21.2	4.3
LOS	C	D		D	B	A	B	D		C	C	A
Approach Delay		44.5			27.4			40.7			18.6	
Approach LOS		D			C			D			B	
Queue Length 50th (m)	43.6	87.5		5.0	5.6	0.0	11.8	106.5		5.5	29.8	0.0
Queue Length 95th (m)	75.1	#161.5		#22.4	12.8	0.0	22.4	#186.0		16.5	49.4	7.8
Internal Link Dist (m)		109.2			204.2			136.2			210.1	
Turn Bay Length (m)	85.0			90.0		90.0	90.0			60.0		60.0
Base Capacity (vph)	513	650		73	761	654	400	769		123	672	559
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.67	0.98		0.58	0.08	0.02	0.34	0.96		0.38	0.38	0.15

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Natural Cycle: 65			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.98			
Intersection Signal Delay: 38.0		Intersection LOS: D	
Intersection Capacity Utilization 102.4%		ICU Level of Service G	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 1: Fisher Hallman Road/Bearinger Road & Laurelwood Drive



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	346	296	343	42	59	14	138	640	98	47	255	85
Future Volume (vph)	346	296	343	42	59	14	138	640	98	47	255	85
Ideal Flow (vphpl)	1775	1650	1650	1775	1900	1750	1775	1650	1650	1775	1900	1750
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.98		1.00	1.00	0.98	1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.92		1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1646	1451		1188	1845	1451	1504	1565		1684	1881	1395
Flt Permitted	0.72	1.00		0.14	1.00	1.00	0.43	1.00		0.20	1.00	1.00
Satd. Flow (perm)	1245	1451		178	1845	1451	688	1565		346	1881	1395
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	346	296	343	42	59	14	138	640	98	47	255	85
RTOR Reduction (vph)	0	52	0	0	0	8	0	7	0	0	0	55
Lane Group Flow (vph)	346	587	0	42	59	6	138	731	0	47	255	30
Confl. Peds. (#/hr)	2		7	7		2	2		3	3		2
Heavy Vehicles (%)	2%	1%	4%	42%	3%	0%	12%	1%	16%	0%	1%	4%
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA		Perm	NA	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8		8	2			6		6
Actuated Green, G (s)	31.0	31.0		31.0	31.0	31.0	37.0	37.0		26.6	26.6	26.6
Effective Green, g (s)	33.0	33.0		33.0	33.0	33.0	37.0	39.0		28.6	28.6	28.6
Actuated g/C Ratio	0.41	0.41		0.41	0.41	0.41	0.46	0.49		0.36	0.36	0.36
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0	4.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	513	598		73	761	598	383	762		123	672	498
v/s Ratio Prot		c0.40			0.03		0.03	c0.47			0.14	
v/s Ratio Perm	0.28			0.24		0.00	0.14			0.14		0.02
v/c Ratio	0.67	0.98		0.58	0.08	0.01	0.36	0.96		0.38	0.38	0.06
Uniform Delay, d1	19.1	23.2		18.1	14.3	13.9	13.2	19.7		19.1	19.1	16.9
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	3.5	31.9		10.5	0.0	0.0	0.6	24.1		8.8	1.6	0.2
Delay (s)	22.6	55.1		28.6	14.3	13.9	13.8	43.9		27.9	20.7	17.1
Level of Service	C	E		C	B	B	B	D		C	C	B
Approach Delay (s)		43.7			19.5			39.2			20.8	
Approach LOS		D			B			D			C	

Intersection Summary			
HCM 2000 Control Delay	37.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	102.4%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	164	38	776	48	31	12	245	176	23	11	312	37
Future Volume (vph)	164	38	776	48	31	12	245	176	23	11	312	37
Ideal Flow (vphpl)	1650	1650	1750	1550	1550	1550	1775	1650	1650	1550	1550	1550
Storage Length (m)	0.0		25.0	0.0		0.0	25.0		0.0	0.0		0.0
Storage Lanes	0		1	0		0	1		0	0		0
Taper Length (m)	0.0			0.0			35.0			0.0		
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			0.850		0.982			0.983			0.986	
Flt Protected		0.961			0.974		0.950				0.998	
Satd. Flow (prot)	0	1527	1473	0	1448	0	1606	1558	0	0	1481	0
Flt Permitted		0.961			0.974		0.950				0.998	
Satd. Flow (perm)	0	1527	1473	0	1448	0	1606	1558	0	0	1481	0
Link Speed (k/h)		60			50			50			50	
Link Distance (m)		1012.1			151.5			558.2			326.3	
Travel Time (s)		60.7			10.9			40.2			23.5	
Confl. Peds. (#/hr)	3		1	1		3	3		1	1		3
Peak Hour 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
Heavy Vehicles (%)	4%	3%	1%	0%	7%	0%	5%	4%	5%	20%	2%	6%
Adj. Flow (vph)	164	38	776	48	31	12	245	176	23	11	312	37
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	202	776	0	91	0	245	199	0	0	360	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	92.8%	ICU Level of Service	F
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	164	38	776	48	31	12	245	176	23	11	312	37
Future Volume (vph)	164	38	776	48	31	12	245	176	23	11	312	37
Peak Hour 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
Hourly flow rate (vph)	164	38	776	48	31	12	245	176	23	11	312	37

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1
Volume Total (vph)	202	776	91	245	199	360
Volume Left (vph)	164	0	48	245	0	11
Volume Right (vph)	0	776	12	0	23	37
Hadj (s)	0.47	-0.68	0.07	0.58	-0.01	-0.01
Departure Headway (s)	8.0	6.8	8.9	8.4	7.8	7.7
Degree Utilization, x	0.45	1.47	0.23	0.57	0.43	0.77
Capacity (veh/h)	445	532	363	414	452	455
Control Delay (s)	16.1	237.6	14.5	20.8	15.4	32.0
Approach Delay (s)	191.8		14.5	18.4		32.0
Approach LOS	F		B	C		D

Intersection Summary				
Delay	111.4			
Level of Service	F			
Intersection Capacity Utilization	92.8%	ICU Level of Service	F	
Analysis Period (min)	15			

Intersection	
Intersection Delay, s/veh	117.3
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	164	38	776	48	31	12	245	176	23	11	312	37
Future Vol, veh/h	164	38	776	48	31	12	245	176	23	11	312	37
Peak Hour 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
Heavy Vehicles, %	4	3	1	0	7	0	5	4	5	20	2	6
Mvmt Flow	164	38	776	48	31	12	245	176	23	11	312	37
Number of Lanes	0	1	1	0	1	0	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	2
HCM Control Delay	198.9	15.8	21.3	39.8
HCM LOS	F	C	C	E

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	100%	0%	81%	0%	53%	3%
Vol Thru, %	0%	88%	19%	0%	34%	87%
Vol Right, %	0%	12%	0%	100%	13%	10%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	245	199	202	776	91	360
LT Vol	245	0	164	0	48	11
Through Vol	0	176	38	0	31	312
RT Vol	0	23	0	776	12	37
Lane Flow Rate	245	199	202	776	91	360
Geometry Grp	7	7	7	7	6	6
Degree of Util (X)	0.575	0.434	0.451	1.482	0.228	0.805
Departure Headway (Hd)	9.373	8.752	8.031	6.877	9.891	8.894
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	387	414	446	528	365	410
Service Time	7.073	6.452	5.811	4.656	7.891	6.894
HCM Lane V/C Ratio	0.633	0.481	0.453	1.47	0.249	0.878
HCM Control Delay	24	18	17.3	246.2	15.8	39.8
HCM Lane LOS	C	C	C	F	C	E
HCM 95th-tile Q	3.5	2.1	2.3	38.6	0.9	7.2

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	175	92	149	63	31	359
Future Volume (vph)	175	92	149	63	31	359
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.953				0.876	
Flt Protected				0.966	0.996	
Satd. Flow (prot)	1511	0	0	1549	1496	0
Flt Permitted				0.966	0.996	
Satd. Flow (perm)	1511	0	0	1549	1496	0
Link Speed (k/h)	80			80	50	
Link Distance (m)	1516.2			424.2	223.3	
Travel Time (s)	68.2			19.1	16.1	
Confl. Peds. (#/hr)		1	1			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	6%	2%	5%	14%	2%
Adj. Flow (vph)	175	92	149	63	31	359
Shared Lane Traffic (%)						
Lane Group Flow (vph)	267	0	0	212	390	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 66.2%		ICU Level of Service C	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	175	92	149	63	31	359
Future Volume (Veh/h)	175	92	149	63	31	359
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	175	92	149	63	31	359
Pedestrians					1	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			268		583	222
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			268		583	222
tC, single (s)			4.1		6.5	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			88		92	56
cM capacity (veh/h)			1295		402	817

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	267	212	390
Volume Left	0	149	31
Volume Right	92	0	359
cSH	1700	1295	755
Volume to Capacity	0.16	0.12	0.52
Queue Length 95th (m)	0.0	3.1	24.1
Control Delay (s)	0.0	6.0	14.7
Lane LOS		A	B
Approach Delay (s)	0.0	6.0	14.7
Approach LOS			B

Intersection Summary			
Average Delay	8.1		
Intersection Capacity Utilization	66.2%	ICU Level of Service	C
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	14	77	105	46	182	69
Future Volume (vph)	14	77	105	46	182	69
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.886		0.959			
Flt Protected	0.992					0.965
Satd. Flow (prot)	1393	0	1470	0	0	1526
Flt Permitted	0.992					0.965
Satd. Flow (perm)	1393	0	1470	0	0	1526
Link Speed (k/h)	80		80			80
Link Distance (m)	1200.3		1761.7			72.7
Travel Time (s)	54.0		79.3			3.3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	8%	12%	11%	0%	3%	8%
Adj. Flow (vph)	14	77	105	46	182	69
Shared Lane Traffic (%)						
Lane Group Flow (vph)	91	0	151	0	0	251
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	41.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	14	77	105	46	182	69
Future Volume (Veh/h)	14	77	105	46	182	69
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	14	77	105	46	182	69
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	561	128			151	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	561	128			151	
tC, single (s)	6.5	6.3			4.1	
tC, 2 stage (s)						
tF (s)	3.6	3.4			2.2	
p0 queue free %	97	91			87	
cM capacity (veh/h)	418	896			1424	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	91	151	251
Volume Left	14	0	182
Volume Right	77	46	0
cSH	762	1700	1424
Volume to Capacity	0.12	0.09	0.13
Queue Length 95th (m)	3.2	0.0	3.5
Control Delay (s)	10.4	0.0	6.0
Lane LOS	B		A
Approach Delay (s)	10.4	0.0	6.0
Approach LOS	B		

Intersection Summary			
Average Delay	5.0		
Intersection Capacity Utilization	41.3%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	24	78	77	75	55	31
Future Volume (vph)	24	78	77	75	55	31
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.897		0.933			
Flt Protected	0.988					0.969
Satd. Flow (prot)	1437	0	1495	0	0	1500
Flt Permitted	0.988					0.969
Satd. Flow (perm)	1437	0	1495	0	0	1500
Link Speed (k/h)	80		80			80
Link Distance (m)	605.5		233.8			1761.7
Travel Time (s)	27.2		10.5			79.3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	5%	10%	3%	3%	8%	4%
Adj. Flow (vph)	24	78	77	75	55	31
Shared Lane Traffic (%)						
Lane Group Flow (vph)	102	0	152	0	0	86
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 31.9%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	24	78	77	75	55	31
Future Volume (Veh/h)	24	78	77	75	55	31
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	24	78	77	75	55	31
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	256	114			152	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	256	114			152	
tC, single (s)	6.4	6.3			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.4			2.3	
p0 queue free %	97	91			96	
cM capacity (veh/h)	698	917			1393	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	102	152	86
Volume Left	24	0	55
Volume Right	78	75	0
cSH	854	1700	1393
Volume to Capacity	0.12	0.09	0.04
Queue Length 95th (m)	3.2	0.0	1.0
Control Delay (s)	9.8	0.0	5.0
Lane LOS	A		A
Approach Delay (s)	9.8	0.0	5.0
Approach LOS	A		

Intersection Summary			
Average Delay	4.2		
Intersection Capacity Utilization	31.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	46	4	111	32	26	0	156	144	61	118	0
Future Volume (vph)	7	46	4	111	32	26	0	156	144	61	118	0
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.991			0.979			0.935				
Flt Protected		0.994			0.968						0.983	
Satd. Flow (prot)	0	1503	0	0	1405	0	0	1379	0	0	1429	0
Flt Permitted		0.994			0.968						0.983	
Satd. Flow (perm)	0	1503	0	0	1405	0	0	1379	0	0	1429	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		187.7			400.3			488.0			394.6	
Travel Time (s)		13.5			28.8			35.1			28.4	
Peak Hour 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
Heavy Vehicles (%)	0%	2%	0%	6%	0%	4%	0%	7%	3%	4%	8%	0%
Adj. Flow (vph)	7	46	4	111	32	26	0	156	144	61	118	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	57	0	0	169	0	0	300	0	0	179	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 60.8%		ICU Level of Service B	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	46	4	111	32	26	0	156	144	61	118	0
Future Volume (Veh/h)	7	46	4	111	32	26	0	156	144	61	118	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	7	46	4	111	32	26	0	156	144	61	118	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	510	540	118	495	468	228	118			300		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	510	540	118	495	468	228	118			300		
tC, single (s)	7.1	6.5	6.2	7.2	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.0	3.3	2.2			2.2		
p0 queue free %	98	89	100	74	93	97	100			95		
cM capacity (veh/h)	422	427	939	421	472	806	1483			1250		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	57	169	300	179
Volume Left	7	111	0	61
Volume Right	4	26	144	0
cSH	443	465	1483	1250
Volume to Capacity	0.13	0.36	0.00	0.05
Queue Length 95th (m)	3.5	13.1	0.0	1.2
Control Delay (s)	14.3	17.1	0.0	3.0
Lane LOS	B	C		A
Approach Delay (s)	14.3	17.1	0.0	3.0
Approach LOS	B	C		

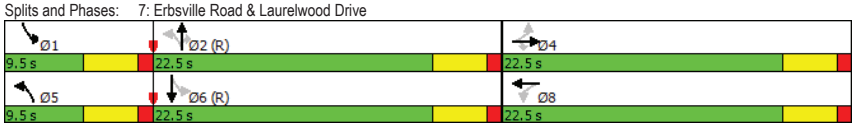
Intersection Summary				
Average Delay		6.0		
Intersection Capacity Utilization		60.8%	ICU Level of Service	B
Analysis Period (min)		15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	231	198	64	107	47	173	263	119	129	269	20
Future Volume (vph)	19	231	198	64	107	47	173	263	119	129	269	20
Ideal Flow (vphpl)	1775	1900	1750	1775	1650	1650	1775	1900	1750	1775	1650	1650
Storage Length (m)	20.0		20.0	25.0		0.0	65.0		30.0	25.0		0.0
Storage Lanes	1		1	1		0	1		1	1		0
Taper Length (m)	35.0			10.0			80.0			35.0		
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	0.90		0.95	0.98	0.96		0.99		0.94	0.97	1.00	
Frt			0.850		0.954				0.850		0.990	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1591	1810	1403	1561	1391	0	1606	1776	1430	1653	1527	0
Flt Permitted	0.659			0.585			0.503			0.539		
Satd. Flow (perm)	997	1810	1327	938	1391	0	843	1776	1344	913	1527	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			198		43				120		7	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		123.5			178.3			236.9			930.8	
Travel Time (s)		8.9			12.8			17.1			67.0	
Confl. Peds. (#/hr)	79		23	23		79	9		27	27		9
Peak Hour 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
Heavy Vehicles (%)	6%	5%	6%	8%	9%	7%	5%	7%	4%	2%	6%	17%
Adj. Flow (vph)	19	231	198	64	107	47	173	263	119	129	269	20
Shared Lane Traffic (%)												
Lane Group Flow (vph)	19	231	198	64	154	0	173	263	119	129	289	0
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2		2	6		
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5		9.5	22.5	22.5	9.5	22.5	
Total Split (s)	22.5	22.5	22.5	22.5	22.5		9.5	22.5	22.5	9.5	22.5	
Total Split (%)	41.3%	41.3%	41.3%	41.3%	41.3%		17.4%	41.3%	41.3%	17.4%	41.3%	
Maximum Green (s)	18.0	18.0	18.0	18.0	18.0		5.0	18.0	18.0	5.0	18.0	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	
Walk Time (s)	7.0	7.0	7.0	7.0	7.0			7.0	7.0		7.0	
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0			11.0	11.0		11.0	
Pedestrian Calls (#/hr)	0	0	0	0	0			0	0		0	
Act Effct Green (s)	18.0	18.0	18.0	18.0	18.0		23.0	18.0	18.0	23.0	18.0	
Actuated g/C Ratio	0.33	0.33	0.33	0.33	0.33		0.42	0.33	0.33	0.42	0.33	
v/c Ratio	0.06	0.39	0.35	0.21	0.32		0.41	0.45	0.23	0.28	0.57	
Control Delay	13.2	16.4	4.5	15.3	12.2		11.2	17.4	4.5	9.3	19.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	13.2	16.4	4.5	15.3	12.2		11.2	17.4	4.5	9.3	19.9	
LOS	B	B	A	B	B		B	B	A	A	B	
Approach Delay		11.0			13.1			12.7			16.7	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		B			B			B			B	
Queue Length 50th (m)	1.3	17.9	0.0	4.7	8.2		9.1	21.0	0.0	6.5	23.5	
Queue Length 95th (m)	5.1	33.8	11.4	12.5	20.3		18.3	38.7	8.9	13.9	44.4	
Internal Link Dist (m)		99.5			154.3			212.9			906.8	
Turn Bay Length (m)	20.0		20.0	25.0			65.0		30.0	25.0		
Base Capacity (vph)	329	597	570	309	488		425	586	524	453	509	
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Reduced v/c Ratio	0.06	0.39	0.35	0.21	0.32		0.41	0.45	0.23	0.28	0.57	

Intersection Summary		
Area Type:	Other	
Cycle Length: 54.5		
Actuated Cycle Length: 54.5		
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green		
Natural Cycle: 55		
Control Type: Pretimed		
Maximum v/c Ratio: 0.57		
Intersection Signal Delay: 13.3		Intersection LOS: B
Intersection Capacity Utilization 62.2%		ICU Level of Service B
Analysis Period (min) 15		

Splits and Phases: 7: Erbsville Road & Laurelwood Drive



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	231	198	64	107	47	173	263	119	129	269	20
Future Volume (vph)	19	231	198	64	107	47	173	263	119	129	269	20
Ideal Flow (vphpl)	1775	1900	1750	1775	1650	1650	1775	1900	1750	1775	1650	1650
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.95	1.00	0.96		1.00	1.00	0.94	1.00	1.00	
Flpb, ped/bikes	0.90	1.00	1.00	0.98	1.00		1.00	1.00	1.00	0.99	1.00	
Frt	1.00	1.00	0.85	1.00	0.95		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1437	1810	1327	1523	1392		1599	1776	1344	1630	1526	
Flt Permitted	0.66	1.00	1.00	0.58	1.00		0.50	1.00	1.00	0.54	1.00	
Satd. Flow (perm)	997	1810	1327	937	1392		846	1776	1344	925	1526	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	19	231	198	64	107	47	173	263	119	129	269	20
RTOR Reduction (vph)	0	0	133	0	29	0	0	0	80	0	5	0
Lane Group Flow (vph)	19	231	65	64	125	0	173	263	39	129	284	0
Confl. Peds. (#/hr)	79		23	23		79	9		27	27		9
Heavy Vehicles (%)	6%	5%	6%	8%	9%	7%	5%	7%	4%	2%	6%	17%
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2		2	6		
Actuated Green, G (s)	18.0	18.0	18.0	18.0	18.0		23.0	18.0	18.0	23.0	18.0	
Effective Green, g (s)	18.0	18.0	18.0	18.0	18.0		23.0	18.0	18.0	23.0	18.0	
Actuated g/C Ratio	0.33	0.33	0.33	0.33	0.33		0.42	0.33	0.33	0.42	0.33	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Lane Grp Cap (vph)	329	597	438	309	459		426	586	443	455	504	
v/s Ratio Prot		c0.13			0.09		c0.04	0.15		0.03	c0.19	
v/s Ratio Perm	0.02		0.05	0.07			0.13		0.03	0.09		
v/c Ratio	0.06	0.39	0.15	0.21	0.27		0.41	0.45	0.09	0.28	0.56	
Uniform Delay, d1	12.5	14.0	12.9	13.1	13.4		10.3	14.3	12.6	9.9	15.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.3	1.9	0.7	1.5	1.5		2.9	2.5	0.4	1.6	4.5	
Delay (s)	12.8	15.9	13.6	14.6	14.9		13.1	16.8	13.0	11.5	19.5	
Level of Service	B	B	B	B	B		B	B	B	B	B	
Approach Delay (s)		14.7			14.8			14.9			17.1	
Approach LOS		B			B			B			B	

Intersection Summary				
HCM 2000 Control Delay	15.4	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.47			
Actuated Cycle Length (s)	54.5	Sum of lost time (s)	13.5	
Intersection Capacity Utilization	62.2%	ICU Level of Service	B	
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	33	559	87	37	178	108	57	38	199	198	20	16
Future Volume (vph)	33	559	87	37	178	108	57	38	199	198	20	16
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
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		0.983			0.955			0.909			0.991	
Flt Protected		0.998			0.994			0.990			0.959	
Satd. Flow (prot)	0	1484	0	0	1397	0	0	1370	0	0	1462	0
Flt Permitted		0.998			0.994			0.990			0.959	
Satd. Flow (perm)	0	1484	0	0	1397	0	0	1370	0	0	1462	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		213.7			555.1			104.8			136.8	
Travel Time (s)		15.4			40.0			7.5			9.8	
Confl. Peds. (#/hr)	10		4	4		10	7		10	10		7
Peak Hour 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
Heavy Vehicles (%)	0%	3%	0%	6%	6%	4%	0%	9%	1%	0%	0%	11%
Adj. Flow (vph)	33	559	87	37	178	108	57	38	199	198	20	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	679	0	0	323	0	0	294	0	0	234	0
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Roundabout			
Intersection Capacity Utilization	98.5%	ICU Level of Service	F
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Traffic Volume (veh/h)	33	559	87	37	178	108	57	38	199	198	20	16
Future Volume (veh/h)	33	559	87	37	178	108	57	38	199	198	20	16
Peak Hour 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
Hourly flow rate (vph)	33	559	87	37	178	108	57	38	199	198	20	16
Approach Volume (veh/h)		679			323			294			234	
Crossing Volume (veh/h)		255			128			790			272	
High Capacity (veh/h)		1134			1253			739			1119	
High v/c (veh/h)		0.60			0.26			0.40			0.21	
Low Capacity (veh/h)		934			1041			583			920	
Low v/c (veh/h)		0.73			0.31			0.50			0.25	

Intersection Summary					
Maximum v/c High		0.60			
Maximum v/c Low		0.73			
Intersection Capacity Utilization		98.5%	ICU Level of Service		F



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	203	21	21	73	18	78
Future Volume (vph)	203	21	21	73	18	78
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.987				0.890	
Flt Protected				0.989	0.991	
Satd. Flow (prot)	1585	0	0	1478	1503	0
Flt Permitted				0.989	0.991	
Satd. Flow (perm)	1585	0	0	1478	1503	0
Link Speed (k/h)	80			80	50	
Link Distance (m)	1200.3			667.7	811.2	
Travel Time (s)	54.0			30.0	58.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	0%	5%	12%	6%	3%
Adj. Flow (vph)	203	21	21	73	18	78
Shared Lane Traffic (%)						
Lane Group Flow (vph)	224	0	0	94	96	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	35.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	203	21	21	73	18	78
Future Volume (Veh/h)	203	21	21	73	18	78
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	203	21	21	73	18	78
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			224		328	214
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			224		328	214
tC, single (s)			4.1		6.5	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			98		97	91
cM capacity (veh/h)			1327		647	824

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	224	94	96
Volume Left	0	21	18
Volume Right	21	0	78
cSH	1700	1327	784
Volume to Capacity	0.13	0.02	0.12
Queue Length 95th (m)	0.0	0.4	3.3
Control Delay (s)	0.0	1.8	10.2
Lane LOS		A	B
Approach Delay (s)	0.0	1.8	10.2
Approach LOS			B

Intersection Summary			
Average Delay		2.8	
Intersection Capacity Utilization		35.8%	ICU Level of Service A
Analysis Period (min)		15	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	26	0	0	0	98	60	6	125	0
Future Volume (vph)	0	0	0	26	0	0	0	98	60	6	125	0
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt								0.949				
Flt Protected					0.950						0.998	
Satd. Flow (prot)	0	1550	0	0	1416	0	0	1444	0	0	1464	0
Flt Permitted					0.950						0.998	
Satd. Flow (perm)	0	1550	0	0	1416	0	0	1444	0	0	1464	0
Link Speed (k/h)		50			70			50			50	
Link Distance (m)		114.7			143.4			394.6			123.0	
Travel Time (s)		8.3			7.4			28.4			8.9	
Peak Hour 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
Heavy Vehicles (%)	0%	0%	0%	4%	0%	0%	0%	3%	0%	40%	4%	0%
Adj. Flow (vph)	0	0	0	26	0	0	0	98	60	6	125	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	26	0	0	158	0	0	131	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 24.0%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	26	0	0	0	98	60	6	125	0
Future Volume (Veh/h)	0	0	0	26	0	0	0	98	60	6	125	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	0	0	0	26	0	0	0	98	60	6	125	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	265	295	125	265	265	128	125			158		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	265	295	125	265	265	128	125			158		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.5		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.6		
p0 queue free %	100	100	100	96	100	100	100			100		
cM capacity (veh/h)	689	617	931	681	641	927	1474			1220		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	0	26	158	131
Volume Left	0	26	0	6
Volume Right	0	0	60	0
cSH	1700	681	1474	1220
Volume to Capacity	0.00	0.04	0.00	0.00
Queue Length 95th (m)	0.0	1.0	0.0	0.1
Control Delay (s)	0.0	10.5	0.0	0.4
Lane LOS	A	B		A
Approach Delay (s)	0.0	10.5	0.0	0.4
Approach LOS	A	B		

Intersection Summary				
Average Delay			1.0	
Intersection Capacity Utilization			24.0%	ICU Level of Service
Analysis Period (min)			15	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	68	487	100	112	239	18	63	27	146	60	44	65
Future Volume (vph)	68	487	100	112	239	18	63	27	146	60	44	65
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.979			0.993			0.916			0.948	
Flt Protected		0.995			0.985			0.987			0.983	
Satd. Flow (prot)	0	1477	0	0	1470	0	0	1343	0	0	1444	0
Flt Permitted		0.995			0.985			0.987			0.983	
Satd. Flow (perm)	0	1477	0	0	1470	0	0	1343	0	0	1444	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		166.4			228.8			212.1			132.6	
Travel Time (s)		12.0			16.5			15.3			9.5	
Peak Hour 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
Heavy Vehicles (%)	0%	3%	0%	4%	3%	0%	7%	0%	4%	0%	0%	0%
Adj. Flow (vph)	68	487	100	112	239	18	63	27	146	60	44	65
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	655	0	0	369	0	0	236	0	0	169	0
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Roundabout			
Intersection Capacity Utilization 79.9%		ICU Level of Service D	
Analysis Period (min) 15			



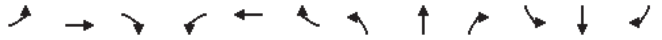
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Traffic Volume (veh/h)	68	487	100	112	239	18	63	27	146	60	44	65
Future Volume (veh/h)	68	487	100	112	239	18	63	27	146	60	44	65
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	68	487	100	112	239	18	63	27	146	60	44	65
Approach Volume (veh/h)		655			369			236			169	
Crossing Volume (veh/h)		216			158			615			414	
High Capacity (veh/h)		1169			1224			851			1000	
High v/c (veh/h)		0.56			0.30			0.28			0.17	
Low Capacity (veh/h)		966			1015			682			813	
Low v/c (veh/h)		0.68			0.36			0.35			0.21	

Intersection Summary					
Maximum v/c High		0.56			
Maximum v/c Low		0.68			
Intersection Capacity Utilization		79.9%	ICU Level of Service		D



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	730	0	0	323	14	0	0	0	72	0	32
Future Volume (vph)	12	730	0	0	323	14	0	0	0	72	0	32
Ideal Flow (vphpl)	1650	1650	1900	1900	1650	1650	1900	1900	1900	1765	1900	1765
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					0.994						0.958	
Flt Protected		0.999									0.967	
Satd. Flow (prot)	0	1586	0	0	1604	0	0	1863	0	0	1760	0
Flt Permitted		0.999									0.967	
Satd. Flow (perm)	0	1586	0	0	1604	0	0	1863	0	0	1760	0
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		96.4			374.2			170.4			178.3	
Travel Time (s)		5.8			22.5			12.3			12.8	
Confl. Peds. (#/hr)	10					10						
Peak Hour 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
Heavy Vehicles (%)	0%	4%	2%	2%	2%	8%	2%	2%	2%	0%	2%	0%
Adj. Flow (vph)	12	730	0	0	323	14	0	0	0	72	0	32
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	742	0	0	337	0	0	0	0	0	104	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary				
Area Type:	Other			
Control Type: Unsignalized				
Intersection Capacity Utilization 67.9%			ICU Level of Service C	
Analysis Period (min) 15				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	730	0	0	323	14	0	0	0	72	0	32
Future Volume (Veh/h)	12	730	0	0	323	14	0	0	0	72	0	32
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	12	730	0	0	323	14	0	0	0	72	0	32
Pedestrians											10	
Lane Width (m)											3.6	
Walking Speed (m/s)											1.2	
Percent Blockage											1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	347			730			1116	1101	730	1094	1094	340
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	347			730			1116	1101	730	1094	1094	340
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			100	100	100	62	100	95
cM capacity (veh/h)	1213			874			174	208	422	189	210	701

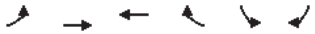
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	742	337	0	104
Volume Left	12	0	0	72
Volume Right	0	14	0	32
cSH	1213	874	1700	244
Volume to Capacity	0.01	0.00	0.00	0.43
Queue Length 95th (m)	0.2	0.0	0.0	16.0
Control Delay (s)	0.3	0.0	0.0	30.3
Lane LOS	A		A	D
Approach Delay (s)	0.3	0.0	0.0	30.3
Approach LOS			A	D

Intersection Summary				
Average Delay			2.8	
Intersection Capacity Utilization			67.9%	ICU Level of Service
Analysis Period (min)			15	



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	16	788	308	27	65	30
Future Volume (vph)	16	788	308	27	65	30
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.989		0.957	
Flt Protected		0.999			0.967	
Satd. Flow (prot)	0	1601	1572	0	1611	0
Flt Permitted		0.999			0.967	
Satd. Flow (perm)	0	1601	1572	0	1611	0
Link Speed (k/h)		60	60		50	
Link Distance (m)		374.2	1012.1		87.7	
Travel Time (s)		22.5	60.7		6.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	3%	3%	13%	2%	0%
Adj. Flow (vph)	16	788	308	27	65	30
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	804	335	0	95	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 75.0%			ICU Level of Service D
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	16	788	308	27	65	30
Future Volume (Veh/h)	16	788	308	27	65	30
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	16	788	308	27	65	30
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	335				1142	322
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	335				1142	322
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				70	96
cM capacity (veh/h)	1236				219	724

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	804	335	95
Volume Left	16	0	65
Volume Right	0	27	30
cSH	1236	1700	281
Volume to Capacity	0.01	0.20	0.34
Queue Length 95th (m)	0.3	0.0	11.6
Control Delay (s)	0.3	0.0	24.2
Lane LOS	A		C
Approach Delay (s)	0.3	0.0	24.2
Approach LOS			C

Intersection Summary			
Average Delay		2.1	
Intersection Capacity Utilization		75.0%	ICU Level of Service D
Analysis Period (min)		15	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	95	6	91	31	2	8	28	366	4	6	245	24
Future Volume (vph)	95	6	91	31	2	8	28	366	4	6	245	24
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
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		0.936			0.974			0.999			0.988	
Flt Protected		0.976			0.964			0.996			0.999	
Satd. Flow (prot)	0	1396	0	0	1455	0	0	1509	0	0	1476	0
Flt Permitted		0.976			0.964			0.996			0.999	
Satd. Flow (perm)	0	1396	0	0	1455	0	0	1509	0	0	1476	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		77.1			66.0			326.3			223.3	
Travel Time (s)		5.6			4.8			23.5			16.1	
Confl. Peds. (#/hr)	7		1	1		7			5	5		
Peak Hour 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
Heavy Vehicles (%)	0%	0%	3%	0%	0%	0%	5%	2%	0%	0%	3%	11%
Adj. Flow (vph)	95	6	91	31	2	8	28	366	4	6	245	24
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	192	0	0	41	0	0	398	0	0	275	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 62.0%			ICU Level of Service B
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	95	6	91	31	2	8	28	366	4	6	245	24
Future Volume (Veh/h)	95	6	91	31	2	8	28	366	4	6	245	24
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	95	6	91	31	2	8	28	366	4	6	245	24
Pedestrians					5			1			7	
Lane Width (m)					3.6			3.6			3.6	
Walking Speed (m/s)					1.2			1.2			1.2	
Percent Blockage					0			0			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	17			98			457	322	58	508	363	13
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	17			98			457	322	58	508	363	13
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.4
p0 queue free %	94			98			90	33	100	97	52	98
cM capacity (veh/h)	1604			1507			293	545	1009	204	515	1036

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	192	41	398	275
Volume Left	95	31	28	6
Volume Right	91	8	4	24
cSH	1604	1507	516	521
Volume to Capacity	0.06	0.02	0.77	0.53
Queue Length 95th (m)	1.5	0.5	55.1	24.4
Control Delay (s)	3.9	5.7	31.7	19.4
Lane LOS	A	A	D	C
Approach Delay (s)	3.9	5.7	31.7	19.4
Approach LOS			D	C

Intersection Summary					
Average Delay			20.9		
Intersection Capacity Utilization			62.0%	ICU Level of Service	B
Analysis Period (min)			15		



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	98	0	0	42
Future Volume (vph)	0	0	98	0	0	42
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1730	0	1618	0	0	1618
Flt Permitted						
Satd. Flow (perm)	1730	0	1618	0	0	1618
Link Speed (k/h)	50		50			50
Link Distance (m)	135.9		143.4			554.5
Travel Time (s)	9.8		10.3			39.9
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	98	0	0	42
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	98	0	0	42
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	9.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	98	0	0	42
Future Volume (Veh/h)	0	0	98	0	0	42
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	98	0	0	42
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	140	98			98	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	140	98			98	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	853	958			1495	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	0	98	42
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	1700	1495
Volume to Capacity	0.00	0.06	0.00
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0
Lane LOS	A		
Approach Delay (s)	0.0	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay		0.0	
Intersection Capacity Utilization		9.3%	ICU Level of Service A
Analysis Period (min)		15	



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	259	1	59	167	6	118
Future Volume (vph)	259	1	59	167	6	118
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.999				0.872	
Flt Protected				0.987	0.998	
Satd. Flow (prot)	1616	0	0	1597	1506	0
Flt Permitted				0.987	0.998	
Satd. Flow (perm)	1616	0	0	1597	1506	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	400.3			181.6	225.5	
Travel Time (s)	28.8			13.1	16.2	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	259	1	59	167	6	118
Shared Lane Traffic (%)						
Lane Group Flow (vph)	260	0	0	226	124	0
Sign Control	Free			Free	Stop	

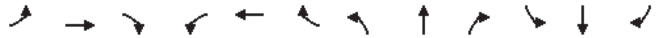
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	47.9%		ICU Level of Service A
Analysis Period (min)	15		



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	259	1	59	167	6	118
Future Volume (Veh/h)	259	1	59	167	6	118
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	259	1	59	167	6	118
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			260		544	260
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			260		544	260
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			95		99	85
cM capacity (veh/h)			1304		477	779

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	260	226	124
Volume Left	0	59	6
Volume Right	1	0	118
cSH	1700	1304	756
Volume to Capacity	0.15	0.05	0.16
Queue Length 95th (m)	0.0	1.1	4.7
Control Delay (s)	0.0	2.4	10.7
Lane LOS		A	B
Approach Delay (s)	0.0	2.4	10.7
Approach LOS			B

Intersection Summary			
Average Delay		3.0	
Intersection Capacity Utilization		47.9%	ICU Level of Service A
Analysis Period (min)		15	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	376	1	46	221	0	5	0	92	0	0	0
Future Volume (vph)	0	376	1	46	221	0	5	0	92	0	0	0
Ideal Flow (vphpl)	1650	1650	1900	1900	1650	1650	1900	1900	1900	1765	1900	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt								0.872				
Flt Protected					0.991			0.997				
Satd. Flow (prot)	0	1618	0	0	1603	0	0	1619	0	0	1863	0
Flt Permitted					0.991			0.997				
Satd. Flow (perm)	0	1618	0	0	1603	0	0	1619	0	0	1863	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		181.6			170.9			157.9			161.8	
Travel Time (s)		13.1			12.3			11.4			11.6	
Peak Hour 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
Adj. Flow (vph)	0	376	1	46	221	0	5	0	92	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	377	0	0	267	0	0	97	0	0	0	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 55.1%		ICU Level of Service B	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	376	1	46	221	0	5	0	92	0	0	0
Future Volume (Veh/h)	0	376	1	46	221	0	5	0	92	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	0	376	1	46	221	0	5	0	92	0	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	221			377			690	690	376	782	690	221
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	221			377			690	690	376	782	690	221
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			96			99	100	86	100	100	100
cM capacity (veh/h)	1348			1181			349	354	670	261	354	819

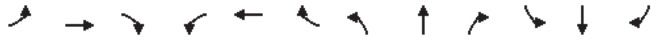
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	377	267	97	0
Volume Left	0	46	5	0
Volume Right	1	0	92	0
cSH	1348	1181	640	1700
Volume to Capacity	0.00	0.04	0.15	0.00
Queue Length 95th (m)	0.0	1.0	4.3	0.0
Control Delay (s)	0.0	1.7	11.6	0.0
Lane LOS		A	B	A
Approach Delay (s)	0.0	1.7	11.6	0.0
Approach LOS			B	A

Intersection Summary					
Average Delay			2.1		
Intersection Capacity Utilization			55.1%	ICU Level of Service	B
Analysis Period (min)			15		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	462	5	93	255	18	9	31	136	57	27	3
Future Volume (vph)	1	462	5	93	255	18	9	31	136	57	27	3
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.999			0.993			0.896			0.995	
Flt Protected					0.987			0.997			0.968	
Satd. Flow (prot)	0	1518	0	0	1489	0	0	1357	0	0	1464	0
Flt Permitted					0.987			0.997			0.968	
Satd. Flow (perm)	0	1518	0	0	1489	0	0	1357	0	0	1464	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		377.6			166.4			109.1			148.1	
Travel Time (s)		27.2			12.0			7.9			10.7	
Peak Hour 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
Adj. Flow (vph)	1	462	5	93	255	18	9	31	136	57	27	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	468	0	0	366	0	0	176	0	0	87	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary				
Area Type:	Other			
Control Type: Unsignalized				
Intersection Capacity Utilization	86.4%		ICU Level of Service	E
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	462	5	93	255	18	9	31	136	57	27	3
Future Volume (Veh/h)	1	462	5	93	255	18	9	31	136	57	27	3
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	1	462	5	93	255	18	9	31	136	57	27	3
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	273			467			933	926	464	1068	919	264
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	273			467			933	926	464	1068	919	264
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			92			96	87	77	56	89	100
cM capacity (veh/h)	1290			1094			211	246	598	130	248	775

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	468	366	176	87
Volume Left	1	93	9	57
Volume Right	5	18	136	3
cSH	1290	1094	444	158
Volume to Capacity	0.00	0.08	0.40	0.55
Queue Length 95th (m)	0.0	2.2	14.9	22.4
Control Delay (s)	0.0	2.8	18.3	52.6
Lane LOS	A	A	C	F
Approach Delay (s)	0.0	2.8	18.3	52.6
Approach LOS			C	F

Intersection Summary					
Average Delay			8.1		
Intersection Capacity Utilization			86.4%	ICU Level of Service	E
Analysis Period (min)			15		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	687	0	0	348	13	0	0	0	39	0	18
Future Volume (vph)	6	687	0	0	348	13	0	0	0	39	0	18
Ideal Flow (vphpl)	1650	1650	1900	1900	1650	1650	1900	1900	1900	1765	1900	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.995						0.957	
Flt Protected											0.967	
Satd. Flow (prot)	0	1618	0	0	1610	0	0	1863	0	0	1724	0
Flt Permitted											0.967	
Satd. Flow (perm)	0	1618	0	0	1610	0	0	1863	0	0	1724	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		228.8			210.5			130.2			114.8	
Travel Time (s)		16.5			15.2			9.4			8.3	
Peak Hour 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
Adj. Flow (vph)	6	687	0	0	348	13	0	0	0	39	0	18
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	693	0	0	361	0	0	0	0	0	57	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary					
Area Type:	Other				
Control Type: Unsignalized					
Intersection Capacity Utilization	57.1%			ICU Level of Service B	
Analysis Period (min)	15				

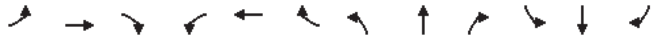
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	687	0	0	348	13	0	0	0	39	0	18
Future Volume (Veh/h)	6	687	0	0	348	13	0	0	0	39	0	18
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	6	687	0	0	348	13	0	0	0	39	0	18
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	361			687			1072	1060	687	1054	1054	354
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	361			687			1072	1060	687	1054	1054	354
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			100	100	100	81	100	97
cM capacity (veh/h)	1198			907			192	223	447	203	225	689

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	693	361	0	57
Volume Left	6	0	0	39
Volume Right	0	13	0	18
cSH	1198	907	1700	261
Volume to Capacity	0.01	0.00	0.00	0.22
Queue Length 95th (m)	0.1	0.0	0.0	6.5
Control Delay (s)	0.1	0.0	0.0	22.6
Lane LOS	A		A	C
Approach Delay (s)	0.1	0.0	0.0	22.6
Approach LOS			A	C

Intersection Summary					
Average Delay			1.2		
Intersection Capacity Utilization			57.1%	ICU Level of Service	B
Analysis Period (min)			15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	720	0	0	343	13	0	0	0	39	0	18
Future Volume (vph)	6	720	0	0	343	13	0	0	0	39	0	18
Ideal Flow (vphpl)	1650	1650	1900	1900	1650	1650	1900	1900	1900	1765	1900	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.995						0.957	
Flt Protected											0.967	
Satd. Flow (prot)	0	1618	0	0	1610	0	0	1863	0	0	1724	0
Flt Permitted											0.967	
Satd. Flow (perm)	0	1618	0	0	1610	0	0	1863	0	0	1724	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		210.5			96.4			148.9			129.5	
Travel Time (s)		15.2			6.9			10.7			9.3	
Peak Hour 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
Adj. Flow (vph)	6	720	0	0	343	13	0	0	0	39	0	18
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	726	0	0	356	0	0	0	0	0	57	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary					
Area Type:	Other				
Control Type: Unsignalized					
Intersection Capacity Utilization 59.1%				ICU Level of Service B	
Analysis Period (min) 15					



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	720	0	0	343	13	0	0	0	39	0	18
Future Volume (Veh/h)	6	720	0	0	343	13	0	0	0	39	0	18
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	6	720	0	0	343	13	0	0	0	39	0	18
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	356			720			1100	1088	720	1082	1082	350
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	356			720			1100	1088	720	1082	1082	350
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	100	80	100	97
cM capacity (veh/h)	1203			882			184	215	428	194	217	694

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	726	356	0	57
Volume Left	6	0	0	39
Volume Right	0	13	0	18
cSH	1203	882	1700	252
Volume to Capacity	0.00	0.00	0.00	0.23
Queue Length 95th (m)	0.1	0.0	0.0	6.8
Control Delay (s)	0.1	0.0	0.0	23.4
Lane LOS	A		A	C
Approach Delay (s)	0.1	0.0	0.0	23.4
Approach LOS			A	C

Intersection Summary					
Average Delay			1.3		
Intersection Capacity Utilization			59.1%	ICU Level of Service	B
Analysis Period (min)			15		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	0	13	0	0	0	7	199	0	0	234	22
Future Volume (vph)	35	0	13	0	0	0	7	199	0	0	234	22
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.963									0.988	
Flt Protected		0.965						0.998				
Satd. Flow (prot)	0	1412	0	0	1520	0	0	1517	0	0	1501	0
Flt Permitted		0.965						0.998				
Satd. Flow (perm)	0	1412	0	0	1520	0	0	1517	0	0	1501	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		174.2			151.1			248.8			212.1	
Travel Time (s)		12.5			10.9			17.9			15.3	
Peak Hour 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
Adj. Flow (vph)	35	0	13	0	0	0	7	199	0	0	234	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	48	0	0	0	0	0	206	0	0	256	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary					
Area Type:	Other				
Control Type: Unsignalized					
Intersection Capacity Utilization	29.8%			ICU Level of Service	A
Analysis Period (min)	15				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	0	13	0	0	0	7	199	0	0	234	22
Future Volume (Veh/h)	35	0	13	0	0	0	7	199	0	0	234	22
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	35	0	13	0	0	0	7	199	0	0	234	22
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	458	458	245	471	469	199	256			199		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	458	458	245	471	469	199	256			199		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	93	100	98	100	100	100	99			100		
cM capacity (veh/h)	511	497	794	493	490	842	1309			1373		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	48	0	206	256
Volume Left	35	0	7	0
Volume Right	13	0	0	22
cSH	566	1700	1309	1373
Volume to Capacity	0.08	0.00	0.01	0.00
Queue Length 95th (m)	2.2	0.0	0.1	0.0
Control Delay (s)	12.0	0.0	0.3	0.0
Lane LOS	B	A	A	
Approach Delay (s)	12.0	0.0	0.3	0.0
Approach LOS	B	A		

Intersection Summary				
Average Delay			1.3	
Intersection Capacity Utilization			29.8%	ICU Level of Service
Analysis Period (min)			15	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	0	13	0	0	0	7	171	0	0	225	22
Future Volume (vph)	35	0	13	0	0	0	7	171	0	0	225	22
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.963									0.988	
Flt Protected		0.965						0.998				
Satd. Flow (prot)	0	1412	0	0	1520	0	0	1517	0	0	1501	0
Flt Permitted		0.965						0.998				
Satd. Flow (perm)	0	1412	0	0	1520	0	0	1517	0	0	1501	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		117.0			126.5			247.2			248.8	
Travel Time (s)		8.4			9.1			17.8			17.9	
Peak Hour 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
Adj. Flow (vph)	35	0	13	0	0	0	7	171	0	0	225	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	48	0	0	0	0	0	178	0	0	247	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary				
Area Type:	Other			
Control Type: Unsignalized				
Intersection Capacity Utilization	28.0%		ICU Level of Service A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	0	13	0	0	0	7	171	0	0	225	22
Future Volume (Veh/h)	35	0	13	0	0	0	7	171	0	0	225	22
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	35	0	13	0	0	0	7	171	0	0	225	22
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	421	421	236	434	432	171	247			171		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	421	421	236	434	432	171	247			171		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	94	100	98	100	100	100	99			100		
cM capacity (veh/h)	541	521	803	521	514	873	1319			1406		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	48	0	178	247
Volume Left	35	0	7	0
Volume Right	13	0	0	22
cSH	593	1700	1319	1406
Volume to Capacity	0.08	0.00	0.01	0.00
Queue Length 95th (m)	2.1	0.0	0.1	0.0
Control Delay (s)	11.6	0.0	0.3	0.0
Lane LOS	B	A	A	
Approach Delay (s)	11.6	0.0	0.3	0.0
Approach LOS	B	A		

Intersection Summary					
Average Delay			1.3		
Intersection Capacity Utilization			28.0%	ICU Level of Service	A
Analysis Period (min)			15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	0	0	0	329	0	0	234	0
Future Volume (vph)	0	0	0	0	0	0	0	329	0	0	234	0
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt												
Flt Protected												
Satd. Flow (prot)	0	1520	0	0	1520	0	0	1520	0	0	1520	0
Flt Permitted												
Satd. Flow (perm)	0	1520	0	0	1520	0	0	1520	0	0	1520	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		128.4			112.6			130.6			488.0	
Travel Time (s)		9.2			8.1			9.4			35.1	
Peak Hour 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
Adj. Flow (vph)	0	0	0	0	0	0	0	329	0	0	234	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	0	0	0	329	0	0	234	0
Sign Control		Stop			Stop			Free			Free	

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	0	0	0	0	329	0	0	234	0
Future Volume (Veh/h)	0	0	0	0	0	0	0	329	0	0	234	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	0	0	0	0	0	0	0	329	0	0	234	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	563	563	234	563	563	329	234			329		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	563	563	234	563	563	329	234			329		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	100	100	100	100			100		
cM capacity (veh/h)	437	435	805	437	435	712	1333			1231		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	0	0	329	234
Volume Left	0	0	0	0
Volume Right	0	0	0	0
cSH	1700	1700	1333	1231
Volume to Capacity	0.00	0.00	0.00	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0
Lane LOS	A	A		
Approach Delay (s)	0.0	0.0	0.0	0.0
Approach LOS	A	A		

Intersection Summary				
Average Delay			0.0	
Intersection Capacity Utilization			24.6%	ICU Level of Service
Analysis Period (min)			15	

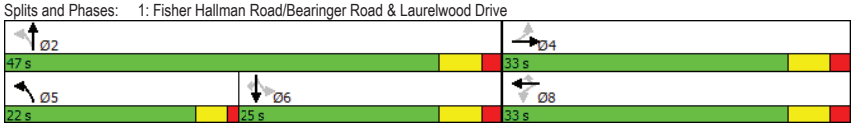
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	141	178	212	104	303	30	313	367	87	29	737	378
Future Volume (vph)	141	178	212	104	303	30	313	367	87	29	737	378
Ideal Flow (vphpl)	1775	1650	1650	1775	1900	1750	1775	1775	1775	1775	1900	1750
Storage Length (m)	85.0		0.0	90.0		90.0	90.0		0.0	60.0		60.0
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (m)	35.0			7.5			45.0			70.0		
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	0.98		0.99		0.98		0.99		1.00		0.98
Frt		0.918				0.850		0.971				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1653	1448	0	1188	1845	1488	1506	1651	0	1686	1881	1430
Flt Permitted	0.418			0.300			0.148			0.501		
Satd. Flow (perm)	726	1448	0	373	1845	1451	235	1651	0	886	1881	1395
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		84				95		23				266
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		133.2			228.2			160.2			234.1	
Travel Time (s)		9.6			16.4			11.5			16.9	
Confl. Peds. (#/hr)	2		7	7		2	2		3	3		2
Peak Hour 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
Heavy Vehicles (%)	2%	1%	4%	42%	3%	0%	12%	1%	16%	0%	1%	4%
Adj. Flow (vph)	141	178	212	104	303	30	313	367	87	29	737	378
Shared Lane Traffic (%)												
Lane Group Flow (vph)	141	390	0	104	303	30	313	454	0	29	737	378
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA		Perm	NA	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8		8	2			6		6
Detector Phase	4	4		8	8	8	5	2		6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	24.0	24.0		30.0	30.0	30.0	9.5	24.0		24.0	24.0	24.0
Total Split (s)	33.0	33.0		33.0	33.0	33.0	22.0	47.0		25.0	25.0	25.0
Total Split (%)	41.3%	41.3%		41.3%	41.3%	41.3%	27.5%	58.8%		31.3%	31.3%	31.3%
Maximum Green (s)	27.0	27.0		27.0	27.0	27.0	18.0	41.0		19.0	19.0	19.0
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	3.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	1.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-2.0	0.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag							Lead			Lag	Lag	Lag
Lead-Lag Optimize?							Yes			Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None	None	None	Max		Max	Max	Max
Walk Time (s)	7.0	7.0		7.0	7.0	7.0		7.0		7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	11.0		11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0		0	0	0		0		0	0	0
Act Effct Green (s)	23.4	23.4		23.4	23.4	23.4	43.3	43.3		25.0	25.0	25.0
Actuated g/C Ratio	0.31	0.31		0.31	0.31	0.31	0.58	0.58		0.33	0.33	0.33
v/c Ratio	0.62	0.76		0.90	0.53	0.06	0.83	0.47		0.10	1.17	0.59

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	34.5	28.3		87.1	24.2	0.2	35.1	11.8		23.0	123.1	12.3
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	34.5	28.3		87.1	24.2	0.2	35.1	11.8		23.0	123.1	12.3
LOS	C	C		F	C	A	D	B		C	F	B
Approach Delay		30.0			37.5			21.3			84.0	
Approach LOS		C			D			C			F	
Queue Length 50th (m)	17.5	40.4		14.4	36.3	0.0	31.7	38.5		3.3	~153.8	13.5
Queue Length 95th (m)	37.0	72.7		#43.1	58.8	0.0	#72.1	65.4		10.2	#231.9	45.5
Internal Link Dist (m)		109.2			204.2			136.2			210.1	
Turn Bay Length (m)	85.0			90.0		90.0	90.0			60.0		60.0
Base Capacity (vph)	283	616		145	720	624	444	965		295	628	643
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.50	0.63		0.72	0.42	0.05	0.70	0.47		0.10	1.17	0.59

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 74.8			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.17			
Intersection Signal Delay: 50.3		Intersection LOS: D	
Intersection Capacity Utilization 103.0%		ICU Level of Service G	
Analysis Period (min) 15			

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

Splits and Phases: 1: Fisher Hallman Road/Bearinger Road & Laurelwood Drive



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	141	178	212	104	303	30	313	367	87	29	737	378
Future Volume (vph)	141	178	212	104	303	30	313	367	87	29	737	378
Ideal Flow (vphpl)	1775	1650	1650	1775	1900	1750	1775	1775	1775	1775	1900	1750
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.98		1.00	1.00	0.98	1.00	0.99		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		0.99	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.92		1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1649	1449		1180	1845	1452	1506	1651		1681	1881	1396
Flt Permitted	0.42	1.00		0.30	1.00	1.00	0.15	1.00		0.50	1.00	1.00
Satd. Flow (perm)	727	1449		373	1845	1452	235	1651		886	1881	1396
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	141	178	212	104	303	30	313	367	87	29	737	378
RTOR Reduction (vph)	0	58	0	0	0	21	0	10	0	0	0	177
Lane Group Flow (vph)	141	332	0	104	303	9	313	444	0	29	737	201
Confl. Peds. (#/hr)	2		7	7		2	2		3	3		2
Heavy Vehicles (%)	2%	1%	4%	42%	3%	0%	12%	1%	16%	0%	1%	4%
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA		Perm	NA	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8		8	2			6		6
Actuated Green, G (s)	21.4	21.4		21.4	21.4	21.4	41.3	41.3		23.0	23.0	23.0
Effective Green, g (s)	23.4	23.4		23.4	23.4	23.4	41.3	43.3		25.0	25.0	25.0
Actuated g/C Ratio	0.31	0.31		0.31	0.31	0.31	0.55	0.58		0.33	0.33	0.33
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0	4.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	227	453		116	577	454	373	957		296	629	467
v/s Ratio Prot		0.23			0.16		c0.16	0.27			c0.39	
v/s Ratio Perm	0.19			c0.28		0.01	0.30			0.03		0.14
v/c Ratio	0.62	0.73		0.90	0.53	0.02	0.84	0.46		0.10	1.17	0.43
Uniform Delay, d1	21.9	22.9		24.5	21.1	17.7	17.7	9.0		17.1	24.9	19.3
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	5.2	6.1		52.2	0.9	0.0	15.2	1.6		0.7	93.4	2.9
Delay (s)	27.1	28.9		76.7	21.9	17.7	32.8	10.6		17.8	118.3	22.2
Level of Service	C	C		E	C	B	C	B		B	F	C
Approach Delay (s)		28.4			34.7			19.7			84.0	
Approach LOS		C			C			B			F	

Intersection Summary					
HCM 2000 Control Delay	49.1	HCM 2000 Level of Service		D	
HCM 2000 Volume to Capacity ratio	0.99				
Actuated Cycle Length (s)	74.7	Sum of lost time (s)		12.0	
Intersection Capacity Utilization	103.0%	ICU Level of Service		G	
Analysis Period (min)	15				

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	72	34	422	20	32	13	760	313	42	9	337	200
Future Volume (vph)	72	34	422	20	32	13	760	313	42	9	337	200
Ideal Flow (vphpl)	1650	1650	1750	1550	1550	1550	1775	1650	1650	1550	1550	1550
Storage Length (m)	0.0		50.0	0.0		0.0	25.0		0.0	0.0		50.0
Storage Lanes	0		1	0		0	1		0	0		0
Taper Length (m)	0.0			0.0			35.0			0.0		
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			0.850		0.973			0.982			0.951	
Flt Protected		0.967			0.985		0.950				0.999	
Satd. Flow (prot)	0	1539	1473	0	1436	0	1606	1556	0	0	1419	0
Flt Permitted		0.967			0.985		0.950				0.999	
Satd. Flow (perm)	0	1539	1473	0	1436	0	1606	1556	0	0	1419	0
Link Speed (k/h)		60			50			50			50	
Link Distance (m)		1012.1			151.5			545.8			326.3	
Travel Time (s)		60.7			10.9			39.3			23.5	
Confl. Peds. (#/hr)	3		1	1		3	3		1	1		3
Peak Hour 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
Heavy Vehicles (%)	4%	3%	1%	0%	7%	0%	5%	4%	5%	20%	2%	6%
Adj. Flow (vph)	72	34	422	20	32	13	760	313	42	9	337	200
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	106	422	0	65	0	760	355	0	0	546	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	105.8%	ICU Level of Service	G
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	72	34	422	20	32	13	760	313	42	9	337	200
Future Volume (vph)	72	34	422	20	32	13	760	313	42	9	337	200
Peak Hour 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
Hourly flow rate (vph)	72	34	422	20	32	13	760	313	42	9	337	200

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1
Volume Total (vph)	106	422	65	760	355	546
Volume Left (vph)	72	0	20	760	0	9
Volume Right (vph)	0	422	13	0	42	200
Hadj (s)	0.40	-0.68	0.00	0.58	-0.01	-0.15
Departure Headway (s)	8.5	7.4	9.7	8.3	7.7	7.6
Degree Utilization, x	0.25	0.86	0.18	1.75	0.76	1.15
Capacity (veh/h)	420	484	354	439	460	479
Control Delay (s)	13.0	40.3	14.8	366.1	29.9	116.0
Approach Delay (s)	34.8		14.8	259.0		116.0
Approach LOS	D		B	F		F

Intersection Summary					
Delay	164.8				
Level of Service	F				
Intersection Capacity Utilization	105.8%	ICU Level of Service		G	
Analysis Period (min)	15				

Intersection	
Intersection Delay, s/veh	173.1
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	72	34	422	20	32	13	760	313	42	9	337	200
Future Vol, veh/h	72	34	422	20	32	13	760	313	42	9	337	200
Peak Hour 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
Heavy Vehicles, %	4	3	1	0	7	0	5	4	5	20	2	6
Mvmt Flow	72	34	422	20	32	13	760	313	42	9	337	200
Number of Lanes	0	1	1	0	1	0	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	2
HCM Control Delay	39	16.5	262.9	138.1
HCM LOS	E	C	F	F

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	100%	0%	68%	0%	31%	2%
Vol Thru, %	0%	88%	32%	0%	49%	62%
Vol Right, %	0%	12%	0%	100%	20%	37%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	760	355	106	422	65	546
LT Vol	760	0	72	0	20	9
Through Vol	0	313	34	0	32	337
RT Vol	0	42	0	422	13	200
Lane Flow Rate	760	355	106	422	65	546
Geometry Grp	7	7	7	7	6	6
Degree of Util (X)	1.755	0.76	0.25	0.871	0.178	1.202
Departure Headway (Hd)	8.782	8.16	9.176	8.073	11.135	8.393
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	418	447	394	452	324	437
Service Time	6.482	5.86	6.876	5.773	9.135	6.393
HCM Lane V/C Ratio	1.818	0.794	0.269	0.934	0.201	1.249
HCM Control Delay	370.5	32.4	14.9	45	16.5	138.1
HCM Lane LOS	F	D	B	E	C	F
HCM 95th-tile Q	44.7	6.4	1	9	0.6	20.3

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	93	58	576	218	80	216
Future Volume (vph)	93	58	576	218	80	216
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Storage Length (m)		0.0	0.0		0.0	30.0
Storage Lanes		0	0		1	0
Taper Length (m)			0.0		0.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.948				0.901	
Flt Protected				0.965	0.987	
Satd. Flow (prot)	1502	0	0	1549	1491	0
Flt Permitted				0.965	0.987	
Satd. Flow (perm)	1502	0	0	1549	1491	0
Link Speed (k/h)	80			80	50	
Link Distance (m)	1516.2			424.2	223.3	
Travel Time (s)	68.2			19.1	16.1	
Confl. Peds. (#/hr)		1	1			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	6%	2%	5%	14%	2%
Adj. Flow (vph)	93	58	576	218	80	216
Shared Lane Traffic (%)						
Lane Group Flow (vph)	151	0	0	794	296	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	88.9%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	93	58	576	218	80	216
Future Volume (Veh/h)	93	58	576	218	80	216
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	93	58	576	218	80	216
Pedestrians					1	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			152		1493	123
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			152		1493	123
tC, single (s)			4.1		6.5	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			60		0	77
cM capacity (veh/h)			1428		76	927

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	151	794	296
Volume Left	0	576	80
Volume Right	58	0	216
cSH	1700	1428	230
Volume to Capacity	0.09	0.40	1.29
Queue Length 95th (m)	0.0	15.9	123.4
Control Delay (s)	0.0	7.9	199.9
Lane LOS		A	F
Approach Delay (s)	0.0	7.9	199.9
Approach LOS			F

Intersection Summary			
Average Delay	52.7		
Intersection Capacity Utilization	88.9%	ICU Level of Service	E
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	59	172	104	16	108	170
Future Volume (vph)	59	172	104	16	108	170
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.899		0.982			
Flt Protected	0.987					0.981
Satd. Flow (prot)	1411	0	1479	0	0	1526
Flt Permitted	0.987					0.981
Satd. Flow (perm)	1411	0	1479	0	0	1526
Link Speed (k/h)	80		80			80
Link Distance (m)	1200.3		1761.7			72.7
Travel Time (s)	54.0		79.3			3.3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	8%	12%	11%	0%	3%	8%
Adj. Flow (vph)	59	172	104	16	108	170
Shared Lane Traffic (%)						
Lane Group Flow (vph)	231	0	120	0	0	278
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	45.4%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	59	172	104	16	108	170
Future Volume (Veh/h)	59	172	104	16	108	170
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	59	172	104	16	108	170
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	498	112			120	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	498	112			120	
tC, single (s)	6.5	6.3			4.1	
tC, 2 stage (s)						
tF (s)	3.6	3.4			2.2	
p0 queue free %	88	81			93	
cM capacity (veh/h)	483	915			1462	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	231	120	278
Volume Left	59	0	108
Volume Right	172	16	0
cSH	744	1700	1462
Volume to Capacity	0.31	0.07	0.07
Queue Length 95th (m)	10.6	0.0	1.9
Control Delay (s)	12.0	0.0	3.4
Lane LOS	B		A
Approach Delay (s)	12.0	0.0	3.4
Approach LOS	B		

Intersection Summary			
Average Delay		5.9	
Intersection Capacity Utilization		45.4%	ICU Level of Service A
Analysis Period (min)		15	



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	80	71	43	36	123	109
Future Volume (vph)	80	71	43	36	123	109
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.937		0.938			
Flt Protected	0.974					0.974
Satd. Flow (prot)	1501	0	1503	0	0	1514
Flt Permitted	0.974					0.974
Satd. Flow (perm)	1501	0	1503	0	0	1514
Link Speed (k/h)	80		80			80
Link Distance (m)	605.5		233.8			1761.7
Travel Time (s)	27.2		10.5			79.3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	5%	10%	3%	3%	8%	4%
Adj. Flow (vph)	80	71	43	36	123	109
Shared Lane Traffic (%)						
Lane Group Flow (vph)	151	0	79	0	0	232
Sign Control	Stop		Free			Free

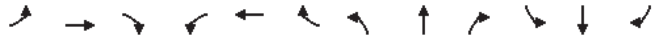
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 37.2%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	80	71	43	36	123	109
Future Volume (Veh/h)	80	71	43	36	123	109
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	80	71	43	36	123	109
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	416	61			79	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	416	61			79	
tC, single (s)	6.4	6.3			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.4			2.3	
p0 queue free %	85	93			92	
cM capacity (veh/h)	539	982			1482	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	151	79	232
Volume Left	80	0	123
Volume Right	71	36	0
cSH	684	1700	1482
Volume to Capacity	0.22	0.05	0.08
Queue Length 95th (m)	6.7	0.0	2.2
Control Delay (s)	11.8	0.0	4.4
Lane LOS	B		A
Approach Delay (s)	11.8	0.0	4.4
Approach LOS	B		

Intersection Summary			
Average Delay		6.0	
Intersection Capacity Utilization		37.2%	ICU Level of Service A
Analysis Period (min)		15	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	26	2	169	62	67	1	131	139	31	224	16
Future Volume (vph)	2	26	2	169	62	67	1	131	139	31	224	16
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		50.0	50.0		0.0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (m)	0.0			0.0			0.0			65.0		
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
Frt		0.991			0.970			0.931			0.992	
Flt Protected		0.997			0.972						0.994	
Satd. Flow (prot)	0	1505	0	0	1401	0	0	1375	0	0	1427	0
Flt Permitted		0.997			0.972						0.994	
Satd. Flow (perm)	0	1505	0	0	1401	0	0	1375	0	0	1427	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		187.7			400.3			488.0			394.6	
Travel Time (s)		13.5			28.8			35.1			28.4	
Peak Hour 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
Heavy Vehicles (%)	0%	2%	0%	6%	0%	4%	0%	7%	3%	4%	8%	0%
Adj. Flow (vph)	2	26	2	169	62	67	1	131	139	31	224	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	30	0	0	298	0	0	271	0	0	271	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	73.8%	ICU Level of Service D	
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	26	2	169	62	67	1	131	139	31	224	16
Future Volume (Veh/h)	2	26	2	169	62	67	1	131	139	31	224	16
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	2	26	2	169	62	67	1	131	139	31	224	16
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	594	566	232	512	504	200	240			270		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	594	566	232	512	504	200	240			270		
tC, single (s)	7.1	6.5	6.2	7.2	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.0	3.3	2.2			2.2		
p0 queue free %	99	94	100	61	87	92	100			98		
cM capacity (veh/h)	339	423	812	435	461	835	1339			1282		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	30	298	271	271
Volume Left	2	169	1	31
Volume Right	2	67	139	16
cSH	429	494	1339	1282
Volume to Capacity	0.07	0.60	0.00	0.02
Queue Length 95th (m)	1.8	31.4	0.0	0.6
Control Delay (s)	14.0	22.7	0.0	1.1
Lane LOS	B	C	A	A
Approach Delay (s)	14.0	22.7	0.0	1.1
Approach LOS	B	C		

Intersection Summary					
Average Delay			8.6		
Intersection Capacity Utilization			73.8%	ICU Level of Service	D
Analysis Period (min)			15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	100	121	155	186	111	135	276	159	44	276	24
Future Volume (vph)	14	100	121	155	186	111	135	276	159	44	276	24
Ideal Flow (vphpl)	1775	1900	1750	1775	1650	1650	1775	1900	1750	1775	1650	1650
Storage Length (m)	20.0		20.0	25.0		0.0	65.0		30.0	25.0		0.0
Storage Lanes	1		1	1		0	1		1	1		0
Taper Length (m)	35.0			10.0			80.0			35.0		
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	0.92		0.94	0.97	0.94		0.99		0.94	0.97	1.00	
Frt			0.850		0.944				0.850		0.988	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1591	1810	1403	1561	1359	0	1606	1776	1430	1653	1521	0
Flt Permitted	0.456			0.692			0.566			0.450		
Satd. Flow (perm)	705	1810	1323	1099	1359	0	948	1776	1339	763	1521	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			121		51				159		8	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		123.5			178.3			236.9			930.8	
Travel Time (s)		8.9			12.8			17.1			67.0	
Confl. Peds. (#/hr)	79		23	23		79	9		27	27		9
Peak Hour 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
Heavy Vehicles (%)	6%	5%	6%	8%	9%	7%	5%	7%	4%	2%	6%	17%
Adj. Flow (vph)	14	100	121	155	186	111	135	276	159	44	276	24
Shared Lane Traffic (%)												
Lane Group Flow (vph)	14	100	121	155	297	0	135	276	159	44	300	0
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2		2	6		
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5		9.5	22.5	22.5	9.5	22.5	
Total Split (s)	22.5	22.5	22.5	22.5	22.5		10.4	24.5	24.5	13.0	27.1	
Total Split (%)	37.5%	37.5%	37.5%	37.5%	37.5%		17.3%	40.8%	40.8%	21.7%	45.2%	
Maximum Green (s)	18.0	18.0	18.0	18.0	18.0		5.9	20.0	20.0	8.5	22.6	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	
Walk Time (s)	7.0	7.0	7.0	7.0	7.0			7.0	7.0		7.0	
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0			11.0	11.0		11.0	
Pedestrian Calls (#/hr)	0	0	0	0	0			0	0		0	
Act Effct Green (s)	18.0	18.0	18.0	18.0	18.0		25.9	20.0	20.0	31.1	22.6	
Actuated g/C Ratio	0.30	0.30	0.30	0.30	0.30		0.43	0.33	0.33	0.52	0.38	
v/c Ratio	0.07	0.18	0.25	0.47	0.67		0.29	0.47	0.29	0.08	0.52	
Control Delay	16.1	16.7	5.3	22.9	24.3		8.9	19.0	4.6	6.7	18.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	16.1	16.7	5.3	22.9	24.3		8.9	19.0	4.6	6.7	18.1	
LOS	B	B	A	C	C		A	B	A	A	B	
Approach Delay		10.8			23.8			12.6			16.6	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		B			C			B			B	
Queue Length 50th (m)	1.2	8.5	0.0	14.4	24.3		6.9	24.7	0.0	2.1	25.3	
Queue Length 95th (m)	4.9	18.4	10.0	30.6	#56.1		14.2	44.2	10.8	5.9	46.3	
Internal Link Dist (m)		99.5			154.3			212.9			906.8	
Turn Bay Length (m)	20.0		20.0	25.0			65.0		30.0	25.0		
Base Capacity (vph)	211	543	481	329	443		473	592	552	521	577	
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Reduced v/c Ratio	0.07	0.18	0.25	0.47	0.67		0.29	0.47	0.29	0.08	0.52	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 55			
Control Type: Pretimed			
Maximum v/c Ratio: 0.67			
Intersection Signal Delay: 16.4		Intersection LOS: B	
Intersection Capacity Utilization 58.8%		ICU Level of Service B	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 7: Erbsville Road & Laurelwood Drive



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	100	121	155	186	111	135	276	159	44	276	24
Future Volume (vph)	14	100	121	155	186	111	135	276	159	44	276	24
Ideal Flow (vphpl)	1775	1900	1750	1775	1650	1650	1775	1900	1750	1775	1650	1650
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.94	1.00	0.94		1.00	1.00	0.94	1.00	1.00	
Flpb, ped/bikes	0.92	1.00	1.00	0.97	1.00		0.99	1.00	1.00	0.99	1.00	
Frt	1.00	1.00	0.85	1.00	0.94		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1467	1810	1323	1509	1359		1597	1776	1339	1635	1521	
Flt Permitted	0.46	1.00	1.00	0.69	1.00		0.57	1.00	1.00	0.45	1.00	
Satd. Flow (perm)	705	1810	1323	1100	1359		952	1776	1339	775	1521	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	14	100	121	155	186	111	135	276	159	44	276	24
RTOR Reduction (vph)	0	0	85	0	36	0	0	0	106	0	5	0
Lane Group Flow (vph)	14	100	36	155	261	0	135	276	53	44	295	0
Confl. Peds. (#/hr)	79		23	23		79	9		27	27		9
Heavy Vehicles (%)	6%	5%	6%	8%	9%	7%	5%	7%	4%	2%	6%	17%
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2		2	6		
Actuated Green, G (s)	18.0	18.0	18.0	18.0	18.0		25.9	20.0	20.0	31.1	22.6	
Effective Green, g (s)	18.0	18.0	18.0	18.0	18.0		25.9	20.0	20.0	31.1	22.6	
Actuated g/C Ratio	0.30	0.30	0.30	0.30	0.30		0.43	0.33	0.33	0.52	0.38	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Lane Grp Cap (vph)	211	543	396	330	407		474	592	446	523	572	
v/s Ratio Prot		0.06			c0.19		c0.03	0.16		c0.01	c0.19	
v/s Ratio Perm	0.02		0.03	0.14			0.09		0.04	0.03		
v/c Ratio	0.07	0.18	0.09	0.47	0.64		0.28	0.47	0.12	0.08	0.52	
Uniform Delay, d1	15.0	15.6	15.1	17.1	18.2		10.6	15.8	13.9	7.4	14.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.6	0.7	0.5	4.7	7.6		1.5	2.6	0.5	0.3	3.3	
Delay (s)	15.6	16.3	15.6	21.8	25.8		12.1	18.4	14.4	7.7	17.8	
Level of Service	B	B	B	C	C		B	B	B	A	B	
Approach Delay (s)		15.9			24.4			15.8			16.5	
Approach LOS		B			C			B			B	

Intersection Summary					
HCM 2000 Control Delay	18.4	HCM 2000 Level of Service		B	
HCM 2000 Volume to Capacity ratio	0.53				
Actuated Cycle Length (s)	60.0	Sum of lost time (s)		13.5	
Intersection Capacity Utilization	58.8%	ICU Level of Service		B	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	285	33	143	579	234	31	24	81	142	43	28
Future Volume (vph)	15	285	33	143	579	234	31	24	81	142	43	28
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
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		0.987			0.967			0.920			0.982	
Flt Protected		0.998			0.993			0.989			0.968	
Satd. Flow (prot)	0	1489	0	0	1411	0	0	1380	0	0	1452	0
Flt Permitted		0.998			0.993			0.989			0.968	
Satd. Flow (perm)	0	1489	0	0	1411	0	0	1380	0	0	1452	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		213.7			555.1			104.8			136.8	
Travel Time (s)		15.4			40.0			7.5			9.8	
Confl. Peds. (#/hr)	10		4	4		10	7		10	10		7
Peak Hour 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
Heavy Vehicles (%)	0%	3%	0%	6%	6%	4%	0%	9%	1%	0%	0%	11%
Adj. Flow (vph)	15	285	33	143	579	234	31	24	81	142	43	28
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	333	0	0	956	0	0	136	0	0	213	0
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Roundabout			
Intersection Capacity Utilization	117.9%	ICU Level of Service	H
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Traffic Volume (veh/h)	15	285	33	143	579	234	31	24	81	142	43	28
Future Volume (veh/h)	15	285	33	143	579	234	31	24	81	142	43	28
Peak Hour 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
Hourly flow rate (vph)	15	285	33	143	579	234	31	24	81	142	43	28
Approach Volume (veh/h)		333			956			136			213	
Crossing Volume (veh/h)		328			70			442			753	
High Capacity (veh/h)		1070			1311			978			761	
High v/c (veh/h)		0.31			0.73			0.14			0.28	
Low Capacity (veh/h)		877			1094			794			603	
Low v/c (veh/h)		0.38			0.87			0.17			0.35	

Intersection Summary					
Maximum v/c High		0.73			
Maximum v/c Low		0.87			
Intersection Capacity Utilization	117.9%	ICU Level of Service		H	

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	102	22	87	203	19	26
Future Volume (vph)	102	22	87	203	19	26
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.976				0.922	
Flt Protected				0.985	0.979	
Satd. Flow (prot)	1572	0	0	1479	1528	0
Flt Permitted				0.985	0.979	
Satd. Flow (perm)	1572	0	0	1479	1528	0
Link Speed (k/h)	80			80	50	
Link Distance (m)	1200.3			667.7	811.2	
Travel Time (s)	54.0			30.0	58.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	0%	5%	12%	6%	3%
Adj. Flow (vph)	102	22	87	203	19	26
Shared Lane Traffic (%)						
Lane Group Flow (vph)	124	0	0	290	45	0
Sign Control	Free			Free	Stop	

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

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	102	22	87	203	19	26
Future Volume (Veh/h)	102	22	87	203	19	26
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	102	22	87	203	19	26
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			124		490	113
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			124		490	113
tC, single (s)			4.1		6.5	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			94		96	97
cM capacity (veh/h)			1444		498	937

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	124	290	45
Volume Left	0	87	19
Volume Right	22	0	26
cSH	1700	1444	683
Volume to Capacity	0.07	0.06	0.07
Queue Length 95th (m)	0.0	1.5	1.7
Control Delay (s)	0.0	2.7	10.6
Lane LOS		A	B
Approach Delay (s)	0.0	2.7	10.6
Approach LOS			B

Intersection Summary			
Average Delay	2.7		
Intersection Capacity Utilization	38.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	83	0	6	0	158	59	1	130	0
Future Volume (vph)	0	0	0	83	0	6	0	158	59	1	130	0
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Storage Length (m)	0.0		0.0	50.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (m)	0.0			50.0			0.0			0.0		
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
Frt					0.991			0.963				
Flt Protected					0.955							
Satd. Flow (prot)	0	1550	0	0	1414	0	0	1461	0	0	1486	0
Flt Permitted					0.955							
Satd. Flow (perm)	0	1550	0	0	1414	0	0	1461	0	0	1486	0
Link Speed (k/h)		50			70			50			50	
Link Distance (m)		114.7			143.4			394.6			123.0	
Travel Time (s)		8.3			7.4			28.4			8.9	
Peak Hour 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
Heavy Vehicles (%)	0%	0%	0%	4%	0%	0%	0%	3%	0%	40%	4%	0%
Adj. Flow (vph)	0	0	0	83	0	6	0	158	59	1	130	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	89	0	0	217	0	0	131	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	27.3%	ICU Level of Service A	
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	83	0	6	0	158	59	1	130	0
Future Volume (Veh/h)	0	0	0	83	0	6	0	158	59	1	130	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	0	0	0	83	0	6	0	158	59	1	130	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	326	349	130	320	320	188	130			217		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	326	349	130	320	320	188	130			217		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.5		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.6		
p0 queue free %	100	100	100	87	100	99	100			100		
cM capacity (veh/h)	627	578	925	629	600	860	1468			1157		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	0	89	217	131
Volume Left	0	83	0	1
Volume Right	0	6	59	0
cSH	1700	641	1468	1157
Volume to Capacity	0.00	0.14	0.00	0.00
Queue Length 95th (m)	0.0	3.8	0.0	0.0
Control Delay (s)	0.0	11.5	0.0	0.1
Lane LOS	A	B		A
Approach Delay (s)	0.0	11.5	0.0	0.1
Approach LOS	A	B		

Intersection Summary				
Average Delay		2.4		
Intersection Capacity Utilization		27.3%	ICU Level of Service	A
Analysis Period (min)		15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	358	74	181	522	57	125	38	142	35	21	21
Future Volume (vph)	22	358	74	181	522	57	125	38	142	35	21	21
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.978			0.990			0.937			0.963	
Flt Protected		0.998			0.988			0.980			0.978	
Satd. Flow (prot)	0	1478	0	0	1472	0	0	1359	0	0	1460	0
Flt Permitted		0.998			0.988			0.980			0.978	
Satd. Flow (perm)	0	1478	0	0	1472	0	0	1359	0	0	1460	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		166.4			228.8			212.1			132.6	
Travel Time (s)		12.0			16.5			15.3			9.5	
Peak Hour 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
Heavy Vehicles (%)	0%	3%	0%	4%	3%	0%	7%	0%	4%	0%	0%	0%
Adj. Flow (vph)	22	358	74	181	522	57	125	38	142	35	21	21
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	454	0	0	760	0	0	305	0	0	77	0
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Roundabout			
Intersection Capacity Utilization	116.8%	ICU Level of Service	H
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Traffic Volume (veh/h)	22	358	74	181	522	57	125	38	142	35	21	21
Future Volume (veh/h)	22	358	74	181	522	57	125	38	142	35	21	21
Peak Hour 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
Hourly flow rate (vph)	22	358	74	181	522	57	125	38	142	35	21	21
Approach Volume (veh/h)		454			760			305			77	
Crossing Volume (veh/h)		237			185			415			828	
High Capacity (veh/h)		1150			1198			999			716	
High v/c (veh/h)		0.39			0.63			0.31			0.11	
Low Capacity (veh/h)		948			992			813			564	
Low v/c (veh/h)		0.48			0.77			0.38			0.14	

Intersection Summary					
Maximum v/c High		0.63			
Maximum v/c Low		0.77			
Intersection Capacity Utilization	116.8%	ICU Level of Service		H	

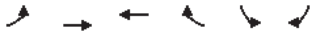
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	530	0	0	746	57	0	0	0	22	0	29
Future Volume (vph)	40	530	0	0	746	57	0	0	0	22	0	29
Ideal Flow (vphpl)	1650	1650	1900	1900	1650	1650	1900	1900	1900	1765	1900	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt					0.990						0.923	
Flt Protected		0.997									0.979	
Satd. Flow (prot)	0	1586	0	0	1595	0	0	1863	0	0	1717	0
Flt Permitted		0.997									0.979	
Satd. Flow (perm)	0	1586	0	0	1595	0	0	1863	0	0	1717	0
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		96.4			374.2			130.3			178.3	
Travel Time (s)		5.8			22.5			9.4			12.8	
Confl. Peds. (#/hr)	10					10						
Peak Hour 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
Heavy Vehicles (%)	0%	4%	2%	2%	2%	8%	2%	2%	2%	0%	2%	0%
Adj. Flow (vph)	40	530	0	0	746	57	0	0	0	22	0	29
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	570	0	0	803	0	0	0	0	0	51	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 80.1%		ICU Level of Service D	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	530	0	0	746	57	0	0	0	22	0	29
Future Volume (Veh/h)	40	530	0	0	746	57	0	0	0	22	0	29
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	40	530	0	0	746	57	0	0	0	22	0	29
Pedestrians											10	
Lane Width (m)											3.6	
Walking Speed (m/s)											1.2	
Percent Blockage											1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	813			530			1414	1423	530	1394	1394	784
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	813			530			1414	1423	530	1394	1394	784
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			100			100	100	100	81	100	93
cM capacity (veh/h)	816			1037			102	128	549	114	133	393

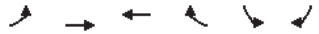
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	570	803	0	51
Volume Left	40	0	0	22
Volume Right	0	57	0	29
cSH	816	1037	1700	191
Volume to Capacity	0.05	0.00	0.00	0.27
Queue Length 95th (m)	1.2	0.0	0.0	8.3
Control Delay (s)	1.3	0.0	0.0	30.6
Lane LOS	A		A	D
Approach Delay (s)	1.3	0.0	0.0	30.6
Approach LOS			A	D

Intersection Summary				
Average Delay		1.6		
Intersection Capacity Utilization		80.1%	ICU Level of Service	D
Analysis Period (min)		15		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	26	532	785	52	26	26
Future Volume (vph)	26	532	785	52	26	26
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.992		0.932	
Flt Protected		0.998			0.976	
Satd. Flow (prot)	0	1601	1580	0	1590	0
Flt Permitted		0.998			0.976	
Satd. Flow (perm)	0	1601	1580	0	1590	0
Link Speed (k/h)		60	60		50	
Link Distance (m)		374.2	1012.1		87.7	
Travel Time (s)		22.5	60.7		6.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	3%	3%	13%	2%	0%
Adj. Flow (vph)	26	532	785	52	26	26
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	558	837	0	52	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 66.6%		ICU Level of Service C	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	26	532	785	52	26	26
Future Volume (Veh/h)	26	532	785	52	26	26
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	26	532	785	52	26	26
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	837				1395	811
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	837				1395	811
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				83	93
cM capacity (veh/h)	806				151	383

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	558	837	52
Volume Left	26	0	26
Volume Right	0	52	26
cSH	806	1700	216
Volume to Capacity	0.03	0.49	0.24
Queue Length 95th (m)	0.8	0.0	7.3
Control Delay (s)	0.9	0.0	26.8
Lane LOS	A		D
Approach Delay (s)	0.9	0.0	26.8
Approach LOS			D

Intersection Summary				
Average Delay		1.3		
Intersection Capacity Utilization		66.6%	ICU Level of Service	C
Analysis Period (min)		15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	10	77	12	6	8	113	230	34	7	387	118
Future Volume (vph)	26	10	77	12	6	8	113	230	34	7	387	118
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Storage Length (m)	0.0		0.0	0.0		0.0	30.0		0.0	0.0		0.0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (m)	0.0			0.0			25.0			0.0		
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		0.908			0.958			0.988			0.969	
Flt Protected		0.989			0.977			0.985			0.999	
Satd. Flow (prot)	0	1364	0	0	1451	0	0	1469	0	0	1432	0
Flt Permitted		0.989			0.977			0.985			0.999	
Satd. Flow (perm)	0	1364	0	0	1451	0	0	1469	0	0	1432	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		77.1			66.0			326.3			223.3	
Travel Time (s)		5.6			4.8			23.5			16.1	
Confl. Peds. (#/hr)	7		1	1		7			5	5		
Peak Hour 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
Heavy Vehicles (%)	0%	0%	3%	0%	0%	0%	5%	2%	0%	0%	3%	11%
Adj. Flow (vph)	26	10	77	12	6	8	113	230	34	7	387	118
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	113	0	0	26	0	0	377	0	0	512	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	78.4%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	26	10	77	12	6	8	113	230	34	7	387	118
Future Volume (Veh/h)	26	10	77	12	6	8	113	230	34	7	387	118
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	26	10	77	12	6	8	113	230	34	7	387	118
Pedestrians					5			1			7	
Lane Width (m)					3.6			3.6			3.6	
Walking Speed (m/s)					1.2			1.2			1.2	
Percent Blockage					0			0			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	21			88			447	146	54	296	181	17
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	21			88			447	146	54	296	181	17
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.4
p0 queue free %	98			99			55	68	97	98	44	89
cM capacity (veh/h)	1599			1519			248	722	1013	466	689	1030

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	113	26	377	512
Volume Left	26	12	113	7
Volume Right	77	8	34	118
cSH	1599	1519	467	741
Volume to Capacity	0.02	0.01	0.81	0.69
Queue Length 95th (m)	0.4	0.2	60.2	44.9
Control Delay (s)	1.8	3.4	37.7	20.0
Lane LOS	A	A	E	C
Approach Delay (s)	1.8	3.4	37.7	20.0
Approach LOS			E	C

Intersection Summary			
Average Delay	24.1		
Intersection Capacity Utilization	78.4%	ICU Level of Service	D
Analysis Period (min)	15		



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	163	0	0	109
Future Volume (vph)	0	0	163	0	0	109
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1730	0	1618	0	0	1618
Flt Permitted						
Satd. Flow (perm)	1730	0	1618	0	0	1618
Link Speed (k/h)	50		50			50
Link Distance (m)	135.9		143.4			554.5
Travel Time (s)	9.8		10.3			39.9
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	163	0	0	109
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	163	0	0	109
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	13.2%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	163	0	0	109
Future Volume (Veh/h)	0	0	163	0	0	109
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	163	0	0	109
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	272	163			163	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	272	163			163	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	717	882			1416	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	0	163	109
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	1700	1416
Volume to Capacity	0.00	0.10	0.00
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0
Lane LOS	A		
Approach Delay (s)	0.0	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	13.2%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	199	5	97	297	4	59
Future Volume (vph)	199	5	97	297	4	59
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.997				0.874	
Flt Protected				0.988	0.997	
Satd. Flow (prot)	1613	0	0	1598	1508	0
Flt Permitted				0.988	0.997	
Satd. Flow (perm)	1613	0	0	1598	1508	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	400.3			181.6	225.5	
Travel Time (s)	28.8			13.1	16.2	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	199	5	97	297	4	59
Shared Lane Traffic (%)						
Lane Group Flow (vph)	204	0	0	394	63	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	50.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	199	5	97	297	4	59
Future Volume (Veh/h)	199	5	97	297	4	59
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	199	5	97	297	4	59
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			204		692	202
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			204		692	202
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			93		99	93
cM capacity (veh/h)			1368		381	839

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	204	394	63
Volume Left	0	97	4
Volume Right	5	0	59
cSH	1700	1368	780
Volume to Capacity	0.12	0.07	0.08
Queue Length 95th (m)	0.0	1.8	2.1
Control Delay (s)	0.0	2.4	10.0
Lane LOS		A	B
Approach Delay (s)	0.0	2.4	10.0
Approach LOS			B

Intersection Summary			
Average Delay	2.4		
Intersection Capacity Utilization	50.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	254	4	74	391	0	3	0	46	0	0	0
Future Volume (vph)	0	254	4	74	391	0	3	0	46	0	0	0
Ideal Flow (vphpl)	1650	1650	1900	1900	1650	1650	1900	1900	1900	1765	1900	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998						0.873				
Flt Protected					0.992			0.997				
Satd. Flow (prot)	0	1614	0	0	1605	0	0	1621	0	0	1863	0
Flt Permitted					0.992			0.997				
Satd. Flow (perm)	0	1614	0	0	1605	0	0	1621	0	0	1863	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		181.6			170.9			154.4			161.8	
Travel Time (s)		13.1			12.3			11.1			11.6	
Peak Hour 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
Adj. Flow (vph)	0	254	4	74	391	0	3	0	46	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	258	0	0	465	0	0	49	0	0	0	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	57.4%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	254	4	74	391	0	3	0	46	0	0	0
Future Volume (Veh/h)	0	254	4	74	391	0	3	0	46	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	0	254	4	74	391	0	3	0	46	0	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	391			258			795	795	256	841	797	391
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	391			258			795	795	256	841	797	391
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			94			99	100	94	100	100	100
cM capacity (veh/h)	1168			1307			292	302	783	256	301	658

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	258	465	49	0
Volume Left	0	74	3	0
Volume Right	4	0	46	0
cSH	1168	1307	710	1700
Volume to Capacity	0.00	0.06	0.07	0.00
Queue Length 95th (m)	0.0	1.4	1.8	0.0
Control Delay (s)	0.0	1.8	10.4	0.0
Lane LOS		A	B	A
Approach Delay (s)	0.0	1.8	10.4	0.0
Approach LOS			B	A

Intersection Summary				
Average Delay	1.7			
Intersection Capacity Utilization	57.4%	ICU Level of Service		B
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	288	9	179	430	59	33	7	133	33	7	2
Future Volume (vph)	3	288	9	179	430	59	33	7	133	33	7	2
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.996			0.988			0.896			0.994	
Flt Protected					0.987			0.991			0.962	
Satd. Flow (prot)	0	1514	0	0	1482	0	0	1349	0	0	1453	0
Flt Permitted					0.987			0.991			0.962	
Satd. Flow (perm)	0	1514	0	0	1482	0	0	1349	0	0	1453	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		377.6			166.4			109.1			148.1	
Travel Time (s)		27.2			12.0			7.9			10.7	
Peak Hour 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
Adj. Flow (vph)	3	288	9	179	430	59	33	7	133	33	7	2
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	300	0	0	668	0	0	173	0	0	42	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	85.9%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	288	9	179	430	59	33	7	133	33	7	2
Future Volume (Veh/h)	3	288	9	179	430	59	33	7	133	33	7	2
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	3	288	9	179	430	59	33	7	133	33	7	2
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	489			297			1122	1146	292	1252	1120	460
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	489			297			1122	1146	292	1252	1120	460
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			86			79	96	82	69	96	100
cM capacity (veh/h)	1074			1264			158	171	747	106	177	602

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	300	668	173	42
Volume Left	3	179	33	33
Volume Right	9	59	133	2
cSH	1074	1264	404	118
Volume to Capacity	0.00	0.14	0.43	0.36
Queue Length 95th (m)	0.1	3.9	16.8	11.5
Control Delay (s)	0.1	3.4	20.4	51.4
Lane LOS	A	A	C	F
Approach Delay (s)	0.1	3.4	20.4	51.4
Approach LOS			C	F

Intersection Summary				
Average Delay	6.8			
Intersection Capacity Utilization	85.9%	ICU Level of Service	E	
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	519	0	0	710	37	0	0	0	22	0	9
Future Volume (vph)	17	519	0	0	710	37	0	0	0	22	0	9
Ideal Flow (vphpl)	1650	1650	1900	1900	1650	1650	1900	1900	1900	1765	1900	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.993						0.961	
Flt Protected		0.998									0.966	
Satd. Flow (prot)	0	1614	0	0	1606	0	0	1863	0	0	1729	0
Flt Permitted		0.998									0.966	
Satd. Flow (perm)	0	1614	0	0	1606	0	0	1863	0	0	1729	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		228.8			210.5			133.9			114.8	
Travel Time (s)		16.5			15.2			9.6			8.3	
Peak Hour 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
Adj. Flow (vph)	17	519	0	0	710	37	0	0	0	22	0	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	536	0	0	747	0	0	0	0	0	31	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	57.3%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	17	519	0	0	710	37	0	0	0	22	0	9
Future Volume (Veh/h)	17	519	0	0	710	37	0	0	0	22	0	9
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	17	519	0	0	710	37	0	0	0	22	0	9
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	747			519			1290	1300	519	1282	1282	728
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	747			519			1290	1300	519	1282	1282	728
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			100			100	100	100	84	100	98
cM capacity (veh/h)	861			1047			135	158	557	140	162	423

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	536	747	0	31
Volume Left	17	0	0	22
Volume Right	0	37	0	9
cSH	861	1047	1700	174
Volume to Capacity	0.02	0.00	0.00	0.18
Queue Length 95th (m)	0.5	0.0	0.0	5.0
Control Delay (s)	0.5	0.0	0.0	30.1
Lane LOS	A		A	D
Approach Delay (s)	0.5	0.0	0.0	30.1
Approach LOS			A	D

Intersection Summary				
Average Delay		0.9		
Intersection Capacity Utilization		57.3%	ICU Level of Service	B
Analysis Period (min)		15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	524	0	0	738	37	0	0	0	22	0	9
Future Volume (vph)	17	524	0	0	738	37	0	0	0	22	0	9
Ideal Flow (vphpl)	1650	1650	1900	1900	1650	1650	1900	1900	1900	1765	1900	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.994						0.961	
Flt Protected		0.998									0.966	
Satd. Flow (prot)	0	1614	0	0	1608	0	0	1863	0	0	1729	0
Flt Permitted		0.998									0.966	
Satd. Flow (perm)	0	1614	0	0	1608	0	0	1863	0	0	1729	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		210.5			96.4			108.7			129.5	
Travel Time (s)		15.2			6.9			7.8			9.3	
Peak Hour 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
Adj. Flow (vph)	17	524	0	0	738	37	0	0	0	22	0	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	541	0	0	775	0	0	0	0	0	31	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	57.6%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	17	524	0	0	738	37	0	0	0	22	0	9
Future Volume (Veh/h)	17	524	0	0	738	37	0	0	0	22	0	9
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	17	524	0	0	738	37	0	0	0	22	0	9
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	775			524			1324	1333	524	1314	1314	756
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	775			524			1324	1333	524	1314	1314	756
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			100			100	100	100	83	100	98
cM capacity (veh/h)	841			1043			128	151	553	133	155	408

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	541	775	0	31
Volume Left	17	0	0	22
Volume Right	0	37	0	9
cSH	841	1043	1700	165
Volume to Capacity	0.02	0.00	0.00	0.19
Queue Length 95th (m)	0.5	0.0	0.0	5.3
Control Delay (s)	0.6	0.0	0.0	31.7
Lane LOS	A		A	D
Approach Delay (s)	0.6	0.0	0.0	31.7
Approach LOS			A	D

Intersection Summary				
Average Delay		1.0		
Intersection Capacity Utilization		57.6%	ICU Level of Service	B
Analysis Period (min)		15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	0	14	0	0	0	14	273	0	0	242	34
Future Volume (vph)	27	0	14	0	0	0	14	273	0	0	242	34
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.954									0.983	
Flt Protected		0.968						0.998				
Satd. Flow (prot)	0	1403	0	0	1520	0	0	1517	0	0	1494	0
Flt Permitted		0.968						0.998				
Satd. Flow (perm)	0	1403	0	0	1520	0	0	1517	0	0	1494	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		174.2			151.1			248.8			212.1	
Travel Time (s)		12.5			10.9			17.9			15.3	
Peak Hour 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
Adj. Flow (vph)	27	0	14	0	0	0	14	273	0	0	242	34
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	41	0	0	0	0	0	287	0	0	276	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	41.6%	ICU Level of Service A	
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	27	0	14	0	0	0	14	273	0	0	242	34
Future Volume (Veh/h)	27	0	14	0	0	0	14	273	0	0	242	34
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	27	0	14	0	0	0	14	273	0	0	242	34
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	560	560	259	574	577	273	276			273		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	560	560	259	574	577	273	276			273		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	94	100	98	100	100	100	99			100		
cM capacity (veh/h)	435	432	780	418	423	766	1287			1290		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	41	0	287	276
Volume Left	27	0	14	0
Volume Right	14	0	0	34
cSH	513	1700	1287	1290
Volume to Capacity	0.08	0.00	0.01	0.00
Queue Length 95th (m)	2.1	0.0	0.3	0.0
Control Delay (s)	12.6	0.0	0.5	0.0
Lane LOS	B	A	A	
Approach Delay (s)	12.6	0.0	0.5	0.0
Approach LOS	B	A		

Intersection Summary				
Average Delay	1.1			
Intersection Capacity Utilization	41.6%	ICU Level of Service	A	
Analysis Period (min)	15			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	0	14	0	0	0	14	260	0	0	222	34
Future Volume (vph)	27	0	14	0	0	0	14	260	0	0	222	34
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.954									0.982	
Flt Protected		0.968						0.997				
Satd. Flow (prot)	0	1403	0	0	1520	0	0	1515	0	0	1492	0
Flt Permitted		0.968						0.997				
Satd. Flow (perm)	0	1403	0	0	1520	0	0	1515	0	0	1492	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		117.0			126.5			247.2			248.8	
Travel Time (s)		8.4			9.1			17.8			17.9	
Peak Hour 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
Adj. Flow (vph)	27	0	14	0	0	0	14	260	0	0	222	34
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	41	0	0	0	0	0	274	0	0	256	0
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		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	27	0	14	0	0	0	14	260	0	0	222	34
Future Volume (Veh/h)	27	0	14	0	0	0	14	260	0	0	222	34
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	27	0	14	0	0	0	14	260	0	0	222	34
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	527	527	239	541	544	260	256			260		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	527	527	239	541	544	260	256			260		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	94	100	98	100	100	100	99			100		
cM capacity (veh/h)	458	451	800	440	441	779	1309			1304		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	41	0	274	256
Volume Left	27	0	14	0
Volume Right	14	0	0	34
cSH	536	1700	1309	1304
Volume to Capacity	0.08	0.00	0.01	0.00
Queue Length 95th (m)	2.0	0.0	0.3	0.0
Control Delay (s)	12.3	0.0	0.5	0.0
Lane LOS	B	A	A	
Approach Delay (s)	12.3	0.0	0.5	0.0
Approach LOS	B	A		

Intersection Summary				
Average Delay	1.1			
Intersection Capacity Utilization	40.8%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	0	0	0	402	0	0	396	0
Future Volume (vph)	0	0	0	0	0	0	0	402	0	0	396	0
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt												
Flt Protected												
Satd. Flow (prot)	0	1520	0	0	1520	0	0	1520	0	0	1520	0
Flt Permitted												
Satd. Flow (perm)	0	1520	0	0	1520	0	0	1520	0	0	1520	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		128.4			112.6			130.6			488.0	
Travel Time (s)		9.2			8.1			9.4			35.1	
Peak Hour 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
Adj. Flow (vph)	0	0	0	0	0	0	0	402	0	0	396	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	0	0	0	402	0	0	396	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	29.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	0	0	0	0	402	0	0	396	0
Future Volume (Veh/h)	0	0	0	0	0	0	0	402	0	0	396	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	0	0	0	0	0	0	0	402	0	0	396	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	798	798	396	798	798	402	396			402		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	798	798	396	798	798	402	396			402		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	100	100	100	100			100		
cM capacity (veh/h)	304	319	653	304	319	648	1163			1157		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	0	0	402	396
Volume Left	0	0	0	0
Volume Right	0	0	0	0
cSH	1700	1700	1163	1157
Volume to Capacity	0.00	0.00	0.00	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0
Lane LOS	A	A		
Approach Delay (s)	0.0	0.0	0.0	0.0
Approach LOS	A	A		

Intersection Summary				
Average Delay		0.0		
Intersection Capacity Utilization		29.3%	ICU Level of Service	A
Analysis Period (min)		15		

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]
© Copyright TRL Limited, 2020

For sales and distribution information, program advice and maintenance, contact TRL:
Tel: +44 (0)1344 770758 email: software@trl.co.uk Web: http://www.trlsoftware.co.uk

The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: Laurelwood & Beaver Creek.arc8
Path: C:\Users\AdamMorrison\Paradigm\Projects - 170278 Beaver Creek Area TES\C5 - Analysis and Evaluation\Arcady
Report generation date: 2020-07-21 4:14:49 PM

Summary of intersection performance

There are warnings associated with this model run - see the 'Data Errors and Warnings' tables.

	AM					
	Queue (Veh)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS
	All - Total 2025					
Intersection 85% - Leg North	0.34	5.07	0.25	A	13.03	B
Intersection 85% - Leg West	3.00	14.97	0.76	B		
Intersection 85% - Leg South	1.98	22.78	0.68	C		
Intersection 85% - Leg East	0.48	5.26	0.32	A		
Intersection 90% - Leg North	0.33	4.72	0.25	A	10.68	B
Intersection 90% - Leg West	2.45	12.15	0.72	B		
Intersection 90% - Leg South	1.61	18.43	0.63	C		
Intersection 90% - Leg East	0.48	4.98	0.33	A		

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Intersection LOS and Intersection Delay are demand-weighted averages.

"D1 - Existing, AM" model duration: 8:00 AM - 9:00 AM
"D2 - Existing, PM" model duration: 4:00 PM - 5:00 PM
"D3 - Background 2022, AM" model duration: 8:00 AM - 9:00 AM
"D4 - Background 2022, PM" model duration: 4:00 PM - 5:00 PM
"D5 - Total 2022, AM" model duration: 8:00 AM - 9:00 AM
"D6 - Total 2022, PM" model duration: 4:00 PM - 5:00 PM
"D7 - Background 2025, AM" model duration: 8:00 AM - 9:00 AM
"D8 - Background 2025, PM" model duration: 4:00 PM - 5:00 PM
"D9 - Total 2025, AM " model duration: 8:00 AM - 9:00 AM
"D10 - Total 2025, PM" model duration: 4:00 PM - 5:00 PM
"D11 - Background 2027, AM" model duration: 8:00 AM - 9:00 AM
"D12 - Background 2027, PM" model duration: 4:00 PM - 5:00 PM
"D13 - Total 2027, AM" model duration: 8:00 AM - 9:00 AM
"D14 - Total 2027, PM" model duration: 4:00 PM - 5:00 PM
"D15 - Background 2032, AM" model duration: 8:00 AM - 9:00 AM
"D16 - Background 2032, PM" model duration: 4:00 PM - 5:00 PM
"D17 - Total 2032, AM" model duration: 8:00 AM - 9:00 AM
"D18 - Total 2032, PM" model duration: 4:00 PM - 5:00 PM

Run using Junctions 8.0.6.541 at 2020-07-21 4:14:48 PM

File summary

Title	Laurelwood & Beaver Creek
Location	Waterloo
Site Number	
Date	2017-12-05
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	170278
Analyst	Matt
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)
7.50	✓		N/A	0.90	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	Veh	Veh	perHour	s	-Min	perMin

All - Total 2025, AM

Data Errors and Warnings

Severity	Area	Item	Description
Last Run	Last Run	Intersection 85% - Leg East - Capacity	Pedestrian Crossing causes blocking on previous leg due to traffic queing to leave the intersection in 4 timesegment(s).
Last Run	Last Run	Intersection 90% - Leg East - Capacity	Pedestrian Crossing causes blocking on previous leg due to traffic queing to leave the intersection in 4 timesegment(s).

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
All	ARCADY		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
Total 2025, AM	Total 2025	AM		PHF	08:00	09:00	60	15				✓		

Intersection Network

Intersections

Junction	Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Do Geometric Delay	Intersection Delay (s)	Intersection LOS
85%	85%	Existing	Roundabout	North,West,South,East				13.03	B
90%	90%	Future	Roundabout	North,West,South,East				10.68	B

Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

Legs

Legs

Intersection	Leg	Leg	Name	Description
85%	**North**	North	Beaver Creek SB	
85%	**West**	West	Laurelwood EB	
85%	**South**	South	Beaver Creek NB	
85%	**East**	East	Laurelwood WB	
90%	**North**	North	Beaver Creek SB	
90%	**West**	West	Laurelwood EB	

90%	South	South	Beaver Creek NB	
90%	East	East	Laurelwood WB	

Capacity Options

Intersection	Leg	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)	Assume Flat Start Profile	Initial Queue (PCE)
85%	North	0.00	99999.00		0.00
85%	West	0.00	99999.00		0.00
85%	South	0.00	99999.00		0.00
85%	East	0.00	99999.00		0.00
90%	North	0.00	99999.00		0.00
90%	West	0.00	99999.00		0.00
90%	South	0.00	99999.00		0.00
90%	East	0.00	99999.00		0.00

Roundabout Geometry

Intersection	Leg	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
85%	North	3.50	4.50	30.00	20.00	30.00	25.00	
85%	West	3.50	4.50	30.00	20.00	30.00	25.00	
85%	South	3.50	4.50	30.00	20.00	30.00	25.00	
85%	East	3.50	4.50	30.00	20.00	30.00	25.00	
90%	North	3.50	4.50	30.00	20.00	30.00	25.00	
90%	West	3.50	4.50	30.00	20.00	30.00	25.00	
90%	South	3.50	4.50	30.00	20.00	30.00	25.00	
90%	East	3.50	4.50	30.00	20.00	30.00	25.00	

Pedestrian Crossings

Intersection	Leg	Crossing Type
85%	North	Unsignalled Pedestrian Crossing
85%	West	Unsignalled Pedestrian Crossing
85%	South	Unsignalled Pedestrian Crossing
85%	East	Unsignalled Pedestrian Crossing
90%	North	Unsignalled Pedestrian Crossing
90%	West	Unsignalled Pedestrian Crossing
90%	South	Unsignalled Pedestrian Crossing
90%	East	Unsignalled Pedestrian Crossing

Unsignalled Pedestrian Crossing Crossings

Intersection	Leg	Space between crossing and intersection entry (PCE)	Vehicles queueing on exit (PCE)	Central Refuge	Crossing Data Type	Crossing length (m)	Crossing time (s)	Crossing length (entry side) (m)	Crossing time (entry side) (s)	Crossing length (exit side) (m)	Crossing time (exit side) (s)
85%	North	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
85%	West	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
85%	South	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
85%	East	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
90%	North	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
90%	West	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
90%	South	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
90%	East	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50

Slope / Intercept / Capacity

Leg Intercept Adjustments

Intersection	Leg	Type	Reason	Direct Intercept Adjustment (PCE/hr)	Percentage Intercept Adjustment (%)
85%	North	Percentage	Region of Waterloo - Requirement		85.00
85%	West	Percentage	Region of Waterloo - Requirement		85.00
85%	South	Percentage	Region of Waterloo - Requirement		85.00
85%	East	Percentage	Region of Waterloo - Requirement		85.00
90%	North	Percentage	Region of Waterloo - Requirement		90.00

90%	West	Percentage	Region of Waterloo - Requirement		90.00
90%	South	Percentage	Region of Waterloo - Requirement		90.00
90%	East	Percentage	Region of Waterloo - Requirement		90.00

Roundabout Slope and Intercept used in model

Intersection	Leg	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
85%	North		(calculated)	(calculated)	0.593	1153.828
85%	West		(calculated)	(calculated)	0.593	1153.828
85%	South		(calculated)	(calculated)	0.593	1153.828
85%	East		(calculated)	(calculated)	0.593	1153.828
90%	North		(calculated)	(calculated)	0.593	1221.701
90%	West		(calculated)	(calculated)	0.593	1221.701
90%	South		(calculated)	(calculated)	0.593	1221.701
90%	East		(calculated)	(calculated)	0.593	1221.701

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCE Factor for a Truck (PCE)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Intersection	Leg	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
85%	North	PHF	✓	223.00	100.000
85%	West	PHF	✓	677.00	100.000
85%	South	PHF	✓	294.00	100.000
85%	East	PHF	✓	302.00	100.000
90%	North	PHF	✓	234.00	100.000
90%	West	PHF	✓	679.00	100.000
90%	South	PHF	✓	294.00	100.000
90%	East	PHF	✓	323.00	100.000

Peak Hour Factor Data

Intersection	Leg	Hourly Volume (Veh/hr)	Peak Hour Factor	Peak Time Segment
85%	North	223.00	0.92	SecondQuarter
85%	West	677.00	0.92	SecondQuarter
85%	South	294.00	0.92	SecondQuarter
85%	East	302.00	0.92	SecondQuarter
90%	North	234.00	0.92	SecondQuarter
90%	West	679.00	0.92	SecondQuarter
90%	South	294.00	0.92	SecondQuarter
90%	East	323.00	0.92	SecondQuarter

Pedestrian Flows

General Flows Data

Intersection	Leg	Profile Type	Average Pedestrian Flow (Ped/hr)

85%	North	PHF	10.00
85%	West	PHF	7.00
85%	South	PHF	4.00
85%	East	PHF	10.00
90%	North	PHF	10.00
90%	West	PHF	7.00
90%	South	PHF	4.00
90%	East	PHF	10.00

Peak Hour Factor Data

Intersection	Leg	Hourly Volume (Ped/hr)	Peak Hour Factor	Peak Time Segment
85%	North	10.00	1.00	SecondQuarter
85%	West	7.00	1.00	SecondQuarter
85%	South	4.00	1.00	SecondQuarter
85%	East	10.00	1.00	SecondQuarter
90%	North	10.00	1.00	SecondQuarter
90%	West	7.00	1.00	SecondQuarter
90%	South	4.00	1.00	SecondQuarter
90%	East	10.00	1.00	SecondQuarter

Turning Proportions

Turning Counts / Proportions (Veh/hr) - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.000	14.000	20.000	189.000
	West	31.000	0.000	87.000	559.000
	South	38.000	57.000	0.000	199.000
	East	87.000	178.000	37.000	0.000

Turning Proportions (Veh) - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.00	0.06	0.09	0.85
	West	0.05	0.00	0.13	0.83
	South	0.13	0.19	0.00	0.68
	East	0.29	0.59	0.12	0.00

Turning Counts / Proportions (Veh/hr) - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.000	16.000	20.000	198.000
	West	33.000	0.000	87.000	559.000
	South	38.000	57.000	0.000	199.000
	East	108.000	178.000	37.000	0.000

Turning Proportions (Veh) - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.00	0.07	0.09	0.85
	West	0.05	0.00	0.13	0.82
	South	0.13	0.19	0.00	0.68
	East	0.33	0.55	0.11	0.00

Vehicle Mix

Average PCE Per Vehicle - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	1.000	1.110	1.000	1.000
	West	1.000	1.000	1.000	1.030
	South	1.090	1.000	1.000	1.010
	East	1.040	1.060	1.060	1.000

Truck Percentages - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.0	11.0	0.0	0.0
	West	0.0	0.0	0.0	3.0
	South	9.0	0.0	0.0	1.0
	East	4.0	6.0	6.0	0.0

Average PCE Per Vehicle - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	1.000	1.110	1.000	1.000
	West	1.000	1.000	1.000	1.030
	South	1.090	1.000	1.000	1.010
	East	1.040	1.060	1.060	1.000

Truck Percentages - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.0	11.0	0.0	0.0
	West	0.0	0.0	0.0	3.0
	South	9.0	0.0	0.0	1.0
	East	4.0	6.0	6.0	0.0

Results

Results Summary for whole modelled period

Intersection	Leg	Max V/C Ratio	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Intersection Arrivals (Veh)	Total Queueing Delay (Veh-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (Veh-min/min)	Inclusive Total Queueing Delay (Veh-min)	Inclusive Average Queueing Delay (s)
85%	North	0.25	5.07	0.34	~1	A	223.00	223.00	17.93	4.82	0.30	17.93	4.82
85%	West	0.76	14.97	3.00	9.00	B	677.00	677.00	135.90	12.04	2.26	136.00	12.05
85%	South	0.68	22.78	1.98	6.00	C	294.00	294.00	80.19	16.37	1.34	80.24	16.38
85%	East	0.32	5.26	0.48	1.00	A	302.00	302.00	25.24	5.02	0.42	25.25	5.02
90%	North	0.25	4.72	0.33	~1	A	234.00	234.00	17.53	4.49	0.29	17.53	4.50
90%	West	0.72	12.15	2.45	5.00	B	679.00	679.00	113.77	10.05	1.90	113.85	10.06
90%	South	0.63	18.43	1.61	3.00	C	294.00	294.00	66.88	13.65	1.11	66.91	13.66
90%	East	0.33	4.98	0.48	1.00	A	323.00	323.00	25.53	4.74	0.43	25.53	4.74

Main Results for each time segment

Main results: (08:00-08:15)

Intersection	Leg	Total Demand (Veh/hr)	Intersection Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	V/C Ratio	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
85%	North	210.07	52.52	208.99	145.72	254.43	10.00	979.79	598.45	0.214	0.00	0.27	4.663	A
85%	West	637.75	159.44	630.71	232.89	230.54	7.00	988.65	717.05	0.645	0.00	1.76	9.874	A

85%	South	276.96	69.24	273.29	134.46	726.78	4.00	571.76	265.16	0.484	0.00	0.92	11.922	B
85%	East	284.49	71.12	282.96	882.88	117.19	10.00	1023.32	1001.51	0.278	0.00	0.38	4.853	A
90%	North	220.44	55.11	219.37	167.40	254.59	10.00	1045.64	667.31	0.211	0.00	0.27	4.351	A
90%	West	639.64	159.91	633.55	234.91	239.05	7.00	1049.85	748.52	0.609	0.00	1.52	8.528	A
90%	South	276.96	69.24	273.77	134.60	738.00	4.00	617.33	247.97	0.449	0.00	0.80	10.385	B
90%	East	304.28	76.07	302.73	892.51	119.25	10.00	1086.00	1054.35	0.280	0.00	0.39	4.585	A

Main results: (08:15-08:30)

Intersection	Leg	Total Demand (Veh/hr)	Intersection Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	V/C Ratio	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
85%	North	242.39	60.60	242.12	168.68	294.56	10.00	951.79	598.45	0.255	0.27	0.34	5.069	A
85%	West	735.87	183.97	730.93	269.59	267.09	7.00	966.39	717.05	0.761	1.76	3.00	14.965	B
85%	South	319.57	79.89	315.29	155.82	842.21	4.00	469.16	265.16	0.681	0.92	1.98	22.780	C
85%	East	328.26	82.07	327.88	1022.15	135.35	10.00	1011.61	1001.51	0.324	0.38	0.48	5.263	A
90%	North	254.35	63.59	254.09	193.84	294.77	10.00	1017.31	667.31	0.250	0.27	0.33	4.716	A
90%	West	738.04	184.51	734.35	271.97	276.88	7.00	1026.78	748.52	0.719	1.52	2.45	12.150	B
90%	South	319.57	79.89	316.33	155.98	855.25	4.00	508.40	247.97	0.629	0.80	1.61	18.434	C
90%	East	351.09	87.77	350.71	1033.67	137.90	10.00	1073.45	1054.35	0.327	0.39	0.48	4.979	A

Main results: (08:30-08:45)

Intersection	Leg	Total Demand (Veh/hr)	Intersection Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	V/C Ratio	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
85%	North	229.46	57.37	229.56	160.84	280.29	10.00	961.82	598.45	0.239	0.34	0.32	4.916	A
85%	West	696.62	174.16	698.19	256.62	253.24	7.00	974.81	717.05	0.715	3.00	2.60	13.108	B
85%	South	302.52	75.63	304.17	148.40	803.02	4.00	503.14	265.16	0.601	1.98	1.57	18.258	C
85%	East	310.75	77.69	310.88	976.94	130.26	10.00	1014.99	1001.51	0.306	0.48	0.44	5.115	A
90%	North	240.78	60.20	240.88	184.46	280.22	10.00	1027.64	667.31	0.234	0.33	0.31	4.577	A
90%	West	698.68	174.67	699.91	258.60	262.49	7.00	1035.55	748.52	0.675	2.45	2.14	10.774	B
90%	South	302.52	75.63	303.82	148.36	814.05	4.00	546.02	247.97	0.554	1.61	1.28	14.950	B
90%	East	332.36	83.09	332.49	985.68	132.19	10.00	1077.41	1054.35	0.308	0.48	0.45	4.835	A

Main results: (08:45-09:00)

Intersection	Leg	Total Demand (Veh/hr)	Intersection Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	V/C Ratio	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
85%	North	210.07	52.52	210.23	147.45	256.84	10.00	978.14	598.45	0.215	0.32	0.28	4.690	A
85%	West	637.75	159.44	640.67	235.16	231.92	7.00	987.78	717.05	0.646	2.60	1.88	10.461	B
85%	South	276.96	69.24	279.27	136.07	736.51	4.00	562.54	265.16	0.492	1.57	1.00	12.812	B
85%	East	284.49	71.12	284.72	896.20	119.57	10.00	1021.86	1001.51	0.278	0.44	0.39	4.886	A
90%	North	220.44	55.11	220.59	169.03	256.72	10.00	1044.16	667.31	0.211	0.31	0.27	4.373	A
90%	West	639.64	159.91	641.79	236.92	240.39	7.00	1049.01	748.52	0.610	2.14	1.60	8.890	A
90%	South	276.96	69.24	278.68	135.97	746.21	4.00	609.23	247.97	0.455	1.28	0.85	10.949	B
90%	East	304.28	76.07	304.50	903.65	121.24	10.00	1084.75	1054.35	0.281	0.45	0.39	4.616	A

Queueing Delay Results for each time segment

Queueing Delay results: (08:00-08:15)

Intersection	Leg	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	3.96	0.26	4.663	A	A
85%	West	24.49	1.63	9.874	A	A
85%	South	12.82	0.85	11.922	B	B
85%	East	5.57	0.37	4.853	A	A
90%	North	3.88	0.26	4.351	A	A
90%	West	21.39	1.43	8.528	A	A
90%	South	11.25	0.75	10.385	B	B
90%	East	5.64	0.38	4.585	A	A

Queueing Delay results: (08:15-08:30)

Intersection	Leg	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service

85%	North	5.00	0.33	5.069	A	A
85%	West	41.23	2.75	14.965	B	B
85%	South	26.75	1.78	22.780	C	C
85%	East	7.01	0.47	5.263	A	A
90%	North	4.88	0.33	4.716	A	A
90%	West	34.24	2.28	12.150	B	B
90%	South	22.12	1.47	18.434	C	B
90%	East	7.10	0.47	4.979	A	A

Queueing Delay results: (08:30-08:45)

Intersection	Leg	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	4.78	0.32	4.916	A	A
85%	West	40.55	2.70	13.108	B	B
85%	South	24.84	1.66	18.258	C	B
85%	East	6.75	0.45	5.115	A	A
90%	North	4.67	0.31	4.577	A	A
90%	West	33.12	2.21	10.774	B	B
90%	South	20.13	1.34	14.950	B	B
90%	East	6.82	0.45	4.835	A	A

Queueing Delay results: (08:45-09:00)

Intersection	Leg	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	4.19	0.28	4.690	A	A
85%	West	29.63	1.98	10.461	B	B
85%	South	15.78	1.05	12.812	B	B
85%	East	5.92	0.39	4.886	A	A
90%	North	4.09	0.27	4.373	A	A
90%	West	25.03	1.67	8.890	A	A
90%	South	13.38	0.89	10.949	B	B
90%	East	5.98	0.40	4.616	A	A

Queue Variation Results for each time segment

Queue Variation results: (08:00-08:15)

Intersection	Leg	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.27	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	1.76	0.00	0.00	3.00	5.00			N/A	N/A
85%	South	0.92	0.00	0.00	1.00	1.00			N/A	N/A
85%	East	0.38	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.27	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	1.52	0.00	0.00	3.00	4.00			N/A	N/A
90%	South	0.80	0.00	0.00	0.00	1.00			N/A	N/A
90%	East	0.39	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:15-08:30)

Intersection	Leg	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.34	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	3.00	0.00	0.00	2.00	9.00			N/A	N/A
85%	South	1.98	0.00	0.00	1.00	6.00			N/A	N/A
85%	East	0.48	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very		N/A	N/A

							small or very big.			
90%	**North**	0.33	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	**West**	2.45	0.00	0.00	0.00	5.00			N/A	N/A
90%	**South**	1.61	0.00	0.00	0.00	3.00			N/A	N/A
90%	**East**	0.48	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:30-08:45)

Intersection	Leg	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	**North**	0.32	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	**West**	2.60	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	**South**	1.57	0.00	0.00	0.00	2.00			N/A	N/A
85%	**East**	0.44	0.00	0.00	0.00	1.00			N/A	N/A
90%	**North**	0.31	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	**West**	2.14	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	**South**	1.28	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	**East**	0.45	0.00	0.00	0.00	1.00			N/A	N/A

Queue Variation results: (08:45-09:00)

Intersection	Leg	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	**North**	0.28	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	**West**	1.88	0.00	0.00	4.00	6.00			N/A	N/A
85%	**South**	1.00	0.00	0.00	1.00	2.00			N/A	N/A
85%	**East**	0.39	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	**North**	0.27	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	**West**	1.60	0.00	0.00	3.00	5.00			N/A	N/A
90%	**South**	0.85	0.00	0.00	1.00	2.00			N/A	N/A
90%	**East**	0.39	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]
© Copyright TRL Limited, 2020

For sales and distribution information, program advice and maintenance, contact TRL:
Tel: +44 (0)1344 770758 email: software@trl.co.uk Web: http://www.trlsoftware.co.uk

The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: Laurelwood & Beaver Creek.arc8
Path: C:\Users\AdamMorrison\Paradigm\Projects - 170278 Beaver Creek Area TES\C5 - Analysis and Evaluation\Arcady
Report generation date: 2020-07-21 4:17:20 PM

Summary of intersection performance

	PM					
	Queue (Veh)	**Delay (s)**	**V/C Ratio**	**LOS**	**Intersection Delay (s)**	**Intersection LOS**
	All - Total 2025					
Intersection 85% - Leg North	0.58	9.41	0.37	A	22.98	C
Intersection 85% - Leg West	0.64	6.40	0.39	A		
Intersection 85% - Leg South	0.22	5.37	0.18	A		
Intersection 85% - Leg East	10.12	34.40	0.94	D		
Intersection 90% - Leg North	0.53	8.35	0.35	A	17.32	C
Intersection 90% - Leg West	0.58	5.78	0.37	A		
Intersection 90% - Leg South	0.20	4.94	0.17	A		
Intersection 90% - Leg East	7.26	25.15	0.90	D		

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Intersection LOS and Intersection Delay are demand-weighted averages.

"D1 - Existing, AM" model duration: 8:00 AM - 9:00 AM
"D2 - Existing, PM" model duration: 4:00 PM - 5:00 PM
"D3 - Background 2022, AM" model duration: 8:00 AM - 9:00 AM
"D4 - Background 2022, PM" model duration: 4:00 PM - 5:00 PM
"D5 - Total 2022, AM" model duration: 8:00 AM - 9:00 AM
"D6 - Total 2022, PM" model duration: 4:00 PM - 5:00 PM
"D7 - Background 2025, AM" model duration: 8:00 AM - 9:00 AM
"D8 - Background 2025, PM" model duration: 4:00 PM - 5:00 PM
"D9 - Total 2025, AM" model duration: 8:00 AM - 9:00 AM
"D10 - Total 2025, PM " model duration: 4:00 PM - 5:00 PM
"D11 - Background 2027, AM" model duration: 8:00 AM - 9:00 AM
"D12 - Background 2027, PM" model duration: 4:00 PM - 5:00 PM
"D13 - Total 2027, AM" model duration: 8:00 AM - 9:00 AM
"D14 - Total 2027, PM" model duration: 4:00 PM - 5:00 PM
"D15 - Background 2032, AM" model duration: 8:00 AM - 9:00 AM
"D16 - Background 2032, PM" model duration: 4:00 PM - 5:00 PM
"D17 - Total 2032, AM" model duration: 8:00 AM - 9:00 AM
"D18 - Total 2032, PM" model duration: 4:00 PM - 5:00 PM

Run using Junctions 8.0.6.541 at 2020-07-21 4:17:19 PM

File summary

Title	Laurelwood & Beaver Creek
Location	Waterloo
Site Number	
Date	2017-12-05
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	170278
Analyst	Matt
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)
7.50	✓		N/A	0.90	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	Veh	Veh	perHour	s	-Min	perMin

All - Total 2025, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
All	ARCADY		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
Total 2025, PM	Total 2025	PM		PHF	16:00	17:00	60	15				✓		

Intersection Network

Intersections

Junction	Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Do Geometric Delay	Intersection Delay (s)	Intersection LOS
85%	85%	Existing	Roundabout	North,West,South,East				22.98	C
90%	90%	Future	Roundabout	North,West,South,East				17.32	C

Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

Legs

Legs

Intersection	Leg	Leg	Name	Description
85%	**North**	North	Beaver Creek SB	
85%	**West**	West	Laurelwood EB	
85%	**South**	South	Beaver Creek NB	
85%	**East**	East	Laurelwood WB	
90%	**North**	North	Beaver Creek SB	
90%	**West**	West	Laurelwood EB	
90%	**South**	South	Beaver Creek NB	
90%	**East**	East	Laurelwood WB	

Capacity Options

Intersection	Leg	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)	Assume Flat Start Profile	Initial Queue (PCE)
85%	**North**	0.00	99999.00		0.00
85%	**West**	0.00	99999.00		0.00
85%	**South**	0.00	99999.00		0.00
85%	**East**	0.00	99999.00		0.00
90%	**North**	0.00	99999.00		0.00
90%	**West**	0.00	99999.00		0.00
90%	**South**	0.00	99999.00		0.00
90%	**East**	0.00	99999.00		0.00

Roundabout Geometry

Intersection	Leg	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
85%	**North**	3.50	4.50	30.00	20.00	30.00	25.00	
85%	**West**	3.50	4.50	30.00	20.00	30.00	25.00	
85%	**South**	3.50	4.50	30.00	20.00	30.00	25.00	
85%	**East**	3.50	4.50	30.00	20.00	30.00	25.00	
90%	**North**	3.50	4.50	30.00	20.00	30.00	25.00	
90%	**West**	3.50	4.50	30.00	20.00	30.00	25.00	
90%	**South**	3.50	4.50	30.00	20.00	30.00	25.00	
90%	**East**	3.50	4.50	30.00	20.00	30.00	25.00	

Pedestrian Crossings

Intersection	Leg	Crossing Type
85%	**North**	Unsignalled Pedestrian Crossing
85%	**West**	Unsignalled Pedestrian Crossing
85%	**South**	Unsignalled Pedestrian Crossing
85%	**East**	Unsignalled Pedestrian Crossing
90%	**North**	Unsignalled Pedestrian Crossing
90%	**West**	Unsignalled Pedestrian Crossing
90%	**South**	Unsignalled Pedestrian Crossing
90%	**East**	Unsignalled Pedestrian Crossing

Unsignalled Pedestrian Crossing Crossings

Intersection	Leg	Space between crossing and intersection entry (PCE)	Vehicles queueing on exit (PCE)	Central Refuge	Crossing Data Type	Crossing length (m)	Crossing time (s)	Crossing length (entry side) (m)	Crossing time (entry side) (s)	Crossing length (exit side) (m)	Crossing time (exit side) (s)
85%	**North**	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
85%	**West**	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
85%	**South**	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
85%	**East**	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
90%	**North**	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
90%	**West**	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
90%	**South**	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
90%	**East**	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50

Slope / Intercept / Capacity

Leg Intercept Adjustments

Intersection	Leg	Type	Reason	Direct Intercept Adjustment (PCE/hr)	Percentage Intercept Adjustment (%)
85%	**North**	Percentage	Region of Waterloo - Requirement		85.00
85%	**West**	Percentage	Region of Waterloo - Requirement		85.00
85%	**South**	Percentage	Region of Waterloo - Requirement		85.00
85%	**East**	Percentage	Region of Waterloo - Requirement		85.00
90%	**North**	Percentage	Region of Waterloo - Requirement		90.00
90%	**West**	Percentage	Region of Waterloo - Requirement		90.00
90%	**South**	Percentage	Region of Waterloo - Requirement		90.00
90%	**East**	Percentage	Region of Waterloo - Requirement		90.00

Roundabout Slope and Intercept used in model

Intersection	Leg	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
85%	North		(calculated)	(calculated)	0.593	1153.828
85%	West		(calculated)	(calculated)	0.593	1153.828
85%	South		(calculated)	(calculated)	0.593	1153.828
85%	East		(calculated)	(calculated)	0.593	1153.828
90%	North		(calculated)	(calculated)	0.593	1221.701
90%	West		(calculated)	(calculated)	0.593	1221.701
90%	South		(calculated)	(calculated)	0.593	1221.701
90%	East		(calculated)	(calculated)	0.593	1221.701

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCE Factor for a Truck (PCE)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Intersection	Leg	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
85%	North	PHF	✓	206.00	100.000
85%	West	PHF	✓	334.00	100.000
85%	South	PHF	✓	136.00	100.000
85%	East	PHF	✓	944.00	100.000
90%	North	PHF	✓	213.00	100.000
90%	West	PHF	✓	334.00	100.000
90%	South	PHF	✓	136.00	100.000
90%	East	PHF	✓	956.00	100.000

Peak Hour Factor Data

Intersection	Leg	Hourly Volume (Veh/hr)	Peak Hour Factor	Peak Time Segment
85%	North	206.00	0.92	SecondQuarter
85%	West	334.00	0.92	SecondQuarter
85%	South	136.00	0.92	SecondQuarter
85%	East	944.00	0.92	SecondQuarter
90%	North	213.00	0.92	SecondQuarter
90%	West	334.00	0.92	SecondQuarter
90%	South	136.00	0.92	SecondQuarter
90%	East	956.00	0.92	SecondQuarter

Pedestrian Flows

General Flows Data

Intersection	Leg	Profile Type	Average Pedestrian Flow (Ped/hr)
85%	North	PHF	9.00
85%	West	PHF	6.00
85%	South	PHF	4.00
85%	East	PHF	8.00
90%	North	PHF	9.00
90%	West	PHF	6.00
90%	South	PHF	4.00
90%	East	PHF	8.00

Peak Hour Factor Data

Intersection	Leg	Hourly Volume (Ped/hr)	Peak Hour Factor	Peak Time Segment
85%	North	9.00	1.00	SecondQuarter
85%	West	6.00	1.00	SecondQuarter
85%	South	4.00	1.00	SecondQuarter
85%	East	8.00	1.00	SecondQuarter
90%	North	9.00	1.00	SecondQuarter
90%	West	6.00	1.00	SecondQuarter
90%	South	4.00	1.00	SecondQuarter
90%	East	8.00	1.00	SecondQuarter

Turning Proportions

Turning Counts / Proportions (Veh/hr) - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.000	28.000	43.000	135.000
	West	15.000	1.000	33.000	285.000
	South	24.000	31.000	0.000	81.000
	East	222.000	579.000	143.000	0.000

Turning Proportions (Veh) - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.00	0.14	0.21	0.66
	West	0.04	0.00	0.10	0.85
	South	0.18	0.23	0.00	0.60
	East	0.24	0.61	0.15	0.00

Turning Counts / Proportions (Veh/hr) - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.000	28.000	43.000	142.000
	West	15.000	1.000	33.000	285.000
	South	24.000	31.000	0.000	81.000
	East	234.000	579.000	143.000	0.000

Turning Proportions (Veh) - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.00	0.13	0.20	0.67
	West	0.04	0.00	0.10	0.85
	South	0.18	0.23	0.00	0.60
	East	0.24	0.61	0.15	0.00

Vehicle Mix

Average PCE Per Vehicle - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	1.000	1.000	1.030	1.000
	West	1.000	1.000	1.000	1.020

	South	1.000	1.000	1.000	1.000
	East	1.000	1.010	1.000	1.000

Truck Percentages - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.0	0.0	3.0	0.0
	West	0.0	0.0	0.0	2.0
	South	0.0	0.0	0.0	0.0
	East	0.0	1.0	0.0	0.0

Average PCE Per Vehicle - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	1.000	1.000	1.030	1.000
	West	1.000	1.000	1.000	1.020
	South	1.000	1.000	1.000	1.000
	East	1.000	1.010	1.000	1.000

Truck Percentages - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.0	0.0	3.0	0.0
	West	0.0	0.0	0.0	2.0
	South	0.0	0.0	0.0	0.0
	East	0.0	1.0	0.0	0.0

Results

Results Summary for whole modelled period

Intersection	Leg	Max V/C Ratio	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Intersection Arrivals (Veh)	Total Queueing Delay (Veh-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (Veh-min/min)	Inclusive Total Queueing Delay (Veh-min)	Inclusive Average Queueing Delay (s)
85%	North	0.37	9.41	0.58	1.00	A	206.00	206.00	28.56	8.32	0.48	28.57	8.32
85%	West	0.39	6.40	0.64	1.00	A	334.00	334.00	33.05	5.94	0.55	33.05	5.94
85%	South	0.18	5.37	0.22	~1	A	136.00	136.00	11.46	5.05	0.19	11.46	5.05
85%	East	0.94	34.40	10.12	39.00	D	944.00	944.00	394.00	25.04	6.57	394.60	25.08
90%	North	0.35	8.35	0.53	1.00	A	213.00	213.00	26.26	7.40	0.44	26.27	7.40
90%	West	0.37	5.78	0.58	1.00	A	334.00	334.00	29.98	5.39	0.50	29.99	5.39
90%	South	0.17	4.94	0.20	~1	A	136.00	136.00	10.58	4.67	0.18	10.58	4.67
90%	East	0.90	25.15	7.26	29.00	D	956.00	956.00	293.31	18.41	4.89	293.65	18.43

Main Results for each time segment

Main results: (16:00-16:15)

Intersection	Leg	Total Demand (Veh/hr)	Intersection Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	V/C Ratio	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
85%	North	194.06	48.51	192.48	241.98	698.16	9.00	679.29	548.48	0.286	0.00	0.40	7.371	A
85%	West	314.64	78.66	312.68	591.98	298.65	6.00	953.32	749.45	0.330	0.00	0.49	5.602	A
85%	South	128.12	32.03	127.43	203.41	407.93	4.00	869.91	338.28	0.147	0.00	0.17	4.845	A
85%	East	889.28	222.32	873.63	468.85	66.51	8.00	1096.91	1024.36	0.811	0.00	3.91	15.210	C
90%	North	200.65	50.16	199.18	253.82	700.38	9.00	740.41	579.99	0.271	0.00	0.37	6.635	A
90%	West	314.64	78.66	312.86	593.79	305.77	6.00	1015.45	791.86	0.310	0.00	0.45	5.112	A
90%	South	128.12	32.03	127.48	203.90	414.73	4.00	929.65	332.16	0.138	0.00	0.16	4.481	A

90%	East	900.58	225.14	887.66	475.67	66.54	8.00	1162.51	1086.82	0.775	0.00	3.23	12.570	B

Main results: (16:15-16:30)

Intersection	Leg	Total Demand (Veh/hr)	Intersection Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	V/C Ratio	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
85%	North	223.91	55.98	223.18	277.80	800.53	9.00	605.17	548.48	0.370	0.40	0.58	9.407	A
85%	West	363.04	90.76	362.44	679.19	344.52	6.00	924.42	749.45	0.393	0.49	0.64	6.399	A
85%	South	147.83	36.96	147.64	234.07	472.89	4.00	817.80	338.27	0.181	0.17	0.22	5.370	A
85%	East	1026.09	256.52	1001.26	543.46	77.07	8.00	1086.95	1024.36	0.944	3.91	10.12	34.400	D
90%	North	231.52	57.88	230.87	292.74	807.35	9.00	661.12	579.99	0.350	0.37	0.53	8.354	A
90%	West	363.04	90.76	362.51	684.68	353.54	6.00	985.22	791.86	0.368	0.45	0.58	5.776	A
90%	South	147.83	36.96	147.65	235.45	480.61	4.00	875.52	332.16	0.169	0.16	0.20	4.944	A
90%	East	1039.13	259.78	1023.01	551.19	77.08	8.00	1151.71	1086.82	0.902	3.23	7.26	25.153	D

Main results: (16:30-16:45)

Intersection	Leg	Total Demand (Veh/hr)	Intersection Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	V/C Ratio	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
85%	North	211.97	52.99	212.18	269.40	778.51	9.00	621.27	548.48	0.341	0.58	0.52	8.806	A
85%	West	343.68	85.92	343.88	659.68	331.01	6.00	932.90	749.45	0.368	0.64	0.59	6.116	A
85%	South	139.94	34.99	140.01	225.93	448.96	4.00	837.19	338.28	0.167	0.22	0.20	5.165	A
85%	East	971.37	242.84	974.81	515.87	73.10	8.00	1090.21	1024.36	0.891	10.12	9.26	32.870	D
90%	North	219.17	54.79	219.39	281.88	778.81	9.00	682.43	579.99	0.321	0.53	0.48	7.779	A
90%	West	343.68	85.92	343.86	659.92	338.27	6.00	994.87	791.86	0.345	0.58	0.53	5.531	A
90%	South	139.94	34.99	140.00	225.99	456.14	4.00	895.84	332.17	0.156	0.20	0.19	4.762	A
90%	East	983.71	245.93	987.60	523.06	73.09	8.00	1155.41	1086.82	0.851	7.26	6.29	22.152	C

Main results: (16:45-17:00)

Intersection	Leg	Total Demand (Veh/hr)	Intersection Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	V/C Ratio	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
85%	North	194.06	48.51	194.47	250.20	724.29	9.00	660.58	548.48	0.294	0.52	0.42	7.730	A
85%	West	314.64	78.66	314.99	613.25	305.52	6.00	948.94	749.45	0.332	0.59	0.50	5.681	A
85%	South	128.12	32.03	128.23	209.20	411.32	4.00	867.26	338.28	0.148	0.20	0.17	4.871	A
85%	East	889.28	222.32	907.56	472.60	66.95	8.00	1095.84	1024.36	0.812	9.26	4.69	20.611	C
90%	North	200.65	50.16	201.03	259.78	718.25	9.00	727.32	579.99	0.276	0.48	0.38	6.844	A
90%	West	314.64	78.66	314.95	608.40	310.88	6.00	1012.19	791.86	0.311	0.53	0.45	5.167	A
90%	South	128.12	32.03	128.22	207.98	417.85	4.00	927.15	332.16	0.138	0.19	0.16	4.506	A
90%	East	900.58	225.14	911.09	479.12	66.94	8.00	1161.61	1086.82	0.775	6.29	3.66	14.920	B

Queueing Delay Results for each time segment

Queueing Delay results: (16:00-16:15)

Intersection	Leg	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	5.70	0.38	7.371	A	A
85%	West	7.08	0.47	5.602	A	A
85%	South	2.51	0.17	4.845	A	A
85%	East	50.87	3.39	15.210	C	B
90%	North	5.32	0.35	6.635	A	A
90%	West	6.48	0.43	5.112	A	A
90%	South	2.33	0.16	4.481	A	A
90%	East	43.13	2.88	12.570	B	B

Queueing Delay results: (16:15-16:30)

Intersection	Leg	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	8.37	0.56	9.407	A	A
85%	West	9.35	0.62	6.399	A	A
85%	South	3.23	0.22	5.370	A	A
85%	East	119.32	7.95	34.400	D	C
90%	North	7.72	0.51	8.354	A	A

90%	West	8.47	0.56	5.776	A	A
90%	South	2.98	0.20	4.944	A	A
90%	East	90.98	6.07	25.153	D	C

Queueing Delay results: (16:30-16:45)

Intersection	Leg	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	8.02	0.53	8.806	A	A
85%	West	8.97	0.60	6.116	A	A
85%	South	3.07	0.20	5.165	A	A
85%	East	144.06	9.60	32.870	D	C
90%	North	7.31	0.49	7.779	A	A
90%	West	8.10	0.54	5.531	A	A
90%	South	2.82	0.19	4.762	A	A
90%	East	99.17	6.61	22.152	C	C

Queueing Delay results: (16:45-17:00)

Intersection	Leg	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	6.47	0.43	7.730	A	A
85%	West	7.65	0.51	5.681	A	A
85%	South	2.65	0.18	4.871	A	A
85%	East	79.75	5.32	20.611	C	C
90%	North	5.91	0.39	6.844	A	A
90%	West	6.94	0.46	5.167	A	A
90%	South	2.45	0.16	4.506	A	A
90%	East	60.03	4.00	14.920	B	B

Queue Variation Results for each time segment

Queue Variation results: (16:00-16:15)

Intersection	Leg	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.40	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	0.49	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.17	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	3.91	0.00	0.00	9.00	13.00			N/A	N/A
90%	North	0.37	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	0.45	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.16	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	3.23	0.00	0.00	7.00	11.00			N/A	N/A

Queue Variation results: (16:15-16:30)

Intersection	Leg	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.58	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	0.64	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.22	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	10.12	0.00	1.00	26.00	39.00			N/A	N/A

90%	North	0.53	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	0.58	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.20	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	7.26	0.00	0.00	17.00	29.00			N/A	N/A

Queue Variation results: (16:30-16:45)

Intersection	Leg	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.52	0.00	0.00	0.00	1.00			N/A	N/A
85%	West	0.59	0.00	0.00	0.00	1.00			N/A	N/A
85%	South	0.20	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	9.26	0.00	0.00	17.00	36.00			N/A	N/A
90%	North	0.48	0.00	0.00	0.00	1.00			N/A	N/A
90%	West	0.53	0.00	0.00	0.00	1.00			N/A	N/A
90%	South	0.19	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	6.29	0.00	0.00	5.00	20.00			N/A	N/A

Queue Variation results: (16:45-17:00)

Intersection	Leg	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.42	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	0.50	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.17	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	4.69	0.00	0.00	6.00	17.00			N/A	N/A
90%	North	0.38	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	0.45	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.16	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	3.66	0.00	0.00	6.00	13.00			N/A	N/A

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]
© Copyright TRL Limited, 2020

For sales and distribution information, program advice and maintenance, contact TRL:
Tel: +44 (0)1344 770758 email: software@trl.co.uk Web: http://www.trlsoftware.co.uk

The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: Conservation & Beaver Creek.arc8
Path: C:\Users\AdamMorrison\Paradigm\Projects - 170278 Beaver Creek Area TES\C5 - Analysis and Evaluation\Arcady
Report generation date: 2020-07-21 4:26:34 PM

Summary of intersection performance

	AM					
	Queue (PCE)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS
	All - Total 2025					
Intersection 85% - Leg North	0.26	5.03	0.20	A	8.31	A
Intersection 85% - Leg West	2.12	11.16	0.68	B		
Intersection 85% - Leg South	0.46	6.90	0.31	A		
Intersection 85% - Leg East	0.53	5.40	0.34	A		
Intersection 90% - Leg North	0.25	4.85	0.19	A	7.65	A
Intersection 90% - Leg West	2.00	10.13	0.67	B		
Intersection 90% - Leg South	0.46	6.41	0.31	A		
Intersection 90% - Leg East	0.60	5.33	0.36	A		

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Intersection LOS and Intersection Delay are demand-weighted averages.

"D1 - Existing, AM" model duration: 8:00 AM - 9:30 AM
"D2 - Existing, PM" model duration: 5:00 PM - 6:30 PM
"D3 - Background 2022, AM" model duration: 8:00 AM - 9:30 AM
"D4 - Background 2022, PM" model duration: 5:00 PM - 6:30 PM
"D5 - Total 2022, AM" model duration: 8:00 AM - 9:30 AM
"D6 - Total 2022, PM" model duration: 5:00 PM - 6:30 PM
"D7 - Background 2025, AM" model duration: 8:00 AM - 9:30 AM
"D8 - Background 2025, PM" model duration: 5:00 PM - 6:30 PM
"D9 - Total 2025, AM " model duration: 8:00 AM - 9:30 AM
"D10 - Total 2025, PM" model duration: 5:00 PM - 6:30 PM
"D11 - Background 2027, AM" model duration: 8:00 AM - 9:30 AM
"D12 - Background 2027, PM" model duration: 5:00 PM - 6:30 PM
"D13 - Total 2027, AM" model duration: 8:00 AM - 9:30 AM
"D14 - Total 2027, PM" model duration: 5:00 PM - 6:30 PM
"D15 - Background 2032, AM" model duration: 8:00 AM - 9:30 AM
"D16 - Background 2032, PM" model duration: 5:00 PM - 6:30 PM
"D17 - Total 2032, AM" model duration: 8:00 AM - 9:30 AM
"D18 - Total 2032, PM" model duration: 5:00 PM - 6:30 PM

Run using Junctions 8.0.6.541 at 2020-07-21 4:26:32 PM

File summary

Title	(untitled)
Location	
Site Number	
Date	2018-09-11
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	170278
Analyst	AdamMorrison
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)
7.50	✓		N/A	0.85	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	PCE	PCE	perHour	s	-Min	perMin

All - Total 2025, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
All	ARCADY		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
Total 2025, AM	Total 2025	AM		ONE HOUR	08:00	09:30	90	15				✓		

Intersection Network

Intersections

Junction	Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Do Geometric Delay	Intersection Delay (s)	Intersection LOS
85%	85%	Conservation Drive & Beaver Creek Road	Roundabout	North,West,South,East				8.31	A
90%	90%	Conservation Drive & Beaver Creek Road	Roundabout	North,West,South,East				7.65	A

Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

Legs

Legs

Intersection	Leg	Leg	Name	Description
85%	**North**	North	Beaver Creek Road	
85%	**West**	West	Conservation Drive	
85%	**South**	South	Beaver Creek Road	
85%	**East**	East	Conservation Drive	
90%	**North**	North	Beaver Creek Road	
90%	**West**	West	Conservation Drive	
90%	**South**	South	Beaver Creek Road	
90%	**East**	East	Conservation Drive	

Capacity Options

Intersection	Leg	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)	Assume Flat Start Profile	Initial Queue (PCE)
85%	North	0.00	99999.00		0.00
85%	West	0.00	99999.00		0.00
85%	South	0.00	99999.00		0.00
85%	East	0.00	99999.00		0.00
90%	North	0.00	99999.00		0.00
90%	West	0.00	99999.00		0.00
90%	South	0.00	99999.00		0.00
90%	East	0.00	99999.00		0.00

Roundabout Geometry

Intersection	Leg	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
85%	North	3.50	4.50	30.00	20.00	40.00	25.00	
85%	West	3.50	4.50	30.00	20.00	40.00	25.00	
85%	South	3.50	4.50	30.00	20.00	40.00	25.00	
85%	East	3.50	4.50	30.00	20.00	40.00	25.00	
90%	North	3.50	4.50	30.00	20.00	40.00	25.00	
90%	West	3.50	4.50	30.00	20.00	40.00	25.00	
90%	South	3.50	4.50	30.00	20.00	40.00	25.00	
90%	East	3.50	4.50	30.00	20.00	40.00	25.00	

Slope / Intercept / Capacity

Leg Intercept Adjustments

Intersection	Leg	Type	Reason	Direct Intercept Adjustment (PCE/hr)	Percentage Intercept Adjustment (%)
85%	North	Percentage	Region of Waterloo		85.00
85%	West	Percentage	Region of Waterloo		85.00
85%	South	Percentage	Region of Waterloo		85.00
85%	East	Percentage	Region of Waterloo		85.00
90%	North	Percentage	Region of Waterloo		90.00
90%	West	Percentage	Region of Waterloo		90.00
90%	South	Percentage	Region of Waterloo		90.00
90%	East	Percentage	Region of Waterloo		90.00

Roundabout Slope and Intercept used in model

Intersection	Leg	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
85%	North		(calculated)	(calculated)	0.579	1153.828
85%	West		(calculated)	(calculated)	0.579	1153.828
85%	South		(calculated)	(calculated)	0.579	1153.828
85%	East		(calculated)	(calculated)	0.579	1153.828
90%	North		(calculated)	(calculated)	0.579	1221.701
90%	West		(calculated)	(calculated)	0.579	1221.701
90%	South		(calculated)	(calculated)	0.579	1221.701
90%	East		(calculated)	(calculated)	0.579	1221.701

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCE Factor for a Truck (PCE)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Intersection	Leg	Profile Type	Use Turning Counts	Average Demand Flow (PCE/hr)	Flow Scaling Factor (%)
85%	North	ONE HOUR	✓	167.00	100.000
85%	West	ONE HOUR	✓	632.00	100.000
85%	South	ONE HOUR	✓	221.00	100.000
85%	East	ONE HOUR	✓	324.00	100.000
90%	North	ONE HOUR	✓	169.00	100.000
90%	West	ONE HOUR	✓	655.00	100.000
90%	South	ONE HOUR	✓	236.00	100.000
90%	East	ONE HOUR	✓	369.00	100.000

Turning Proportions

Turning Counts / Proportions (PCE/hr) - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.000	63.000	44.000	60.000
	West	63.000	0.000	97.000	472.000
	South	31.000	50.000	0.000	140.000
	East	18.000	208.000	98.000	0.000

Turning Proportions (PCE) - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.00	0.38	0.26	0.36
	West	0.10	0.00	0.15	0.75
	South	0.14	0.23	0.00	0.63
	East	0.06	0.64	0.30	0.00

Turning Counts / Proportions (PCE/hr) - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.000	65.000	44.000	60.000
	West	68.000	0.000	100.000	487.000
	South	27.000	63.000	0.000	146.000
	East	18.000	239.000	112.000	0.000

Turning Proportions (PCE) - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.00	0.38	0.26	0.36
	West	0.10	0.00	0.15	0.74
	South	0.11	0.27	0.00	0.62
	East	0.05	0.65	0.30	0.00

Vehicle Mix

Average PCE Per Vehicle - Intersection 85% (for whole period)

		To			
		North	West	South	East

From	North	1.000	1.110	1.000	1.000
	West	1.000	1.000	1.000	1.030
	South	1.090	1.000	1.000	1.010
	East	1.040	1.060	1.060	1.000

Truck Percentages - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.0	11.0	0.0	0.0
	West	0.0	0.0	0.0	3.0
	South	9.0	0.0	0.0	1.0
	East	4.0	6.0	6.0	0.0

Average PCE Per Vehicle - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	1.000	1.110	1.000	1.000
	West	1.000	1.000	1.000	1.030
	South	1.090	1.000	1.000	1.010
	East	1.040	1.060	1.060	1.000

Truck Percentages - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.0	11.0	0.0	0.0
	West	0.0	0.0	0.0	3.0
	South	9.0	0.0	0.0	1.0
	East	4.0	6.0	6.0	0.0

Results

Results Summary for whole modelled period

Intersection	Leg	Max V/C Ratio	Max Delay (s)	Max Queue (PCE)	Max 95th percentile Queue (PCE)	Max LOS	Average Demand (PCE/hr)	Total Intersection Arrivals (PCE)	Total Queueing Delay (PCE-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCE-min/min)	Inclusive Total Queueing Delay (PCE-min)	Inclusive Average Queueing Delay (s)
85%	North	0.20	5.03	0.26	~1	A	153.24	229.86	17.79	4.64	0.20	17.79	4.64
85%	West	0.68	11.16	2.12	3.07	B	579.93	869.90	122.00	8.41	1.36	122.02	8.42
85%	South	0.31	6.90	0.46	1.02	A	202.79	304.19	30.02	5.92	0.33	30.02	5.92
85%	East	0.34	5.40	0.53	1.06	A	297.31	445.96	36.64	4.93	0.41	36.65	4.93
90%	North	0.19	4.85	0.25	~1	A	155.08	232.62	17.29	4.46	0.19	17.29	4.46
90%	West	0.67	10.13	2.00	2.04	B	601.04	901.56	116.24	7.74	1.29	116.25	7.74
90%	South	0.31	6.41	0.46	1.02	A	216.56	324.84	29.92	5.53	0.33	29.92	5.53
90%	East	0.36	5.33	0.60	1.06	A	338.60	507.90	40.83	4.82	0.45	40.83	4.82

Main Results for each time segment

Main results: (08:00-08:15)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	125.73	31.43	125.13	83.80	266.66	0.00	999.49	538.24	0.126	0.00	0.15	4.274	A
85%	West	475.80	118.95	472.55	240.46	151.34	0.00	1066.24	790.14	0.446	0.00	0.81	6.166	A
85%	South	166.38	41.60	165.46	178.91	444.98	0.00	896.29	654.79	0.186	0.00	0.23	5.009	A
85%	East	243.92	60.98	242.71	502.69	107.75	0.00	1091.47	969.35	0.223	0.00	0.30	4.484	A
90%	North	127.23	31.81	126.66	84.58	310.16	0.00	1042.19	554.22	0.122	0.00	0.14	4.085	A

90%	West	493.12	123.28	489.98	274.96	161.86	0.00	1128.02	845.50	0.437	0.00	0.78	5.740	A
90%	South	177.67	44.42	176.75	191.70	460.14	0.00	955.39	693.19	0.186	0.00	0.23	4.689	A
90%	East	277.80	69.45	276.47	518.62	118.27	0.00	1153.25	1017.90	0.241	0.00	0.33	4.342	A

Main results: (08:15-08:30)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	150.13	37.53	149.97	100.47	319.64	0.00	968.83	538.24	0.155	0.15	0.19	4.565	A
85%	West	568.16	142.04	566.66	288.22	181.39	0.00	1048.85	790.14	0.542	0.81	1.19	7.606	A
85%	South	198.67	49.67	198.35	214.48	533.57	0.00	845.02	654.79	0.235	0.23	0.31	5.665	A
85%	East	291.27	72.82	290.93	602.74	129.19	0.00	1079.06	969.35	0.270	0.30	0.39	4.834	A
90%	North	151.93	37.98	151.77	101.38	371.72	0.00	1006.56	554.22	0.151	0.14	0.18	4.378	A
90%	West	588.83	147.21	587.42	329.53	193.96	0.00	1109.44	845.50	0.531	0.78	1.14	7.028	A
90%	South	212.16	53.04	211.84	229.76	551.62	0.00	902.45	693.19	0.235	0.23	0.31	5.293	A
90%	East	331.72	82.93	331.33	621.69	141.77	0.00	1139.65	1017.90	0.291	0.33	0.43	4.714	A

Main results: (08:30-08:45)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	183.87	45.97	183.61	122.84	391.29	0.00	927.36	538.24	0.198	0.19	0.26	5.027	A
85%	West	695.84	173.96	692.26	352.83	222.07	0.00	1025.30	790.15	0.679	1.19	2.08	10.931	B
85%	South	243.33	60.83	242.73	262.35	651.98	0.00	776.49	654.79	0.313	0.31	0.46	6.860	A
85%	East	356.73	89.18	356.16	736.74	157.97	0.00	1062.40	969.35	0.336	0.39	0.53	5.392	A
90%	North	186.07	46.52	185.81	123.97	455.04	0.00	958.34	554.22	0.194	0.18	0.25	4.843	A
90%	West	721.17	180.29	717.85	403.39	237.46	0.00	1084.27	845.50	0.665	1.14	1.97	9.951	A
90%	South	259.84	64.96	259.25	281.09	674.22	0.00	831.49	693.19	0.313	0.31	0.46	6.383	A
90%	East	406.28	101.57	405.62	760.08	173.39	0.00	1121.35	1017.90	0.362	0.43	0.60	5.322	A

Main results: (08:45-09:00)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	183.87	45.97	183.87	123.30	391.95	0.00	926.98	538.24	0.198	0.26	0.26	5.032	A
85%	West	695.84	173.96	695.70	353.42	222.40	0.00	1025.11	790.15	0.679	2.08	2.12	11.158	B
85%	South	243.33	60.83	243.31	263.12	654.98	0.00	774.75	654.79	0.314	0.46	0.46	6.896	A
85%	East	356.73	89.18	356.72	739.76	158.53	0.00	1062.08	969.35	0.336	0.53	0.53	5.403	A
90%	North	186.07	46.52	186.07	124.40	455.81	0.00	957.90	554.22	0.194	0.25	0.25	4.848	A
90%	West	721.17	180.29	721.04	404.06	237.81	0.00	1084.06	845.50	0.665	1.97	2.00	10.127	B
90%	South	259.84	64.96	259.83	281.84	677.02	0.00	829.87	693.19	0.313	0.46	0.46	6.414	A
90%	East	406.28	101.57	406.27	762.91	173.94	0.00	1121.03	1017.90	0.362	0.60	0.60	5.333	A

Main results: (09:00-09:15)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	150.13	37.53	150.39	101.15	320.69	0.00	968.22	538.24	0.155	0.26	0.19	4.575	A
85%	West	568.16	142.04	571.71	289.16	181.92	0.00	1048.54	790.14	0.542	2.12	1.23	7.774	A
85%	South	198.67	49.67	199.26	215.64	538.00	0.00	842.46	654.79	0.236	0.46	0.32	5.705	A
85%	East	291.27	72.82	291.82	607.23	130.02	0.00	1078.58	969.35	0.270	0.53	0.39	4.850	A
90%	North	151.93	37.98	152.18	102.02	372.94	0.00	1005.86	554.22	0.151	0.25	0.19	4.386	A
90%	West	588.83	147.21	592.12	330.59	194.53	0.00	1109.11	845.50	0.531	2.00	1.18	7.161	A
90%	South	212.16	53.04	212.74	230.90	555.75	0.00	900.05	693.19	0.236	0.46	0.32	5.324	A
90%	East	331.72	82.93	332.37	625.89	142.60	0.00	1139.17	1017.90	0.291	0.60	0.44	4.728	A

Main results: (09:15-09:30)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	125.73	31.43	125.89	84.54	268.42	0.00	998.48	538.24	0.126	0.19	0.15	4.286	A
85%	West	475.80	118.95	477.39	242.03	152.29	0.00	1065.69	790.14	0.446	1.23	0.83	6.271	A
85%	South	166.38	41.60	166.71	180.32	449.35	0.00	893.76	654.79	0.186	0.32	0.23	5.045	A
85%	East	243.92	60.98	244.28	507.37	108.69	0.00	1090.92	969.35	0.224	0.39	0.31	4.505	A

90%	North	127.23	31.81	127.39	85.28	312.15	0.00	1041.04	554.22	0.122	0.19	0.15	4.096	A
90%	West	493.12	123.28	494.61	276.70	162.84	0.00	1127.46	845.50	0.437	1.18	0.80	5.829	A
90%	South	177.67	44.42	178.00	193.12	464.32	0.00	952.97	693.19	0.186	0.32	0.23	4.722	A
90%	East	277.80	69.45	278.20	523.09	119.23	0.00	1152.70	1017.90	0.241	0.44	0.34	4.362	A

Queueing Delay Results for each time segment

Queueing Delay results: (08:00-08:15)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	2.18	0.15	4.274	A	A
85%	West	11.71	0.78	6.166	A	A
85%	South	3.36	0.22	5.009	A	A
85%	East	4.43	0.30	4.484	A	A
90%	North	2.11	0.14	4.085	A	A
90%	West	11.33	0.76	5.740	A	A
90%	South	3.37	0.22	4.689	A	A
90%	East	4.88	0.33	4.342	A	A

Queueing Delay results: (08:15-08:30)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	2.80	0.19	4.565	A	A
85%	West	17.15	1.14	7.606	A	A
85%	South	4.56	0.30	5.665	A	A
85%	East	5.72	0.38	4.834	A	A
90%	North	2.71	0.18	4.378	A	A
90%	West	16.48	1.10	7.028	A	A
90%	South	4.56	0.30	5.293	A	A
90%	East	6.35	0.42	4.714	A	A

Queueing Delay results: (08:30-08:45)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	3.76	0.25	5.027	A	A
85%	West	29.28	1.95	10.931	B	B
85%	South	6.71	0.45	6.860	A	A
85%	East	7.78	0.52	5.392	A	A
90%	North	3.66	0.24	4.843	A	A
90%	West	27.80	1.85	9.951	A	A
90%	South	6.68	0.45	6.383	A	A
90%	East	8.74	0.58	5.322	A	A

Queueing Delay results: (08:45-09:00)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	3.84	0.26	5.032	A	A
85%	West	31.58	2.11	11.158	B	B
85%	South	6.93	0.46	6.896	A	A
85%	East	7.98	0.53	5.403	A	A
90%	North	3.74	0.25	4.848	A	A
90%	West	29.79	1.99	10.127	B	B
90%	South	6.89	0.46	6.414	A	A
90%	East	8.97	0.60	5.333	A	A

Queueing Delay results: (09:00-09:15)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	2.93	0.20	4.575	A	A
85%	West	19.34	1.29	7.774	A	A
85%	South	4.87	0.32	5.705	A	A
85%	East	6.04	0.40	4.850	A	A

90%	North	2.84	0.19	4.386	A	A
90%	West	18.42	1.23	7.161	A	A
90%	South	4.85	0.32	5.324	A	A
90%	East	6.72	0.45	4.728	A	A

Queueing Delay results: (09:15-09:30)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	2.29	0.15	4.286	A	A
85%	West	12.93	0.86	6.271	A	A
85%	South	3.59	0.24	5.045	A	A
85%	East	4.69	0.31	4.505	A	A
90%	North	2.22	0.15	4.096	A	A
90%	West	12.43	0.83	5.829	A	A
90%	South	3.58	0.24	4.722	A	A
90%	East	5.17	0.34	4.362	A	A

Queue Variation Results for each time segment

Queue Variation results: (08:00-08:15)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.15	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	0.81	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.23	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	0.30	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.14	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	0.78	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.23	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.33	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:15-08:30)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.19	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	1.19	0.00	0.00	2.04	2.04			N/A	N/A
85%	South	0.31	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	0.39	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.18	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	1.14	0.00	0.00	1.02	2.04			N/A	N/A
90%	South	0.31	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.43	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:30-08:45)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.26	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	2.08	0.00	0.00	0.00	3.07			N/A	N/A
85%	South	0.46	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	0.53	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.25	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	1.97	0.00	0.00	0.00	2.04			N/A	N/A
90%	South	0.46	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.60	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:45-09:00)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.26	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	2.12	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.46	0.00	0.00	0.00	1.02			N/A	N/A
85%	East	0.53	0.00	0.00	0.00	1.06			N/A	N/A
90%	North	0.25	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	2.00	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.46	0.00	0.00	0.00	1.02			N/A	N/A
90%	East	0.60	0.00	0.00	0.00	1.06			N/A	N/A

Queue Variation results: (09:00-09:15)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.19	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	1.23	0.00	0.00	2.04	3.07			N/A	N/A
85%	South	0.32	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	0.39	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.19	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	1.18	0.00	0.00	2.04	2.04			N/A	N/A
90%	South	0.32	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.44	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (09:15-09:30)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
							Percentiles could not be calculated.			

85%	North	0.15	~1	~1	~1	~1	This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	0.83	0.00	0.00	1.02	2.04			N/A	N/A
85%	South	0.23	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	0.31	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.15	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	0.80	0.00	0.00	1.02	1.02			N/A	N/A
90%	South	0.23	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.34	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]
© Copyright TRL Limited, 2020

For sales and distribution information, program advice and maintenance, contact TRL:
Tel: +44 (0)1344 770758 email: software@trl.co.uk Web: http://www.trlsoftware.co.uk

The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: Conservation & Beaver Creek.arc8
Path: C:\Users\AdamMorrison\Paradigm\Projects - 170278 Beaver Creek Area TES\C5 - Analysis and Evaluation\Arcady
Report generation date: 2020-07-21 4:27:00 PM

Summary of intersection performance

	PM					
	Queue (PCE)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS
	All - Total 2025					
Intersection 85% - Leg North	0.15	6.43	0.13	A	10.74	B
Intersection 85% - Leg West	0.90	6.87	0.47	A		
Intersection 85% - Leg South	0.55	6.20	0.36	A		
Intersection 85% - Leg East	3.32	15.27	0.77	C		
Intersection 90% - Leg North	0.14	5.95	0.12	A	9.65	A
Intersection 90% - Leg West	0.88	6.40	0.47	A		
Intersection 90% - Leg South	0.54	5.79	0.35	A		
Intersection 90% - Leg East	3.06	13.51	0.76	B		

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Intersection LOS and Intersection Delay are demand-weighted averages.

"D1 - Existing, AM" model duration: 8:00 AM - 9:30 AM
"D2 - Existing, PM" model duration: 5:00 PM - 6:30 PM
"D3 - Background 2022, AM" model duration: 8:00 AM - 9:30 AM
"D4 - Background 2022, PM" model duration: 5:00 PM - 6:30 PM
"D5 - Total 2022, AM" model duration: 8:00 AM - 9:30 AM
"D6 - Total 2022, PM" model duration: 5:00 PM - 6:30 PM
"D7 - Background 2025, AM" model duration: 8:00 AM - 9:30 AM
"D8 - Background 2025, PM" model duration: 5:00 PM - 6:30 PM
"D9 - Total 2025, AM" model duration: 8:00 AM - 9:30 AM
"D10 - Total 2025, PM " model duration: 5:00 PM - 6:30 PM
"D11 - Background 2027, AM" model duration: 8:00 AM - 9:30 AM
"D12 - Background 2027, PM" model duration: 5:00 PM - 6:30 PM
"D13 - Total 2027, AM" model duration: 8:00 AM - 9:30 AM
"D14 - Total 2027, PM" model duration: 5:00 PM - 6:30 PM
"D15 - Background 2032, AM" model duration: 8:00 AM - 9:30 AM
"D16 - Background 2032, PM" model duration: 5:00 PM - 6:30 PM
"D17 - Total 2032, AM" model duration: 8:00 AM - 9:30 AM
"D18 - Total 2032, PM" model duration: 5:00 PM - 6:30 PM

Run using Junctions 8.0.6.541 at 2020-07-21 4:26:59 PM

File summary

Title	(untitled)
Location	
Site Number	
Date	2018-09-11
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	170278
Analyst	AdamMorrison
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)
7.50	✓		N/A	0.85	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	PCE	PCE	perHour	s	-Min	perMin

All - Total 2025, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
All	ARCADY		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
Total 2025, PM	Total 2025	PM		ONE HOUR	17:00	18:30	90	15				✓		

Intersection Network

Intersections

Junction	Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Do Geometric Delay	Intersection Delay (s)	Intersection LOS
85%	85%	Conservation Drive & Beaver Creek Road	Roundabout	North,West,South,East				10.74	B
90%	90%	Conservation Drive & Beaver Creek Road	Roundabout	North,West,South,East				9.65	A

Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

Legs

Legs

Intersection	Leg	Leg	Name	Description
85%	**North**	North	Beaver Creek Road	
85%	**West**	West	Conservation Drive	
85%	**South**	South	Beaver Creek Road	
85%	**East**	East	Conservation Drive	
90%	**North**	North	Beaver Creek Road	
90%	**West**	West	Conservation Drive	
90%	**South**	South	Beaver Creek Road	
90%	**East**	East	Conservation Drive	

Capacity Options

Intersection	Leg	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)	Assume Flat Start Profile	Initial Queue (PCE)
85%	North	0.00	99999.00		0.00
85%	West	0.00	99999.00		0.00
85%	South	0.00	99999.00		0.00
85%	East	0.00	99999.00		0.00
90%	North	0.00	99999.00		0.00
90%	West	0.00	99999.00		0.00
90%	South	0.00	99999.00		0.00
90%	East	0.00	99999.00		0.00

Roundabout Geometry

Intersection	Leg	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
85%	North	3.50	4.50	30.00	20.00	40.00	25.00	
85%	West	3.50	4.50	30.00	20.00	40.00	25.00	
85%	South	3.50	4.50	30.00	20.00	40.00	25.00	
85%	East	3.50	4.50	30.00	20.00	40.00	25.00	
90%	North	3.50	4.50	30.00	20.00	40.00	25.00	
90%	West	3.50	4.50	30.00	20.00	40.00	25.00	
90%	South	3.50	4.50	30.00	20.00	40.00	25.00	
90%	East	3.50	4.50	30.00	20.00	40.00	25.00	

Slope / Intercept / Capacity

Leg Intercept Adjustments

Intersection	Leg	Type	Reason	Direct Intercept Adjustment (PCE/hr)	Percentage Intercept Adjustment (%)
85%	North	Percentage	Region of Waterloo		85.00
85%	West	Percentage	Region of Waterloo		85.00
85%	South	Percentage	Region of Waterloo		85.00
85%	East	Percentage	Region of Waterloo		85.00
90%	North	Percentage	Region of Waterloo		90.00
90%	West	Percentage	Region of Waterloo		90.00
90%	South	Percentage	Region of Waterloo		90.00
90%	East	Percentage	Region of Waterloo		90.00

Roundabout Slope and Intercept used in model

Intersection	Leg	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
85%	North		(calculated)	(calculated)	0.579	1153.828
85%	West		(calculated)	(calculated)	0.579	1153.828
85%	South		(calculated)	(calculated)	0.579	1153.828
85%	East		(calculated)	(calculated)	0.579	1153.828
90%	North		(calculated)	(calculated)	0.579	1221.701
90%	West		(calculated)	(calculated)	0.579	1221.701
90%	South		(calculated)	(calculated)	0.579	1221.701
90%	East		(calculated)	(calculated)	0.579	1221.701

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCE Factor for a Truck (PCE)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Intersection	Leg	Profile Type	Use Turning Counts	Average Demand Flow (PCE/hr)	Flow Scaling Factor (%)
85%	North	ONE HOUR	✓	77.00	100.000
85%	West	ONE HOUR	✓	431.00	100.000
85%	South	ONE HOUR	✓	291.00	100.000
85%	East	ONE HOUR	✓	732.00	100.000
90%	North	ONE HOUR	✓	77.00	100.000
90%	West	ONE HOUR	✓	454.00	100.000
90%	South	ONE HOUR	✓	305.00	100.000
90%	East	ONE HOUR	✓	760.00	100.000

Turning Proportions

Turning Counts / Proportions (PCE/hr) - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.000	21.000	21.000	35.000
	West	21.000	0.000	69.000	341.000
	South	38.000	117.000	0.000	136.000
	East	57.000	500.000	175.000	0.000

Turning Proportions (PCE) - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.00	0.27	0.27	0.45
	West	0.05	0.00	0.16	0.79
	South	0.13	0.40	0.00	0.47
	East	0.08	0.68	0.24	0.00

Turning Counts / Proportions (PCE/hr) - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.000	21.000	21.000	35.000
	West	22.000	0.000	74.000	358.000
	South	38.000	125.000	0.000	142.000
	East	57.000	522.000	181.000	0.000

Turning Proportions (PCE) - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.00	0.27	0.27	0.45
	West	0.05	0.00	0.16	0.79
	South	0.12	0.41	0.00	0.47
	East	0.08	0.69	0.24	0.00

Vehicle Mix

Average PCE Per Vehicle - Intersection 85% (for whole period)

		To			
		North	West	South	East

From	North	1.000	1.000	1.030	1.000
	West	1.000	1.000	1.000	1.020
	South	1.000	1.000	1.000	1.000
	East	1.000	1.010	1.000	1.000

Truck Percentages - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.0	0.0	3.0	0.0
	West	0.0	0.0	0.0	2.0
	South	0.0	0.0	0.0	0.0
	East	0.0	1.0	0.0	0.0

Average PCE Per Vehicle - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	1.000	1.000	1.030	1.000
	West	1.000	1.000	1.000	1.020
	South	1.000	1.000	1.000	1.000
	East	1.000	1.010	1.000	1.000

Truck Percentages - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.0	0.0	3.0	0.0
	West	0.0	0.0	0.0	2.0
	South	0.0	0.0	0.0	0.0
	East	0.0	1.0	0.0	0.0

Results

Results Summary for whole modelled period

Intersection	Leg	Max V/C Ratio	Max Delay (s)	Max Queue (PCE)	Max 95th percentile Queue (PCE)	Max LOS	Average Demand (PCE/hr)	Total Intersection Arrivals (PCE)	Total Queueing Delay (PCE-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCE-min/min)	Inclusive Total Queueing Delay (PCE-min)	Inclusive Average Queueing Delay (s)
85%	North	0.13	6.43	0.15	~1	A	70.66	105.98	9.89	5.60	0.11	9.89	5.60
85%	West	0.47	6.87	0.90	1.02	A	395.49	593.24	58.24	5.89	0.65	58.25	5.89
85%	South	0.36	6.20	0.55	1.00	A	267.03	400.54	36.26	5.43	0.40	36.26	5.43
85%	East	0.77	15.27	3.32	10.07	C	671.70	1007.54	174.19	10.37	1.94	174.22	10.38
90%	North	0.12	5.95	0.14	~1	A	70.66	105.98	9.21	5.21	0.10	9.21	5.21
90%	West	0.47	6.40	0.88	203.14	A	416.60	624.90	57.39	5.51	0.64	57.40	5.51
90%	South	0.35	5.79	0.54	1.00	A	279.87	419.81	35.60	5.09	0.40	35.60	5.09
90%	East	0.76	13.51	3.06	8.05	B	697.39	1046.08	163.76	9.39	1.82	163.79	9.39

Main Results for each time segment

Main results: (17:00-17:15)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	57.97	14.49	57.66	86.77	591.97	0.00	811.22	507.53	0.071	0.00	0.08	4.813	A
85%	West	324.48	81.12	322.69	476.94	172.69	0.00	1053.88	810.43	0.308	0.00	0.45	4.989	A
85%	South	219.08	54.77	217.94	198.14	297.24	0.00	981.80	626.36	0.223	0.00	0.29	4.706	A
85%	East	551.09	137.77	546.94	383.37	131.81	0.00	1077.54	937.89	0.511	0.00	1.04	6.779	A
90%	North	57.97	14.49	57.68	87.56	619.21	0.00	863.33	532.99	0.067	0.00	0.07	4.503	A

90%	West	341.80	85.45	340.02	499.62	177.27	0.00	1119.11	860.63	0.305	0.00	0.44	4.683	A
90%	South	229.62	57.41	228.50	206.47	310.82	0.00	1041.81	664.58	0.220	0.00	0.28	4.419	A
90%	East	572.17	143.04	568.18	400.72	138.59	0.00	1141.49	992.01	0.501	0.00	1.00	6.281	A

Main results: (17:15-17:30)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	69.22	17.31	69.12	104.03	709.77	0.00	743.04	507.53	0.093	0.08	0.10	5.384	A
85%	West	387.46	96.87	386.84	571.84	207.05	0.00	1033.99	810.43	0.375	0.45	0.60	5.646	A
85%	South	261.60	65.40	261.23	237.57	356.33	0.00	947.60	626.36	0.276	0.29	0.38	5.243	A
85%	East	658.05	164.51	655.81	459.57	157.99	0.00	1062.39	937.89	0.619	1.04	1.60	8.863	A
90%	North	69.22	17.31	69.13	104.95	742.27	0.00	792.11	532.99	0.087	0.07	0.10	5.019	A
90%	West	408.14	102.03	407.53	598.90	212.49	0.00	1098.72	860.62	0.371	0.44	0.59	5.286	A
90%	South	274.19	68.55	273.82	247.49	372.53	0.00	1006.10	664.58	0.273	0.28	0.37	4.914	A
90%	East	683.22	170.81	681.13	480.26	166.09	0.00	1125.58	992.01	0.607	1.00	1.52	8.116	A

Main results: (17:30-17:45)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	84.78	21.19	84.59	127.07	865.77	0.00	652.76	507.53	0.130	0.10	0.15	6.385	A
85%	West	474.54	118.63	473.38	697.71	252.65	0.00	1007.60	810.43	0.471	0.60	0.89	6.829	A
85%	South	320.40	80.10	319.73	289.99	436.05	0.00	901.46	626.36	0.355	0.38	0.55	6.182	A
85%	East	805.95	201.49	799.47	562.41	193.37	0.00	1041.92	937.89	0.774	1.60	3.22	14.567	B
90%	North	84.78	21.19	84.61	128.25	905.98	0.00	697.36	532.99	0.122	0.10	0.14	5.920	A
90%	West	499.86	124.97	498.74	731.16	259.43	0.00	1071.55	860.63	0.466	0.59	0.88	6.370	A
90%	South	335.81	83.95	335.16	302.26	455.90	0.00	957.84	664.58	0.351	0.37	0.53	5.775	A
90%	East	836.78	209.19	830.94	587.78	203.29	0.00	1104.05	992.01	0.758	1.52	2.98	12.996	B

Main results: (17:45-18:00)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	84.78	21.19	84.77	127.68	871.62	0.00	649.37	507.53	0.131	0.15	0.15	6.426	A
85%	West	474.54	118.63	474.51	702.16	254.23	0.00	1006.69	810.43	0.471	0.89	0.90	6.870	A
85%	South	320.40	80.10	320.38	291.66	437.08	0.00	900.86	626.36	0.356	0.55	0.55	6.201	A
85%	East	805.95	201.49	805.53	563.69	193.77	0.00	1041.68	937.89	0.774	3.22	3.32	15.274	C
90%	North	84.78	21.19	84.77	128.79	911.34	0.00	694.26	532.99	0.122	0.14	0.14	5.953	A
90%	West	499.86	124.97	499.84	735.25	260.86	0.00	1070.73	860.63	0.467	0.88	0.88	6.404	A
90%	South	335.81	83.95	335.80	303.80	456.90	0.00	957.27	664.58	0.351	0.53	0.54	5.792	A
90%	East	836.78	209.19	836.45	589.02	203.68	0.00	1103.82	992.01	0.758	2.98	3.06	13.511	B

Main results: (18:00-18:15)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	69.22	17.31	69.40	104.93	718.31	0.00	738.10	507.53	0.094	0.15	0.11	5.429	A
85%	West	387.46	96.87	388.59	578.34	209.37	0.00	1032.66	810.43	0.375	0.90	0.62	5.689	A
85%	South	261.60	65.40	262.26	240.03	357.93	0.00	946.67	626.36	0.276	0.55	0.38	5.266	A
85%	East	658.05	164.51	664.61	461.56	158.63	0.00	1062.02	937.89	0.620	3.32	1.68	9.266	A
90%	North	69.22	17.31	69.39	105.76	750.06	0.00	787.60	532.99	0.088	0.14	0.10	5.055	A
90%	West	408.14	102.03	409.24	604.87	214.58	0.00	1097.51	860.62	0.372	0.88	0.61	5.320	A
90%	South	274.19	68.55	274.83	249.75	374.08	0.00	1005.20	664.58	0.273	0.54	0.38	4.934	A
90%	East	683.22	170.81	689.11	482.20	166.71	0.00	1125.22	992.01	0.607	3.06	1.59	8.419	A

Main results: (18:15-18:30)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	57.97	14.49	58.08	87.60	598.66	0.00	807.35	507.53	0.072	0.11	0.08	4.845	A
85%	West	324.48	81.12	325.12	482.17	174.57	0.00	1052.79	810.43	0.308	0.62	0.46	5.029	A
85%	South	219.08	54.77	219.46	200.22	299.47	0.00	980.51	626.36	0.223	0.38	0.29	4.732	A
85%	East	551.09	137.77	553.53	386.19	132.74	0.00	1077.01	937.89	0.512	1.68	1.07	6.955	A

90%	North	57.97	14.49	58.07	88.33	625.60	0.00	859.63	532.99	0.067	0.10	0.07	4.527	A
90%	West	341.80	85.45	342.42	504.63	179.03	0.00	1118.08	860.63	0.306	0.61	0.45	4.719	A
90%	South	229.62	57.41	229.99	208.45	313.00	0.00	1040.55	664.58	0.221	0.38	0.28	4.444	A
90%	East	572.17	143.04	574.43	403.49	139.51	0.00	1140.96	992.01	0.501	1.59	1.03	6.425	A

Queueing Delay Results for each time segment

Queueing Delay results: (17:00-17:15)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	1.13	0.08	4.813	A	A
85%	West	6.52	0.43	4.989	A	A
85%	South	4.17	0.28	4.706	A	A
85%	East	14.84	0.99	6.779	A	A
90%	North	1.06	0.07	4.503	A	A
90%	West	6.46	0.43	4.683	A	A
90%	South	4.11	0.27	4.419	A	A
90%	East	14.31	0.95	6.281	A	A

Queueing Delay results: (17:15-17:30)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	1.52	0.10	5.384	A	A
85%	West	8.83	0.59	5.646	A	A
85%	South	5.56	0.37	5.243	A	A
85%	East	22.86	1.52	8.863	A	A
90%	North	1.41	0.09	5.019	A	A
90%	West	8.72	0.58	5.286	A	A
90%	South	5.47	0.36	4.914	A	A
90%	East	21.83	1.46	8.116	A	A

Queueing Delay results: (17:30-17:45)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	2.19	0.15	6.385	A	A
85%	West	12.95	0.86	6.829	A	A
85%	South	7.97	0.53	6.182	A	A
85%	East	43.78	2.92	14.567	B	B
90%	North	2.03	0.14	5.920	A	A
90%	West	12.75	0.85	6.370	A	A
90%	South	7.82	0.52	5.775	A	A
90%	East	40.96	2.73	12.996	B	B

Queueing Delay results: (17:45-18:00)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	2.25	0.15	6.426	A	A
85%	West	13.44	0.90	6.870	A	A
85%	South	8.22	0.55	6.201	A	A
85%	East	49.20	3.28	15.274	C	B
90%	North	2.09	0.14	5.953	A	A
90%	West	13.21	0.88	6.404	A	A
90%	South	8.05	0.54	5.792	A	A
90%	East	45.45	3.03	13.511	B	B

Queueing Delay results: (18:00-18:15)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	1.61	0.11	5.429	A	A
85%	West	9.50	0.63	5.689	A	A
85%	South	5.91	0.39	5.266	A	A
85%	East	26.80	1.79	9.266	A	A

90%	North	1.50	0.10	5.055	A	A
90%	West	9.35	0.62	5.320	A	A
90%	South	5.80	0.39	4.934	A	A
90%	East	25.23	1.68	8.419	A	A

Queueing Delay results: (18:15-18:30)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	1.20	0.08	4.845	A	A
85%	West	7.00	0.47	5.029	A	A
85%	South	4.43	0.30	4.732	A	A
85%	East	16.71	1.11	6.955	A	A
90%	North	1.12	0.07	4.527	A	A
90%	West	6.90	0.46	4.719	A	A
90%	South	4.35	0.29	4.444	A	A
90%	East	15.98	1.07	6.425	A	A

Queue Variation Results for each time segment

Queue Variation results: (17:00-17:15)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.08	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	0.45	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.29	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	1.04	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.07	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	0.44	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.28	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	1.00	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (17:15-17:30)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.10	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	0.60	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.38	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	1.60	0.00	0.00	3.02	4.03			N/A	N/A
90%	North	0.10	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	0.59	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.37	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	1.52	0.00	0.00	3.02	4.03			N/A	N/A

Queue Variation results: (17:30-17:45)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.15	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	0.89	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.55	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	3.22	0.00	0.00	2.01	10.07			N/A	N/A
90%	North	0.14	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	0.88	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.53	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	2.98	0.00	0.00	1.01	8.05			N/A	N/A

Queue Variation results: (17:45-18:00)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.15	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	0.90	0.00	0.00	0.00	1.02			N/A	N/A
85%	South	0.55	0.00	0.00	0.00	1.00			N/A	N/A
85%	East	3.32	0.00	0.00	0.00	5.03			N/A	N/A
90%	North	0.14	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	0.88	0.00	0.00	0.00	1.02			N/A	N/A
90%	South	0.54	0.00	0.00	0.00	1.00			N/A	N/A
90%	East	3.06	0.00	0.00	0.00	4.03			N/A	N/A

Queue Variation results: (18:00-18:15)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.11	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	0.62	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.38	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	1.68	0.00	0.00	3.02	5.03			N/A	N/A
90%	North	0.10	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	0.61	0.00	0.00	0.00	>199			N/A	N/A
90%	South	0.38	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	1.59	0.00	0.00	3.02	5.03			N/A	N/A

Queue Variation results: (18:15-18:30)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.08	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	0.46	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

85%	South	0.29	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	1.07	0.00	0.00	1.01	3.02			N/A	N/A
90%	North	0.07	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	0.45	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.28	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	1.03	0.00	0.00	1.01	3.02			N/A	N/A

Appendix G

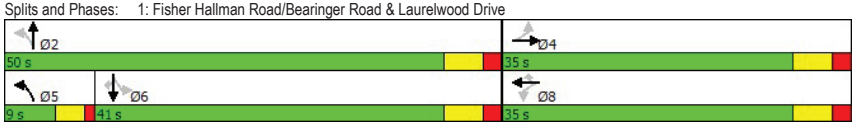
2027 Background Traffic Operations Reports

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	357	262	232	43	40	15	79	660	101	48	263	88
Future Volume (vph)	357	262	232	43	40	15	79	660	101	48	263	88
Ideal Flow (vphpl)	1775	1650	1650	1775	1900	1750	1775	1650	1650	1775	1900	1750
Storage Length (m)	85.0		0.0	90.0		90.0	90.0		0.0	60.0		60.0
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (m)	35.0			7.5			45.0			70.0		
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	0.98		1.00		0.98	1.00	1.00		1.00		0.98
Frt		0.930				0.850		0.980				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1653	1475	0	1188	1845	1488	1506	1565	0	1686	1881	1430
Flt Permitted	0.731			0.212			0.507			0.222		
Satd. Flow (perm)	1267	1475	0	264	1845	1452	802	1565	0	394	1881	1398
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		57				90		13				90
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		133.2			228.2			160.2			234.1	
Travel Time (s)		9.6			16.4			11.5			16.9	
Confl. Peds. (#/hr)	2		7	7		2	2		3	3		2
Peak Hour 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
Heavy Vehicles (%)	2%	1%	4%	42%	3%	0%	12%	1%	16%	0%	1%	4%
Adj. Flow (vph)	357	262	232	43	40	15	79	660	101	48	263	88
Shared Lane Traffic (%)												
Lane Group Flow (vph)	357	494	0	43	40	15	79	761	0	48	263	88
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA		Perm	NA	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8		8	2			6		6
Detector Phase	4	4		8	8	8	5	2		6	6	6
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0	8.0	5.0	30.0		30.0	30.0	30.0
Minimum Split (s)	14.0	14.0		14.0	14.0	14.0	9.0	36.0		36.0	36.0	36.0
Total Split (s)	35.0	35.0		35.0	35.0	35.0	9.0	50.0		41.0	41.0	41.0
Total Split (%)	41.2%	41.2%		41.2%	41.2%	41.2%	10.6%	58.8%		48.2%	48.2%	48.2%
Maximum Green (s)	29.0	29.0		29.0	29.0	29.0	5.0	44.0		35.0	35.0	35.0
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	3.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	1.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0	4.0	6.0		6.0	6.0	6.0
Lead/Lag							Lead			Lag	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None	None	None	Max		Max	Max	Max
Walk Time (s)	12.0	12.0		12.0	12.0	12.0		9.0		9.0	9.0	9.0
Flash Dont Walk (s)	10.0	10.0		10.0	10.0	10.0		21.0		21.0	21.0	21.0
Pedestrian Calls (#/hr)	0	0		0	0	0		0		0	0	0
Act Effct Green (s)	27.7	27.7		27.7	27.7	27.7	46.0	44.0		36.9	36.9	36.9
Actuated g/C Ratio	0.33	0.33		0.33	0.33	0.33	0.55	0.53		0.44	0.44	0.44
v/c Ratio	0.85	0.94		0.49	0.07	0.03	0.16	0.92		0.28	0.32	0.13

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	47.1	53.0		44.9	19.4	0.1	10.4	37.0		22.3	17.8	4.2
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	47.1	53.0		44.9	19.4	0.1	10.4	37.0		22.3	17.8	4.2
LOS	D	D		D	B	A	B	D		C	B	A
Approach Delay		50.5			27.6			34.5			15.3	
Approach LOS		D			C			C			B	
Queue Length 50th (m)	55.3	71.9		5.7	4.6	0.0	6.1	113.1		5.4	29.9	0.0
Queue Length 95th (m)	#103.3	#133.9		#20.5	11.4	0.0	12.9	#195.2		14.9	48.6	8.2
Internal Link Dist (m)		109.2			204.2			136.2			210.1	
Turn Bay Length (m)	85.0			90.0		90.0	90.0			60.0		60.0
Base Capacity (vph)	439	548		91	639	562	483	829		174	830	667
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.81	0.90		0.47	0.06	0.03	0.16	0.92		0.28	0.32	0.13

Intersection Summary		
Area Type:	Other	
Cycle Length: 85		
Actuated Cycle Length: 83.7		
Natural Cycle: 90		
Control Type: Semi Act-Uncoord		
Maximum v/c Ratio: 0.94		
Intersection Signal Delay: 36.9		Intersection LOS: D
Intersection Capacity Utilization 118.5%		ICU Level of Service H
Analysis Period (min) 15		
# 95th percentile volume exceeds capacity, queue may be longer.		
Queue shown is maximum after two cycles.		

Splits and Phases: 1: Fisher Hallman Road/Bearinger Road & Laurelwood Drive



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	357	262	232	43	40	15	79	660	101	48	263	88
Future Volume (vph)	357	262	232	43	40	15	79	660	101	48	263	88
Ideal Flow (vphpl)	1775	1650	1650	1775	1900	1750	1775	1650	1650	1775	1900	1750
Total Lost time (s)	6.0	6.0		6.0	6.0	6.0	4.0	6.0		6.0	6.0	6.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.98		1.00	1.00	0.98	1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.93		1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1647	1474		1182	1845	1452	1504	1565		1684	1881	1398
Flt Permitted	0.73	1.00		0.21	1.00	1.00	0.51	1.00		0.22	1.00	1.00
Satd. Flow (perm)	1267	1474		264	1845	1452	803	1565		394	1881	1398
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	357	262	232	43	40	15	79	660	101	48	263	88
RTOR Reduction (vph)	0	38	0	0	0	10	0	6	0	0	0	50
Lane Group Flow (vph)	357	456	0	43	40	5	79	755	0	48	263	38
Confl. Peds. (#/hr)	2		7	7		2	2		3	3		2
Heavy Vehicles (%)	2%	1%	4%	42%	3%	0%	12%	1%	16%	0%	1%	4%
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA		Perm	NA	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8		8	2			6		6
Actuated Green, G (s)	27.7	27.7		27.7	27.7	27.7	44.9	44.9		37.0	37.0	37.0
Effective Green, g (s)	27.7	27.7		27.7	27.7	27.7	44.9	44.9		37.0	37.0	37.0
Actuated g/C Ratio	0.33	0.33		0.33	0.33	0.33	0.53	0.53		0.44	0.44	0.44
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0	4.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	414	482		86	604	475	458	830		172	822	611
v/s Ratio Prot		c0.31			0.02		0.01	c0.48			0.14	
v/s Ratio Perm	0.28			0.16		0.00	0.08			0.12		0.03
v/c Ratio	0.86	0.95		0.50	0.07	0.01	0.17	0.91		0.28	0.32	0.06
Uniform Delay, d1	26.7	27.7		22.9	19.6	19.2	10.1	18.0		15.3	15.6	13.8
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	16.7	27.5		4.5	0.0	0.0	0.2	15.7		4.0	1.0	0.2
Delay (s)	43.3	55.3		27.4	19.6	19.2	10.3	33.7		19.3	16.6	14.0
Level of Service	D	E		C	B	B	B	C		B	B	B
Approach Delay (s)		50.2			23.0			31.5			16.3	
Approach LOS		D			C			C			B	

Intersection Summary			
HCM 2000 Control Delay	35.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	84.6	Sum of lost time (s)	16.0
Intersection Capacity Utilization	118.5%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	134	39	374	49	32	13	77	175	24	11	301	21
Future Volume (vph)	134	39	374	49	32	13	77	175	24	11	301	21
Ideal Flow (vphpl)	1650	1650	1750	1550	1550	1550	1775	1650	1650	1550	1550	1550
Storage Length (m)	0.0		25.0	0.0		0.0	25.0		0.0	0.0		0.0
Storage Lanes	0		1	0		0	1		0	0		0
Taper Length (m)	0.0			0.0			35.0			0.0		
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			0.850		0.981			0.982			0.991	
Flt Protected		0.963			0.975		0.950				0.998	
Satd. Flow (prot)	0	1531	1473	0	1448	0	1606	1556	0	0	1491	0
Flt Permitted		0.963			0.975		0.950				0.998	
Satd. Flow (perm)	0	1531	1473	0	1448	0	1606	1556	0	0	1491	0
Link Speed (k/h)		60			50			50			50	
Link Distance (m)		1012.1			151.5			558.2			326.3	
Travel Time (s)		60.7			10.9			40.2			23.5	
Confl. Peds. (#/hr)	3		1	1		3	3		1	1		3
Peak Hour 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
Heavy Vehicles (%)	4%	3%	1%	0%	7%	0%	5%	4%	5%	20%	2%	6%
Adj. Flow (vph)	134	39	374	49	32	13	77	175	24	11	301	21
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	173	374	0	94	0	77	199	0	0	333	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	64.1%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	134	39	374	49	32	13	77	175	24	11	301	21
Future Volume (vph)	134	39	374	49	32	13	77	175	24	11	301	21
Peak Hour 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
Hourly flow rate (vph)	134	39	374	49	32	13	77	175	24	11	301	21

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1
Volume Total (vph)	173	374	94	77	199	333
Volume Left (vph)	134	0	49	77	0	11
Volume Right (vph)	0	374	13	0	24	21
Hadj (s)	0.45	-0.68	0.06	0.58	-0.01	0.02
Departure Headway (s)	7.2	6.1	7.7	7.7	7.1	6.9
Degree Utilization, x	0.35	0.63	0.20	0.16	0.39	0.64
Capacity (veh/h)	481	567	406	440	477	503
Control Delay (s)	12.8	17.6	12.6	11.0	13.4	21.3
Approach Delay (s)	16.1		12.6	12.7		21.3
Approach LOS	C		B	B		C

Intersection Summary				
Delay	16.5			
Level of Service	C			
Intersection Capacity Utilization	64.1%	ICU Level of Service		C
Analysis Period (min)	15			

Intersection	
Intersection Delay, s/veh	18.2
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	134	39	374	49	32	13	77	175	24	11	301	21
Future Vol, veh/h	134	39	374	49	32	13	77	175	24	11	301	21
Peak Hour 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
Heavy Vehicles, %	4	3	1	0	7	0	5	4	5	20	2	6
Mvmt Flow	134	39	374	49	32	13	77	175	24	11	301	21
Number of Lanes	0	1	1	0	1	0	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	2
HCM Control Delay	17.7	12.9	13.9	24.2
HCM LOS	C	B	B	C

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	100%	0%	77%	0%	52%	3%
Vol Thru, %	0%	88%	23%	0%	34%	90%
Vol Right, %	0%	12%	0%	100%	14%	6%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	77	199	173	374	94	333
LT Vol	77	0	134	0	49	11
Through Vol	0	175	39	0	32	301
RT Vol	0	24	0	374	13	21
Lane Flow Rate	77	199	173	374	94	333
Geometry Grp	7	7	7	7	6	6
Degree of Util (X)	0.167	0.397	0.351	0.643	0.205	0.674
Departure Headway (Hd)	7.799	7.183	7.314	6.187	7.84	7.291
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	460	501	493	583	458	496
Service Time	5.541	4.924	5.05	3.923	5.894	5.33
HCM Lane V/C Ratio	0.167	0.397	0.351	0.642	0.205	0.671
HCM Control Delay	12.1	14.6	14	19.4	12.9	24.2
HCM Lane LOS	B	B	B	C	B	C
HCM 95th-tile Q	0.6	1.9	1.6	4.6	0.8	5

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	181	95	133	65	32	327
Future Volume (vph)	181	95	133	65	32	327
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.954				0.877	
Flt Protected				0.968	0.996	
Satd. Flow (prot)	1513	0	0	1551	1496	0
Flt Permitted				0.968	0.996	
Satd. Flow (perm)	1513	0	0	1551	1496	0
Link Speed (k/h)	80			80	50	
Link Distance (m)	1516.2			424.2	223.3	
Travel Time (s)	68.2			19.1	16.1	
Confl. Peds. (#/hr)		1	1			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	6%	2%	5%	14%	2%
Adj. Flow (vph)	181	95	133	65	32	327
Shared Lane Traffic (%)						
Lane Group Flow (vph)	276	0	0	198	359	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	63.8%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	181	95	133	65	32	327
Future Volume (Veh/h)	181	95	133	65	32	327
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	181	95	133	65	32	327
Pedestrians					1	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			277		560	230
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			277		560	230
tC, single (s)			4.1		6.5	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			90		92	60
cM capacity (veh/h)			1285		420	809

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	276	198	359
Volume Left	0	133	32
Volume Right	95	0	327
cSH	1700	1285	747
Volume to Capacity	0.16	0.10	0.48
Queue Length 95th (m)	0.0	2.8	21.0
Control Delay (s)	0.0	5.7	14.2
Lane LOS		A	B
Approach Delay (s)	0.0	5.7	14.2
Approach LOS			B

Intersection Summary			
Average Delay	7.5		
Intersection Capacity Utilization	63.8%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	15	79	109	47	188	71
Future Volume (vph)	15	79	109	47	188	71
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.887		0.959			
Flt Protected	0.992					0.965
Satd. Flow (prot)	1395	0	1469	0	0	1526
Flt Permitted	0.992					0.965
Satd. Flow (perm)	1395	0	1469	0	0	1526
Link Speed (k/h)	80		80			80
Link Distance (m)	1200.3		1761.7			383.9
Travel Time (s)	54.0		79.3			17.3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	8%	12%	11%	0%	3%	8%
Adj. Flow (vph)	15	79	109	47	188	71
Shared Lane Traffic (%)						
Lane Group Flow (vph)	94	0	156	0	0	259
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	42.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	15	79	109	47	188	71
Future Volume (Veh/h)	15	79	109	47	188	71
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	15	79	109	47	188	71
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	580	132			156	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	580	132			156	
tC, single (s)	6.5	6.3			4.1	
tC, 2 stage (s)						
tF (s)	3.6	3.4			2.2	
p0 queue free %	96	91			87	
cM capacity (veh/h)	405	891			1418	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	94	156	259
Volume Left	15	0	188
Volume Right	79	47	0
cSH	748	1700	1418
Volume to Capacity	0.13	0.09	0.13
Queue Length 95th (m)	3.4	0.0	3.7
Control Delay (s)	10.5	0.0	6.1
Lane LOS	B		A
Approach Delay (s)	10.5	0.0	6.1
Approach LOS	B		

Intersection Summary			
Average Delay	5.0		
Intersection Capacity Utilization	42.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	25	80	79	78	57	32
Future Volume (vph)	25	80	79	78	57	32
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.897		0.933			
Flt Protected	0.988					0.969
Satd. Flow (prot)	1438	0	1495	0	0	1500
Flt Permitted	0.988					0.969
Satd. Flow (perm)	1438	0	1495	0	0	1500
Link Speed (k/h)	80		80			80
Link Distance (m)	605.5		233.8			1761.7
Travel Time (s)	27.2		10.5			79.3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	5%	10%	3%	3%	8%	4%
Adj. Flow (vph)	25	80	79	78	57	32
Shared Lane Traffic (%)						
Lane Group Flow (vph)	105	0	157	0	0	89
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 32.7%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	25	80	79	78	57	32
Future Volume (Veh/h)	25	80	79	78	57	32
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	25	80	79	78	57	32
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	264	118			157	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	264	118			157	
tC, single (s)	6.4	6.3			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.4			2.3	
p0 queue free %	96	91			96	
cM capacity (veh/h)	689	913			1387	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	105	157	89
Volume Left	25	0	57
Volume Right	80	78	0
cSH	847	1700	1387
Volume to Capacity	0.12	0.09	0.04
Queue Length 95th (m)	3.4	0.0	1.0
Control Delay (s)	9.8	0.0	5.1
Lane LOS	A		A
Approach Delay (s)	9.8	0.0	5.1
Approach LOS	A		

Intersection Summary			
Average Delay	4.2		
Intersection Capacity Utilization	32.7%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	47	5	78	29	26	0	161	138	63	121	0
Future Volume (vph)	7	47	5	78	29	26	0	161	138	63	121	0
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.989			0.974			0.938				
Flt Protected		0.994			0.972						0.983	
Satd. Flow (prot)	0	1500	0	0	1407	0	0	1383	0	0	1429	0
Flt Permitted		0.994			0.972						0.983	
Satd. Flow (perm)	0	1500	0	0	1407	0	0	1383	0	0	1429	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		187.7			400.3			618.6			394.6	
Travel Time (s)		13.5			28.8			44.5			28.4	
Peak Hour 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
Heavy Vehicles (%)	0%	2%	0%	6%	0%	4%	0%	7%	3%	4%	8%	0%
Adj. Flow (vph)	7	47	5	78	29	26	0	161	138	63	121	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	59	0	0	133	0	0	299	0	0	184	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 58.6%		ICU Level of Service B	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	47	5	78	29	26	0	161	138	63	121	0
Future Volume (Veh/h)	7	47	5	78	29	26	0	161	138	63	121	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	7	47	5	78	29	26	0	161	138	63	121	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	518	546	121	506	477	230	121			299		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	518	546	121	506	477	230	121			299		
tC, single (s)	7.1	6.5	6.2	7.2	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.0	3.3	2.2			2.2		
p0 queue free %	98	89	99	81	94	97	100			95		
cM capacity (veh/h)	418	423	936	412	465	804	1479			1251		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	59	133	299	184
Volume Left	7	78	0	63
Volume Right	5	26	138	0
cSH	443	469	1479	1251
Volume to Capacity	0.13	0.28	0.00	0.05
Queue Length 95th (m)	3.7	9.3	0.0	1.3
Control Delay (s)	14.4	15.7	0.0	3.0
Lane LOS	B	C		A
Approach Delay (s)	14.4	15.7	0.0	3.0
Approach LOS	B	C		

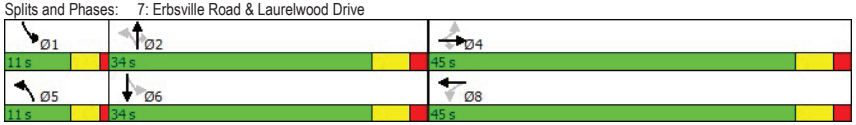
Intersection Summary				
Average Delay		5.2		
Intersection Capacity Utilization	58.6%	ICU Level of Service	B	
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	238	204	59	110	48	178	261	120	133	240	21
Future Volume (vph)	19	238	204	59	110	48	178	261	120	133	240	21
Ideal Flow (vphpl)	1775	1900	1750	1775	1650	1650	1775	1900	1750	1775	1650	1650
Storage Length (m)	20.0		20.0	25.0		0.0	65.0		30.0	25.0		0.0
Storage Lanes	1		1	1		0	1		1	1		0
Taper Length (m)	35.0			10.0			80.0			35.0		
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	0.84		0.92	0.96	0.94		0.99		0.91	0.96	1.00	
Frt			0.850		0.954				0.850		0.988	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1591	1810	1403	1561	1358	0	1606	1776	1430	1653	1520	0
Flt Permitted	0.657			0.526			0.564			0.598		
Satd. Flow (perm)	926	1810	1296	831	1358	0	940	1776	1307	998	1520	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			204		31				120		5	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		123.5			178.3			236.9			930.8	
Travel Time (s)		8.9			12.8			17.1			67.0	
Confl. Peds. (#/hr)	79		23	23		79	9		27	27		9
Peak Hour 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
Heavy Vehicles (%)	6%	5%	6%	8%	9%	7%	5%	7%	4%	2%	6%	17%
Adj. Flow (vph)	19	238	204	59	110	48	178	261	120	133	240	21
Shared Lane Traffic (%)												
Lane Group Flow (vph)	19	238	204	59	158	0	178	261	120	133	261	0
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2		2	6		
Detector Phase	4	4	4	8	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0		5.0	28.0	28.0	5.0	28.0	
Minimum Split (s)	14.0	14.0	14.0	14.0	14.0		9.0	34.0	34.0	9.0	34.0	
Total Split (s)	45.0	45.0	45.0	45.0	45.0		11.0	34.0	34.0	11.0	34.0	
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%		12.2%	37.8%	37.8%	12.2%	37.8%	
Maximum Green (s)	39.0	39.0	39.0	39.0	39.0		7.0	28.0	28.0	7.0	28.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		1.0	2.0	2.0	1.0	2.0	
Lost Time Adjust (s)	0.0	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	6.0		4.0	6.0	6.0	4.0	6.0	
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	None	None		None	Max	Max	None	Max	
Walk Time (s)	7.0	7.0	7.0	7.0	7.0			7.0	7.0		7.0	
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0			11.0	11.0		11.0	
Pedestrian Calls (#/hr)	0	0	0	0	0			0	0		0	
Act Effct Green (s)	13.8	13.8	13.8	13.8	13.8		38.0	30.5	30.5	36.9	28.1	
Actuated g/C Ratio	0.21	0.21	0.21	0.21	0.21		0.59	0.47	0.47	0.57	0.43	
v/c Ratio	0.10	0.62	0.47	0.34	0.51		0.29	0.31	0.18	0.21	0.40	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	20.9	30.6	7.4	26.8	23.7		7.2	14.1	3.8	6.6	15.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	20.9	30.6	7.4	26.8	23.7		7.2	14.1	3.8	6.6	15.6	
LOS	C	C	A	C	C		A	B	A	A	B	
Approach Delay		19.9			24.5			9.7			12.5	
Approach LOS		B			C			A			B	
Queue Length 50th (m)	2.0	27.4	0.0	6.4	14.0		7.8	20.7	0.0	5.6	20.9	
Queue Length 95th (m)	6.8	47.6	14.5	16.0	30.1		19.6	43.1	9.2	15.0	44.6	
Internal Link Dist (m)		99.5			154.3			212.9			906.8	
Turn Bay Length (m)	20.0		20.0	25.0			65.0		30.0	25.0		
Base Capacity (vph)	558	1091	862	501	831		622	834	677	642	660	
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Reduced v/c Ratio	0.03	0.22	0.24	0.12	0.19		0.29	0.31	0.18	0.21	0.40	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 64.9			
Natural Cycle: 60			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.62			
Intersection Signal Delay: 15.2		Intersection LOS: B	
Intersection Capacity Utilization 73.6%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 7: Erbsville Road & Laurelwood Drive



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	238	204	59	110	48	178	261	120	133	240	21
Future Volume (vph)	19	238	204	59	110	48	178	261	120	133	240	21
Ideal Flow (vphpl)	1775	1900	1750	1775	1650	1650	1775	1900	1750	1775	1650	1650
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0		4.0	6.0	6.0	4.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.94	1.00	0.95		1.00	1.00	0.93	1.00	1.00	
Flpb, ped/bikes	0.88	1.00	1.00	0.97	1.00		0.99	1.00	1.00	0.98	1.00	
Frt	1.00	1.00	0.85	1.00	0.95		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1406	1810	1317	1517	1382		1596	1776	1333	1620	1521	
Flt Permitted	0.66	1.00	1.00	0.53	1.00		0.56	1.00	1.00	0.60	1.00	
Satd. Flow (perm)	972	1810	1317	839	1382		948	1776	1333	1020	1521	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	19	238	204	59	110	48	178	261	120	133	240	21
RTOR Reduction (vph)	0	0	161	0	24	0	0	0	64	0	3	0
Lane Group Flow (vph)	19	238	43	59	134	0	178	261	56	133	258	0
Confl. Peds. (#/hr)	79		23	23		79	9		27	27		9
Heavy Vehicles (%)	6%	5%	6%	8%	9%	7%	5%	7%	4%	2%	6%	17%
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2		2	6		
Actuated Green, G (s)	13.8	13.8	13.8	13.8	13.8		37.5	30.5	30.5	34.5	29.0	
Effective Green, g (s)	13.8	13.8	13.8	13.8	13.8		37.5	30.5	30.5	34.5	29.0	
Actuated g/C Ratio	0.21	0.21	0.21	0.21	0.21		0.57	0.46	0.46	0.52	0.44	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		4.0	6.0	6.0	4.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	203	379	276	175	289		609	823	617	584	670	
v/s Ratio Prot		c0.13			0.10		c0.03	0.15		0.02	c0.17	
v/s Ratio Perm	0.02		0.03	0.07			0.14		0.04	0.10		
v/c Ratio	0.09	0.63	0.16	0.34	0.46		0.29	0.32	0.09	0.23	0.39	
Uniform Delay, d1	21.0	23.7	21.2	22.1	22.8		6.9	11.1	9.9	8.1	12.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.2	3.2	0.3	1.1	1.2		0.3	1.0	0.3	0.2	1.7	
Delay (s)	21.2	26.9	21.5	23.3	23.9		7.1	12.1	10.2	8.3	14.1	
Level of Service	C	C	C	C	C		A	B	B	A	B	
Approach Delay (s)		24.3			23.7			10.1			12.1	
Approach LOS		C			C			B			B	

Intersection Summary				
HCM 2000 Control Delay	16.4	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.44			
Actuated Cycle Length (s)	65.8	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	73.6%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	576	89	38	183	27	58	39	205	39	21	10
Future Volume (vph)	32	576	89	38	183	27	58	39	205	39	21	10
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
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		0.983			0.985			0.908			0.981	
Flt Protected		0.998			0.992			0.990			0.973	
Satd. Flow (prot)	0	1484	0	0	1432	0	0	1368	0	0	1457	0
Flt Permitted		0.998			0.992			0.990			0.973	
Satd. Flow (perm)	0	1484	0	0	1432	0	0	1368	0	0	1457	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		213.7			555.1			104.8			136.8	
Travel Time (s)		15.4			40.0			7.5			9.8	
Confl. Peds. (#/hr)	10		4	4		10	7		10	10		7
Peak Hour 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
Heavy Vehicles (%)	0%	3%	0%	6%	6%	4%	0%	9%	1%	0%	0%	11%
Adj. Flow (vph)	32	576	89	38	183	27	58	39	205	39	21	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	697	0	0	248	0	0	302	0	0	70	0
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Roundabout			
Intersection Capacity Utilization	79.5%	ICU Level of Service D	
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Traffic Volume (veh/h)	32	576	89	38	183	27	58	39	205	39	21	10
Future Volume (veh/h)	32	576	89	38	183	27	58	39	205	39	21	10
Peak Hour 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
Hourly flow rate (vph)	32	576	89	38	183	27	58	39	205	39	21	10
Approach Volume (veh/h)		697			248			302			70	
Crossing Volume (veh/h)		98			129			647			279	
High Capacity (veh/h)		1283			1252			830			1113	
High v/c (veh/h)		0.54			0.20			0.36			0.06	
Low Capacity (veh/h)		1068			1041			663			915	
Low v/c (veh/h)		0.65			0.24			0.46			0.08	

Intersection Summary				
Maximum v/c High		0.54		
Maximum v/c Low		0.65		
Intersection Capacity Utilization		79.5%	ICU Level of Service	D



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	209	22	22	75	18	80
Future Volume (vph)	209	22	22	75	18	80
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.987				0.890	
Flt Protected				0.989	0.991	
Satd. Flow (prot)	1586	0	0	1478	1503	0
Flt Permitted				0.989	0.991	
Satd. Flow (perm)	1586	0	0	1478	1503	0
Link Speed (k/h)	80			80	50	
Link Distance (m)	1200.3			667.7	811.2	
Travel Time (s)	54.0			30.0	58.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	0%	5%	12%	6%	3%
Adj. Flow (vph)	209	22	22	75	18	80
Shared Lane Traffic (%)						
Lane Group Flow (vph)	231	0	0	97	98	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	36.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	209	22	22	75	18	80
Future Volume (Veh/h)	209	22	22	75	18	80
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	209	22	22	75	18	80
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			231		339	220
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			231		339	220
tC, single (s)			4.1		6.5	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			98		97	90
cM capacity (veh/h)			1319		638	817

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	231	97	98
Volume Left	0	22	18
Volume Right	22	0	80
cSH	1700	1319	777
Volume to Capacity	0.14	0.02	0.13
Queue Length 95th (m)	0.0	0.4	3.4
Control Delay (s)	0.0	1.9	10.3
Lane LOS		A	B
Approach Delay (s)	0.0	1.9	10.3
Approach LOS			B

Intersection Summary			
Average Delay		2.8	
Intersection Capacity Utilization		36.5%	ICU Level of Service A
Analysis Period (min)		15	

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	26	0	101	62	6	129
Future Volume (vph)	26	0	101	62	6	129
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.949			
Flt Protected	0.950					0.998
Satd. Flow (prot)	1612	0	1537	0	0	1559
Flt Permitted	0.950					0.998
Satd. Flow (perm)	1612	0	1537	0	0	1559
Link Speed (k/h)	70		50			50
Link Distance (m)	143.4		394.6			123.0
Travel Time (s)	7.4		28.4			8.9
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	4%	0%	3%	0%	40%	4%
Adj. Flow (vph)	26	0	101	62	6	129
Shared Lane Traffic (%)						
Lane Group Flow (vph)	26	0	163	0	0	135
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 23.4%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	26	0	101	62	6	129
Future Volume (Veh/h)	26	0	101	62	6	129
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	26	0	101	62	6	129
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	273	132			163	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	273	132			163	
tC, single (s)	6.4	6.2			4.5	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.6	
p0 queue free %	96	100			100	
cM capacity (veh/h)	709	923			1215	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	26	163	135
Volume Left	26	0	6
Volume Right	0	62	0
cSH	709	1700	1215
Volume to Capacity	0.04	0.10	0.00
Queue Length 95th (m)	0.9	0.0	0.1
Control Delay (s)	10.3	0.0	0.4
Lane LOS	B		A
Approach Delay (s)	10.3	0.0	0.4
Approach LOS	B		

Intersection Summary			
Average Delay		1.0	
Intersection Capacity Utilization		23.4%	ICU Level of Service A
Analysis Period (min)		15	



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	239	18	56	120	17	82
Future Volume (vph)	239	18	56	120	17	82
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.991				0.888	
Flt Protected				0.984	0.991	
Satd. Flow (prot)	1591	0	0	1571	1486	0
Flt Permitted				0.984	0.991	
Satd. Flow (perm)	1591	0	0	1571	1486	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	166.4			228.8	212.1	
Travel Time (s)	12.0			16.5	15.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	0%	4%	3%	7%	4%
Adj. Flow (vph)	239	18	56	120	17	82
Shared Lane Traffic (%)						
Lane Group Flow (vph)	257	0	0	176	99	0
Sign Control	Free			Free	Stop	

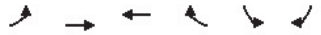
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	43.0%		ICU Level of Service A
Analysis Period (min)	15		



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	239	18	56	120	17	82
Future Volume (Veh/h)	239	18	56	120	17	82
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	239	18	56	120	17	82
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			257		480	248
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			257		480	248
tC, single (s)			4.1		6.5	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			96		97	90
cM capacity (veh/h)			1296		513	786

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	257	176	99
Volume Left	0	56	17
Volume Right	18	0	82
cSH	1700	1296	720
Volume to Capacity	0.15	0.04	0.14
Queue Length 95th (m)	0.0	1.1	3.8
Control Delay (s)	0.0	2.8	10.8
Lane LOS		A	B
Approach Delay (s)	0.0	2.8	10.8
Approach LOS			B

Intersection Summary			
Average Delay		2.9	
Intersection Capacity Utilization		43.0%	ICU Level of Service A
Analysis Period (min)		15	



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	13	292	139	15	74	33
Future Volume (vph)	13	292	139	15	74	33
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.987		0.958	
Flt Protected		0.998			0.967	
Satd. Flow (prot)	0	1586	1588	0	1635	0
Flt Permitted		0.998			0.967	
Satd. Flow (perm)	0	1586	1588	0	1635	0
Link Speed (k/h)		60	60		50	
Link Distance (m)		98.4	372.2		168.6	
Travel Time (s)		5.9	22.3		12.1	
Confl. Peds. (#/hr)	10			10		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	4%	2%	8%	0%	0%
Adj. Flow (vph)	13	292	139	15	74	33
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	305	154	0	107	0
Sign Control		Free	Free		Stop	

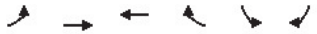
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 43.1%			ICU Level of Service A
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	13	292	139	15	74	33
Future Volume (Veh/h)	13	292	139	15	74	33
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	13	292	139	15	74	33
Pedestrians					10	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	164				474	156
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	164				474	156
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				86	96
cM capacity (veh/h)	1415				543	887

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	305	154	107
Volume Left	13	0	74
Volume Right	0	15	33
cSH	1415	1700	617
Volume to Capacity	0.01	0.09	0.17
Queue Length 95th (m)	0.2	0.0	5.0
Control Delay (s)	0.4	0.0	12.1
Lane LOS	A		B
Approach Delay (s)	0.4	0.0	12.1
Approach LOS			B

Intersection Summary			
Average Delay		2.5	
Intersection Capacity Utilization		43.1%	ICU Level of Service A
Analysis Period (min)		15	



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	16	351	123	27	67	31
Future Volume (vph)	16	351	123	27	67	31
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.976		0.957	
Flt Protected		0.998			0.967	
Satd. Flow (prot)	0	1601	1537	0	1611	0
Flt Permitted		0.998			0.967	
Satd. Flow (perm)	0	1601	1537	0	1611	0
Link Speed (k/h)		60	60		50	
Link Distance (m)		372.2	1012.1		87.7	
Travel Time (s)		22.3	60.7		6.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	3%	3%	13%	2%	0%
Adj. Flow (vph)	16	351	123	27	67	31
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	367	150	0	98	0
Sign Control		Free	Free		Stop	

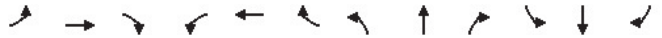
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 47.7%			ICU Level of Service A
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	16	351	123	27	67	31
Future Volume (Veh/h)	16	351	123	27	67	31
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	16	351	123	27	67	31
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	150				520	136
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	150				520	136
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				87	97
cM capacity (veh/h)	1444				511	917

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	367	150	98
Volume Left	16	0	67
Volume Right	0	27	31
cSH	1444	1700	594
Volume to Capacity	0.01	0.09	0.16
Queue Length 95th (m)	0.3	0.0	4.7
Control Delay (s)	0.4	0.0	12.3
Lane LOS	A		B
Approach Delay (s)	0.4	0.0	12.3
Approach LOS			B

Intersection Summary			
Average Delay		2.2	
Intersection Capacity Utilization		47.7%	ICU Level of Service A
Analysis Period (min)		15	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	89	6	73	32	2	8	23	342	5	6	234	22
Future Volume (vph)	89	6	73	32	2	8	23	342	5	6	234	22
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
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		0.941			0.974			0.998			0.989	
Flt Protected		0.974			0.963			0.997			0.999	
Satd. Flow (prot)	0	1402	0	0	1454	0	0	1510	0	0	1478	0
Flt Permitted		0.974			0.963			0.997			0.999	
Satd. Flow (perm)	0	1402	0	0	1454	0	0	1510	0	0	1478	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		77.1			66.0			326.3			223.3	
Travel Time (s)		5.6			4.8			23.5			16.1	
Confl. Peds. (#/hr)	7		1	1		7			5	5		
Peak Hour 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
Heavy Vehicles (%)	0%	0%	3%	0%	0%	0%	5%	2%	0%	0%	3%	11%
Adj. Flow (vph)	89	6	73	32	2	8	23	342	5	6	234	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	168	0	0	42	0	0	370	0	0	262	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 55.4%		ICU Level of Service B	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	89	6	73	32	2	8	23	342	5	6	234	22
Future Volume (Veh/h)	89	6	73	32	2	8	23	342	5	6	234	22
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	89	6	73	32	2	8	23	342	5	6	234	22
Pedestrians					5			1			7	
Lane Width (m)					3.6			3.6			3.6	
Walking Speed (m/s)					1.2			1.2			1.2	
Percent Blockage					0			0			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	17			80			430	302	48	478	335	13
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	17			80			430	302	48	478	335	13
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.4
p0 queue free %	94			98			93	39	100	97	56	98
cM capacity (veh/h)	1604			1529			322	561	1021	239	536	1036

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	168	42	370	262
Volume Left	89	32	23	6
Volume Right	73	8	5	22
cSH	1604	1529	539	543
Volume to Capacity	0.06	0.02	0.69	0.48
Queue Length 95th (m)	1.4	0.5	42.1	20.8
Control Delay (s)	4.1	5.7	25.0	17.7
Lane LOS	A	A	D	C
Approach Delay (s)	4.1	5.7	25.0	17.7
Approach LOS			D	C

Intersection Summary					
Average Delay			17.6		
Intersection Capacity Utilization			55.4%	ICU Level of Service	B
Analysis Period (min)			15		

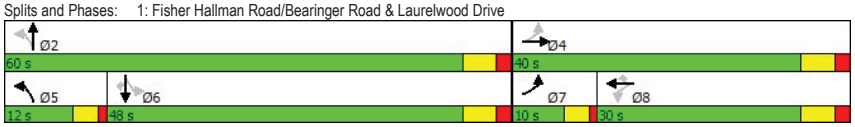


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	145	152	133	107	261	31	177	378	89	30	759	390
Future Volume (vph)	145	152	133	107	261	31	177	378	89	30	759	390
Ideal Flow (vphpl)	1775	1650	1650	1775	1900	1750	1775	1650	1650	1775	1900	1750
Storage Length (m)	85.0		0.0	90.0		90.0	90.0		0.0	60.0		60.0
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (m)	35.0			7.5			45.0			70.0		
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		0.96		0.98		1.00		1.00		0.98
Frt		0.930				0.850		0.971				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1670	1463	0	1686	1900	1488	1637	1595	0	1686	1900	1488
Flt Permitted	0.253			0.585			0.087			0.495		
Satd. Flow (perm)	444	1463	0	1002	1900	1454	150	1595	0	877	1900	1456
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		49				120		19				281
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		133.2			228.2			160.2			234.1	
Travel Time (s)		9.6			16.4			11.5			16.9	
Confl. Peds. (#/hr)	1		23	23		1	1		2	2		1
Peak Hour 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
Heavy Vehicles (%)	1%	0%	3%	0%	0%	0%	3%	0%	0%	0%	0%	0%
Adj. Flow (vph)	145	152	133	107	261	31	177	378	89	30	759	390
Shared Lane Traffic (%)												
Lane Group Flow (vph)	145	285	0	107	261	31	177	467	0	30	759	390
Turn Type	pm+pt	NA		Perm	NA	Perm	pm+pt	NA		Perm	NA	Perm
Protected Phases	7	4			8		5	2			6	
Permitted Phases	4			8		8	2			6		6
Detector Phase	7	4		8	8	8	5	2		6	6	6
Switch Phase												
Minimum Initial (s)	5.0	8.0		8.0	8.0	8.0	5.0	37.0		37.0	37.0	37.0
Minimum Split (s)	9.5	14.0		14.0	14.0	14.0	9.0	43.0		43.0	43.0	43.0
Total Split (s)	10.0	40.0		30.0	30.0	30.0	12.0	60.0		48.0	48.0	48.0
Total Split (%)	10.0%	40.0%		30.0%	30.0%	30.0%	12.0%	60.0%		48.0%	48.0%	48.0%
Maximum Green (s)	6.0	34.0		24.0	24.0	24.0	8.0	54.0		42.0	42.0	42.0
Yellow Time (s)	3.0	4.0		4.0	4.0	4.0	3.0	4.0		4.0	4.0	4.0
All-Red Time (s)	1.0	2.0		2.0	2.0	2.0	1.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	-2.0		-2.0	-2.0	-2.0	0.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lead			Lag	Lag	Lag	Lead			Lag	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None	None	None	Max		Max	Max	Max
Walk Time (s)		12.0		12.0	12.0	12.0		16.0		16.0	16.0	16.0
Flash Dont Walk (s)		10.0		10.0	10.0	10.0		21.0		21.0	21.0	21.0
Pedestrian Calls (#/hr)		0		0	0	0		0		0	0	0
Act Effct Green (s)	29.8	29.8		19.8	19.8	19.8	56.1	56.1		44.1	44.1	44.1
Actuated g/C Ratio	0.32	0.32		0.21	0.21	0.21	0.60	0.60		0.47	0.47	0.47
v/c Ratio	0.66	0.57		0.51	0.65	0.08	0.82	0.49		0.07	0.85	0.47

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	40.1	26.7		41.5	41.9	0.4	48.0	13.1		15.9	34.1	7.2
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	40.1	26.7		41.5	41.9	0.4	48.0	13.1		15.9	34.1	7.2
LOS	D	C		D	D	A	D	B		B	C	A
Approach Delay		31.2			38.6			22.7			24.8	
Approach LOS		C			D			C			C	
Queue Length 50th (m)	20.5	37.0		18.1	45.7	0.0	17.3	44.8		3.0	123.7	11.6
Queue Length 95th (m)	#36.9	63.0		35.0	71.3	0.0	#59.6	80.9		9.3	#217.7	37.0
Internal Link Dist (m)		109.2			204.2			136.2			210.1	
Turn Bay Length (m)	85.0			90.0		90.0	90.0			60.0		60.0
Base Capacity (vph)	219	592		277	526	489	216	960		411	891	832
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.66	0.48		0.39	0.50	0.06	0.82	0.49		0.07	0.85	0.47

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 93.9			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.85			
Intersection Signal Delay: 27.4		Intersection LOS: C	
Intersection Capacity Utilization 101.3%		ICU Level of Service G	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 1: Fisher Hallman Road/Bearinger Road & Laurelwood Drive



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	145	152	133	107	261	31	177	378	89	30	759	390
Future Volume (vph)	145	152	133	107	261	31	177	378	89	30	759	390
Ideal Flow (vphpl)	1775	1650	1650	1775	1900	1750	1775	1650	1650	1775	1900	1750
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.97		1.00	1.00	0.98	1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		0.97	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.93		1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1669	1465		1631	1900	1455	1637	1596		1684	1900	1456
Flt Permitted	0.25	1.00		0.59	1.00	1.00	0.09	1.00		0.50	1.00	1.00
Satd. Flow (perm)	445	1465		1004	1900	1455	150	1596		877	1900	1456
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	145	152	133	107	261	31	177	378	89	30	759	390
RTOR Reduction (vph)	0	33	0	0	0	24	0	8	0	0	0	149
Lane Group Flow (vph)	145	252	0	107	261	7	177	459	0	30	759	241
Confl. Peds. (#/hr)	1		23	23		1	1		2	2		1
Heavy Vehicles (%)	1%	0%	3%	0%	0%	0%	3%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA		Perm	NA	Perm	pm+pt	NA		Perm	NA	Perm
Protected Phases	7	4			8		5	2			6	
Permitted Phases	4			8		8	2			6		6
Actuated Green, G (s)	27.8	27.8		17.8	17.8	17.8	54.1	54.1		42.1	42.1	42.1
Effective Green, g (s)	27.8	29.8		19.8	19.8	19.8	54.1	56.1		44.1	44.1	44.1
Actuated g/C Ratio	0.30	0.32		0.21	0.21	0.21	0.58	0.60		0.47	0.47	0.47
Clearance Time (s)	4.0	6.0		6.0	6.0	6.0	4.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	209	464		211	400	306	213	953		411	892	683
v/s Ratio Prot	c0.04	0.17			0.14		c0.07	0.29			c0.40	
v/s Ratio Perm	c0.16			0.11		0.00	0.41			0.03		0.17
v/c Ratio	0.69	0.54		0.51	0.65	0.02	0.83	0.48		0.07	0.85	0.35
Uniform Delay, d1	26.9	26.4		32.7	33.9	29.4	22.2	10.7		13.7	22.0	15.8
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	9.6	1.3		1.9	3.8	0.0	23.2	1.7		0.3	10.0	1.4
Delay (s)	36.5	27.7		34.7	37.7	29.4	45.4	12.4		14.0	32.0	17.3
Level of Service	D	C		C	D	C	D	B		B	C	B
Approach Delay (s)		30.7			36.2			21.5			26.7	
Approach LOS		C			D			C			C	

Intersection Summary					
HCM 2000 Control Delay	27.5	HCM 2000 Level of Service		C	
HCM 2000 Volume to Capacity ratio	0.80				
Actuated Cycle Length (s)	93.9	Sum of lost time (s)		16.0	
Intersection Capacity Utilization	101.3%	ICU Level of Service		G	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	47	35	135	21	33	14	358	303	43	9	335	164
Future Volume (vph)	47	35	135	21	33	14	358	303	43	9	335	164
Ideal Flow (vphpl)	1650	1650	1750	1550	1550	1550	1775	1650	1650	1550	1550	1550
Storage Length (m)	0.0		25.0	0.0		0.0	25.0		0.0	0.0		0.0
Storage Lanes	0		1	0		0	1		0	0		0
Taper Length (m)	0.0			0.0			35.0			0.0		
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			0.850		0.972			0.981			0.956	
Flt Protected		0.972			0.985		0.950				0.999	
Satd. Flow (prot)	0	1542	1473	0	1435	0	1653	1605	0	0	1464	0
Flt Permitted		0.972			0.985		0.950				0.999	
Satd. Flow (perm)	0	1542	1473	0	1435	0	1653	1605	0	0	1464	0
Link Speed (k/h)		60			50			50			50	
Link Distance (m)		1012.1			151.5			558.2			326.3	
Travel Time (s)		60.7			10.9			40.2			23.5	
Confl. Peds. (#/hr)	1					1						
Peak Hour 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
Heavy Vehicles (%)	7%	0%	1%	0%	7%	0%	2%	1%	0%	25%	1%	0%
Adj. Flow (vph)	47	35	135	21	33	14	358	303	43	9	335	164
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	82	135	0	68	0	358	346	0	0	508	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 77.2%		ICU Level of Service D	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	47	35	135	21	33	14	358	303	43	9	335	164
Future Volume (vph)	47	35	135	21	33	14	358	303	43	9	335	164
Peak Hour 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
Hourly flow rate (vph)	47	35	135	21	33	14	358	303	43	9	335	164

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1
Volume Total (vph)	82	135	68	358	346	508
Volume Left (vph)	47	0	21	358	0	9
Volume Right (vph)	0	135	14	0	43	164
Hadj (s)	0.35	-0.68	0.00	0.53	-0.07	-0.17
Departure Headway (s)	8.1	7.1	8.3	6.9	6.3	6.3
Degree Utilization, x	0.19	0.27	0.16	0.69	0.61	0.89
Capacity (veh/h)	427	488	411	507	552	563
Control Delay (s)	11.8	11.4	12.8	22.7	17.4	40.5
Approach Delay (s)	11.6		12.8	20.1		40.5
Approach LOS	B		B	C		E

Intersection Summary				
Delay	25.4			
Level of Service	D			
Intersection Capacity Utilization	77.2%	ICU Level of Service	D	
Analysis Period (min)	15			

Intersection	
Intersection Delay, s/veh	30.8
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	47	35	135	21	33	14	358	303	43	9	335	164
Future Vol, veh/h	47	35	135	21	33	14	358	303	43	9	335	164
Peak Hour 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
Heavy Vehicles, %	7	0	1	0	7	0	2	1	0	25	1	0
Mvmt Flow	47	35	135	21	33	14	358	303	43	9	335	164
Number of Lanes	0	1	1	0	1	0	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	2
HCM Control Delay	12.8	13.1	21.8	53.4
HCM LOS	B	B	C	F

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	100%	0%	57%	0%	31%	2%
Vol Thru, %	0%	88%	43%	0%	49%	66%
Vol Right, %	0%	12%	0%	100%	21%	32%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	358	346	82	135	68	508
LT Vol	358	0	47	0	21	9
Through Vol	0	303	35	0	33	335
RT Vol	0	43	0	135	14	164
Lane Flow Rate	358	346	82	135	68	508
Geometry Grp	7	7	7	7	6	6
Degree of Util (X)	0.701	0.618	0.19	0.27	0.16	0.948
Departure Headway (Hd)	7.048	6.432	8.335	7.194	8.457	6.831
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	516	564	432	501	426	533
Service Time	4.748	4.132	6.056	4.914	6.484	4.831
HCM Lane V/C Ratio	0.694	0.613	0.19	0.269	0.16	0.953
HCM Control Delay	24.6	19	13	12.6	13.1	53.4
HCM Lane LOS	C	C	B	B	B	F
HCM 95th-tile Q	5.5	4.2	0.7	1.1	0.6	12.1

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	96	59	542	224	82	192
Future Volume (vph)	96	59	542	224	82	192
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.949				0.905	
Flt Protected				0.966	0.985	
Satd. Flow (prot)	1506	0	0	1594	1528	0
Flt Permitted				0.966	0.985	
Satd. Flow (perm)	1506	0	0	1594	1528	0
Link Speed (k/h)	80			80	50	
Link Distance (m)	1516.2			424.2	223.3	
Travel Time (s)	68.2			19.1	16.1	
Confl. Peds. (#/hr)		1	1			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	4%	4%	0%	0%	3%	3%
Adj. Flow (vph)	96	59	542	224	82	192
Shared Lane Traffic (%)						
Lane Group Flow (vph)	155	0	0	766	274	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	85.9%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	96	59	542	224	82	192
Future Volume (Veh/h)	96	59	542	224	82	192
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	96	59	542	224	82	192
Pedestrians					1	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			156		1434	126
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			156		1434	126
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			62		10	79
cM capacity (veh/h)			1435		91	920

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	155	766	274
Volume Left	0	542	82
Volume Right	59	0	192
cSH	1700	1435	247
Volume to Capacity	0.09	0.38	1.11
Queue Length 95th (m)	0.0	14.3	95.5
Control Delay (s)	0.0	7.5	132.5
Lane LOS		A	F
Approach Delay (s)	0.0	7.5	132.5
Approach LOS			F

Intersection Summary			
Average Delay		35.2	
Intersection Capacity Utilization		85.9%	ICU Level of Service E
Analysis Period (min)		15	

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	61	177	107	16	111	175
Future Volume (vph)	61	177	107	16	111	175
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.900		0.982			
Flt Protected	0.987					0.981
Satd. Flow (prot)	1556	0	1566	0	0	1572
Flt Permitted	0.987					0.981
Satd. Flow (perm)	1556	0	1566	0	0	1572
Link Speed (k/h)	80		80			80
Link Distance (m)	1200.3		1761.7			383.9
Travel Time (s)	54.0		79.3			17.3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	4%	0%	3%	3%
Adj. Flow (vph)	61	177	107	16	111	175
Shared Lane Traffic (%)						
Lane Group Flow (vph)	238	0	123	0	0	286
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 50.7%			ICU Level of Service A
Analysis Period (min) 15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	61	177	107	16	111	175
Future Volume (Veh/h)	61	177	107	16	111	175
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	61	177	107	16	111	175
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	512	115			123	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	512	115			123	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	87	81			92	
cM capacity (veh/h)	485	940			1458	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	238	123	286
Volume Left	61	0	111
Volume Right	177	16	0
cSH	758	1700	1458
Volume to Capacity	0.31	0.07	0.08
Queue Length 95th (m)	10.8	0.0	2.0
Control Delay (s)	11.9	0.0	3.4
Lane LOS	B		A
Approach Delay (s)	11.9	0.0	3.4
Approach LOS	B		

Intersection Summary			
Average Delay		5.9	
Intersection Capacity Utilization		50.7%	ICU Level of Service A
Analysis Period (min)		15	

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	82	73	45	37	127	112
Future Volume (vph)	82	73	45	37	127	112
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.936		0.939			
Flt Protected	0.974					0.974
Satd. Flow (prot)	1587	0	1508	0	0	1558
Flt Permitted	0.974					0.974
Satd. Flow (perm)	1587	0	1508	0	0	1558
Link Speed (k/h)	80		80			80
Link Distance (m)	605.5		233.8			1761.7
Travel Time (s)	27.2		10.5			79.3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	3%	5%	0%	5%	1%
Adj. Flow (vph)	82	73	45	37	127	112
Shared Lane Traffic (%)						
Lane Group Flow (vph)	155	0	82	0	0	239
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 37.9%			ICU Level of Service A
Analysis Period (min) 15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	82	73	45	37	127	112
Future Volume (Veh/h)	82	73	45	37	127	112
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	82	73	45	37	127	112
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	430	64			82	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	430	64			82	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	85	93			92	
cM capacity (veh/h)	537	998			1497	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	155	82	239
Volume Left	82	0	127
Volume Right	73	37	0
cSH	686	1700	1497
Volume to Capacity	0.23	0.05	0.08
Queue Length 95th (m)	6.9	0.0	2.2
Control Delay (s)	11.8	0.0	4.4
Lane LOS	B		A
Approach Delay (s)	11.8	0.0	4.4
Approach LOS	B		

Intersection Summary			
Average Delay		6.0	
Intersection Capacity Utilization		37.9%	ICU Level of Service A
Analysis Period (min)		15	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	26	2	147	62	69	1	135	112	32	231	16
Future Volume (vph)	2	26	2	147	62	69	1	135	112	32	231	16
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.991			0.966			0.939			0.992	
Flt Protected		0.997			0.974						0.994	
Satd. Flow (prot)	0	1531	0	0	1426	0	0	1422	0	0	1485	0
Flt Permitted		0.997			0.974						0.994	
Satd. Flow (perm)	0	1531	0	0	1426	0	0	1422	0	0	1485	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		187.7			400.3			618.6			394.6	
Travel Time (s)		13.5			28.8			44.5			28.4	
Peak Hour 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
Heavy Vehicles (%)	0%	0%	0%	1%	0%	7%	0%	1%	4%	4%	3%	0%
Adj. Flow (vph)	2	26	2	147	62	69	1	135	112	32	231	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	30	0	0	278	0	0	248	0	0	279	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 71.2%		ICU Level of Service C	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	26	2	147	62	69	1	135	112	32	231	16
Future Volume (Veh/h)	2	26	2	147	62	69	1	135	112	32	231	16
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	2	26	2	147	62	69	1	135	112	32	231	16
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	596	552	239	511	504	191	247			247		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	596	552	239	511	504	191	247			247		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.3	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.4	2.2			2.2		
p0 queue free %	99	94	100	67	87	92	100			98		
cM capacity (veh/h)	338	433	805	443	461	838	1331			1307		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	30	278	248	279
Volume Left	2	147	1	32
Volume Right	2	69	112	16
cSH	438	507	1331	1307
Volume to Capacity	0.07	0.55	0.00	0.02
Queue Length 95th (m)	1.8	26.2	0.0	0.6
Control Delay (s)	13.8	20.4	0.0	1.1
Lane LOS	B	C	A	A
Approach Delay (s)	13.8	20.4	0.0	1.1
Approach LOS	B	C		

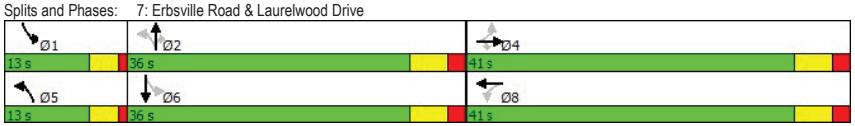
Intersection Summary				
Average Delay			7.7	
Intersection Capacity Utilization			71.2%	ICU Level of Service
Analysis Period (min)			15	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	103	125	156	192	114	139	254	160	46	257	25
Future Volume (vph)	15	103	125	156	192	114	139	254	160	46	257	25
Ideal Flow (vphpl)	1775	1900	1750	1775	1650	1650	1775	1900	1750	1775	1650	1650
Storage Length (m)	20.0		20.0	25.0		0.0	65.0		30.0	25.0		0.0
Storage Lanes	1		1	1		0	1		1	1		0
Taper Length (m)	35.0			10.0			80.0			35.0		
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	0.98		0.97	0.99	0.98		0.99		0.97	0.99	1.00	
Frt			0.850		0.944				0.850		0.987	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1686	1776	1417	1670	1513	0	1621	1881	1488	1686	1610	0
Flt Permitted	0.415			0.690			0.513			0.602		
Satd. Flow (perm)	725	1776	1371	1199	1513	0	870	1881	1442	1061	1610	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			125		39				160		6	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		123.5			178.3			236.9			930.8	
Travel Time (s)		8.9			12.8			17.1			67.0	
Confl. Peds. (#/hr)	20		10	10		20	7		7	7		7
Peak Hour 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
Heavy Vehicles (%)	0%	7%	5%	1%	2%	0%	4%	1%	0%	0%	1%	0%
Adj. Flow (vph)	15	103	125	156	192	114	139	254	160	46	257	25
Shared Lane Traffic (%)												
Lane Group Flow (vph)	15	103	125	156	306	0	139	254	160	46	282	0
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2		2	6		
Detector Phase	4	4	4	8	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0		5.0	30.0	30.0	5.0	30.0	
Minimum Split (s)	14.0	14.0	14.0	14.0	14.0		9.0	36.0	36.0	9.0	36.0	
Total Split (s)	41.0	41.0	41.0	41.0	41.0		13.0	36.0	36.0	13.0	36.0	
Total Split (%)	45.6%	45.6%	45.6%	45.6%	45.6%		14.4%	40.0%	40.0%	14.4%	40.0%	
Maximum Green (s)	35.0	35.0	35.0	35.0	35.0		9.0	30.0	30.0	9.0	30.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		1.0	2.0	2.0	1.0	2.0	
Lost Time Adjust (s)	0.0	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	6.0		4.0	6.0	6.0	4.0	6.0	
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	None	None		None	Max	Max	None	Max	
Walk Time (s)	15.0	15.0	15.0	15.0	15.0			12.0	12.0		12.0	
Flash Dont Walk (s)	21.0	21.0	21.0	21.0	21.0			18.0	18.0		18.0	
Pedestrian Calls (#/hr)	0	0	0	0	0			0	0		0	
Act Effct Green (s)	18.3	18.3	18.3	18.3	18.3		41.1	34.2	34.2	37.8	30.7	
Actuated g/C Ratio	0.26	0.26	0.26	0.26	0.26		0.58	0.48	0.48	0.53	0.43	
v/c Ratio	0.08	0.22	0.28	0.50	0.73		0.24	0.28	0.21	0.07	0.40	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	20.8	22.2	6.0	28.9	31.9		8.7	15.1	3.9	8.0	18.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	20.8	22.2	6.0	28.9	31.9		8.7	15.1	3.9	8.0	18.5	
LOS	C	C	A	C	C		A	B	A	A	B	
Approach Delay		13.8			30.9			10.3			17.0	
Approach LOS		B			C			B			B	
Queue Length 50th (m)	1.6	11.8	0.0	19.3	35.4		7.5	22.5	0.0	2.4	27.2	
Queue Length 95th (m)	6.0	23.5	11.3	36.5	62.1		20.3	49.6	11.9	8.3	58.5	
Internal Link Dist (m)		99.5			154.3			212.9			906.8	
Turn Bay Length (m)	20.0		20.0	25.0			65.0		30.0	25.0		
Base Capacity (vph)	366	899	755	607	785		603	908	779	674	702	
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Reduced v/c Ratio	0.04	0.11	0.17	0.26	0.39		0.23	0.28	0.21	0.07	0.40	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 70.8			
Natural Cycle: 65			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 18.2		Intersection LOS: B	
Intersection Capacity Utilization 71.6%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 7: Erbsville Road & Laurelwood Drive



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	103	125	156	192	114	139	254	160	46	257	25
Future Volume (vph)	15	103	125	156	192	114	139	254	160	46	257	25
Ideal Flow (vphpl)	1775	1900	1750	1775	1650	1650	1775	1900	1750	1775	1650	1650
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0		4.0	6.0	6.0	4.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	0.99		1.00	1.00	0.97	1.00	1.00	
Flpb, ped/bikes	0.99	1.00	1.00	0.99	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.94		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1666	1776	1374	1655	1516		1617	1881	1445	1680	1609	
Flt Permitted	0.42	1.00	1.00	0.69	1.00		0.51	1.00	1.00	0.60	1.00	
Satd. Flow (perm)	728	1776	1374	1203	1516		874	1881	1445	1065	1609	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	15	103	125	156	192	114	139	254	160	46	257	25
RTOR Reduction (vph)	0	0	93	0	29	0	0	0	84	0	3	0
Lane Group Flow (vph)	15	103	32	156	277	0	139	254	76	46	279	0
Confl. Peds. (#/hr)	20		10	10		20	7		7	7		7
Heavy Vehicles (%)	0%	7%	5%	1%	2%	0%	4%	1%	0%	0%	1%	0%
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2		2	6		
Actuated Green, G (s)	18.3	18.3	18.3	18.3	18.3		40.7	34.2	34.2	35.3	31.5	
Effective Green, g (s)	18.3	18.3	18.3	18.3	18.3		40.7	34.2	34.2	35.3	31.5	
Actuated g/C Ratio	0.25	0.25	0.25	0.25	0.25		0.56	0.47	0.47	0.49	0.44	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		4.0	6.0	6.0	4.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	184	449	347	304	383		558	889	683	552	701	
v/s Ratio Prot		0.06			c0.18		c0.02	0.14		0.00	c0.17	
v/s Ratio Perm	0.02		0.02	0.13			0.12		0.05	0.04		
v/c Ratio	0.08	0.23	0.09	0.51	0.72		0.25	0.29	0.11	0.08	0.40	
Uniform Delay, d1	20.6	21.4	20.6	23.2	24.7		7.7	11.6	10.6	9.7	13.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.2	0.3	0.1	1.5	6.6		0.2	0.8	0.3	0.1	1.7	
Delay (s)	20.8	21.7	20.8	24.6	31.3		7.9	12.4	10.9	9.8	15.6	
Level of Service	C	C	C	C	C		A	B	B	A	B	
Approach Delay (s)		21.1			29.0			10.9			14.8	
Approach LOS		C			C			B			B	

Intersection Summary					
HCM 2000 Control Delay	18.5	HCM 2000 Level of Service		B	
HCM 2000 Volume to Capacity ratio	0.49				
Actuated Cycle Length (s)	72.3	Sum of lost time (s)		16.0	
Intersection Capacity Utilization	71.6%	ICU Level of Service		C	
Analysis Period (min)	15				

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	294	34	147	597	45	32	25	83	30	45	25
Future Volume (vph)	11	294	34	147	597	45	32	25	83	30	45	25
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
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		0.986			0.992			0.920			0.966	
Flt Protected		0.998			0.991			0.989			0.985	
Satd. Flow (prot)	0	1499	0	0	1512	0	0	1410	0	0	1455	0
Flt Permitted		0.998			0.991			0.989			0.985	
Satd. Flow (perm)	0	1499	0	0	1512	0	0	1410	0	0	1455	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		213.7			555.1			104.8			136.8	
Travel Time (s)		15.4			40.0			7.5			9.8	
Confl. Peds. (#/hr)	9		4	4		9	6		8	8		6
Peak Hour 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
Heavy Vehicles (%)	0%	2%	0%	0%	1%	0%	0%	0%	0%	0%	3%	0%
Adj. Flow (vph)	11	294	34	147	597	45	32	25	83	30	45	25
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	339	0	0	789	0	0	140	0	0	100	0
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Roundabout			
Intersection Capacity Utilization	97.0%	ICU Level of Service	F
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Traffic Volume (veh/h)	11	294	34	147	597	45	32	25	83	30	45	25
Future Volume (veh/h)	11	294	34	147	597	45	32	25	83	30	45	25
Peak Hour 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
Hourly flow rate (vph)	11	294	34	147	597	45	32	25	83	30	45	25
Approach Volume (veh/h)		339			789			140			100	
Crossing Volume (veh/h)		222			68			335			776	
High Capacity (veh/h)		1164			1313			1064			747	
High v/c (veh/h)		0.29			0.60			0.13			0.13	
Low Capacity (veh/h)		961			1096			871			591	
Low v/c (veh/h)		0.35			0.72			0.16			0.17	

Intersection Summary					
Maximum v/c High		0.60			
Maximum v/c Low		0.72			
Intersection Capacity Utilization		97.0%	ICU Level of Service		F

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	105	23	89	209	19	26
Future Volume (vph)	105	23	89	209	19	26
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.976				0.922	
Flt Protected				0.985	0.979	
Satd. Flow (prot)	1584	0	0	1609	1593	0
Flt Permitted				0.985	0.979	
Satd. Flow (perm)	1584	0	0	1609	1593	0
Link Speed (k/h)	80			80	50	
Link Distance (m)	1200.3			667.7	811.2	
Travel Time (s)	54.0			30.0	58.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	0%	1%	1%	0%	0%
Adj. Flow (vph)	105	23	89	209	19	26
Shared Lane Traffic (%)						
Lane Group Flow (vph)	128	0	0	298	45	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 39.6%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	105	23	89	209	19	26
Future Volume (Veh/h)	105	23	89	209	19	26
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	105	23	89	209	19	26
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			128		504	116
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			128		504	116
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			94		96	97
cM capacity (veh/h)			1464		499	941

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	128	298	45
Volume Left	0	89	19
Volume Right	23	0	26
cSH	1700	1464	685
Volume to Capacity	0.08	0.06	0.07
Queue Length 95th (m)	0.0	1.6	1.7
Control Delay (s)	0.0	2.6	10.6
Lane LOS		A	B
Approach Delay (s)	0.0	2.6	10.6
Approach LOS			B

Intersection Summary			
Average Delay	2.7		
Intersection Capacity Utilization	39.6%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	86	6	162	61	1	134
Future Volume (vph)	86	6	162	61	1	134
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.991		0.963			
Flt Protected	0.955					
Satd. Flow (prot)	1625	0	1577	0	0	1650
Flt Permitted	0.955					
Satd. Flow (perm)	1625	0	1577	0	0	1650
Link Speed (k/h)	70		50			50
Link Distance (m)	143.4		394.6			123.0
Travel Time (s)	7.4		28.4			8.9
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	0%	1%	0%	0%	0%
Adj. Flow (vph)	86	6	162	61	1	134
Shared Lane Traffic (%)						
Lane Group Flow (vph)	92	0	223	0	0	135
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	26.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	86	6	162	61	1	134
Future Volume (Veh/h)	86	6	162	61	1	134
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	86	6	162	61	1	134
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	328	192			223	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	328	192			223	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	87	99			100	
cM capacity (veh/h)	663	854			1358	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	92	223	135
Volume Left	86	0	1
Volume Right	6	61	0
cSH	673	1700	1358
Volume to Capacity	0.14	0.13	0.00
Queue Length 95th (m)	3.8	0.0	0.0
Control Delay (s)	11.2	0.0	0.1
Lane LOS	B		A
Approach Delay (s)	11.2	0.0	0.1
Approach LOS	B		

Intersection Summary			
Average Delay	2.3		
Intersection Capacity Utilization	26.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	169	10	112	261	21	66
Future Volume (vph)	169	10	112	261	21	66
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.992				0.898	
Flt Protected				0.985	0.988	
Satd. Flow (prot)	1606	0	0	1598	1544	0
Flt Permitted				0.985	0.988	
Satd. Flow (perm)	1606	0	0	1598	1544	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	166.4			228.8	212.1	
Travel Time (s)	12.0			16.5	15.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	0%	1%	2%	6%	0%
Adj. Flow (vph)	169	10	112	261	21	66
Shared Lane Traffic (%)						
Lane Group Flow (vph)	179	0	0	373	87	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 49.5%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	169	10	112	261	21	66
Future Volume (Veh/h)	169	10	112	261	21	66
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	169	10	112	261	21	66
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			179		659	174
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			179		659	174
tC, single (s)			4.1		6.5	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			92		95	92
cM capacity (veh/h)			1403		389	875

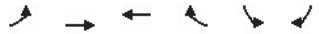
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	179	373	87
Volume Left	0	112	21
Volume Right	10	0	66
cSH	1700	1403	672
Volume to Capacity	0.11	0.08	0.13
Queue Length 95th (m)	0.0	2.1	3.5
Control Delay (s)	0.0	2.9	11.2
Lane LOS		A	B
Approach Delay (s)	0.0	2.9	11.2
Approach LOS			B

Intersection Summary			
Average Delay	3.2		
Intersection Capacity Utilization	49.5%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	41	220	301	58	23	30
Future Volume (vph)	41	220	301	58	23	30
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.978		0.924	
Flt Protected		0.992			0.979	
Satd. Flow (prot)	0	1623	1600	0	1563	0
Flt Permitted		0.992			0.979	
Satd. Flow (perm)	0	1623	1600	0	1563	0
Link Speed (k/h)		60	60		50	
Link Distance (m)		98.4	372.2		168.6	
Travel Time (s)		5.9	22.3		12.1	
Confl. Peds. (#/hr)	1			1		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	1%	0%	5%	0%
Adj. Flow (vph)	41	220	301	58	23	30
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	261	359	0	53	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	51.6%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	41	220	301	58	23	30
Future Volume (Veh/h)	41	220	301	58	23	30
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	41	220	301	58	23	30
Pedestrians					1	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	360				633	331
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	360				633	331
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				95	96
cM capacity (veh/h)	1209				424	715

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	261	359	53
Volume Left	41	0	23
Volume Right	0	58	30
cSH	1209	1700	551
Volume to Capacity	0.03	0.21	0.10
Queue Length 95th (m)	0.8	0.0	2.5
Control Delay (s)	1.5	0.0	12.2
Lane LOS	A		B
Approach Delay (s)	1.5	0.0	12.2
Approach LOS			B

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	51.6%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	26	222	341	54	26	26
Future Volume (vph)	26	222	341	54	26	26
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.982		0.932	
Flt Protected		0.995			0.976	
Satd. Flow (prot)	0	1613	1598	0	1606	0
Flt Permitted		0.995			0.976	
Satd. Flow (perm)	0	1613	1598	0	1606	0
Link Speed (k/h)		60	60		50	
Link Distance (m)		372.2	1012.1		87.7	
Travel Time (s)		22.3	60.7		6.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	2%	1%	4%	0%	0%
Adj. Flow (vph)	26	222	341	54	26	26
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	248	395	0	52	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 48.5%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	26	222	341	54	26	26
Future Volume (Veh/h)	26	222	341	54	26	26
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	26	222	341	54	26	26
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	395				642	368
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	395				642	368
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				94	96
cM capacity (veh/h)	1175				432	682

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	248	395	52
Volume Left	26	0	26
Volume Right	0	54	26
cSH	1175	1700	529
Volume to Capacity	0.02	0.23	0.10
Queue Length 95th (m)	0.5	0.0	2.6
Control Delay (s)	1.0	0.0	12.5
Lane LOS	A		B
Approach Delay (s)	1.0	0.0	12.5
Approach LOS			B

Intersection Summary				
Average Delay		1.3		
Intersection Capacity Utilization		48.5%	ICU Level of Service	A
Analysis Period (min)		15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	10	67	13	6	8	97	210	35	7	357	112
Future Volume (vph)	23	10	67	13	6	8	97	210	35	7	357	112
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
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		0.910			0.960			0.986			0.968	
Flt Protected		0.989			0.976			0.986			0.999	
Satd. Flow (prot)	0	1367	0	0	1452	0	0	1498	0	0	1499	0
Flt Permitted		0.989			0.976			0.986			0.999	
Satd. Flow (perm)	0	1367	0	0	1452	0	0	1498	0	0	1499	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		77.1			66.0			326.3			223.3	
Travel Time (s)		5.6			4.8			23.5			16.1	
Confl. Peds. (#/hr)	4					4			1	1		
Peak Hour 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
Heavy Vehicles (%)	0%	0%	3%	0%	0%	0%	0%	1%	0%	0%	0%	0%
Adj. Flow (vph)	23	10	67	13	6	8	97	210	35	7	357	112
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	100	0	0	27	0	0	342	0	0	476	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 72.3%		ICU Level of Service C	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	23	10	67	13	6	8	97	210	35	7	357	112
Future Volume (Veh/h)	23	10	67	13	6	8	97	210	35	7	357	112
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	23	10	67	13	6	8	97	210	35	7	357	112
Pedestrians					1						4	
Lane Width (m)					3.6						3.6	
Walking Speed (m/s)					1.2						1.2	
Percent Blockage					0						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	18			77			416	134	44	270	163	14
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	18			77			416	134	44	270	163	14
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			67	72	97	99	50	90
cM capacity (veh/h)	1607			1535			294	739	1030	505	714	1068

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	100	27	342	476
Volume Left	23	13	97	7
Volume Right	67	8	35	112
cSH	1607	1535	527	769
Volume to Capacity	0.01	0.01	0.65	0.62
Queue Length 95th (m)	0.3	0.2	36.9	34.8
Control Delay (s)	1.8	3.6	23.5	17.0
Lane LOS	A	A	C	C
Approach Delay (s)	1.8	3.6	23.5	17.0
Approach LOS			C	C

Intersection Summary				
Average Delay		17.4		
Intersection Capacity Utilization		72.3%	ICU Level of Service	C
Analysis Period (min)		15		

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]
© Copyright TRL Limited, 2020

For sales and distribution information, program advice and maintenance, contact TRL:
Tel: +44 (0)1344 770758 email: software@trl.co.uk Web: http://www.trlsoftware.co.uk

The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: Laurelwood & Beaver Creek.arc8
Path: C:\Users\AdamMorrison\Paradigm\Projects - 170278 Beaver Creek Area TES\C5 - Analysis and Evaluation\Arcady
Report generation date: 2020-07-21 4:17:44 PM

Summary of intersection performance

There are warnings associated with this model run - see the 'Data Errors and Warnings' tables.

	AM					
	Queue (Veh)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS
	All - Background 2027					
Intersection 85% - Leg North	0.09	4.17	0.08	A	10.50	B
Intersection 85% - Leg West	2.41	11.68	0.72	B		
Intersection 85% - Leg South	1.26	14.03	0.57	B		
Intersection 85% - Leg East	0.36	4.87	0.27	A		
Intersection 90% - Leg North	0.08	3.88	0.08	A	8.81	A
Intersection 90% - Leg West	2.00	9.67	0.67	A		
Intersection 90% - Leg South	1.05	11.65	0.52	B		
Intersection 90% - Leg East	0.33	4.48	0.25	A		

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Intersection LOS and Intersection Delay are demand-weighted averages.

"D1 - Existing, AM" model duration: 8:00 AM - 9:00 AM
"D2 - Existing, PM" model duration: 4:00 PM - 5:00 PM
"D3 - Background 2022, AM" model duration: 8:00 AM - 9:00 AM
"D4 - Background 2022, PM" model duration: 4:00 PM - 5:00 PM
"D5 - Total 2022, AM" model duration: 8:00 AM - 9:00 AM
"D6 - Total 2022, PM" model duration: 4:00 PM - 5:00 PM
"D7 - Background 2025, AM" model duration: 8:00 AM - 9:00 AM
"D8 - Background 2025, PM" model duration: 4:00 PM - 5:00 PM
"D9 - Total 2025, AM" model duration: 8:00 AM - 9:00 AM
"D10 - Total 2025, PM" model duration: 4:00 PM - 5:00 PM
"D11 - Background 2027, AM " model duration: 8:00 AM - 9:00 AM
"D12 - Background 2027, PM" model duration: 4:00 PM - 5:00 PM
"D13 - Total 2027, AM" model duration: 8:00 AM - 9:00 AM
"D14 - Total 2027, PM" model duration: 4:00 PM - 5:00 PM
"D15 - Background 2032, AM" model duration: 8:00 AM - 9:00 AM
"D16 - Background 2032, PM" model duration: 4:00 PM - 5:00 PM
"D17 - Total 2032, AM" model duration: 8:00 AM - 9:00 AM
"D18 - Total 2032, PM" model duration: 4:00 PM - 5:00 PM

Run using Junctions 8.0.6.541 at 2020-07-21 4:17:43 PM

File summary

Title	Laurelwood & Beaver Creek
Location	Waterloo
Site Number	
Date	2017-12-05
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	170278
Analyst	Matt
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)
7.50	✓		N/A	0.90	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	Veh	Veh	perHour	s	-Min	perMin

All - Background 2027, AM

Data Errors and Warnings

Severity	Area	Item	Description
Last Run	Last Run	Intersection 85% - Leg East - Capacity	Pedestrian Crossing causes blocking on previous leg due to traffic queing to leave the intersection in 4 timesegment(s).
Last Run	Last Run	Intersection 90% - Leg East - Capacity	Pedestrian Crossing causes blocking on previous leg due to traffic queing to leave the intersection in 4 timesegment(s).

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
All	ARCADY		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
Background 2027, AM	Background 2027	AM		PHF	08:00	09:00	60	15				✓		

Intersection Network

Intersections

Junction	Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Do Geometric Delay	Intersection Delay (s)	Intersection LOS
85%	85%	Existing	Roundabout	North,West,South,East				10.50	B
90%	90%	Future	Roundabout	North,West,South,East				8.81	A

Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

Legs

Legs

Intersection	Leg	Leg	Name	Description
85%	**North**	North	Beaver Creek SB	
85%	**West**	West	Laurelwood EB	
85%	**South**	South	Beaver Creek NB	
85%	**East**	East	Laurelwood WB	
90%	**North**	North	Beaver Creek SB	
90%	**West**	West	Laurelwood EB	
90%	**South**	South	Beaver Creek NB	
90%	**East**	East	Laurelwood WB	

Capacity Options

Intersection	Leg	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)	Assume Flat Start Profile	Initial Queue (PCE)
85%	North	0.00	99999.00		0.00
85%	West	0.00	99999.00		0.00
85%	South	0.00	99999.00		0.00
85%	East	0.00	99999.00		0.00
90%	North	0.00	99999.00		0.00
90%	West	0.00	99999.00		0.00
90%	South	0.00	99999.00		0.00
90%	East	0.00	99999.00		0.00

Roundabout Geometry

Intersection	Leg	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
85%	North	3.50	4.50	30.00	20.00	30.00	25.00	
85%	West	3.50	4.50	30.00	20.00	30.00	25.00	
85%	South	3.50	4.50	30.00	20.00	30.00	25.00	
85%	East	3.50	4.50	30.00	20.00	30.00	25.00	
90%	North	3.50	4.50	30.00	20.00	30.00	25.00	
90%	West	3.50	4.50	30.00	20.00	30.00	25.00	
90%	South	3.50	4.50	30.00	20.00	30.00	25.00	
90%	East	3.50	4.50	30.00	20.00	30.00	25.00	

Pedestrian Crossings

Intersection	Leg	Crossing Type
85%	North	Unsignalled Pedestrian Crossing
85%	West	Unsignalled Pedestrian Crossing
85%	South	Unsignalled Pedestrian Crossing
85%	East	Unsignalled Pedestrian Crossing
90%	North	Unsignalled Pedestrian Crossing
90%	West	Unsignalled Pedestrian Crossing
90%	South	Unsignalled Pedestrian Crossing
90%	East	Unsignalled Pedestrian Crossing

Unsignalled Pedestrian Crossing Crossings

Intersection	Leg	Space between crossing and intersection entry (PCE)	Vehicles queueing on exit (PCE)	Central Refuge	Crossing Data Type	Crossing length (m)	Crossing time (s)	Crossing length (entry side) (m)	Crossing time (entry side) (s)	Crossing length (exit side) (m)	Crossing time (exit side) (s)
85%	North	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
85%	West	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
85%	South	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
85%	East	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
90%	North	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
90%	West	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
90%	South	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
90%	East	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50

Slope / Intercept / Capacity

Leg Intercept Adjustments

Intersection	Leg	Type	Reason	Direct Intercept Adjustment (PCE/hr)	Percentage Intercept Adjustment (%)
85%	North	Percentage	Region of Waterloo - Requirement		85.00
85%	West	Percentage	Region of Waterloo - Requirement		85.00
85%	South	Percentage	Region of Waterloo - Requirement		85.00
85%	East	Percentage	Region of Waterloo - Requirement		85.00
90%	North	Percentage	Region of Waterloo - Requirement		90.00
90%	West	Percentage	Region of Waterloo - Requirement		90.00
90%	South	Percentage	Region of Waterloo - Requirement		90.00
90%	East	Percentage	Region of Waterloo - Requirement		90.00

Roundabout Slope and Intercept used in model

Intersection	Leg	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
85%	North		(calculated)	(calculated)	0.593	1153.828
85%	West		(calculated)	(calculated)	0.593	1153.828
85%	South		(calculated)	(calculated)	0.593	1153.828
85%	East		(calculated)	(calculated)	0.593	1153.828
90%	North		(calculated)	(calculated)	0.593	1221.701
90%	West		(calculated)	(calculated)	0.593	1221.701
90%	South		(calculated)	(calculated)	0.593	1221.701
90%	East		(calculated)	(calculated)	0.593	1221.701

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCE Factor for a Truck (PCE)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Intersection	Leg	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
85%	North	PHF	✓	70.00	100.000
85%	West	PHF	✓	697.00	100.000
85%	South	PHF	✓	302.00	100.000
85%	East	PHF	✓	248.00	100.000
90%	North	PHF	✓	70.00	100.000
90%	West	PHF	✓	697.00	100.000
90%	South	PHF	✓	302.00	100.000
90%	East	PHF	✓	248.00	100.000

Peak Hour Factor Data

Intersection	Leg	Hourly Volume (Veh/hr)	Peak Hour Factor	Peak Time Segment
85%	North	70.00	0.92	SecondQuarter
85%	West	697.00	0.92	SecondQuarter
85%	South	302.00	0.92	SecondQuarter
85%	East	248.00	0.92	SecondQuarter
90%	North	70.00	0.92	SecondQuarter
90%	West	697.00	0.92	SecondQuarter
90%	South	302.00	0.92	SecondQuarter
90%	East	248.00	0.92	SecondQuarter

Pedestrian Flows

General Flows Data

Intersection	Leg	Profile Type	Average Pedestrian Flow (Ped/hr)
85%	North	PHF	10.00
85%	West	PHF	7.00
85%	South	PHF	4.00
85%	East	PHF	10.00
90%	North	PHF	10.00
90%	West	PHF	7.00
90%	South	PHF	4.00
90%	East	PHF	10.00

Peak Hour Factor Data

Intersection	Leg	Hourly Volume (Ped/hr)	Peak Hour Factor	Peak Time Segment
85%	North	10.00	1.00	SecondQuarter
85%	West	7.00	1.00	SecondQuarter
85%	South	4.00	1.00	SecondQuarter
85%	East	10.00	1.00	SecondQuarter
90%	North	10.00	1.00	SecondQuarter
90%	West	7.00	1.00	SecondQuarter
90%	South	4.00	1.00	SecondQuarter
90%	East	10.00	1.00	SecondQuarter

Turning Proportions

Turning Counts / Proportions (Veh/hr) - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.000	10.000	21.000	39.000
	West	32.000	0.000	89.000	576.000
	South	39.000	58.000	0.000	205.000
	East	27.000	183.000	38.000	0.000

Turning Proportions (Veh) - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.00	0.14	0.30	0.56
	West	0.05	0.00	0.13	0.83
	South	0.13	0.19	0.00	0.68
	East	0.11	0.74	0.15	0.00

Turning Counts / Proportions (Veh/hr) - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.000	10.000	21.000	39.000
	West	32.000	0.000	89.000	576.000
	South	39.000	58.000	0.000	205.000
	East	27.000	183.000	38.000	0.000

Turning Proportions (Veh) - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.00	0.14	0.30	0.56
	West	0.05	0.00	0.13	0.83
	South	0.13	0.19	0.00	0.68
	East	0.11	0.74	0.15	0.00

Vehicle Mix

Average PCE Per Vehicle - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	1.000	1.110	1.000	1.000
	West	1.000	1.000	1.000	1.030
	South	1.090	1.000	1.000	1.010
	East	1.040	1.060	1.060	1.000

Truck Percentages - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.0	11.0	0.0	0.0
	West	0.0	0.0	0.0	3.0
	South	9.0	0.0	0.0	1.0
	East	4.0	6.0	6.0	0.0

Average PCE Per Vehicle - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	1.000	1.110	1.000	1.000
	West	1.000	1.000	1.000	1.030
	South	1.090	1.000	1.000	1.010
	East	1.040	1.060	1.060	1.000

Truck Percentages - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.0	11.0	0.0	0.0
	West	0.0	0.0	0.0	3.0
	South	9.0	0.0	0.0	1.0
	East	4.0	6.0	6.0	0.0

Results

Results Summary for whole modelled period

Intersection	Leg	Max V/C Ratio	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Intersection Arrivals (Veh)	Total Queueing Delay (Veh-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (Veh-min/min)	Inclusive Total Queueing Delay (Veh-min)	Inclusive Average Queueing Delay (s)
85%	North	0.08	4.17	0.09	~1	A	70.00	70.00	4.73	4.06	0.08	4.73	4.06
85%	West	0.72	11.68	2.41	5.00	B	697.00	697.00	114.35	9.84	1.91	114.42	9.85
85%	South	0.57	14.03	1.26	1.00	B	302.00	302.00	56.44	11.21	0.94	56.46	11.22
85%	East	0.27	4.87	0.36	~1	A	248.00	248.00	19.34	4.68	0.32	19.35	4.68
90%	North	0.08	3.88	0.08	~1	A	70.00	70.00	4.41	3.78	0.07	4.41	3.78
90%	West	0.67	9.67	2.00	3.00	A	697.00	697.00	96.81	8.33	1.61	96.86	8.34
90%	South	0.52	11.65	1.05	?	B	302.00	302.00	48.00	9.54	0.80	48.02	9.54
90%	East	0.25	4.48	0.33	~1	A	248.00	248.00	17.86	4.32	0.30	17.86	4.32

Main Results for each time segment

Main results: (08:00-08:15)

Intersection	Leg	Total Demand (Veh/hr)	Intersection Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	V/C Ratio	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
85%	North	65.94	16.49	65.65	91.53	261.22	10.00	967.00	441.64	0.068	0.00	0.07	3.993	A
85%	West	656.60	164.15	650.37	234.98	91.89	7.00	1068.45	790.83	0.615	0.00	1.56	8.491	A
85%	South	284.49	71.12	281.58	138.36	603.90	4.00	668.92	379.16	0.425	0.00	0.73	9.227	A
85%	East	233.62	58.41	232.44	765.19	120.30	10.00	1020.16	993.49	0.229	0.00	0.30	4.564	A
90%	North	65.94	16.49	65.67	91.62	261.36	10.00	1033.07	453.64	0.064	0.00	0.07	3.721	A
90%	West	656.60	164.15	651.21	235.12	91.92	7.00	1134.46	840.99	0.579	0.00	1.35	7.370	A
90%	South	284.49	71.12	281.95	138.48	604.64	4.00	725.97	381.62	0.392	0.00	0.64	8.063	A
90%	East	233.62	58.41	232.53	766.13	120.46	10.00	1084.12	1054.79	0.216	0.00	0.27	4.222	A

Main results: (08:15-08:30)

Intersection	Leg	Total Demand (Veh/hr)	Intersection Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	V/C Ratio	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
85%	North	76.09	19.02	76.03	106.06	302.61	10.00	938.41	441.64	0.081	0.07	0.09	4.174	A
85%	West	757.61	189.40	754.18	272.21	106.43	7.00	1058.72	790.83	0.716	1.56	2.41	11.684	B
85%	South	328.26	82.07	326.14	160.37	700.24	4.00	580.51	379.16	0.565	0.73	1.26	14.034	B
85%	East	269.57	67.39	269.30	886.99	139.38	10.00	1008.75	993.49	0.267	0.30	0.36	4.867	A
90%	North	76.09	19.02	76.03	106.16	302.73	10.00	1004.27	453.64	0.076	0.07	0.08	3.878	A

90%	West	757.61	189.40	754.99	272.32	106.44	7.00	1124.67	840.99	0.674	1.35	2.00	9.667	A
90%	South	328.26	82.07	326.61	160.48	700.95	4.00	633.95	381.62	0.518	0.64	1.05	11.649	B
90%	East	269.57	67.39	269.32	887.99	139.57	10.00	1072.66	1054.79	0.251	0.27	0.33	4.480	A

Main results: (08:30-08:45)

Intersection	Leg	Total Demand (Veh/hr)	Intersection Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	V/C Ratio	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
85%	North	72.03	18.01	72.05	101.00	287.32	10.00	949.04	441.64	0.076	0.09	0.08	4.104	A
85%	West	717.20	179.30	718.30	258.50	100.87	7.00	1062.43	790.83	0.675	2.41	2.14	10.505	B
85%	South	310.75	77.69	311.55	152.45	666.72	4.00	611.23	379.16	0.508	1.26	1.06	12.050	B
85%	East	255.19	63.80	255.28	845.23	133.04	10.00	1012.55	993.49	0.252	0.36	0.34	4.756	A
90%	North	72.03	18.01	72.05	100.97	287.28	10.00	1015.09	453.64	0.071	0.08	0.08	3.819	A
90%	West	717.20	179.30	718.08	258.46	100.87	7.00	1128.43	840.99	0.636	2.00	1.78	8.797	A
90%	South	310.75	77.69	311.38	152.42	666.53	4.00	666.91	381.62	0.466	1.05	0.89	10.147	B
90%	East	255.19	63.80	255.27	844.93	132.98	10.00	1076.63	1054.79	0.237	0.33	0.31	4.384	A

Main results: (08:45-09:00)

Intersection	Leg	Total Demand (Veh/hr)	Intersection Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	V/C Ratio	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
85%	North	65.94	16.49	65.98	92.58	263.19	10.00	965.65	441.64	0.068	0.08	0.07	4.001	A
85%	West	656.60	164.15	658.62	236.80	92.37	7.00	1068.10	790.83	0.615	2.14	1.63	8.836	A
85%	South	284.49	71.12	285.66	139.71	611.28	4.00	662.07	379.16	0.430	1.06	0.77	9.593	A
85%	East	233.62	58.41	233.78	774.95	121.99	10.00	1019.16	993.49	0.229	0.34	0.30	4.584	A
90%	North	65.94	16.49	65.97	92.52	263.13	10.00	1031.87	453.64	0.064	0.08	0.07	3.726	A
90%	West	656.60	164.15	658.13	236.73	92.37	7.00	1134.13	840.99	0.579	1.78	1.40	7.587	A
90%	South	284.49	71.12	285.40	139.65	610.85	4.00	719.99	381.62	0.395	0.89	0.66	8.301	A
90%	East	233.62	58.41	233.77	774.36	121.88	10.00	1083.28	1054.79	0.216	0.31	0.28	4.238	A

Queueing Delay Results for each time segment

Queueing Delay results: (08:00-08:15)

Intersection	Leg	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	1.07	0.07	3.993	A	A
85%	West	21.86	1.46	8.491	A	A
85%	South	10.33	0.69	9.227	A	A
85%	East	4.31	0.29	4.564	A	A
90%	North	1.00	0.07	3.721	A	A
90%	West	19.11	1.27	7.370	A	A
90%	South	9.09	0.61	8.063	A	A
90%	East	4.00	0.27	4.222	A	A

Queueing Delay results: (08:15-08:30)

Intersection	Leg	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	1.30	0.09	4.174	A	A
85%	West	33.91	2.26	11.684	B	B
85%	South	17.72	1.18	14.034	B	B
85%	East	5.34	0.36	4.867	A	A
90%	North	1.21	0.08	3.878	A	A
90%	West	28.48	1.90	9.667	A	A
90%	South	14.91	0.99	11.649	B	B
90%	East	4.92	0.33	4.480	A	A

Queueing Delay results: (08:30-08:45)

Intersection	Leg	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	1.25	0.08	4.104	A	A
85%	West	33.05	2.20	10.505	B	B
85%	South	16.43	1.10	12.050	B	B
85%	East	5.14	0.34	4.756	A	A
90%	North	1.16	0.08	3.819	A	A
90%	West	27.47	1.83	8.797	A	A
90%	South	13.73	0.92	10.147	B	B

90%	East	4.74	0.32	4.384	A	A

Queueing Delay results: (08:45-09:00)

Intersection	Leg	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	1.12	0.07	4.001	A	A
85%	West	25.53	1.70	8.836	A	A
85%	South	11.95	0.80	9.593	A	A
85%	East	4.55	0.30	4.584	A	A
90%	North	1.04	0.07	3.726	A	A
90%	West	21.75	1.45	7.587	A	A
90%	South	10.27	0.68	8.301	A	A
90%	East	4.20	0.28	4.238	A	A

Queue Variation Results for each time segment

Queue Variation results: (08:00-08:15)

Intersection	Leg	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.07	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	1.56	0.00	0.00	3.00	4.00			N/A	N/A
85%	South	0.73	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	0.30	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.07	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	1.35	0.00	0.00	2.00	3.00			N/A	N/A
90%	South	0.64	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.27	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:15-08:30)

Intersection	Leg	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.09	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	2.41	0.00	0.00	0.00	5.00			N/A	N/A
85%	South	1.26	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	0.36	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.08	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	2.00	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	1.05	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.33	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:30-08:45)

Intersection	Leg	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.08	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	2.14	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

85%	South	1.06	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	0.34	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.08	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	1.78	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.89	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.31	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:45-09:00)

Intersection	Leg	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.07	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	1.63	0.00	0.00	3.00	5.00			N/A	N/A
85%	South	0.77	0.00	0.00	0.00	1.00			N/A	N/A
85%	East	0.30	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.07	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	1.40	0.00	0.00	2.00	3.00			N/A	N/A
90%	South	0.66	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.28	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]
© Copyright TRL Limited, 2020

For sales and distribution information, program advice and maintenance, contact TRL:
Tel: +44 (0)1344 770758 email: software@trl.co.uk Web: http://www.trlsoftware.co.uk

The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: Laurelwood & Beaver Creek.arc8
Path: C:\Users\AdamMorrison\Paradigm\Projects - 170278 Beaver Creek Area TES\C5 - Analysis and Evaluation\Arcady
Report generation date: 2020-07-21 4:18:08 PM

Summary of intersection performance

	PM					
	Queue (Veh)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS
	All - Background 2027					
Intersection 85% - Leg North	0.23	7.73	0.19	A	10.70	B
Intersection 85% - Leg West	0.60	5.85	0.38	A		
Intersection 85% - Leg South	0.20	4.82	0.17	A		
Intersection 85% - Leg East	3.32	14.22	0.78	B		
Intersection 90% - Leg North	0.21	6.86	0.17	A	8.80	A
Intersection 90% - Leg West	0.54	5.29	0.35	A		
Intersection 90% - Leg South	0.19	4.43	0.16	A		
Intersection 90% - Leg East	2.65	11.34	0.73	B		

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Intersection LOS and Intersection Delay are demand-weighted averages.

"D1 - Existing, AM" model duration: 8:00 AM - 9:00 AM
"D2 - Existing, PM" model duration: 4:00 PM - 5:00 PM
"D3 - Background 2022, AM" model duration: 8:00 AM - 9:00 AM
"D4 - Background 2022, PM" model duration: 4:00 PM - 5:00 PM
"D5 - Total 2022, AM" model duration: 8:00 AM - 9:00 AM
"D6 - Total 2022, PM" model duration: 4:00 PM - 5:00 PM
"D7 - Background 2025, AM" model duration: 8:00 AM - 9:00 AM
"D8 - Background 2025, PM" model duration: 4:00 PM - 5:00 PM
"D9 - Total 2025, AM" model duration: 8:00 AM - 9:00 AM
"D10 - Total 2025, PM" model duration: 4:00 PM - 5:00 PM
"D11 - Background 2027, AM" model duration: 8:00 AM - 9:00 AM
"D12 - Background 2027, PM " model duration: 4:00 PM - 5:00 PM
"D13 - Total 2027, AM" model duration: 8:00 AM - 9:00 AM
"D14 - Total 2027, PM" model duration: 4:00 PM - 5:00 PM
"D15 - Background 2032, AM" model duration: 8:00 AM - 9:00 AM
"D16 - Background 2032, PM" model duration: 4:00 PM - 5:00 PM
"D17 - Total 2032, AM" model duration: 8:00 AM - 9:00 AM
"D18 - Total 2032, PM" model duration: 4:00 PM - 5:00 PM

Run using Junctions 8.0.6.541 at 2020-07-21 4:18:07 PM

File summary

Title	Laurelwood & Beaver Creek
Location	Waterloo
Site Number	
Date	2017-12-05
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	170278
Analyst	Matt
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)

7.50	✓		N/A	0.90	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	Veh	Veh	perHour	s	-Min	perMin

All - Background 2027, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
All	ARCADY		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
Background 2027, PM	Background 2027	PM		PHF	16:00	17:00	60	15				✓		

Intersection Network

Intersections

Junction	Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Do Geometric Delay	Intersection Delay (s)	Intersection LOS
85%	85%	Existing	Roundabout	North,West,South,East				10.70	B
90%	90%	Future	Roundabout	North,West,South,East				8.80	A

Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

Legs

Legs

Intersection	Leg	Leg	Name	Description
85%	**North**	North	Beaver Creek SB	
85%	**West**	West	Laurelwood EB	
85%	**South**	South	Beaver Creek NB	
85%	**East**	East	Laurelwood WB	
90%	**North**	North	Beaver Creek SB	
90%	**West**	West	Laurelwood EB	
90%	**South**	South	Beaver Creek NB	
90%	**East**	East	Laurelwood WB	

Capacity Options

Intersection	Leg	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)	Assume Flat Start Profile	Initial Queue (PCE)
85%	**North**	0.00	99999.00		0.00
85%	**West**	0.00	99999.00		0.00
85%	**South**	0.00	99999.00		0.00
85%	**East**	0.00	99999.00		0.00

90%	**North**	0.00	99999.00		0.00
90%	**West**	0.00	99999.00		0.00
90%	**South**	0.00	99999.00		0.00
90%	**East**	0.00	99999.00		0.00

Roundabout Geometry

Intersection	Leg	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
85%	**North**	3.50	4.50	30.00	20.00	30.00	25.00	
85%	**West**	3.50	4.50	30.00	20.00	30.00	25.00	
85%	**South**	3.50	4.50	30.00	20.00	30.00	25.00	
85%	**East**	3.50	4.50	30.00	20.00	30.00	25.00	
90%	**North**	3.50	4.50	30.00	20.00	30.00	25.00	
90%	**West**	3.50	4.50	30.00	20.00	30.00	25.00	
90%	**South**	3.50	4.50	30.00	20.00	30.00	25.00	
90%	**East**	3.50	4.50	30.00	20.00	30.00	25.00	

Pedestrian Crossings

Intersection	Leg	Crossing Type
85%	**North**	Unsignalled Pedestrian Crossing
85%	**West**	Unsignalled Pedestrian Crossing
85%	**South**	Unsignalled Pedestrian Crossing
85%	**East**	Unsignalled Pedestrian Crossing
90%	**North**	Unsignalled Pedestrian Crossing
90%	**West**	Unsignalled Pedestrian Crossing
90%	**South**	Unsignalled Pedestrian Crossing
90%	**East**	Unsignalled Pedestrian Crossing

Unsignalled Pedestrian Crossing Crossings

Intersection	Leg	Space between crossing and intersection entry (PCE)	Vehicles queueing on exit (PCE)	Central Refuge	Crossing Data Type	Crossing length (m)	Crossing time (s)	Crossing length (entry side) (m)	Crossing time (entry side) (s)	Crossing length (exit side) (m)	Crossing time (exit side) (s)
85%	**North**	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
85%	**West**	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
85%	**South**	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
85%	**East**	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
90%	**North**	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
90%	**West**	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
90%	**South**	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
90%	**East**	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50

Slope / Intercept / Capacity

Leg Intercept Adjustments

Intersection	Leg	Type	Reason	Direct Intercept Adjustment (PCE/hr)	Percentage Intercept Adjustment (%)
85%	**North**	Percentage	Region of Waterloo - Requirement		85.00
85%	**West**	Percentage	Region of Waterloo - Requirement		85.00
85%	**South**	Percentage	Region of Waterloo - Requirement		85.00
85%	**East**	Percentage	Region of Waterloo - Requirement		85.00
90%	**North**	Percentage	Region of Waterloo - Requirement		90.00
90%	**West**	Percentage	Region of Waterloo - Requirement		90.00
90%	**South**	Percentage	Region of Waterloo - Requirement		90.00
90%	**East**	Percentage	Region of Waterloo - Requirement		90.00

Roundabout Slope and Intercept used in model

Intersection	Leg	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
85%	**North**		(calculated)	(calculated)	0.593	1153.828
85%	**West**		(calculated)	(calculated)	0.593	1153.828
85%	**South**		(calculated)	(calculated)	0.593	1153.828
85%	**East**		(calculated)	(calculated)	0.593	1153.828
90%	**North**		(calculated)	(calculated)	0.593	1221.701
90%	**West**		(calculated)	(calculated)	0.593	1221.701

90%	South		(calculated)	(calculated)	0.593	1221.701
90%	East		(calculated)	(calculated)	0.593	1221.701

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCE Factor for a Truck (PCE)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Intersection	Leg	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
85%	North	PHF	✓	100.00	100.000
85%	West	PHF	✓	340.00	100.000
85%	South	PHF	✓	140.00	100.000
85%	East	PHF	✓	789.00	100.000
90%	North	PHF	✓	100.00	100.000
90%	West	PHF	✓	340.00	100.000
90%	South	PHF	✓	140.00	100.000
90%	East	PHF	✓	789.00	100.000

Peak Hour Factor Data

Intersection	Leg	Hourly Volume (Veh/hr)	Peak Hour Factor	Peak Time Segment
85%	North	100.00	0.92	SecondQuarter
85%	West	340.00	0.92	SecondQuarter
85%	South	140.00	0.92	SecondQuarter
85%	East	789.00	0.92	SecondQuarter
90%	North	100.00	0.92	SecondQuarter
90%	West	340.00	0.92	SecondQuarter
90%	South	140.00	0.92	SecondQuarter
90%	East	789.00	0.92	SecondQuarter

Pedestrian Flows

General Flows Data

Intersection	Leg	Profile Type	Average Pedestrian Flow (Ped/hr)
85%	North	PHF	9.00
85%	West	PHF	6.00
85%	South	PHF	4.00
85%	East	PHF	8.00
90%	North	PHF	9.00
90%	West	PHF	6.00
90%	South	PHF	4.00
90%	East	PHF	8.00

Peak Hour Factor Data

Intersection	Leg	Hourly Volume (Ped/hr)	Peak Hour Factor	Peak Time Segment
85%	North	9.00	1.00	SecondQuarter
85%	West	6.00	1.00	SecondQuarter
85%	South	4.00	1.00	SecondQuarter
85%	East	8.00	1.00	SecondQuarter

90%	North	9.00	1.00	SecondQuarter
90%	West	6.00	1.00	SecondQuarter
90%	South	4.00	1.00	SecondQuarter
90%	East	8.00	1.00	SecondQuarter

Turning Proportions

Turning Counts / Proportions (Veh/hr) - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.000	25.000	45.000	30.000
	West	11.000	1.000	34.000	294.000
	South	25.000	32.000	0.000	83.000
	East	45.000	597.000	147.000	0.000

Turning Proportions (Veh) - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.00	0.25	0.45	0.30
	West	0.03	0.00	0.10	0.86
	South	0.18	0.23	0.00	0.59
	East	0.06	0.76	0.19	0.00

Turning Counts / Proportions (Veh/hr) - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.000	25.000	45.000	30.000
	West	11.000	1.000	34.000	294.000
	South	25.000	32.000	0.000	83.000
	East	45.000	597.000	147.000	0.000

Turning Proportions (Veh) - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.00	0.25	0.45	0.30
	West	0.03	0.00	0.10	0.86
	South	0.18	0.23	0.00	0.59
	East	0.06	0.76	0.19	0.00

Vehicle Mix

Average PCE Per Vehicle - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	1.000	1.000	1.030	1.000
	West	1.000	1.000	1.000	1.020
	South	1.000	1.000	1.000	1.000
	East	1.000	1.010	1.000	1.000

Truck Percentages - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.0	0.0	3.0	0.0
	West	0.0	0.0	0.0	2.0
	South	0.0	0.0	0.0	0.0
	East	0.0	1.0	0.0	0.0

Average PCE Per Vehicle - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	1.000	1.000	1.030	1.000
	West	1.000	1.000	1.000	1.020
	South	1.000	1.000	1.000	1.000
	East	1.000	1.010	1.000	1.000

Truck Percentages - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.0	0.0	3.0	0.0
	West	0.0	0.0	0.0	2.0
	South	0.0	0.0	0.0	0.0
	East	0.0	1.0	0.0	0.0

Results

Results Summary for whole modelled period

Intersection	Leg	Max V/C Ratio	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Intersection Arrivals (Veh)	Total Queueing Delay (Veh-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (Veh-min/min)	Inclusive Total Queueing Delay (Veh-min)	Inclusive Average Queueing Delay (s)
85%	North	0.19	7.73	0.23	~1	A	100.00	100.00	11.59	6.95	0.19	11.59	6.95
85%	West	0.38	5.85	0.60	1.00	A	340.00	340.00	31.05	5.48	0.52	31.06	5.48
85%	South	0.17	4.82	0.20	~1	A	140.00	140.00	10.73	4.60	0.18	10.73	4.60
85%	East	0.78	14.22	3.32	10.00	B	789.00	789.00	151.79	11.54	2.53	151.91	11.55
90%	North	0.17	6.86	0.21	~1	A	100.00	100.00	10.37	6.22	0.17	10.37	6.22
90%	West	0.35	5.29	0.54	1.00	A	340.00	340.00	28.21	4.98	0.47	28.21	4.98
90%	South	0.16	4.43	0.19	~1	A	140.00	140.00	9.90	4.24	0.16	9.90	4.24
90%	East	0.73	11.34	2.65	6.00	B	789.00	789.00	124.75	9.49	2.08	124.83	9.49

Main Results for each time segment

Main results: (16:00-16:15)

Intersection	Leg	Total Demand (Veh/hr)	Intersection Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	V/C Ratio	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
85%	North	94.20	23.55	93.54	75.68	724.32	9.00	656.36	397.36	0.144	0.00	0.17	6.391	A
85%	West	320.29	80.07	318.44	610.71	207.15	6.00	1005.53	814.28	0.319	0.00	0.46	5.226	A
85%	South	131.88	32.97	131.23	210.94	314.65	4.00	938.02	451.82	0.141	0.00	0.16	4.458	A
85%	East	743.26	185.81	735.33	381.22	64.67	8.00	1106.18	1015.70	0.672	0.00	1.98	9.516	A
90%	North	94.20	23.55	93.60	75.76	725.46	9.00	717.33	405.53	0.131	0.00	0.15	5.767	A
90%	West	320.29	80.07	318.60	611.64	207.42	6.00	1071.59	864.50	0.299	0.00	0.42	4.770	A
90%	South	131.88	32.97	131.28	211.20	314.82	4.00	1003.94	457.84	0.131	0.00	0.15	4.123	A
90%	East	743.26	185.81	736.52	381.40	64.70	8.00	1173.46	1079.91	0.633	0.00	1.69	8.119	A

Main results: (16:15-16:30)

Intersection	Leg	Total Demand (Veh/hr)	Intersection Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	V/C Ratio	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
85%	North	108.70	27.17	108.44	87.69	839.49	9.00	573.88	397.36	0.189	0.17	0.23	7.731	A
85%	West	369.57	92.39	369.04	707.81	240.11	6.00	983.62	814.28	0.376	0.46	0.60	5.852	A
85%	South	152.17	38.04	152.01	244.49	364.66	4.00	898.75	451.82	0.169	0.16	0.20	4.819	A
85%	East	857.61	214.40	852.27	441.76	74.92	8.00	1099.84	1015.70	0.780	1.98	3.32	14.221	B
90%	North	108.70	27.17	108.47	87.78	840.89	9.00	632.60	405.53	0.172	0.15	0.21	6.865	A
90%	West	369.57	92.39	369.10	708.94	240.42	6.00	1049.47	864.50	0.352	0.42	0.54	5.288	A
90%	South	152.17	38.04	152.03	244.79	364.73	4.00	964.02	457.84	0.158	0.15	0.19	4.433	A
90%	East	857.61	214.40	853.74	441.84	74.93	8.00	1167.11	1079.91	0.735	1.69	2.65	11.342	B

Main results: (16:30-16:45)

Intersection	Leg	Total Demand (Veh/hr)	Intersection Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	V/C Ratio	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
85%	North	102.90	25.72	102.99	83.46	801.08	9.00	601.40	397.36	0.171	0.23	0.21	7.226	A
85%	West	349.86	87.46	350.04	675.25	228.81	6.00	991.19	814.28	0.353	0.60	0.55	5.616	A
85%	South	144.06	36.01	144.12	232.91	345.93	4.00	913.62	451.82	0.158	0.20	0.19	4.678	A
85%	East	811.87	202.97	813.50	419.02	71.03	8.00	1102.24	1015.70	0.737	3.32	2.91	12.560	B
90%	North	102.90	25.72	102.98	83.43	800.72	9.00	662.12	405.53	0.155	0.21	0.19	6.438	A
90%	West	349.86	87.46	350.02	674.97	228.73	6.00	1057.36	864.50	0.331	0.54	0.50	5.090	A
90%	South	144.06	36.01	144.11	232.84	345.91	4.00	979.25	457.85	0.147	0.19	0.17	4.310	A
90%	East	811.87	202.97	813.12	418.99	71.03	8.00	1169.53	1079.91	0.694	2.65	2.34	10.145	B

Main results: (16:45-17:00)

Intersection	Leg	Total Demand (Veh/hr)	Intersection Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	V/C Ratio	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
85%	North	94.20	23.55	94.35	76.51	734.99	9.00	648.76	397.36	0.145	0.21	0.17	6.496	A
85%	West	320.29	80.07	320.60	619.50	209.84	6.00	1003.77	814.28	0.319	0.55	0.47	5.271	A
85%	South	131.88	32.97	131.98	213.59	316.85	4.00	936.34	451.82	0.141	0.19	0.16	4.477	A
85%	East	743.26	185.81	746.45	383.77	65.05	8.00	1105.94	1015.70	0.672	2.91	2.11	10.107	B
90%	North	94.20	23.55	94.33	76.46	734.12	9.00	711.01	405.53	0.132	0.19	0.15	5.838	A
90%	West	320.29	80.07	320.56	618.80	209.65	6.00	1070.12	864.50	0.299	0.50	0.43	4.804	A
90%	South	131.88	32.97	131.97	213.41	316.80	4.00	1002.39	457.85	0.132	0.17	0.15	4.137	A
90%	East	743.26	185.81	745.53	383.73	65.04	8.00	1173.23	1079.91	0.634	2.34	1.77	8.465	A

Queueing Delay Results for each time segment

Queueing Delay results: (16:00-16:15)

Intersection	Leg	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	2.41	0.16	6.391	A	A
85%	West	6.73	0.45	5.226	A	A
85%	South	2.38	0.16	4.458	A	A
85%	East	27.51	1.83	9.516	A	A
90%	North	2.19	0.15	5.767	A	A
90%	West	6.16	0.41	4.770	A	A
90%	South	2.21	0.15	4.123	A	A
90%	East	23.68	1.58	8.119	A	A

Queueing Delay results: (16:15-16:30)

Intersection	Leg	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	3.38	0.23	7.731	A	A
85%	West	8.73	0.58	5.852	A	A
85%	South	2.99	0.20	4.819	A	A
85%	East	45.65	3.04	14.221	B	B
90%	North	3.01	0.20	6.865	A	A
90%	West	7.91	0.53	5.288	A	A
90%	South	2.75	0.18	4.433	A	A
90%	East	37.19	2.48	11.342	B	B

Queueing Delay results: (16:30-16:45)

Intersection	Leg	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	3.17	0.21	7.226	A	A
85%	West	8.37	0.56	5.616	A	A
85%	South	2.85	0.19	4.678	A	A
85%	East	45.25	3.02	12.560	B	B
90%	North	2.82	0.19	6.438	A	A
90%	West	7.57	0.50	5.090	A	A
90%	South	2.63	0.18	4.310	A	A
90%	East	36.19	2.41	10.145	B	B

Queueing Delay results: (16:45-17:00)

Intersection	Leg	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service

85%	North	2.62	0.17	6.496	A	A
85%	West	7.21	0.48	5.271	A	A
85%	South	2.51	0.17	4.477	A	A
85%	East	33.38	2.23	10.107	B	B
90%	North	2.35	0.16	5.838	A	A
90%	West	6.56	0.44	4.804	A	A
90%	South	2.31	0.15	4.137	A	A
90%	East	27.68	1.85	8.465	A	A

Queue Variation Results for each time segment

Queue Variation results: (16:00-16:15)

Intersection	Leg	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.17	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	0.46	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.16	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	1.98	0.00	0.00	4.00	6.00			N/A	N/A
90%	North	0.15	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	0.42	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.15	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	1.69	0.00	0.00	3.00	5.00			N/A	N/A

Queue Variation results: (16:15-16:30)

Intersection	Leg	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.23	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	0.60	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.20	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	3.32	0.00	0.00	2.00	10.00			N/A	N/A
90%	North	0.21	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	0.54	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.19	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	2.65	0.00	0.00	0.00	6.00			N/A	N/A

Queue Variation results: (16:30-16:45)

Intersection	Leg	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.21	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	0.55	0.00	0.00	0.00	1.00			N/A	N/A
85%	South	0.19	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	2.91	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.19	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	0.50	0.00	0.00	0.00	1.00			N/A	N/A

90%	South	0.17	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	2.34	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (16:45-17:00)

Intersection	Leg	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.17	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	0.47	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.16	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	2.11	0.00	0.00	4.00	7.00			N/A	N/A
90%	North	0.15	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	0.43	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.15	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	1.77	0.00	0.00	3.00	5.00			N/A	N/A

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]
© Copyright TRL Limited, 2020

For sales and distribution information, program advice and maintenance, contact TRL:
Tel: +44 (0)1344 770758 email: software@trl.co.uk Web: http://www.trlsoftware.co.uk

The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: Conservation & Beaver Creek.arc8
Path: C:\Users\AdamMorrison\Paradigm\Projects - 170278 Beaver Creek Area TES\C5 - Analysis and Evaluation\Arcady
Report generation date: 2020-07-21 4:27:23 PM

Summary of intersection performance

	AM					
	Queue (PCE)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS
	All - Background 2027					
Intersection 85% - Leg North	0.00	0.00	0.00	A	4.23	A
Intersection 85% - Leg West	0.35	4.43	0.25	A		
Intersection 85% - Leg South	0.12	4.07	0.11	A		
Intersection 85% - Leg East	0.22	4.02	0.17	A		
Intersection 90% - Leg North	0.00	0.00	0.00	A	3.92	A
Intersection 90% - Leg West	0.32	4.10	0.24	A		
Intersection 90% - Leg South	0.11	3.78	0.10	A		
Intersection 90% - Leg East	0.20	3.75	0.16	A		

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Intersection LOS and Intersection Delay are demand-weighted averages.

"D1 - Existing, AM" model duration: 8:00 AM - 9:30 AM
"D2 - Existing, PM" model duration: 5:00 PM - 6:30 PM
"D3 - Background 2022, AM" model duration: 8:00 AM - 9:30 AM
"D4 - Background 2022, PM" model duration: 5:00 PM - 6:30 PM
"D5 - Total 2022, AM" model duration: 8:00 AM - 9:30 AM
"D6 - Total 2022, PM" model duration: 5:00 PM - 6:30 PM
"D7 - Background 2025, AM" model duration: 8:00 AM - 9:30 AM
"D8 - Background 2025, PM" model duration: 5:00 PM - 6:30 PM
"D9 - Total 2025, AM" model duration: 8:00 AM - 9:30 AM
"D10 - Total 2025, PM" model duration: 5:00 PM - 6:30 PM
"D11 - Background 2027, AM " model duration: 8:00 AM - 9:30 AM
"D12 - Background 2027, PM" model duration: 5:00 PM - 6:30 PM
"D13 - Total 2027, AM" model duration: 8:00 AM - 9:30 AM
"D14 - Total 2027, PM" model duration: 5:00 PM - 6:30 PM
"D15 - Background 2032, AM" model duration: 8:00 AM - 9:30 AM
"D16 - Background 2032, PM" model duration: 5:00 PM - 6:30 PM
"D17 - Total 2032, AM" model duration: 8:00 AM - 9:30 AM
"D18 - Total 2032, PM" model duration: 5:00 PM - 6:30 PM

Run using Junctions 8.0.6.541 at 2020-07-21 4:27:22 PM

File summary

Title	(untitled)
Location	
Site Number	
Date	2018-09-11
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	170278
Analyst	AdamMorrison
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)
7.50	✓		N/A	0.85	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	PCE	PCE	perHour	s	-Min	perMin

All - Background 2027, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
All	ARCADY		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
Background 2027, AM	Background 2027	AM		ONE HOUR	08:00	09:30	90	15				✓		

Intersection Network

Intersections

Junction	Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Do Geometric Delay	Intersection Delay (s)	Intersection LOS
85%	85%	Conservation Drive & Beaver Creek Road	Roundabout	North,West,South,East				4.23	A
90%	90%	Conservation Drive & Beaver Creek Road	Roundabout	North,West,South,East				3.92	A

Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

Legs

Legs

Intersection	Leg	Leg	Name	Description
85%	**North**	North	Beaver Creek Road	
85%	**West**	West	Conservation Drive	
85%	**South**	South	Beaver Creek Road	
85%	**East**	East	Conservation Drive	
90%	**North**	North	Beaver Creek Road	
90%	**West**	West	Conservation Drive	
90%	**South**	South	Beaver Creek Road	
90%	**East**	East	Conservation Drive	

Capacity Options

Intersection	Leg	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)	Assume Flat Start Profile	Initial Queue (PCE)
85%	**North**	0.00	99999.00		0.00
85%	**West**	0.00	99999.00		0.00
85%	**South**	0.00	99999.00		0.00

85%	East	0.00	99999.00		0.00
90%	North	0.00	99999.00		0.00
90%	West	0.00	99999.00		0.00
90%	South	0.00	99999.00		0.00
90%	East	0.00	99999.00		0.00

Roundabout Geometry

Intersection	Leg	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
85%	North	3.50	4.50	30.00	20.00	40.00	25.00	
85%	West	3.50	4.50	30.00	20.00	40.00	25.00	
85%	South	3.50	4.50	30.00	20.00	40.00	25.00	
85%	East	3.50	4.50	30.00	20.00	40.00	25.00	
90%	North	3.50	4.50	30.00	20.00	40.00	25.00	
90%	West	3.50	4.50	30.00	20.00	40.00	25.00	
90%	South	3.50	4.50	30.00	20.00	40.00	25.00	
90%	East	3.50	4.50	30.00	20.00	40.00	25.00	

Slope / Intercept / Capacity

Leg Intercept Adjustments

Intersection	Leg	Type	Reason	Direct Intercept Adjustment (PCE/hr)	Percentage Intercept Adjustment (%)
85%	North	Percentage	Region of Waterloo		85.00
85%	West	Percentage	Region of Waterloo		85.00
85%	South	Percentage	Region of Waterloo		85.00
85%	East	Percentage	Region of Waterloo		85.00
90%	North	Percentage	Region of Waterloo		90.00
90%	West	Percentage	Region of Waterloo		90.00
90%	South	Percentage	Region of Waterloo		90.00
90%	East	Percentage	Region of Waterloo		90.00

Roundabout Slope and Intercept used in model

Intersection	Leg	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
85%	North		(calculated)	(calculated)	0.579	1153.828
85%	West		(calculated)	(calculated)	0.579	1153.828
85%	South		(calculated)	(calculated)	0.579	1153.828
85%	East		(calculated)	(calculated)	0.579	1153.828
90%	North		(calculated)	(calculated)	0.579	1221.701
90%	West		(calculated)	(calculated)	0.579	1221.701
90%	South		(calculated)	(calculated)	0.579	1221.701
90%	East		(calculated)	(calculated)	0.579	1221.701

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCE Factor for a Truck (PCE)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Intersection	Leg	Profile Type	Use Turning Counts	Average Demand Flow (PCE/hr)	Flow Scaling Factor (%)
85%	North	ONE HOUR	✓	0.00	100.000
85%	West	ONE HOUR	✓	257.00	100.000
85%	South	ONE HOUR	✓	99.00	100.000

85%	East	ONE HOUR	✓	176.00	100.000
90%	North	ONE HOUR	✓	0.00	100.000
90%	West	ONE HOUR	✓	257.00	100.000
90%	South	ONE HOUR	✓	99.00	100.000
90%	East	ONE HOUR	✓	176.00	100.000

Turning Proportions

Turning Counts / Proportions (PCE/hr) - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.000	0.000	0.000	0.000
	West	0.000	0.000	18.000	239.000
	South	0.000	17.000	0.000	82.000
	East	0.000	120.000	56.000	0.000

Turning Proportions (PCE) - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.25	0.25	0.25	0.25
	West	0.00	0.00	0.07	0.93
	South	0.00	0.17	0.00	0.83
	East	0.00	0.68	0.32	0.00

Turning Counts / Proportions (PCE/hr) - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.000	0.000	0.000	0.000
	West	0.000	0.000	18.000	239.000
	South	0.000	17.000	0.000	82.000
	East	0.000	120.000	56.000	0.000

Turning Proportions (PCE) - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.25	0.25	0.25	0.25
	West	0.00	0.00	0.07	0.93
	South	0.00	0.17	0.00	0.83
	East	0.00	0.68	0.32	0.00

Vehicle Mix

Average PCE Per Vehicle - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	1.000	1.110	1.000	1.000
	West	1.000	1.000	1.000	1.030
	South	1.090	1.000	1.000	1.010
	East	1.040	1.060	1.060	1.000

Truck Percentages - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.0	11.0	0.0	0.0
	West	0.0	0.0	0.0	3.0
	South	9.0	0.0	0.0	1.0
	East	4.0	6.0	6.0	0.0

Average PCE Per Vehicle - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	1.000	1.110	1.000	1.000
	West	1.000	1.000	1.000	1.030
	South	1.090	1.000	1.000	1.010
	East	1.040	1.060	1.060	1.000

Truck Percentages - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.0	11.0	0.0	0.0
	West	0.0	0.0	0.0	3.0
	South	9.0	0.0	0.0	1.0
	East	4.0	6.0	6.0	0.0

Results

Results Summary for whole modelled period

Intersection	Leg	Max V/C Ratio	Max Delay (s)	Max Queue (PCE)	Max 95th percentile Queue (PCE)	Max LOS	Average Demand (PCE/hr)	Total Intersection Arrivals (PCE)	Total Queueing Delay (PCE-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCE-min/min)	Inclusive Total Queueing Delay (PCE-min)	Inclusive Average Queueing Delay (s)
85%	North	0.00	0.00	0.00	~1	A	0.00	0.00	0.00	0.00	0.00	0.00	0.00
85%	West	0.25	4.43	0.35	~1	A	235.83	353.74	24.63	4.18	0.27	24.63	4.18
85%	South	0.11	4.07	0.12	~1	A	90.84	136.27	8.82	3.88	0.10	8.82	3.88
85%	East	0.17	4.02	0.22	~1	A	161.50	242.25	15.66	3.88	0.17	15.66	3.88
90%	North	0.00	0.00	0.00	~1	A	0.00	0.00	0.00	0.00	0.00	0.00	0.00
90%	West	0.24	4.10	0.32	~1	A	235.83	353.74	22.88	3.88	0.25	22.88	3.88
90%	South	0.10	3.78	0.11	~1	A	90.84	136.27	8.22	3.62	0.09	8.22	3.62
90%	East	0.16	3.75	0.20	~1	A	161.50	242.25	14.65	3.63	0.16	14.65	3.63

Main Results for each time segment

Main results: (08:00-08:15)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	0.00	0.00	0.00	0.00	144.70	0.00	1070.08	502.78	0.000	0.00	0.00	0.000	A
85%	West	193.48	48.37	192.64	102.71	41.98	0.00	1129.53	747.60	0.171	0.00	0.21	3.946	A
85%	South	74.53	18.63	74.23	55.48	179.15	0.00	1050.15	605.96	0.071	0.00	0.08	3.719	A
85%	East	132.50	33.13	131.95	240.63	12.75	0.00	1146.45	1020.86	0.116	0.00	0.14	3.759	A
90%	North	0.00	0.00	0.00	0.00	144.73	0.00	1137.93	532.35	0.000	0.00	0.00	0.000	A
90%	West	193.48	48.37	192.69	102.74	42.00	0.00	1197.40	791.57	0.162	0.00	0.20	3.683	A
90%	South	74.53	18.63	74.25	55.49	179.20	0.00	1117.99	641.60	0.067	0.00	0.07	3.477	A
90%	East	132.50	33.13	131.98	240.69	12.75	0.00	1214.32	1080.91	0.109	0.00	0.13	3.523	A

Main results: (08:15-08:30)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	0.00	0.00	0.00	0.00	173.37	0.00	1053.49	502.78	0.000	0.00	0.00	0.000	A
85%	West	231.04	57.76	230.83	123.06	50.30	0.00	1124.72	747.60	0.205	0.21	0.26	4.138	A
85%	South	89.00	22.25	88.93	66.47	214.66	0.00	1029.59	605.96	0.086	0.08	0.09	3.858	A
85%	East	158.22	39.56	158.10	288.32	15.27	0.00	1144.99	1020.86	0.138	0.14	0.17	3.866	A
90%	North	0.00	0.00	0.00	0.00	173.38	0.00	1121.36	532.35	0.000	0.00	0.00	0.000	A
90%	West	231.04	57.76	230.84	123.07	50.31	0.00	1192.59	791.57	0.194	0.20	0.25	3.846	A
90%	South	89.00	22.25	88.93	66.47	214.68	0.00	1097.46	641.60	0.081	0.07	0.09	3.598	A
90%	East	158.22	39.56	158.10	288.34	15.27	0.00	1212.86	1080.91	0.130	0.13	0.16	3.617	A

Main results: (08:30-08:45)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	0.00	0.00	0.00	0.00	212.29	0.00	1030.96	502.78	0.000	0.00	0.00	0.000	A
85%	West	282.96	70.74	282.64	150.70	61.60	0.00	1118.18	747.60	0.253	0.26	0.35	4.425	A
85%	South	109.00	27.25	108.89	81.39	262.84	0.00	1001.71	605.96	0.109	0.09	0.12	4.065	A
85%	East	193.78	48.44	193.60	353.03	18.70	0.00	1143.01	1020.86	0.170	0.17	0.22	4.018	A
90%	North	0.00	0.00	0.00	0.00	212.31	0.00	1098.82	532.35	0.000	0.00	0.00	0.000	A
90%	West	282.96	70.74	282.66	150.71	61.60	0.00	1186.05	791.57	0.239	0.25	0.32	4.095	A
90%	South	109.00	27.25	108.90	81.40	262.87	0.00	1069.56	641.60	0.102	0.09	0.11	3.777	A
90%	East	193.78	48.44	193.61	353.07	18.70	0.00	1210.88	1080.91	0.160	0.16	0.20	3.750	A

Main results: (08:45-09:00)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	0.00	0.00	0.00	0.00	212.49	0.00	1030.85	502.78	0.000	0.00	0.00	0.000	A
85%	West	282.96	70.74	282.96	150.84	61.66	0.00	1118.14	747.60	0.253	0.35	0.35	4.430	A
85%	South	109.00	27.25	109.00	81.47	263.14	0.00	1001.53	605.96	0.109	0.12	0.12	4.066	A
85%	East	193.78	48.44	193.78	353.42	18.72	0.00	1143.00	1020.86	0.170	0.22	0.22	4.019	A
90%	North	0.00	0.00	0.00	0.00	212.49	0.00	1098.72	532.35	0.000	0.00	0.00	0.000	A
90%	West	282.96	70.74	282.96	150.84	61.66	0.00	1186.02	791.57	0.239	0.32	0.32	4.097	A
90%	South	109.00	27.25	109.00	81.47	263.14	0.00	1069.41	641.60	0.102	0.11	0.11	3.778	A
90%	East	193.78	48.44	193.78	353.42	18.72	0.00	1210.87	1080.91	0.160	0.20	0.20	3.750	A

Main results: (09:00-09:15)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	0.00	0.00	0.00	0.00	173.70	0.00	1053.30	502.78	0.000	0.00	0.00	0.000	A
85%	West	231.04	57.76	231.36	123.30	50.40	0.00	1124.66	747.60	0.205	0.35	0.27	4.145	A
85%	South	89.00	22.25	89.11	66.60	215.15	0.00	1029.31	605.96	0.086	0.12	0.10	3.860	A
85%	East	158.22	39.56	158.40	288.96	15.30	0.00	1144.97	1020.86	0.138	0.22	0.17	3.869	A
90%	North	0.00	0.00	0.00	0.00	173.69	0.00	1121.18	532.35	0.000	0.00	0.00	0.000	A
90%	West	231.04	57.76	231.33	123.29	50.40	0.00	1192.53	791.57	0.194	0.32	0.25	3.850	A
90%	South	89.00	22.25	89.10	66.60	215.13	0.00	1097.19	641.60	0.081	0.11	0.09	3.600	A
90%	East	158.22	39.56	158.39	288.93	15.30	0.00	1212.85	1080.91	0.130	0.20	0.16	3.618	A

Main results: (09:15-09:30)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	0.00	0.00	0.00	0.00	145.44	0.00	1069.65	502.78	0.000	0.00	0.00	0.000	A
85%	West	193.48	48.37	193.70	103.24	42.20	0.00	1129.40	747.60	0.171	0.27	0.21	3.955	A
85%	South	74.53	18.63	74.61	55.77	180.13	0.00	1049.58	605.96	0.071	0.10	0.08	3.722	A
85%	East	132.50	33.13	132.63	241.93	12.81	0.00	1146.41	1020.86	0.116	0.17	0.14	3.766	A
90%	North	0.00	0.00	0.00	0.00	145.43	0.00	1137.53	532.35	0.000	0.00	0.00	0.000	A
90%	West	193.48	48.37	193.68	103.23	42.20	0.00	1197.28	791.57	0.162	0.25	0.20	3.686	A
90%	South	74.53	18.63	74.60	55.76	180.11	0.00	1117.46	641.60	0.067	0.09	0.07	3.479	A
90%	East	132.50	33.13	132.62	241.91	12.81	0.00	1214.29	1080.91	0.109	0.16	0.13	3.530	A

Queueing Delay Results for each time segment

Queueing Delay results: (08:00-08:15)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	0.00	0.00	0.000	A	A
85%	West	3.10	0.21	3.946	A	A
85%	South	1.13	0.08	3.719	A	A
85%	East	2.03	0.14	3.759	A	A
90%	North	0.00	0.00	0.000	A	A
90%	West	2.90	0.19	3.683	A	A
90%	South	1.06	0.07	3.477	A	A
90%	East	1.90	0.13	3.523	A	A

Queueing Delay results: (08:15-08:30)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	0.00	0.00	0.000	A	A
85%	West	3.90	0.26	4.138	A	A
85%	South	1.41	0.09	3.858	A	A
85%	East	2.50	0.17	3.866	A	A
90%	North	0.00	0.00	0.000	A	A
90%	West	3.63	0.24	3.846	A	A
90%	South	1.31	0.09	3.598	A	A
90%	East	2.34	0.16	3.617	A	A

Queueing Delay results: (08:30-08:45)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	0.00	0.00	0.000	A	A
85%	West	5.10	0.34	4.425	A	A
85%	South	1.81	0.12	4.065	A	A
85%	East	3.18	0.21	4.018	A	A
90%	North	0.00	0.00	0.000	A	A
90%	West	4.72	0.31	4.095	A	A
90%	South	1.68	0.11	3.777	A	A
90%	East	2.97	0.20	3.750	A	A

Queueing Delay results: (08:45-09:00)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	0.00	0.00	0.000	A	A
85%	West	5.20	0.35	4.430	A	A
85%	South	1.84	0.12	4.066	A	A
85%	East	3.23	0.22	4.019	A	A
90%	North	0.00	0.00	0.000	A	A
90%	West	4.81	0.32	4.097	A	A
90%	South	1.71	0.11	3.778	A	A
90%	East	3.02	0.20	3.750	A	A

Queueing Delay results: (09:00-09:15)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	0.00	0.00	0.000	A	A
85%	West	4.08	0.27	4.145	A	A
85%	South	1.46	0.10	3.860	A	A
85%	East	2.60	0.17	3.869	A	A
90%	North	0.00	0.00	0.000	A	A
90%	West	3.78	0.25	3.850	A	A
90%	South	1.36	0.09	3.600	A	A
90%	East	2.43	0.16	3.618	A	A

Queueing Delay results: (09:15-09:30)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	0.00	0.00	0.000	A	A
85%	West	3.25	0.22	3.955	A	A
85%	South	1.18	0.08	3.722	A	A
85%	East	2.12	0.14	3.766	A	A
90%	North	0.00	0.00	0.000	A	A
90%	West	3.03	0.20	3.686	A	A
90%	South	1.10	0.07	3.479	A	A
90%	East	1.98	0.13	3.530	A	A

Queue Variation Results for each time segment

Queue Variation results: (08:00-08:15)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.00	~1	~1	~1	~1			N/A	N/A
85%	West	0.21	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.08	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	0.14	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.00	~1	~1	~1	~1			N/A	N/A
90%	West	0.20	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.07	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.13	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:15-08:30)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.00	~1	~1	~1	~1			N/A	N/A
85%	West	0.26	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.09	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	0.17	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.00	~1	~1	~1	~1			N/A	N/A
90%	West	0.25	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.09	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.16	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:30-08:45)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.00	~1	~1	~1	~1			N/A	N/A
85%	West	0.35	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.12	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	0.22	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.00	~1	~1	~1	~1			N/A	N/A
90%	West	0.32	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.11	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.20	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:45-09:00)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.00	~1	~1	~1	~1			N/A	N/A
85%	West	0.35	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.12	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

85%	East	0.22	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.00	~1	~1	~1	~1			N/A	N/A
90%	West	0.32	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.11	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.20	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (09:00-09:15)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.00	~1	~1	~1	~1			N/A	N/A
85%	West	0.27	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.10	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	0.17	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.00	~1	~1	~1	~1			N/A	N/A
90%	West	0.25	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.09	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.16	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (09:15-09:30)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.00	~1	~1	~1	~1			N/A	N/A
85%	West	0.21	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.08	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	0.14	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.00	~1	~1	~1	~1			N/A	N/A
90%	West	0.20	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.07	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.13	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]
© Copyright TRL Limited, 2020

For sales and distribution information, program advice and maintenance, contact TRL:
Tel: +44 (0)1344 770758 email: software@trl.co.uk Web: http://www.trlsoftware.co.uk

The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: Conservation & Beaver Creek.arc8
Path: C:\Users\AdamMorrison\Paradigm\Projects - 170278 Beaver Creek Area TES\C5 - Analysis and Evaluation\Arcady
Report generation date: 2020-07-21 4:27:48 PM

Summary of intersection performance

	PM					
	Queue (PCE)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS
	All - Background 2027					
Intersection 85% - Leg North	0.00	0.00	0.00	A	4.57	A
Intersection 85% - Leg West	0.23	4.14	0.18	A		
Intersection 85% - Leg South	0.10	3.79	0.09	A		
Intersection 85% - Leg East	0.56	4.97	0.36	A		
Intersection 90% - Leg North	0.00	0.00	0.00	A	4.21	A
Intersection 90% - Leg West	0.21	3.85	0.17	A		
Intersection 90% - Leg South	0.09	3.53	0.09	A		
Intersection 90% - Leg East	0.52	4.54	0.34	A		

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Intersection LOS and Intersection Delay are demand-weighted averages.

"D1 - Existing, AM" model duration: 8:00 AM - 9:30 AM
"D2 - Existing, PM" model duration: 5:00 PM - 6:30 PM
"D3 - Background 2022, AM" model duration: 8:00 AM - 9:30 AM
"D4 - Background 2022, PM" model duration: 5:00 PM - 6:30 PM
"D5 - Total 2022, AM" model duration: 8:00 AM - 9:30 AM
"D6 - Total 2022, PM" model duration: 5:00 PM - 6:30 PM
"D7 - Background 2025, AM" model duration: 8:00 AM - 9:30 AM
"D8 - Background 2025, PM" model duration: 5:00 PM - 6:30 PM
"D9 - Total 2025, AM" model duration: 8:00 AM - 9:30 AM
"D10 - Total 2025, PM" model duration: 5:00 PM - 6:30 PM
"D11 - Background 2027, AM" model duration: 8:00 AM - 9:30 AM
"D12 - Background 2027, PM " model duration: 5:00 PM - 6:30 PM
"D13 - Total 2027, AM" model duration: 8:00 AM - 9:30 AM
"D14 - Total 2027, PM" model duration: 5:00 PM - 6:30 PM
"D15 - Background 2032, AM" model duration: 8:00 AM - 9:30 AM
"D16 - Background 2032, PM" model duration: 5:00 PM - 6:30 PM
"D17 - Total 2032, AM" model duration: 8:00 AM - 9:30 AM
"D18 - Total 2032, PM" model duration: 5:00 PM - 6:30 PM

Run using Junctions 8.0.6.541 at 2020-07-21 4:27:46 PM

File summary

Title	(untitled)
Location	
Site Number	
Date	2018-09-11
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	170278
Analyst	AdamMorrison
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)

7.50	✓		N/A	0.85	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	PCE	PCE	perHour	s	-Min	perMin

All - Background 2027, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
All	ARCADY		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
Background 2027, PM	Background 2027	PM		ONE HOUR	17:00	18:30	90	15				✓		

Intersection Network

Intersections

Junction	Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Do Geometric Delay	Intersection Delay (s)	Intersection LOS
85%	85%	Conservation Drive & Beaver Creek Road	Roundabout	North,West,South,East				4.57	A
90%	90%	Conservation Drive & Beaver Creek Road	Roundabout	North,West,South,East				4.21	A

Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

Legs

Legs

Intersection	Leg	Leg	Name	Description
85%	**North**	North	Beaver Creek Road	
85%	**West**	West	Conservation Drive	
85%	**South**	South	Beaver Creek Road	
85%	**East**	East	Conservation Drive	
90%	**North**	North	Beaver Creek Road	
90%	**West**	West	Conservation Drive	
90%	**South**	South	Beaver Creek Road	
90%	**East**	East	Conservation Drive	

Capacity Options

Intersection	Leg	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)	Assume Flat Start Profile	Initial Queue (PCE)
85%	**North**	0.00	99999.00		0.00
85%	**West**	0.00	99999.00		0.00
85%	**South**	0.00	99999.00		0.00
85%	**East**	0.00	99999.00		0.00
90%	**North**	0.00	99999.00		0.00
90%	**West**	0.00	99999.00		0.00
90%	**South**	0.00	99999.00		0.00
90%	**East**	0.00	99999.00		0.00

Roundabout Geometry

Intersection	Leg	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
85%	**North**	3.50	4.50	30.00	20.00	40.00	25.00	
85%	**West**	3.50	4.50	30.00	20.00	40.00	25.00	
85%	**South**	3.50	4.50	30.00	20.00	40.00	25.00	
85%	**East**	3.50	4.50	30.00	20.00	40.00	25.00	
90%	**North**	3.50	4.50	30.00	20.00	40.00	25.00	
90%	**West**	3.50	4.50	30.00	20.00	40.00	25.00	
90%	**South**	3.50	4.50	30.00	20.00	40.00	25.00	
90%	**East**	3.50	4.50	30.00	20.00	40.00	25.00	

Slope / Intercept / Capacity

Leg Intercept Adjustments

Intersection	Leg	Type	Reason	Direct Intercept Adjustment (PCE/hr)	Percentage Intercept Adjustment (%)
85%	**North**	Percentage	Region of Waterloo		85.00
85%	**West**	Percentage	Region of Waterloo		85.00
85%	**South**	Percentage	Region of Waterloo		85.00
85%	**East**	Percentage	Region of Waterloo		85.00
90%	**North**	Percentage	Region of Waterloo		90.00
90%	**West**	Percentage	Region of Waterloo		90.00
90%	**South**	Percentage	Region of Waterloo		90.00
90%	**East**	Percentage	Region of Waterloo		90.00

Roundabout Slope and Intercept used in model

Intersection	Leg	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
85%	**North**		(calculated)	(calculated)	0.579	1153.828
85%	**West**		(calculated)	(calculated)	0.579	1153.828
85%	**South**		(calculated)	(calculated)	0.579	1153.828
85%	**East**		(calculated)	(calculated)	0.579	1153.828
90%	**North**		(calculated)	(calculated)	0.579	1221.701
90%	**West**		(calculated)	(calculated)	0.579	1221.701
90%	**South**		(calculated)	(calculated)	0.579	1221.701
90%	**East**		(calculated)	(calculated)	0.579	1221.701

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCE Factor for a Truck (PCE)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Intersection	Leg	Profile Type	Use Turning Counts	Average Demand Flow (PCE/hr)	Flow Scaling Factor (%)
85%	**North**	ONE HOUR	✓	0.00	100.000
85%	**West**	ONE HOUR	✓	179.00	100.000
85%	**South**	ONE HOUR	✓	87.00	100.000

85%	East	ONE HOUR	✓	373.00	100.000
90%	North	ONE HOUR	✓	0.00	100.000
90%	West	ONE HOUR	✓	179.00	100.000
90%	South	ONE HOUR	✓	87.00	100.000
90%	East	ONE HOUR	✓	373.00	100.000

Turning Proportions

Turning Counts / Proportions (PCE/hr) - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.000	0.000	0.000	0.000
	West	0.000	0.000	10.000	169.000
	South	0.000	21.000	0.000	66.000
	East	0.000	261.000	112.000	0.000

Turning Proportions (PCE) - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.25	0.25	0.25	0.25
	West	0.00	0.00	0.06	0.94
	South	0.00	0.24	0.00	0.76
	East	0.00	0.70	0.30	0.00

Turning Counts / Proportions (PCE/hr) - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.000	0.000	0.000	0.000
	West	0.000	0.000	10.000	169.000
	South	0.000	21.000	0.000	66.000
	East	0.000	261.000	112.000	0.000

Turning Proportions (PCE) - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.25	0.25	0.25	0.25
	West	0.00	0.00	0.06	0.94
	South	0.00	0.24	0.00	0.76
	East	0.00	0.70	0.30	0.00

Vehicle Mix

Average PCE Per Vehicle - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	1.000	1.000	1.030	1.000
	West	1.000	1.000	1.000	1.020
	South	1.000	1.000	1.000	1.000
	East	1.000	1.010	1.000	1.000

Truck Percentages - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.0	0.0	3.0	0.0
	West	0.0	0.0	0.0	2.0
	South	0.0	0.0	0.0	0.0
	East	0.0	1.0	0.0	0.0

Average PCE Per Vehicle - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	1.000	1.000	1.030	1.000
	West	1.000	1.000	1.000	1.020
	South	1.000	1.000	1.000	1.000
	East	1.000	1.010	1.000	1.000

Truck Percentages - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.0	0.0	3.0	0.0
	West	0.0	0.0	0.0	2.0
	South	0.0	0.0	0.0	0.0
	East	0.0	1.0	0.0	0.0

Results

Results Summary for whole modelled period

Intersection	Leg	Max V/C Ratio	Max Delay (s)	Max Queue (PCE)	Max 95th percentile Queue (PCE)	Max LOS	Average Demand (PCE/hr)	Total Intersection Arrivals (PCE)	Total Queueing Delay (PCE-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCE-min/min)	Inclusive Total Queueing Delay (PCE-min)	Inclusive Average Queueing Delay (s)
85%	North	0.00	0.00	0.00	~1	A	0.00	0.00	0.00	0.00	0.00	0.00	0.00
85%	West	0.18	4.14	0.23	~1	A	164.25	246.38	16.22	3.95	0.18	16.22	3.95
85%	South	0.09	3.79	0.10	~1	A	79.83	119.75	7.30	3.66	0.08	7.30	3.66
85%	East	0.36	4.97	0.56	1.01	A	342.27	513.41	39.05	4.56	0.43	39.05	4.56
90%	North	0.00	0.00	0.00	~1	A	0.00	0.00	0.00	0.00	0.00	0.00	0.00
90%	West	0.17	3.85	0.21	~1	A	164.25	246.38	15.11	3.68	0.17	15.11	3.68
90%	South	0.09	3.53	0.09	~1	A	79.83	119.75	6.83	3.42	0.08	6.83	3.42
90%	East	0.34	4.54	0.52	1.01	A	342.27	513.41	35.96	4.20	0.40	35.97	4.20

Main Results for each time segment

Main results: (17:00-17:15)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	0.00	0.00	0.00	0.00	295.26	0.00	982.94	492.40	0.000	0.00	0.00	0.000	A
85%	West	134.76	33.69	134.20	211.33	83.93	0.00	1105.25	766.34	0.122	0.00	0.14	3.775	A
85%	South	65.50	16.37	65.24	91.43	126.70	0.00	1080.50	592.59	0.061	0.00	0.06	3.545	A
85%	East	280.81	70.20	279.51	176.19	15.75	0.00	1144.71	999.80	0.245	0.00	0.33	4.184	A
90%	North	0.00	0.00	0.00	0.00	295.36	0.00	1050.76	521.37	0.000	0.00	0.00	0.000	A
90%	West	134.76	33.69	134.23	211.40	83.96	0.00	1173.11	811.42	0.115	0.00	0.13	3.528	A
90%	South	65.50	16.37	65.26	91.46	126.73	0.00	1148.35	627.44	0.057	0.00	0.06	3.323	A
90%	East	280.81	70.20	279.61	176.24	15.75	0.00	1212.58	1058.61	0.232	0.00	0.30	3.881	A

Main results: (17:15-17:30)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	0.00	0.00	0.00	0.00	353.82	0.00	949.05	492.40	0.000	0.00	0.00	0.000	A
85%	West	160.92	40.23	160.78	253.25	100.58	0.00	1095.62	766.34	0.147	0.14	0.17	3.923	A
85%	South	78.21	19.55	78.15	109.56	151.80	0.00	1065.97	592.59	0.073	0.06	0.08	3.643	A
85%	East	335.32	83.83	334.96	211.09	18.86	0.00	1142.91	999.80	0.293	0.33	0.42	4.484	A
90%	North	0.00	0.00	0.00	0.00	353.86	0.00	1016.90	521.37	0.000	0.00	0.00	0.000	A
90%	West	160.92	40.23	160.79	253.27	100.59	0.00	1163.48	811.42	0.138	0.13	0.16	3.657	A
90%	South	78.21	19.55	78.16	109.57	151.81	0.00	1133.84	627.44	0.069	0.06	0.07	3.409	A
90%	East	335.32	83.83	334.99	211.10	18.87	0.00	1210.78	1058.61	0.277	0.30	0.38	4.138	A

Main results: (17:30-17:45)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	0.00	0.00	0.00	0.00	433.19	0.00	903.11	492.41	0.000	0.00	0.00	0.000	A
85%	West	197.08	49.27	196.88	310.06	123.14	0.00	1082.56	766.34	0.182	0.17	0.23	4.140	A
85%	South	95.79	23.95	95.70	134.14	185.88	0.00	1046.25	592.59	0.092	0.08	0.10	3.786	A
85%	East	410.68	102.67	410.09	258.48	23.10	0.00	1140.46	999.80	0.360	0.42	0.56	4.959	A
90%	North	0.00	0.00	0.00	0.00	433.26	0.00	970.95	521.37	0.000	0.00	0.00	0.000	A
90%	West	197.08	49.27	196.90	310.10	123.16	0.00	1150.42	811.42	0.171	0.16	0.21	3.845	A
90%	South	95.79	23.95	95.71	134.16	185.90	0.00	1114.11	627.44	0.086	0.07	0.09	3.534	A
90%	East	410.68	102.67	410.16	258.50	23.10	0.00	1208.33	1058.61	0.340	0.38	0.51	4.539	A

Main results: (17:45-18:00)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	0.00	0.00	0.00	0.00	433.79	0.00	902.77	492.41	0.000	0.00	0.00	0.000	A
85%	West	197.08	49.27	197.08	310.48	123.31	0.00	1082.46	766.34	0.182	0.23	0.23	4.142	A
85%	South	95.79	23.95	95.79	134.32	186.07	0.00	1046.14	592.59	0.092	0.10	0.10	3.787	A
85%	East	410.68	102.67	410.67	258.74	23.12	0.00	1140.45	999.80	0.360	0.56	0.56	4.967	A
90%	North	0.00	0.00	0.00	0.00	433.79	0.00	970.64	521.37	0.000	0.00	0.00	0.000	A
90%	West	197.08	49.27	197.08	310.48	123.31	0.00	1150.33	811.42	0.171	0.21	0.21	3.847	A
90%	South	95.79	23.95	95.79	134.32	186.07	0.00	1114.01	627.44	0.086	0.09	0.09	3.534	A
90%	East	410.68	102.67	410.67	258.74	23.12	0.00	1208.32	1058.61	0.340	0.51	0.52	4.544	A

Main results: (18:00-18:15)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	0.00	0.00	0.00	0.00	354.79	0.00	948.49	492.40	0.000	0.00	0.00	0.000	A
85%	West	160.92	40.23	161.12	253.93	100.86	0.00	1095.46	766.34	0.147	0.23	0.18	3.927	A
85%	South	78.21	19.55	78.30	109.86	152.12	0.00	1065.79	592.59	0.073	0.10	0.08	3.647	A
85%	East	335.32	83.83	335.89	211.51	18.90	0.00	1142.89	999.80	0.293	0.56	0.42	4.494	A
90%	North	0.00	0.00	0.00	0.00	354.73	0.00	1016.40	521.37	0.000	0.00	0.00	0.000	A
90%	West	160.92	40.23	161.10	253.89	100.84	0.00	1163.34	811.42	0.138	0.21	0.16	3.659	A
90%	South	78.21	19.55	78.29	109.84	152.10	0.00	1133.67	627.44	0.069	0.09	0.07	3.413	A
90%	East	335.32	83.83	335.83	211.49	18.90	0.00	1210.76	1058.61	0.277	0.52	0.39	4.147	A

Main results: (18:15-18:30)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	0.00	0.00	0.00	0.00	297.00	0.00	981.93	492.40	0.000	0.00	0.00	0.000	A
85%	West	134.76	33.69	134.90	212.58	84.43	0.00	1104.96	766.34	0.122	0.18	0.14	3.780	A
85%	South	65.50	16.37	65.56	91.97	127.36	0.00	1080.12	592.59	0.061	0.08	0.06	3.547	A
85%	East	280.81	70.20	281.18	177.09	15.82	0.00	1144.67	999.80	0.245	0.42	0.33	4.201	A
90%	North	0.00	0.00	0.00	0.00	296.97	0.00	1049.83	521.37	0.000	0.00	0.00	0.000	A
90%	West	134.76	33.69	134.89	212.55	84.42	0.00	1172.84	811.42	0.115	0.16	0.13	3.533	A
90%	South	65.50	16.37	65.55	91.95	127.35	0.00	1148.00	627.44	0.057	0.07	0.06	3.325	A
90%	East	280.81	70.20	281.15	177.08	15.82	0.00	1212.54	1058.61	0.232	0.39	0.31	3.894	A

Queueing Delay Results for each time segment

Queueing Delay results: (17:00-17:15)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	0.00	0.00	0.000	A	A
85%	West	2.07	0.14	3.775	A	A
85%	South	0.95	0.06	3.545	A	A
85%	East	4.76	0.32	4.184	A	A
90%	North	0.00	0.00	0.000	A	A
90%	West	1.94	0.13	3.528	A	A
90%	South	0.89	0.06	3.323	A	A
90%	East	4.42	0.29	3.881	A	A

Queueing Delay results: (17:15-17:30)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	0.00	0.00	0.000	A	A
85%	West	2.58	0.17	3.923	A	A
85%	South	1.17	0.08	3.643	A	A
85%	East	6.12	0.41	4.484	A	A
90%	North	0.00	0.00	0.000	A	A
90%	West	2.41	0.16	3.657	A	A
90%	South	1.09	0.07	3.409	A	A
90%	East	5.65	0.38	4.138	A	A

Queueing Delay results: (17:30-17:45)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	0.00	0.00	0.000	A	A
85%	West	3.33	0.22	4.140	A	A
85%	South	1.48	0.10	3.786	A	A
85%	East	8.25	0.55	4.959	A	A
90%	North	0.00	0.00	0.000	A	A
90%	West	3.10	0.21	3.845	A	A
90%	South	1.39	0.09	3.534	A	A
90%	East	7.57	0.50	4.539	A	A

Queueing Delay results: (17:45-18:00)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	0.00	0.00	0.000	A	A
85%	West	3.39	0.23	4.142	A	A
85%	South	1.51	0.10	3.787	A	A
85%	East	8.45	0.56	4.967	A	A
90%	North	0.00	0.00	0.000	A	A
90%	West	3.15	0.21	3.847	A	A
90%	South	1.41	0.09	3.534	A	A
90%	East	7.74	0.52	4.544	A	A

Queueing Delay results: (18:00-18:15)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	0.00	0.00	0.000	A	A
85%	West	2.69	0.18	3.927	A	A
85%	South	1.21	0.08	3.647	A	A
85%	East	6.44	0.43	4.494	A	A
90%	North	0.00	0.00	0.000	A	A
90%	West	2.50	0.17	3.659	A	A
90%	South	1.13	0.08	3.413	A	A
90%	East	5.93	0.40	4.147	A	A

Queueing Delay results: (18:15-18:30)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	0.00	0.00	0.000	A	A
85%	West	2.16	0.14	3.780	A	A
85%	South	0.98	0.07	3.547	A	A
85%	East	5.03	0.34	4.201	A	A
90%	North	0.00	0.00	0.000	A	A
90%	West	2.02	0.13	3.533	A	A
90%	South	0.92	0.06	3.325	A	A
90%	East	4.65	0.31	3.894	A	A

Queue Variation Results for each time segment

Queue Variation results: (17:00-17:15)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.00	~1	~1	~1	~1			N/A	N/A

85%	West	0.14	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.06	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	0.33	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.00	~1	~1	~1	~1			N/A	N/A
90%	West	0.13	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.06	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.30	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (17:15-17:30)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.00	~1	~1	~1	~1			N/A	N/A
85%	West	0.17	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.08	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	0.42	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.00	~1	~1	~1	~1			N/A	N/A
90%	West	0.16	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.07	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.38	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (17:30-17:45)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.00	~1	~1	~1	~1			N/A	N/A
85%	West	0.23	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.10	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	0.56	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.00	~1	~1	~1	~1			N/A	N/A
90%	West	0.21	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.09	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.51	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (17:45-18:00)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.00	~1	~1	~1	~1			N/A	N/A
85%	West	0.23	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.10	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

85%	East	0.56	0.00	0.00	0.00	1.01			N/A	N/A
90%	North	0.00	~1	~1	~1	~1			N/A	N/A
90%	West	0.21	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.09	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.52	0.00	0.00	0.00	1.01			N/A	N/A

Queue Variation results: (18:00-18:15)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.00	~1	~1	~1	~1			N/A	N/A
85%	West	0.18	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.08	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	0.42	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.00	~1	~1	~1	~1			N/A	N/A
90%	West	0.16	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.07	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.39	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (18:15-18:30)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.00	~1	~1	~1	~1			N/A	N/A
85%	West	0.14	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.06	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	0.33	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.00	~1	~1	~1	~1			N/A	N/A
90%	West	0.13	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.06	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.31	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Appendix H

2027 Total Traffic Operations Reports



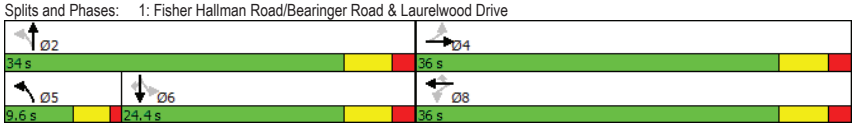
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	357	355	493	43	79	15	193	660	101	48	263	88
Future Volume (vph)	357	355	493	43	79	15	193	660	101	48	263	88
Ideal Flow (vphpl)	1775	1650	1650	1775	1900	1750	1775	1650	1650	1775	1900	1750
Storage Length (m)	85.0		0.0	90.0		90.0	90.0		0.0	60.0		60.0
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (m)	35.0			7.5			45.0			70.0		
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	0.98				0.98	1.00	1.00		1.00		0.98
Frt		0.913				0.850		0.980				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1653	1438	0	1188	1845	1488	1506	1565	0	1686	1881	1430
Flt Permitted	0.706			0.125			0.371			0.196		
Satd. Flow (perm)	1226	1438	0	156	1845	1452	587	1565	0	348	1881	1396
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		132				109		14				109
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		133.2			228.2			160.2			234.1	
Travel Time (s)		9.6			16.4			11.5			16.9	
Confl. Peds. (#/hr)	2		7	7		2	2		3	3		2
Peak Hour 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
Heavy Vehicles (%)	2%	1%	4%	42%	3%	0%	12%	1%	16%	0%	1%	4%
Adj. Flow (vph)	357	355	493	43	79	15	193	660	101	48	263	88
Shared Lane Traffic (%)												
Lane Group Flow (vph)	357	848	0	43	79	15	193	761	0	48	263	88
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA		Perm	NA	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8		8	2			6		6
Detector Phase	4	4		8	8	8	5	2		6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	24.0	24.0		30.0	30.0	30.0	9.5	24.0		24.0	24.0	24.0
Total Split (s)	36.0	36.0		36.0	36.0	36.0	9.6	34.0		24.4	24.4	24.4
Total Split (%)	51.4%	51.4%		51.4%	51.4%	51.4%	13.7%	48.6%		34.9%	34.9%	34.9%
Maximum Green (s)	30.0	30.0		30.0	30.0	30.0	5.6	28.0		18.4	18.4	18.4
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	3.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	1.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-2.0	0.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag							Lead			Lag	Lag	Lag
Lead-Lag Optimize?							Yes			Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None	None	None	Max		Max	Max	Max
Walk Time (s)	7.0	7.0		7.0	7.0	7.0		7.0		7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	11.0		11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0		0	0	0		0		0	0	0
Act Effct Green (s)	32.0	32.0		32.0	32.0	32.0	30.0	30.0		20.4	20.4	20.4
Actuated g/C Ratio	0.46	0.46		0.46	0.46	0.46	0.43	0.43		0.29	0.29	0.29
v/c Ratio	0.64	1.16		0.61	0.09	0.02	0.59	1.12		0.48	0.48	0.18

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	21.0	107.8		55.8	11.2	0.1	22.3	96.1		39.4	24.0	4.1
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	21.0	107.8		55.8	11.2	0.1	22.3	96.1		39.4	24.0	4.1
LOS	C	F		E	B	A	C	F		D	C	A
Approach Delay		82.1			24.0			81.1			21.5	
Approach LOS		F			C			F			C	
Queue Length 50th (m)	35.9	~131.8		4.2	5.9	0.0	16.8	~123.3		5.4	29.6	0.0
Queue Length 95th (m)	64.7	#199.9		#21.2	13.0	0.0	30.9	#188.6		#19.5	50.7	7.2
Internal Link Dist (m)		109.2			204.2			136.2			210.1	
Turn Bay Length (m)	85.0			90.0		90.0	90.0			60.0		60.0
Base Capacity (vph)	560	729		71	843	722	325	678		101	548	484
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.64	1.16		0.61	0.09	0.02	0.59	1.12		0.48	0.48	0.18

Intersection Summary		
Area Type:	Other	
Cycle Length: 70		
Actuated Cycle Length: 70		
Natural Cycle: 75		
Control Type: Semi Act-Uncoord		
Maximum v/c Ratio: 1.16		
Intersection Signal Delay: 69.8		Intersection LOS: E
Intersection Capacity Utilization 118.0%		ICU Level of Service H
Analysis Period (min) 15		

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

Splits and Phases: 1: Fisher Hallman Road/Bearinger Road & Laurelwood Drive



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	357	355	493	43	79	15	193	660	101	48	263	88
Future Volume (vph)	357	355	493	43	79	15	193	660	101	48	263	88
Ideal Flow (vphpl)	1775	1650	1650	1775	1900	1750	1775	1650	1650	1775	1900	1750
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.98		1.00	1.00	0.98	1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.91		1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1647	1437		1188	1845	1452	1505	1565		1684	1881	1396
Flt Permitted	0.71	1.00		0.12	1.00	1.00	0.37	1.00		0.20	1.00	1.00
Satd. Flow (perm)	1224	1437		156	1845	1452	587	1565		348	1881	1396
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	357	355	493	43	79	15	193	660	101	48	263	88
RTOR Reduction (vph)	0	72	0	0	0	8	0	8	0	0	0	62
Lane Group Flow (vph)	357	776	0	43	79	7	193	753	0	48	263	26
Confl. Peds. (#/hr)	2		7	7		2	2		3	3		2
Heavy Vehicles (%)	2%	1%	4%	42%	3%	0%	12%	1%	16%	0%	1%	4%
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA		Perm	NA	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8		8	2			6		6
Actuated Green, G (s)	30.0	30.0		30.0	30.0	30.0	28.0	28.0		18.4	18.4	18.4
Effective Green, g (s)	32.0	32.0		32.0	32.0	32.0	28.0	30.0		20.4	20.4	20.4
Actuated g/C Ratio	0.46	0.46		0.46	0.46	0.46	0.40	0.43		0.29	0.29	0.29
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0	4.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	559	656		71	843	663	308	670		101	548	406
v/s Ratio Prot		c0.54			0.04		0.05	c0.48			0.14	
v/s Ratio Perm	0.29			0.28		0.00	0.20			0.14		0.02
v/c Ratio	0.64	1.18		0.61	0.09	0.01	0.63	1.12		0.48	0.48	0.06
Uniform Delay, d1	14.6	19.0		14.3	10.8	10.4	15.7	20.0		20.4	20.4	17.9
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	2.4	97.5		13.7	0.0	0.0	3.9	74.1		15.2	3.0	0.3
Delay (s)	17.0	116.5		28.0	10.8	10.4	19.7	94.1		35.6	23.4	18.2
Level of Service	B	F		C	B	B	B	F		D	C	B
Approach Delay (s)		87.0			16.2			79.0			23.7	
Approach LOS		F			B			E			C	

Intersection Summary				
HCM 2000 Control Delay	71.2	HCM 2000 Level of Service	E	
HCM 2000 Volume to Capacity ratio	1.23			
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	12.0	
Intersection Capacity Utilization	118.0%	ICU Level of Service	H	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	190	39	1328	49	32	13	411	181	24	11	321	46
Future Volume (vph)	190	39	1328	49	32	13	411	181	24	11	321	46
Ideal Flow (vphpl)	1650	1650	1750	1550	1550	1550	1775	1650	1650	1550	1550	1550
Storage Length (m)	0.0		25.0	0.0		0.0	25.0		0.0	0.0		0.0
Storage Lanes	0		1	0		0	1		0	0		0
Taper Length (m)	0.0			0.0			35.0			0.0		
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			0.850		0.981			0.982			0.984	
Flt Protected		0.960			0.975		0.950				0.999	
Satd. Flow (prot)	0	1526	1473	0	1448	0	1606	1556	0	0	1479	0
Flt Permitted		0.960			0.975		0.950				0.999	
Satd. Flow (perm)	0	1526	1473	0	1448	0	1606	1556	0	0	1479	0
Link Speed (k/h)		60			50			50			50	
Link Distance (m)		1012.1			151.5			558.2			326.3	
Travel Time (s)		60.7			10.9			40.2			23.5	
Confl. Peds. (#/hr)	3		1	1		3	3		1	1		3
Peak Hour 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
Heavy Vehicles (%)	4%	3%	1%	0%	7%	0%	5%	4%	5%	20%	2%	6%
Adj. Flow (vph)	190	39	1328	49	32	13	411	181	24	11	321	46
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	229	1328	0	94	0	411	205	0	0	378	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	131.4%	ICU Level of Service	H
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	190	39	1328	49	32	13	411	181	24	11	321	46
Future Volume (vph)	190	39	1328	49	32	13	411	181	24	11	321	46
Peak Hour 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
Hourly flow rate (vph)	190	39	1328	49	32	13	411	181	24	11	321	46

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1
Volume Total (vph)	229	1328	94	411	205	378
Volume Left (vph)	190	0	49	411	0	11
Volume Right (vph)	0	1328	13	0	24	46
Hadj (s)	0.48	-0.68	0.06	0.58	-0.01	-0.02
Departure Headway (s)	8.6	7.4	9.7	8.6	8.0	8.1
Degree Utilization, x	0.55	2.73	0.25	0.98	0.45	0.85
Capacity (veh/h)	415	489	353	411	447	439
Control Delay (s)	20.2	797.0	16.0	67.1	16.2	42.3
Approach Delay (s)	682.7		16.0	50.2		42.3
Approach LOS	F		C	F		E

Intersection Summary					
Delay	420.2				
Level of Service	F				
Intersection Capacity Utilization	131.4%	ICU Level of Service		H	
Analysis Period (min)	15				

Intersection	
Intersection Delay, s/veh	432.4
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	190	39	1328	49	32	13	411	181	24	11	321	46
Future Vol, veh/h	190	39	1328	49	32	13	411	181	24	11	321	46
Peak Hour 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
Heavy Vehicles, %	4	3	1	0	7	0	5	4	5	20	2	6
Mvmt Flow	190	39	1328	49	32	13	411	181	24	11	321	46
Number of Lanes	0	1	1	0	1	0	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	2
HCM Control Delay	695.1	19.4	60.8	58.8
HCM LOS	F	C	F	F

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	100%	0%	83%	0%	52%	3%
Vol Thru, %	0%	88%	17%	0%	34%	85%
Vol Right, %	0%	12%	0%	100%	14%	12%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	411	205	229	1328	94	378
LT Vol	411	0	190	0	49	11
Through Vol	0	181	39	0	32	321
RT Vol	0	24	0	1328	13	46
Lane Flow Rate	411	205	229	1328	94	378
Geometry Grp	7	7	7	7	6	6
Degree of Util (X)	0.985	0.457	0.549	2.754	0.26	0.889
Departure Headway (Hd)	11.033	10.403	8.636	7.465	12.179	10.71
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	333	349	417	491	297	340
Service Time	8.733	8.103	6.423	5.251	10.179	8.71
HCM Lane V/C Ratio	1.234	0.587	0.549	2.705	0.316	1.112
HCM Control Delay	80.4	21.6	21.5	811.2	19.4	58.8
HCM Lane LOS	F	C	C	F	C	F
HCM 95th-tile Q	10.7	2.3	3.2	109	1	8.5

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	210	95	161	76	32	391
Future Volume (vph)	210	95	161	76	32	391
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.958				0.875	
Flt Protected				0.967	0.996	
Satd. Flow (prot)	1521	0	0	1550	1495	0
Flt Permitted				0.967	0.996	
Satd. Flow (perm)	1521	0	0	1550	1495	0
Link Speed (k/h)	80			80	50	
Link Distance (m)	1516.2			424.2	223.3	
Travel Time (s)	68.2			19.1	16.1	
Confl. Peds. (#/hr)		1	1			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	6%	2%	5%	14%	2%
Adj. Flow (vph)	210	95	161	76	32	391
Shared Lane Traffic (%)						
Lane Group Flow (vph)	305	0	0	237	423	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 72.2%		ICU Level of Service C	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	210	95	161	76	32	391
Future Volume (Veh/h)	210	95	161	76	32	391
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	210	95	161	76	32	391
Pedestrians					1	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			306		656	258
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			306		656	258
tC, single (s)			4.1		6.5	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			87		91	50
cM capacity (veh/h)			1254		359	779

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	305	237	423
Volume Left	0	161	32
Volume Right	95	0	391
cSH	1700	1254	716
Volume to Capacity	0.18	0.13	0.59
Queue Length 95th (m)	0.0	3.5	31.3
Control Delay (s)	0.0	6.0	17.0
Lane LOS		A	C
Approach Delay (s)	0.0	6.0	17.0
Approach LOS			C

Intersection Summary			
Average Delay	8.9		
Intersection Capacity Utilization	72.2%	ICU Level of Service	C
Analysis Period (min)	15		



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	15	79	109	47	188	71
Future Volume (vph)	15	79	109	47	188	71
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.887		0.959			
Flt Protected	0.992					0.965
Satd. Flow (prot)	1395	0	1469	0	0	1526
Flt Permitted	0.992					0.965
Satd. Flow (perm)	1395	0	1469	0	0	1526
Link Speed (k/h)	80		80			80
Link Distance (m)	1200.3		1761.7			72.7
Travel Time (s)	54.0		79.3			3.3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	8%	12%	11%	0%	3%	8%
Adj. Flow (vph)	15	79	109	47	188	71
Shared Lane Traffic (%)						
Lane Group Flow (vph)	94	0	156	0	0	259
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	42.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	15	79	109	47	188	71
Future Volume (Veh/h)	15	79	109	47	188	71
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	15	79	109	47	188	71
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	580	132			156	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	580	132			156	
tC, single (s)	6.5	6.3			4.1	
tC, 2 stage (s)						
tF (s)	3.6	3.4			2.2	
p0 queue free %	96	91			87	
cM capacity (veh/h)	405	891			1418	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	94	156	259
Volume Left	15	0	188
Volume Right	79	47	0
cSH	748	1700	1418
Volume to Capacity	0.13	0.09	0.13
Queue Length 95th (m)	3.4	0.0	3.7
Control Delay (s)	10.5	0.0	6.1
Lane LOS	B		A
Approach Delay (s)	10.5	0.0	6.1
Approach LOS	B		

Intersection Summary			
Average Delay	5.0		
Intersection Capacity Utilization	42.3%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	25	80	79	78	57	32
Future Volume (vph)	25	80	79	78	57	32
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.897		0.933			
Flt Protected	0.988					0.969
Satd. Flow (prot)	1438	0	1495	0	0	1500
Flt Permitted	0.988					0.969
Satd. Flow (perm)	1438	0	1495	0	0	1500
Link Speed (k/h)	80		80			80
Link Distance (m)	605.5		233.8			1761.7
Travel Time (s)	27.2		10.5			79.3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	5%	10%	3%	3%	8%	4%
Adj. Flow (vph)	25	80	79	78	57	32
Shared Lane Traffic (%)						
Lane Group Flow (vph)	105	0	157	0	0	89
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 32.7%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	25	80	79	78	57	32
Future Volume (Veh/h)	25	80	79	78	57	32
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	25	80	79	78	57	32
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	264	118			157	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	264	118			157	
tC, single (s)	6.4	6.3			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.4			2.3	
p0 queue free %	96	91			96	
cM capacity (veh/h)	689	913			1387	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	105	157	89
Volume Left	25	0	57
Volume Right	80	78	0
cSH	847	1700	1387
Volume to Capacity	0.12	0.09	0.04
Queue Length 95th (m)	3.4	0.0	1.0
Control Delay (s)	9.8	0.0	5.1
Lane LOS	A		A
Approach Delay (s)	9.8	0.0	5.1
Approach LOS	A		

Intersection Summary			
Average Delay	4.2		
Intersection Capacity Utilization	32.7%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	47	5	199	50	109	5	201	319	273	207	0
Future Volume (vph)	13	47	5	199	50	109	5	201	319	273	207	0
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.990			0.959			0.918				
Flt Protected		0.990			0.973						0.972	
Satd. Flow (prot)	0	1497	0	0	1383	0	0	1362	0	0	1425	0
Flt Permitted		0.990			0.973						0.972	
Satd. Flow (perm)	0	1497	0	0	1383	0	0	1362	0	0	1425	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		187.7			400.3			488.0			394.6	
Travel Time (s)		13.5			28.8			35.1			28.4	
Peak Hour 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
Heavy Vehicles (%)	0%	2%	0%	6%	0%	4%	0%	7%	3%	4%	8%	0%
Adj. Flow (vph)	13	47	5	199	50	109	5	201	319	273	207	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	65	0	0	358	0	0	525	0	0	480	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 110.7%		ICU Level of Service H	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	47	5	199	50	109	5	201	319	273	207	0
Future Volume (Veh/h)	13	47	5	199	50	109	5	201	319	273	207	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	13	47	5	199	50	109	5	201	319	273	207	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1258	1283	207	1152	1124	360	207			520		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1258	1283	207	1152	1124	360	207			520		
tC, single (s)	7.1	6.5	6.2	7.2	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.0	3.3	2.2			2.2		
p0 queue free %	83	61	99	0	67	84	100			74		
cM capacity (veh/h)	75	121	839	96	152	680	1376			1036		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	65	358	525	480
Volume Left	13	199	5	273
Volume Right	5	109	319	0
cSH	115	140	1376	1036
Volume to Capacity	0.57	2.56	0.00	0.26
Queue Length 95th (m)	21.8	252.2	0.1	8.5
Control Delay (s)	71.3	772.5	0.1	6.8
Lane LOS	F	F	A	A
Approach Delay (s)	71.3	772.5	0.1	6.8
Approach LOS	F	F		

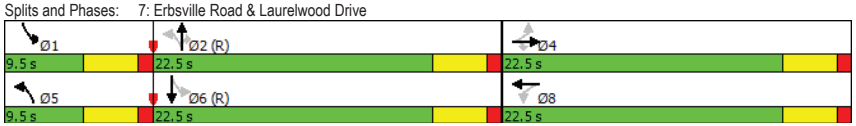
Intersection Summary				
Average Delay	199.2			
Intersection Capacity Utilization	110.7%	ICU Level of Service	H	
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	238	204	71	110	90	178	283	124	244	321	21
Future Volume (vph)	19	238	204	71	110	90	178	283	124	244	321	21
Ideal Flow (vphpl)	1775	1900	1750	1775	1650	1650	1775	1900	1750	1775	1650	1650
Storage Length (m)	20.0		20.0	25.0		0.0	65.0		30.0	25.0		0.0
Storage Lanes	1		1	1		0	1		1	1		0
Taper Length (m)	35.0			10.0			80.0			35.0		
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	0.91		0.95	0.98	0.94		0.99		0.94	0.97	1.00	
Frt			0.850		0.932				0.850		0.991	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1591	1810	1403	1561	1335	0	1606	1776	1430	1653	1530	0
Flt Permitted	0.630			0.575			0.430			0.511		
Satd. Flow (perm)	955	1810	1327	922	1335	0	722	1776	1344	866	1530	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			204		81				124		6	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		123.5			178.3			236.9			930.8	
Travel Time (s)		8.9			12.8			17.1			67.0	
Confl. Peds. (#/hr)	79		23	23		79	9		27	27		9
Peak Hour 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
Heavy Vehicles (%)	6%	5%	6%	8%	9%	7%	5%	7%	4%	2%	6%	17%
Adj. Flow (vph)	19	238	204	71	110	90	178	283	124	244	321	21
Shared Lane Traffic (%)												
Lane Group Flow (vph)	19	238	204	71	200	0	178	283	124	244	342	0
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2		2	6		
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5		9.5	22.5	22.5	9.5	22.5	
Total Split (s)	22.5	22.5	22.5	22.5	22.5		9.5	22.5	22.5	9.5	22.5	
Total Split (%)	41.3%	41.3%	41.3%	41.3%	41.3%		17.4%	41.3%	41.3%	17.4%	41.3%	
Maximum Green (s)	18.0	18.0	18.0	18.0	18.0		5.0	18.0	18.0	5.0	18.0	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	
Walk Time (s)	7.0	7.0	7.0	7.0	7.0			7.0	7.0		7.0	
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0			11.0	11.0		11.0	
Pedestrian Calls (#/hr)	0	0	0	0	0			0	0		0	
Act Effct Green (s)	18.0	18.0	18.0	18.0	18.0		23.0	18.0	18.0	23.0	18.0	
Actuated g/C Ratio	0.33	0.33	0.33	0.33	0.33		0.42	0.33	0.33	0.42	0.33	
v/c Ratio	0.06	0.40	0.36	0.23	0.40		0.46	0.48	0.24	0.56	0.67	
Control Delay	13.3	16.6	4.5	15.8	11.5		12.5	18.0	4.6	14.6	23.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	13.3	16.6	4.5	15.8	11.5		12.5	18.0	4.6	14.6	23.7	
LOS	B	B	A	B	B		B	B	A	B	C	
Approach Delay		11.1			12.6			13.4			19.9	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		B			B			B			B	
Queue Length 50th (m)	1.3	18.6	0.0	5.2	8.9		9.4	22.9	0.0	13.4	29.3	
Queue Length 95th (m)	5.0	34.8	11.6	13.7	23.3		18.7	41.8	9.1	25.3	#61.6	
Internal Link Dist (m)		99.5			154.3			212.9			906.8	
Turn Bay Length (m)	20.0		20.0	25.0			65.0		30.0	25.0		
Base Capacity (vph)	315	597	574	304	495		385	586	526	437	509	
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Reduced v/c Ratio	0.06	0.40	0.36	0.23	0.40		0.46	0.48	0.24	0.56	0.67	

Intersection Summary		
Area Type:	Other	
Cycle Length: 54.5		
Actuated Cycle Length: 54.5		
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green		
Natural Cycle: 60		
Control Type: Pretimed		
Maximum v/c Ratio: 0.67		
Intersection Signal Delay: 14.7		Intersection LOS: B
Intersection Capacity Utilization 66.1%		ICU Level of Service C
Analysis Period (min) 15		
# 95th percentile volume exceeds capacity, queue may be longer.		
Queue shown is maximum after two cycles.		

Splits and Phases: 7: Erbsville Road & Laurelwood Drive



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	238	204	71	110	90	178	283	124	244	321	21
Future Volume (vph)	19	238	204	71	110	90	178	283	124	244	321	21
Ideal Flow (vphpl)	1775	1900	1750	1775	1650	1650	1775	1900	1750	1775	1650	1650
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.95	1.00	0.94		1.00	1.00	0.94	1.00	1.00	
Flpb, ped/bikes	0.91	1.00	1.00	0.98	1.00		1.00	1.00	1.00	0.99	1.00	
Frt	1.00	1.00	0.85	1.00	0.93		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1447	1810	1327	1523	1335		1601	1776	1344	1632	1529	
Flt Permitted	0.63	1.00	1.00	0.57	1.00		0.43	1.00	1.00	0.51	1.00	
Satd. Flow (perm)	960	1810	1327	922	1335		725	1776	1344	878	1529	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	19	238	204	71	110	90	178	283	124	244	321	21
RTOR Reduction (vph)	0	0	137	0	54	0	0	0	83	0	4	0
Lane Group Flow (vph)	19	238	67	71	146	0	178	283	41	244	338	0
Confl. Peds. (#/hr)	79		23	23		79	9		27	27		9
Heavy Vehicles (%)	6%	5%	6%	8%	9%	7%	5%	7%	4%	2%	6%	17%
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2		2	6		
Actuated Green, G (s)	18.0	18.0	18.0	18.0	18.0		23.0	18.0	18.0	23.0	18.0	
Effective Green, g (s)	18.0	18.0	18.0	18.0	18.0		23.0	18.0	18.0	23.0	18.0	
Actuated g/C Ratio	0.33	0.33	0.33	0.33	0.33		0.42	0.33	0.33	0.42	0.33	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Lane Grp Cap (vph)	317	597	438	304	440		386	586	443	439	504	
v/s Ratio Prot		c0.13			0.11		0.04	0.16		c0.05	c0.22	
v/s Ratio Perm	0.02		0.05	0.08			0.15		0.03	0.18		
v/c Ratio	0.06	0.40	0.15	0.23	0.33		0.46	0.48	0.09	0.56	0.67	
Uniform Delay, d1	12.5	14.1	12.9	13.2	13.7		10.4	14.5	12.6	11.0	15.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.4	2.0	0.7	1.8	2.0		3.9	2.8	0.4	5.0	6.9	
Delay (s)	12.8	16.1	13.6	15.0	15.7		14.4	17.4	13.0	16.0	22.6	
Level of Service	B	B	B	B	B		B	B	B	B	C	
Approach Delay (s)		14.8			15.6			15.5			19.9	
Approach LOS		B			B			B			B	

Intersection Summary				
HCM 2000 Control Delay	16.7	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.54			
Actuated Cycle Length (s)	54.5	Sum of lost time (s)	13.5	
Intersection Capacity Utilization	66.1%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	36	687	89	38	225	138	58	39	205	282	21	22
Future Volume (vph)	36	687	89	38	225	138	58	39	205	282	21	22
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
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		0.985			0.954			0.908			0.991	
Flt Protected		0.998			0.995			0.990			0.958	
Satd. Flow (prot)	0	1486	0	0	1397	0	0	1368	0	0	1461	0
Flt Permitted		0.998			0.995			0.990			0.958	
Satd. Flow (perm)	0	1486	0	0	1397	0	0	1368	0	0	1461	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		213.7			555.1			104.8			136.8	
Travel Time (s)		15.4			40.0			7.5			9.8	
Confl. Peds. (#/hr)	10		4	4		10	7		10	10		7
Peak Hour 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
Heavy Vehicles (%)	0%	3%	0%	6%	6%	4%	0%	9%	1%	0%	0%	11%
Adj. Flow (vph)	36	687	89	38	225	138	58	39	205	282	21	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	812	0	0	401	0	0	302	0	0	325	0
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Roundabout			
Intersection Capacity Utilization	115.6%	ICU Level of Service	H
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Traffic Volume (veh/h)	36	687	89	38	225	138	58	39	205	282	21	22
Future Volume (veh/h)	36	687	89	38	225	138	58	39	205	282	21	22
Peak Hour 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
Hourly flow rate (vph)	36	687	89	38	225	138	58	39	205	282	21	22
Approach Volume (veh/h)		812			401			302			325	
Crossing Volume (veh/h)		341			133			1005			321	
High Capacity (veh/h)		1059			1248			620			1076	
High v/c (veh/h)		0.77			0.32			0.49			0.30	
Low Capacity (veh/h)		867			1037			480			882	
Low v/c (veh/h)		0.94			0.39			0.63			0.37	

Intersection Summary				
Maximum v/c High		0.77		
Maximum v/c Low		0.94		
Intersection Capacity Utilization		115.6%	ICU Level of Service	H



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	209	22	33	75	18	109
Future Volume (vph)	209	22	33	75	18	109
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.987				0.884	
Flt Protected				0.985	0.993	
Satd. Flow (prot)	1586	0	0	1479	1498	0
Flt Permitted				0.985	0.993	
Satd. Flow (perm)	1586	0	0	1479	1498	0
Link Speed (k/h)	80			80	50	
Link Distance (m)	1200.3			667.7	811.2	
Travel Time (s)	54.0			30.0	58.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	0%	5%	12%	6%	3%
Adj. Flow (vph)	209	22	33	75	18	109
Shared Lane Traffic (%)						
Lane Group Flow (vph)	231	0	0	108	127	0
Sign Control	Free			Free	Stop	

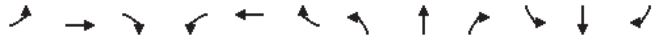
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 39.2%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	209	22	33	75	18	109
Future Volume (Veh/h)	209	22	33	75	18	109
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	209	22	33	75	18	109
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			231		361	220
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			231		361	220
tC, single (s)			4.1		6.5	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			97		97	87
cM capacity (veh/h)			1319		614	817

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	231	108	127
Volume Left	0	33	18
Volume Right	22	0	109
cSH	1700	1319	781
Volume to Capacity	0.14	0.03	0.16
Queue Length 95th (m)	0.0	0.6	4.6
Control Delay (s)	0.0	2.5	10.5
Lane LOS		A	B
Approach Delay (s)	0.0	2.5	10.5
Approach LOS			B

Intersection Summary			
Average Delay		3.4	
Intersection Capacity Utilization		39.2%	ICU Level of Service A
Analysis Period (min)		15	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	13	240	88	5	0	93	101	92	6	129	0
Future Volume (vph)	0	13	240	88	5	0	93	101	92	6	129	0
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.872						0.957				
Flt Protected					0.955			0.984			0.998	
Satd. Flow (prot)	0	1352	0	0	1426	0	0	1444	0	0	1465	0
Flt Permitted					0.955			0.984			0.998	
Satd. Flow (perm)	0	1352	0	0	1426	0	0	1444	0	0	1465	0
Link Speed (k/h)		50			70			50			50	
Link Distance (m)		114.7			143.4			394.6			123.0	
Travel Time (s)		8.3			7.4			28.4			8.9	
Peak Hour 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
Heavy Vehicles (%)	0%	0%	0%	4%	0%	0%	0%	3%	0%	40%	4%	0%
Adj. Flow (vph)	0	13	240	88	5	0	93	101	92	6	129	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	253	0	0	93	0	0	286	0	0	135	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 67.1%		ICU Level of Service C	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	13	240	88	5	0	93	101	92	6	129	0
Future Volume (Veh/h)	0	13	240	88	5	0	93	101	92	6	129	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	0	13	240	88	5	0	93	101	92	6	129	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	476	520	129	720	474	147	129			193		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	476	520	129	720	474	147	129			193		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.5		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.6		
p0 queue free %	100	97	74	62	99	100	94			99		
cM capacity (veh/h)	472	432	926	234	458	905	1469			1182		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	253	93	286	135
Volume Left	0	88	93	6
Volume Right	240	0	92	0
cSH	875	240	1469	1182
Volume to Capacity	0.29	0.39	0.06	0.01
Queue Length 95th (m)	9.6	13.9	1.6	0.1
Control Delay (s)	10.8	29.2	2.8	0.4
Lane LOS	B	D	A	A
Approach Delay (s)	10.8	29.2	2.8	0.4
Approach LOS	B	D		

Intersection Summary					
Average Delay			8.2		
Intersection Capacity Utilization			67.1%	ICU Level of Service	C
Analysis Period (min)			15		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	117	890	128	167	379	18	75	39	228	60	54	109
Future Volume (vph)	117	890	128	167	379	18	75	39	228	60	54	109
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.985			0.996			0.910			0.934	
Flt Protected		0.995			0.985			0.989			0.987	
Satd. Flow (prot)	0	1484	0	0	1473	0	0	1339	0	0	1429	0
Flt Permitted		0.995			0.985			0.989			0.987	
Satd. Flow (perm)	0	1484	0	0	1473	0	0	1339	0	0	1429	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		166.4			228.8			212.1			132.6	
Travel Time (s)		12.0			16.5			15.3			9.5	
Peak Hour 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
Heavy Vehicles (%)	0%	3%	0%	4%	3%	0%	7%	0%	4%	0%	0%	0%
Adj. Flow (vph)	117	890	128	167	379	18	75	39	228	60	54	109
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1135	0	0	564	0	0	342	0	0	223	0
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary				
Area Type:	Other			
Control Type: Roundabout				
Intersection Capacity Utilization	118.2%		ICU Level of Service H	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Traffic Volume (veh/h)	117	890	128	167	379	18	75	39	228	60	54	109
Future Volume (veh/h)	117	890	128	167	379	18	75	39	228	60	54	109
Peak Hour 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
Hourly flow rate (vph)	117	890	128	167	379	18	75	39	228	60	54	109
Approach Volume (veh/h)		1135			564			342			223	
Crossing Volume (veh/h)		281			231			1067			621	
High Capacity (veh/h)		1111			1156			589			847	
High v/c (veh/h)		1.02			0.49			0.58			0.26	
Low Capacity (veh/h)		913			953			454			678	
Low v/c (veh/h)		1.24			0.59			0.75			0.33	

Intersection Summary					
Maximum v/c High		1.02			
Maximum v/c Low		1.24			
Intersection Capacity Utilization		118.2%	ICU Level of Service		H



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	1268	5	10	488	15	15	7	34	74	8	33
Future Volume (vph)	13	1268	5	10	488	15	15	7	34	74	8	33
Ideal Flow (vphpl)	1650	1650	1900	1900	1650	1650	1900	1900	1900	1765	1900	1765
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		0.999			0.996			0.918			0.961	
Flt Protected		0.999			0.999			0.987			0.969	
Satd. Flow (prot)	0	1584	0	0	1607	0	0	1688	0	0	1767	0
Flt Permitted		0.999			0.999			0.987			0.969	
Satd. Flow (perm)	0	1584	0	0	1607	0	0	1688	0	0	1767	0
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		96.4			374.2			170.4			178.3	
Travel Time (s)		5.8			22.5			12.3			12.8	
Confl. Peds. (#/hr)	10					10						
Peak Hour 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
Heavy Vehicles (%)	0%	4%	2%	2%	2%	8%	2%	2%	2%	0%	2%	0%
Adj. Flow (vph)	13	1268	5	10	488	15	15	7	34	74	8	33
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1286	0	0	513	0	0	56	0	0	115	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary					
Area Type:	Other				
Control Type: Unsignalized					
Intersection Capacity Utilization 104.6%			ICU Level of Service G		
Analysis Period (min) 15					



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	1268	5	10	488	15	15	7	34	74	8	33
Future Volume (Veh/h)	13	1268	5	10	488	15	15	7	34	74	8	33
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	13	1268	5	10	488	15	15	7	34	74	8	33
Pedestrians											10	
Lane Width (m)											3.6	
Walking Speed (m/s)											1.2	
Percent Blockage											1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	513			1273			1849	1830	1270	1860	1824	506
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	513			1273			1849	1830	1270	1860	1824	506
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			98			69	90	83	0	89	94
cM capacity (veh/h)	1054			546			48	74	205	42	74	566

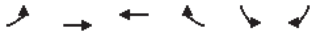
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	1286	513	56	115
Volume Left	13	10	15	74
Volume Right	5	15	34	33
cSH	1054	546	98	60
Volume to Capacity	0.01	0.02	0.57	1.92
Queue Length 95th (m)	0.3	0.4	21.4	86.8
Control Delay (s)	0.5	0.5	82.9	577.5
Lane LOS	A	A	F	F
Approach Delay (s)	0.5	0.5	82.9	577.5
Approach LOS			F	F

Intersection Summary				
Average Delay			36.5	
Intersection Capacity Utilization			104.6%	ICU Level of Service G
Analysis Period (min)			15	



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	16	1361	482	27	67	31
Future Volume (vph)	16	1361	482	27	67	31
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.993		0.957	
Flt Protected		0.999			0.967	
Satd. Flow (prot)	0	1601	1583	0	1611	0
Flt Permitted		0.999			0.967	
Satd. Flow (perm)	0	1601	1583	0	1611	0
Link Speed (k/h)		60	60		50	
Link Distance (m)		374.2	1012.1		87.7	
Travel Time (s)		22.5	60.7		6.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	3%	3%	13%	2%	0%
Adj. Flow (vph)	16	1361	482	27	67	31
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1377	509	0	98	0
Sign Control		Free	Free		Stop	

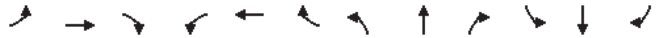
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 109.9%		ICU Level of Service H	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	16	1361	482	27	67	31
Future Volume (Veh/h)	16	1361	482	27	67	31
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	16	1361	482	27	67	31
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	509				1888	496
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	509				1888	496
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				12	95
cM capacity (veh/h)	1066				76	578

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	1377	509	98
Volume Left	16	0	67
Volume Right	0	27	31
cSH	1066	1700	105
Volume to Capacity	0.02	0.30	0.93
Queue Length 95th (m)	0.4	0.0	45.1
Control Delay (s)	0.7	0.0	145.3
Lane LOS	A		F
Approach Delay (s)	0.7	0.0	145.3
Approach LOS			F

Intersection Summary			
Average Delay	7.7		
Intersection Capacity Utilization	109.9%	ICU Level of Service	H
Analysis Period (min)	15		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	97	6	93	32	2	8	29	398	5	6	259	25
Future Volume (vph)	97	6	93	32	2	8	29	398	5	6	259	25
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
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		0.936			0.974			0.998			0.988	
Flt Protected		0.976			0.963			0.997			0.999	
Satd. Flow (prot)	0	1396	0	0	1454	0	0	1509	0	0	1476	0
Flt Permitted		0.976			0.963			0.997			0.999	
Satd. Flow (perm)	0	1396	0	0	1454	0	0	1509	0	0	1476	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		77.1			66.0			326.3			223.3	
Travel Time (s)		5.6			4.8			23.5			16.1	
Confl. Peds. (#/hr)	7		1	1		7			5	5		
Peak Hour 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
Heavy Vehicles (%)	0%	0%	3%	0%	0%	0%	5%	2%	0%	0%	3%	11%
Adj. Flow (vph)	97	6	93	32	2	8	29	398	5	6	259	25
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	196	0	0	42	0	0	432	0	0	290	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	65.4%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	97	6	93	32	2	8	29	398	5	6	259	25
Future Volume (Veh/h)	97	6	93	32	2	8	29	398	5	6	259	25
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	97	6	93	32	2	8	29	398	5	6	259	25
Pedestrians					5			1			7	
Lane Width (m)					3.6			3.6			3.6	
Walking Speed (m/s)					1.2			1.2			1.2	
Percent Blockage					0			0			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	17			100			472	328	58	532	371	13
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	17			100			472	328	58	532	371	13
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.4
p0 queue free %	94			98			89	26	100	96	49	98
cM capacity (veh/h)	1604			1504			273	539	1008	170	509	1036

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	196	42	432	290
Volume Left	97	32	29	6
Volume Right	93	8	5	25
cSH	1604	1504	509	510
Volume to Capacity	0.06	0.02	0.85	0.57
Queue Length 95th (m)	1.5	0.5	70.5	28.0
Control Delay (s)	3.9	5.7	40.2	20.9
Lane LOS	A	A	E	C
Approach Delay (s)	3.9	5.7	40.2	20.9
Approach LOS			E	C

Intersection Summary					
Average Delay			25.5		
Intersection Capacity Utilization			65.4%	ICU Level of Service	C
Analysis Period (min)			15		



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	57	4	126	18	1	53
Future Volume (vph)	57	4	126	18	1	53
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.991		0.983			
Flt Protected	0.955					0.999
Satd. Flow (prot)	1638	0	1590	0	0	1616
Flt Permitted	0.955					0.999
Satd. Flow (perm)	1638	0	1590	0	0	1616
Link Speed (k/h)	50		50			50
Link Distance (m)	135.9		143.4			554.5
Travel Time (s)	9.8		10.3			39.9
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	57	4	126	18	1	53
Shared Lane Traffic (%)						
Lane Group Flow (vph)	61	0	144	0	0	54
Sign Control	Stop		Free			Free

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



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	57	4	126	18	1	53
Future Volume (Veh/h)	57	4	126	18	1	53
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	57	4	126	18	1	53
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	190	135			144	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	190	135			144	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	93	100			100	
cM capacity (veh/h)	798	914			1438	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	61	144	54
Volume Left	57	0	1
Volume Right	4	18	0
cSH	805	1700	1438
Volume to Capacity	0.08	0.08	0.00
Queue Length 95th (m)	2.0	0.0	0.0
Control Delay (s)	9.8	0.0	0.1
Lane LOS	A		A
Approach Delay (s)	9.8	0.0	0.1
Approach LOS	A		

Intersection Summary			
Average Delay		2.3	
Intersection Capacity Utilization		19.2%	ICU Level of Service A
Analysis Period (min)		15	



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	647	1	37	356	6	92
Future Volume (vph)	647	1	37	356	6	92
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.873	
Flt Protected				0.995	0.997	
Satd. Flow (prot)	1618	0	0	1610	1506	0
Flt Permitted				0.995	0.997	
Satd. Flow (perm)	1618	0	0	1610	1506	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	400.3			181.6	225.5	
Travel Time (s)	28.8			13.1	16.2	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	647	1	37	356	6	92
Shared Lane Traffic (%)						
Lane Group Flow (vph)	648	0	0	393	98	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	70.2%		ICU Level of Service C
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	647	1	37	356	6	92
Future Volume (Veh/h)	647	1	37	356	6	92
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	647	1	37	356	6	92
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			648		1078	648
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			648		1078	648
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			96		97	80
cM capacity (veh/h)			938		233	471

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	648	393	98
Volume Left	0	37	6
Volume Right	1	0	92
cSH	1700	938	443
Volume to Capacity	0.38	0.04	0.22
Queue Length 95th (m)	0.0	1.0	6.7
Control Delay (s)	0.0	1.3	15.4
Lane LOS		A	C
Approach Delay (s)	0.0	1.3	15.4
Approach LOS			C

Intersection Summary			
Average Delay		1.8	
Intersection Capacity Utilization		70.2%	ICU Level of Service C
Analysis Period (min)		15	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	736	1	27	376	62	5	0	70	142	0	10
Future Volume (vph)	2	736	1	27	376	62	5	0	70	142	0	10
Ideal Flow (vphpl)	1650	1650	1900	1900	1650	1650	1900	1900	1900	1765	1900	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.982			0.874			0.991	
Flt Protected					0.997			0.997			0.955	
Satd. Flow (prot)	0	1618	0	0	1584	0	0	1623	0	0	1763	0
Flt Permitted					0.997			0.997			0.955	
Satd. Flow (perm)	0	1618	0	0	1584	0	0	1623	0	0	1763	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		181.6			170.9			157.9			161.8	
Travel Time (s)		13.1			12.3			11.4			11.6	
Peak Hour 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
Adj. Flow (vph)	2	736	1	27	376	62	5	0	70	142	0	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	739	0	0	465	0	0	75	0	0	152	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	73.0%	ICU Level of Service D	
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	736	1	27	376	62	5	0	70	142	0	10
Future Volume (Veh/h)	2	736	1	27	376	62	5	0	70	142	0	10
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	2	736	1	27	376	62	5	0	70	142	0	10
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	438			737			1212	1232	736	1272	1202	407
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	438			737			1212	1232	736	1272	1202	407
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			97			97	100	83	0	100	98
cM capacity (veh/h)	1122			869			153	171	419	117	178	644

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	739	465	75	152
Volume Left	2	27	5	142
Volume Right	1	62	70	10
cSH	1122	869	375	124
Volume to Capacity	0.00	0.03	0.20	1.23
Queue Length 95th (m)	0.0	0.8	5.9	76.0
Control Delay (s)	0.0	0.9	17.0	220.9
Lane LOS	A	A	C	F
Approach Delay (s)	0.0	0.9	17.0	220.9
Approach LOS			C	F

Intersection Summary				
Average Delay			24.7	
Intersection Capacity Utilization			73.0%	ICU Level of Service
Analysis Period (min)			15	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	942	5	93	452	18	11	24	136	57	20	4
Future Volume (vph)	1	942	5	93	452	18	11	24	136	57	20	4
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.999			0.996			0.893			0.993	
Flt Protected					0.992			0.997			0.966	
Satd. Flow (prot)	0	1518	0	0	1501	0	0	1353	0	0	1458	0
Flt Permitted					0.992			0.997			0.966	
Satd. Flow (perm)	0	1518	0	0	1501	0	0	1353	0	0	1458	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		377.6			166.4			109.1			148.1	
Travel Time (s)		27.2			12.0			7.9			10.7	
Peak Hour 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
Adj. Flow (vph)	1	942	5	93	452	18	11	24	136	57	20	4
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	948	0	0	563	0	0	171	0	0	81	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary				
Area Type:	Other			
Control Type: Unsignalized				
Intersection Capacity Utilization	129.4%		ICU Level of Service H	
Analysis Period (min)	15			

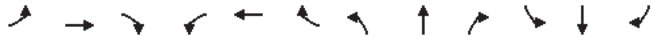
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	942	5	93	452	18	11	24	136	57	20	4
Future Volume (Veh/h)	1	942	5	93	452	18	11	24	136	57	20	4
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	1	942	5	93	452	18	11	24	136	57	20	4
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	470			947			1608	1602	944	1742	1596	461
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	470			947			1608	1602	944	1742	1596	461
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			87			83	74	57	0	78	99
cM capacity (veh/h)	1092			725			63	92	318	28	93	600

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	948	563	171	81
Volume Left	1	93	11	57
Volume Right	5	18	136	4
cSH	1092	725	198	36
Volume to Capacity	0.00	0.13	0.86	2.25
Queue Length 95th (m)	0.0	3.5	51.9	72.0
Control Delay (s)	0.0	3.4	81.7	810.2
Lane LOS	A	A	F	F
Approach Delay (s)	0.0	3.4	81.7	810.2
Approach LOS			F	F

Intersection Summary					
Average Delay			46.2		
Intersection Capacity Utilization			129.4%	ICU Level of Service	H
Analysis Period (min)			15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	1167	5	10	526	13	15	7	34	39	8	20
Future Volume (vph)	6	1167	5	10	526	13	15	7	34	39	8	20
Ideal Flow (vphpl)	1650	1650	1900	1900	1650	1650	1900	1900	1900	1765	1900	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.999			0.997			0.918			0.960	
Flt Protected					0.999			0.987			0.972	
Satd. Flow (prot)	0	1616	0	0	1611	0	0	1688	0	0	1738	0
Flt Permitted					0.999			0.987			0.972	
Satd. Flow (perm)	0	1616	0	0	1611	0	0	1688	0	0	1738	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		228.8			210.5			130.2			114.8	
Travel Time (s)		16.5			15.2			9.4			8.3	
Peak Hour 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
Adj. Flow (vph)	6	1167	5	10	526	13	15	7	34	39	8	20
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1178	0	0	549	0	0	56	0	0	67	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary					
Area Type:	Other				
Control Type: Unsignalized					
Intersection Capacity Utilization	88.9%			ICU Level of Service	E
Analysis Period (min)	15				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	1167	5	10	526	13	15	7	34	39	8	20
Future Volume (Veh/h)	6	1167	5	10	526	13	15	7	34	39	8	20
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	6	1167	5	10	526	13	15	7	34	39	8	20
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	539			1172			1758	1740	1170	1772	1736	532
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	539			1172			1758	1740	1170	1772	1736	532
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			98			74	92	86	24	91	96
cM capacity (veh/h)	1029			596			58	85	235	51	85	547

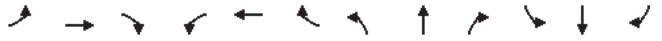
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	1178	549	56	67
Volume Left	6	10	15	39
Volume Right	5	13	34	20
cSH	1029	596	116	75
Volume to Capacity	0.01	0.02	0.48	0.89
Queue Length 95th (m)	0.1	0.4	17.5	36.3
Control Delay (s)	0.2	0.5	62.5	170.4
Lane LOS	A	A	F	F
Approach Delay (s)	0.2	0.5	62.5	170.4
Approach LOS			F	F

Intersection Summary				
Average Delay			8.3	
Intersection Capacity Utilization			88.9%	ICU Level of Service E
Analysis Period (min)			15	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	1228	5	10	513	13	15	7	34	39	8	20
Future Volume (vph)	6	1228	5	10	513	13	15	7	34	39	8	20
Ideal Flow (vphpl)	1650	1650	1900	1900	1650	1650	1900	1900	1900	1765	1900	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.999			0.997			0.918			0.960	
Flt Protected					0.999			0.987			0.972	
Satd. Flow (prot)	0	1616	0	0	1611	0	0	1688	0	0	1738	0
Flt Permitted					0.999			0.987			0.972	
Satd. Flow (perm)	0	1616	0	0	1611	0	0	1688	0	0	1738	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		210.5			96.4			148.9			129.5	
Travel Time (s)		15.2			6.9			10.7			9.3	
Peak Hour 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
Adj. Flow (vph)	6	1228	5	10	513	13	15	7	34	39	8	20
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1239	0	0	536	0	0	56	0	0	67	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary				
Area Type:	Other			
Control Type: Unsignalized				
Intersection Capacity Utilization 92.5%				ICU Level of Service F
Analysis Period (min) 15				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	1228	5	10	513	13	15	7	34	39	8	20
Future Volume (Veh/h)	6	1228	5	10	513	13	15	7	34	39	8	20
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	6	1228	5	10	513	13	15	7	34	39	8	20
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	526			1233			1806	1788	1230	1820	1784	520
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	526			1233			1806	1788	1230	1820	1784	520
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			98			72	91	84	16	90	96
cM capacity (veh/h)	1041			565			54	79	216	46	80	556

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	1239	536	56	67
Volume Left	6	10	15	39
Volume Right	5	13	34	20
cSH	1041	565	107	68
Volume to Capacity	0.01	0.02	0.53	0.98
Queue Length 95th (m)	0.1	0.4	19.3	39.4
Control Delay (s)	0.2	0.5	71.3	205.4
Lane LOS	A	A	F	F
Approach Delay (s)	0.2	0.5	71.3	205.4
Approach LOS			F	F

Intersection Summary				
Average Delay			9.6	
Intersection Capacity Utilization			92.5%	ICU Level of Service
Analysis Period (min)			15	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	33	0	13	14	0	43	7	265	5	17	312	20
Future Volume (vph)	33	0	13	14	0	43	7	265	5	17	312	20
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.962			0.898			0.998			0.992	
Flt Protected		0.965			0.988			0.999			0.998	
Satd. Flow (prot)	0	1411	0	0	1348	0	0	1515	0	0	1504	0
Flt Permitted		0.965			0.988			0.999			0.998	
Satd. Flow (perm)	0	1411	0	0	1348	0	0	1515	0	0	1504	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		174.2			151.1			248.8			212.1	
Travel Time (s)		12.5			10.9			17.9			15.3	
Peak Hour 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
Adj. Flow (vph)	33	0	13	14	0	43	7	265	5	17	312	20
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	46	0	0	57	0	0	277	0	0	349	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary				
Area Type:	Other			
Control Type: Unsignalized				
Intersection Capacity Utilization	46.1%		ICU Level of Service A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	33	0	13	14	0	43	7	265	5	17	312	20
Future Volume (Veh/h)	33	0	13	14	0	43	7	265	5	17	312	20
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	33	0	13	14	0	43	7	265	5	17	312	20
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	680	640	322	650	648	268	332			270		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	680	640	322	650	648	268	332			270		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	90	100	98	96	100	94	99			99		
cM capacity (veh/h)	339	386	719	370	382	771	1227			1293		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	46	57	277	349
Volume Left	33	14	7	17
Volume Right	13	43	5	20
cSH	399	609	1227	1293
Volume to Capacity	0.12	0.09	0.01	0.01
Queue Length 95th (m)	3.1	2.5	0.1	0.3
Control Delay (s)	15.2	11.5	0.3	0.5
Lane LOS	C	B	A	A
Approach Delay (s)	15.2	11.5	0.3	0.5
Approach LOS	C	B		

Intersection Summary					
Average Delay			2.2		
Intersection Capacity Utilization			46.1%	ICU Level of Service	A
Analysis Period (min)			15		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	33	0	13	14	0	43	7	201	5	17	302	20
Future Volume (vph)	33	0	13	14	0	43	7	201	5	17	302	20
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.962			0.898			0.997			0.992	
Flt Protected		0.965			0.988			0.998			0.997	
Satd. Flow (prot)	0	1411	0	0	1348	0	0	1512	0	0	1503	0
Flt Permitted		0.965			0.988			0.998			0.997	
Satd. Flow (perm)	0	1411	0	0	1348	0	0	1512	0	0	1503	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		117.0			126.5			247.2			248.8	
Travel Time (s)		8.4			9.1			17.8			17.9	
Peak Hour 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
Adj. Flow (vph)	33	0	13	14	0	43	7	201	5	17	302	20
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	46	0	0	57	0	0	213	0	0	339	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary				
Area Type:	Other			
Control Type: Unsignalized				
Intersection Capacity Utilization	44.4%		ICU Level of Service	A
Analysis Period (min)	15			

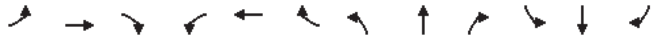
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	33	0	13	14	0	43	7	201	5	17	302	20
Future Volume (Veh/h)	33	0	13	14	0	43	7	201	5	17	302	20
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	33	0	13	14	0	43	7	201	5	17	302	20
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	606	566	312	576	574	204	322			206		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	606	566	312	576	574	204	322			206		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	91	100	98	97	100	95	99			99		
cM capacity (veh/h)	382	426	728	415	422	837	1238			1365		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	46	57	213	339
Volume Left	33	14	7	17
Volume Right	13	43	5	20
cSH	442	670	1238	1365
Volume to Capacity	0.10	0.09	0.01	0.01
Queue Length 95th (m)	2.8	2.2	0.1	0.3
Control Delay (s)	14.1	10.9	0.3	0.5
Lane LOS	B	B	A	A
Approach Delay (s)	14.1	10.9	0.3	0.5
Approach LOS	B	B		

Intersection Summary				
Average Delay			2.3	
Intersection Capacity Utilization			44.4%	ICU Level of Service
Analysis Period (min)			15	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	125	0	40	19	0	58	14	371	7	24	337	50
Future Volume (vph)	125	0	40	19	0	58	14	371	7	24	337	50
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.967			0.898			0.998			0.984	
Flt Protected		0.964			0.988			0.998			0.997	
Satd. Flow (prot)	0	1417	0	0	1348	0	0	1514	0	0	1491	0
Flt Permitted		0.964			0.988			0.998			0.997	
Satd. Flow (perm)	0	1417	0	0	1348	0	0	1514	0	0	1491	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		128.4			112.6			130.6			488.0	
Travel Time (s)		9.2			8.1			9.4			35.1	
Peak Hour 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
Adj. Flow (vph)	125	0	40	19	0	58	14	371	7	24	337	50
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	165	0	0	77	0	0	392	0	0	411	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary				
Area Type:	Other			
Control Type: Unsignalized				
Intersection Capacity Utilization 62.5%			ICU Level of Service B	
Analysis Period (min) 15				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	125	0	40	19	0	58	14	371	7	24	337	50
Future Volume (Veh/h)	125	0	40	19	0	58	14	371	7	24	337	50
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	125	0	40	19	0	58	14	371	7	24	337	50
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	870	816	362	852	838	374	387			378		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	870	816	362	852	838	374	387			378		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	48	100	94	93	100	91	99			98		
cM capacity (veh/h)	242	301	683	257	293	672	1171			1180		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	165	77	392	411
Volume Left	125	19	14	24
Volume Right	40	58	7	50
cSH	287	480	1171	1180
Volume to Capacity	0.57	0.16	0.01	0.02
Queue Length 95th (m)	26.6	4.5	0.3	0.5
Control Delay (s)	33.2	13.9	0.4	0.7
Lane LOS	D	B	A	A
Approach Delay (s)	33.2	13.9	0.4	0.7
Approach LOS	D	B		

Intersection Summary					
Average Delay			6.7		
Intersection Capacity Utilization			62.5%	ICU Level of Service	B
Analysis Period (min)			15		



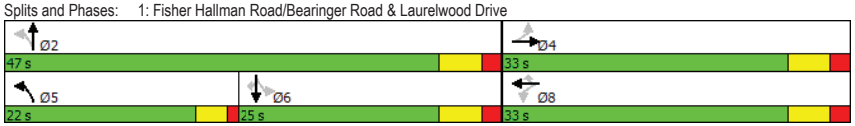
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	145	210	293	107	367	31	481	378	89	30	759	390
Future Volume (vph)	145	210	293	107	367	31	481	378	89	30	759	390
Ideal Flow (vphpl)	1775	1650	1650	1775	1900	1750	1775	1775	1775	1775	1900	1750
Storage Length (m)	85.0		0.0	90.0		90.0	90.0		0.0	60.0		60.0
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (m)	35.0			7.5			45.0			70.0		
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	0.98		1.00		0.98		0.99		1.00		0.98
Frt		0.913				0.850		0.971				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1653	1436	0	1188	1845	1488	1506	1651	0	1686	1881	1430
Flt Permitted	0.373			0.218			0.174			0.495		
Satd. Flow (perm)	648	1436	0	271	1845	1451	276	1651	0	876	1881	1395
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		98				95		23				218
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		133.2			228.2			160.2			234.1	
Travel Time (s)		9.6			16.4			11.5			16.9	
Confl. Peds. (#/hr)	2		7	7		2	2		3	3		2
Peak Hour 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
Heavy Vehicles (%)	2%	1%	4%	42%	3%	0%	12%	1%	16%	0%	1%	4%
Adj. Flow (vph)	145	210	293	107	367	31	481	378	89	30	759	390
Shared Lane Traffic (%)												
Lane Group Flow (vph)	145	503	0	107	367	31	481	467	0	30	759	390
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA		Perm	NA	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8		8	2			6		6
Detector Phase	4	4		8	8	8	5	2		6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	24.0	24.0		30.0	30.0	30.0	9.5	24.0		24.0	24.0	24.0
Total Split (s)	33.0	33.0		33.0	33.0	33.0	22.0	47.0		25.0	25.0	25.0
Total Split (%)	41.3%	41.3%		41.3%	41.3%	41.3%	27.5%	58.8%		31.3%	31.3%	31.3%
Maximum Green (s)	27.0	27.0		27.0	27.0	27.0	18.0	41.0		19.0	19.0	19.0
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	3.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	1.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-2.0	0.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag							Lead			Lag	Lag	Lag
Lead-Lag Optimize?							Yes			Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None	None	None	Max		Max	Max	Max
Walk Time (s)	7.0	7.0		7.0	7.0	7.0		7.0		7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	11.0		11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0		0	0	0		0		0	0	0
Act Effct Green (s)	29.0	29.0		29.0	29.0	29.0	43.0	43.0		21.0	21.0	21.0
Actuated g/C Ratio	0.36	0.36		0.36	0.36	0.36	0.54	0.54		0.26	0.26	0.26
v/c Ratio	0.62	0.86		1.09	0.55	0.05	1.13	0.52		0.13	1.54	0.74

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	35.0	36.2		149.5	24.1	0.2	107.2	13.8		24.4	278.9	21.7
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	35.0	36.2		149.5	24.1	0.2	107.2	13.8		24.4	278.9	21.7
LOS	C	D		F	C	A	F	B		C	F	C
Approach Delay		35.9			49.2			61.2			187.3	
Approach LOS		D			D			E			F	
Queue Length 50th (m)	18.7	60.4		~19.6	45.8	0.0	~75.9	42.3		3.7	~173.1	24.1
Queue Length 95th (m)	#44.8	#119.3		#50.7	72.5	0.0	#134.8	68.0		10.5	#240.0	#67.4
Internal Link Dist (m)		109.2			204.2			136.2			210.1	
Turn Bay Length (m)	85.0			90.0		90.0	90.0			60.0		60.0
Base Capacity (vph)	234	583		98	668	586	425	898		229	493	526
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.62	0.86		1.09	0.55	0.05	1.13	0.52		0.13	1.54	0.74

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Natural Cycle: 110			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.54			
Intersection Signal Delay: 99.7		Intersection LOS: F	
Intersection Capacity Utilization 122.0%		ICU Level of Service H	
Analysis Period (min) 15			

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

Splits and Phases: 1: Fisher Hallman Road/Bearinger Road & Laurelwood Drive



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	145	210	293	107	367	31	481	378	89	30	759	390
Future Volume (vph)	145	210	293	107	367	31	481	378	89	30	759	390
Ideal Flow (vphpl)	1775	1650	1650	1775	1900	1750	1775	1775	1775	1775	1900	1750
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.98		1.00	1.00	0.98	1.00	0.99		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.91		1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1650	1435		1182	1845	1451	1506	1652		1680	1881	1395
Flt Permitted	0.37	1.00		0.22	1.00	1.00	0.17	1.00		0.50	1.00	1.00
Satd. Flow (perm)	648	1435		272	1845	1451	276	1652		876	1881	1395
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	145	210	293	107	367	31	481	378	89	30	759	390
RTOR Reduction (vph)	0	62	0	0	0	20	0	11	0	0	0	161
Lane Group Flow (vph)	145	441	0	107	367	11	481	456	0	30	759	229
Confl. Peds. (#/hr)	2		7	7		2	2		3	3		2
Heavy Vehicles (%)	2%	1%	4%	42%	3%	0%	12%	1%	16%	0%	1%	4%
Turn Type	Perm	NA		Perm	NA	Perm	pm+pt	NA		Perm	NA	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8		8	2			6		6
Actuated Green, G (s)	27.0	27.0		27.0	27.0	27.0	41.0	41.0		19.0	19.0	19.0
Effective Green, g (s)	29.0	29.0		29.0	29.0	29.0	41.0	43.0		21.0	21.0	21.0
Actuated g/C Ratio	0.36	0.36		0.36	0.36	0.36	0.51	0.54		0.26	0.26	0.26
Clearance Time (s)	6.0	6.0		6.0	6.0	6.0	4.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	234	520		98	668	525	418	887		229	493	366
v/s Ratio Prot		0.31			0.20		c0.26	0.28			c0.40	
v/s Ratio Perm	0.22			c0.39		0.01	0.33			0.03		0.16
v/c Ratio	0.62	0.85		1.09	0.55	0.02	1.15	0.51		0.13	1.54	0.63
Uniform Delay, d1	21.0	23.5		25.5	20.3	16.4	21.5	11.8		22.5	29.5	26.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	4.8	12.1		117.9	0.9	0.0	92.0	2.1		1.2	252.8	7.9
Delay (s)	25.8	35.6		143.4	21.2	16.4	113.6	14.0		23.7	282.3	33.9
Level of Service	C	D		F	C	B	F	B		C	F	C
Approach Delay (s)		33.4			46.8			64.5			193.6	
Approach LOS		C			D			E			F	

Intersection Summary					
HCM 2000 Control Delay	102.0	HCM 2000 Level of Service	F		
HCM 2000 Volume to Capacity ratio	1.25				
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.0		
Intersection Capacity Utilization	122.0%	ICU Level of Service	H		
Analysis Period (min)	15				

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	82	35	717	21	33	14	1269	322	43	9	347	227
Future Volume (vph)	82	35	717	21	33	14	1269	322	43	9	347	227
Ideal Flow (vphpl)	1650	1650	1750	1550	1550	1550	1775	1650	1650	1550	1550	1550
Storage Length (m)	0.0		50.0	0.0		0.0	25.0		0.0	0.0		50.0
Storage Lanes	0		1	0		0	1		0	0		0
Taper Length (m)	0.0			0.0			35.0			0.0		
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			0.850		0.972			0.982			0.947	
Flt Protected		0.966			0.985		0.950				0.999	
Satd. Flow (prot)	0	1537	1473	0	1435	0	1606	1556	0	0	1412	0
Flt Permitted		0.966			0.985		0.950				0.999	
Satd. Flow (perm)	0	1537	1473	0	1435	0	1606	1556	0	0	1412	0
Link Speed (k/h)		60			50			50			50	
Link Distance (m)		1012.1			151.5			545.8			326.3	
Travel Time (s)		60.7			10.9			39.3			23.5	
Confl. Peds. (#/hr)	3		1	1		3	3		1	1		3
Peak Hour 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
Heavy Vehicles (%)	4%	3%	1%	0%	7%	0%	5%	4%	5%	20%	2%	6%
Adj. Flow (vph)	82	35	717	21	33	14	1269	322	43	9	347	227
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	117	717	0	68	0	1269	365	0	0	583	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	139.4%	ICU Level of Service	H
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	82	35	717	21	33	14	1269	322	43	9	347	227
Future Volume (vph)	82	35	717	21	33	14	1269	322	43	9	347	227
Peak Hour 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
Hourly flow rate (vph)	82	35	717	21	33	14	1269	322	43	9	347	227

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1
Volume Total (vph)	117	717	68	1269	365	583
Volume Left (vph)	82	0	21	1269	0	9
Volume Right (vph)	0	717	14	0	43	227
Hadj (s)	0.41	-0.68	0.00	0.58	-0.01	-0.17
Departure Headway (s)	8.5	7.4	10.0	8.6	8.0	7.8
Degree Utilization, x	0.28	1.48	0.19	3.03	0.81	1.27
Capacity (veh/h)	419	489	354	433	445	466
Control Delay (s)	13.5	244.1	15.4	934.8	35.9	162.4
Approach Delay (s)	211.8		15.4	734.0		162.4
Approach LOS	F		C	F		F

Intersection Summary					
Delay	471.8				
Level of Service	F				
Intersection Capacity Utilization	139.4%	ICU Level of Service		H	
Analysis Period (min)	15				

Intersection	
Intersection Delay, s/veh	477.6
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	82	35	717	21	33	14	1269	322	43	9	347	227
Future Vol, veh/h	82	35	717	21	33	14	1269	322	43	9	347	227
Peak Hour 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
Heavy Vehicles, %	4	3	1	0	7	0	5	4	5	20	2	6
Mvmt Flow	82	35	717	21	33	14	1269	322	43	9	347	227
Number of Lanes	0	1	1	0	1	0	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	2
HCM Control Delay	214.4	19.8	734.6	187
HCM LOS	F	C	F	F

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	100%	0%	70%	0%	31%	2%
Vol Thru, %	0%	88%	30%	0%	49%	60%
Vol Right, %	0%	12%	0%	100%	21%	39%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	1269	365	117	717	68	583
LT Vol	1269	0	82	0	21	9
Through Vol	0	322	35	0	33	347
RT Vol	0	43	0	717	14	227
Lane Flow Rate	1269	365	117	717	68	583
Geometry Grp	7	7	7	7	6	6
Degree of Util (X)	3.013	0.806	0.275	1.471	0.191	1.312
Departure Headway (Hd)	10.213	9.583	9.561	8.44	13.646	9.933
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	368	380	378	437	265	373
Service Time	7.913	7.283	7.261	6.14	11.646	7.933
HCM Lane V/C Ratio	3.448	0.961	0.31	1.641	0.257	1.563
HCM Control Delay	933.8	42	15.8	246.8	19.8	187
HCM Lane LOS	F	E	C	F	C	F
HCM 95th-tile Q	93	7	1.1	32.4	0.7	22.2

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	115	59	614	258	82	231
Future Volume (vph)	115	59	614	258	82	231
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Storage Length (m)		0.0	0.0		0.0	30.0
Storage Lanes		0	0		1	0
Taper Length (m)			0.0		0.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.954				0.900	
Flt Protected				0.966	0.987	
Satd. Flow (prot)	1513	0	0	1549	1491	0
Flt Permitted				0.966	0.987	
Satd. Flow (perm)	1513	0	0	1549	1491	0
Link Speed (k/h)	80			80	50	
Link Distance (m)	1516.2			424.2	223.3	
Travel Time (s)	68.2			19.1	16.1	
Confl. Peds. (#/hr)		1	1			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	6%	2%	5%	14%	2%
Adj. Flow (vph)	115	59	614	258	82	231
Shared Lane Traffic (%)						
Lane Group Flow (vph)	174	0	0	872	313	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 96.2%		ICU Level of Service F	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	115	59	614	258	82	231
Future Volume (Veh/h)	115	59	614	258	82	231
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	115	59	614	258	82	231
Pedestrians					1	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			175		1632	146
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			175		1632	146
tC, single (s)			4.1		6.5	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			56		0	74
cM capacity (veh/h)			1400		59	901

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	174	872	313
Volume Left	0	614	82
Volume Right	59	0	231
cSH	1700	1400	189
Volume to Capacity	0.10	0.44	1.66
Queue Length 95th (m)	0.0	18.3	168.6
Control Delay (s)	0.0	8.2	361.5
Lane LOS		A	F
Approach Delay (s)	0.0	8.2	361.5
Approach LOS			F

Intersection Summary			
Average Delay	88.5		
Intersection Capacity Utilization	96.2%	ICU Level of Service	F
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	61	177	107	16	111	175
Future Volume (vph)	61	177	107	16	111	175
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.900		0.982			
Flt Protected	0.987					0.981
Satd. Flow (prot)	1413	0	1479	0	0	1526
Flt Permitted	0.987					0.981
Satd. Flow (perm)	1413	0	1479	0	0	1526
Link Speed (k/h)	80		80			80
Link Distance (m)	1200.3		1761.7			72.7
Travel Time (s)	54.0		79.3			3.3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	8%	12%	11%	0%	3%	8%
Adj. Flow (vph)	61	177	107	16	111	175
Shared Lane Traffic (%)						
Lane Group Flow (vph)	238	0	123	0	0	286
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 50.7%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	61	177	107	16	111	175
Future Volume (Veh/h)	61	177	107	16	111	175
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	61	177	107	16	111	175
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	512	115			123	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	512	115			123	
tC, single (s)	6.5	6.3			4.1	
tC, 2 stage (s)						
tF (s)	3.6	3.4			2.2	
p0 queue free %	87	81			92	
cM capacity (veh/h)	473	911			1458	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	238	123	286
Volume Left	61	0	111
Volume Right	177	16	0
cSH	736	1700	1458
Volume to Capacity	0.32	0.07	0.08
Queue Length 95th (m)	11.2	0.0	2.0
Control Delay (s)	12.2	0.0	3.4
Lane LOS	B		A
Approach Delay (s)	12.2	0.0	3.4
Approach LOS	B		

Intersection Summary			
Average Delay		6.0	
Intersection Capacity Utilization		50.7%	ICU Level of Service A
Analysis Period (min)		15	



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	82	73	45	37	127	112
Future Volume (vph)	82	73	45	37	127	112
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.936		0.939			
Flt Protected	0.974					0.974
Satd. Flow (prot)	1499	0	1504	0	0	1514
Flt Permitted	0.974					0.974
Satd. Flow (perm)	1499	0	1504	0	0	1514
Link Speed (k/h)	80		80			80
Link Distance (m)	605.5		233.8			1761.7
Travel Time (s)	27.2		10.5			79.3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	5%	10%	3%	3%	8%	4%
Adj. Flow (vph)	82	73	45	37	127	112
Shared Lane Traffic (%)						
Lane Group Flow (vph)	155	0	82	0	0	239
Sign Control	Stop		Free			Free

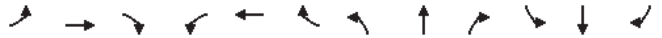
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 37.9%			ICU Level of Service A
Analysis Period (min) 15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	82	73	45	37	127	112
Future Volume (Veh/h)	82	73	45	37	127	112
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	82	73	45	37	127	112
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	430	64			82	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	430	64			82	
tC, single (s)	6.4	6.3			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.4			2.3	
p0 queue free %	84	93			91	
cM capacity (veh/h)	527	979			1478	

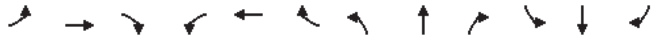
Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	155	82	239
Volume Left	82	0	127
Volume Right	73	37	0
cSH	674	1700	1478
Volume to Capacity	0.23	0.05	0.09
Queue Length 95th (m)	7.1	0.0	2.3
Control Delay (s)	11.9	0.0	4.4
Lane LOS	B		A
Approach Delay (s)	11.9	0.0	4.4
Approach LOS	B		

Intersection Summary			
Average Delay		6.1	
Intersection Capacity Utilization		37.9%	ICU Level of Service A
Analysis Period (min)		15	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	26	2	316	69	247	4	231	240	143	295	16
Future Volume (vph)	6	26	2	316	69	247	4	231	240	143	295	16
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		50.0	50.0		0.0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (m)	0.0			0.0			0.0			65.0		
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
Frt		0.992			0.947			0.932			0.995	
Flt Protected		0.991			0.976						0.984	
Satd. Flow (prot)	0	1501	0	0	1370	0	0	1377	0	0	1426	0
Flt Permitted		0.991			0.976						0.984	
Satd. Flow (perm)	0	1501	0	0	1370	0	0	1377	0	0	1426	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		187.7			400.3			488.0			394.6	
Travel Time (s)		13.5			28.8			35.1			28.4	
Peak Hour 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
Heavy Vehicles (%)	0%	2%	0%	6%	0%	4%	0%	7%	3%	4%	8%	0%
Adj. Flow (vph)	6	26	2	316	69	247	4	231	240	143	295	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	34	0	0	632	0	0	475	0	0	454	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	124.2%	ICU Level of Service H	
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	26	2	316	69	247	4	231	240	143	295	16
Future Volume (Veh/h)	6	26	2	316	69	247	4	231	240	143	295	16
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	6	26	2	316	69	247	4	231	240	143	295	16
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1230	1068	303	963	956	351	311			471		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1230	1068	303	963	956	351	311			471		
tC, single (s)	7.1	6.5	6.2	7.2	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.0	3.3	2.2			2.2		
p0 queue free %	91	86	100	0	69	64	100			87		
cM capacity (veh/h)	69	192	741	186	225	688	1261			1080		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	34	632	475	454
Volume Left	6	316	4	143
Volume Right	2	247	240	16
cSH	151	267	1261	1080
Volume to Capacity	0.23	2.37	0.00	0.13
Queue Length 95th (m)	6.6	402.7	0.1	3.6
Control Delay (s)	35.7	656.5	0.1	3.8
Lane LOS	E	F	A	A
Approach Delay (s)	35.7	656.5	0.1	3.8
Approach LOS	E	F		

Intersection Summary					
Average Delay		262.0			
Intersection Capacity Utilization		124.2%	ICU Level of Service		H
Analysis Period (min)		15			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	103	125	162	192	244	139	322	170	112	309	25
Future Volume (vph)	15	103	125	162	192	244	139	322	170	112	309	25
Ideal Flow (vphpl)	1775	1900	1750	1775	1650	1650	1775	1900	1750	1775	1650	1650
Storage Length (m)	20.0		20.0	25.0		0.0	65.0		30.0	25.0		0.0
Storage Lanes	1		1	1		0	1		1	1		0
Taper Length (m)	35.0			10.0			80.0			35.0		
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	0.93		0.94	0.97	0.92		0.99		0.94	0.98	1.00	
Frt			0.850		0.916				0.850		0.989	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1591	1810	1403	1561	1284	0	1606	1776	1430	1653	1524	0
Flt Permitted	0.257			0.690			0.520			0.395		
Satd. Flow (perm)	398	1810	1323	1096	1284	0	873	1776	1339	671	1524	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			125		109				170		8	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		123.5			178.3			236.9			930.8	
Travel Time (s)		8.9			12.8			17.1			67.0	
Confl. Peds. (#/hr)	79		23	23		79	9		27	27		9
Peak Hour 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
Heavy Vehicles (%)	6%	5%	6%	8%	9%	7%	5%	7%	4%	2%	6%	17%
Adj. Flow (vph)	15	103	125	162	192	244	139	322	170	112	309	25
Shared Lane Traffic (%)												
Lane Group Flow (vph)	15	103	125	162	436	0	139	322	170	112	334	0
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2		2	6		
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5		9.5	22.5	22.5	9.5	22.5	
Total Split (s)	22.5	22.5	22.5	22.5	22.5		10.4	24.5	24.5	13.0	27.1	
Total Split (%)	37.5%	37.5%	37.5%	37.5%	37.5%		17.3%	40.8%	40.8%	21.7%	45.2%	
Maximum Green (s)	18.0	18.0	18.0	18.0	18.0		5.9	20.0	20.0	8.5	22.6	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	
Walk Time (s)	7.0	7.0	7.0	7.0	7.0			7.0	7.0		7.0	
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0			11.0	11.0		11.0	
Pedestrian Calls (#/hr)	0	0	0	0	0			0	0		0	
Act Effct Green (s)	18.0	18.0	18.0	18.0	18.0		25.9	20.0	20.0	31.1	22.6	
Actuated g/C Ratio	0.30	0.30	0.30	0.30	0.30		0.43	0.33	0.33	0.52	0.38	
v/c Ratio	0.13	0.19	0.26	0.49	0.95		0.31	0.54	0.30	0.23	0.58	
Control Delay	18.5	16.8	5.3	23.5	49.8		9.2	20.5	4.5	7.9	19.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	18.5	16.8	5.3	23.5	49.8		9.2	20.5	4.5	7.9	19.4	
LOS	B	B	A	C	D		A	C	A	A	B	
Approach Delay		11.0			42.7			13.7			16.5	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		B			D			B			B	
Queue Length 50th (m)	1.3	8.7	0.0	15.2	37.5		7.1	29.7	0.0	5.6	29.0	
Queue Length 95th (m)	5.4	18.9	10.1	31.9	#91.3		14.5	52.1	11.1	12.0	52.6	
Internal Link Dist (m)		99.5			154.3			212.9			906.8	
Turn Bay Length (m)	20.0		20.0	25.0			65.0		30.0	25.0		
Base Capacity (vph)	119	543	484	328	461		448	592	559	486	579	
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Reduced v/c Ratio	0.13	0.19	0.26	0.49	0.95		0.31	0.54	0.30	0.23	0.58	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 60			
Control Type: Pretimed			
Maximum v/c Ratio: 0.95			
Intersection Signal Delay: 23.0		Intersection LOS: C	
Intersection Capacity Utilization 71.8%		ICU Level of Service C	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 7: Erbsville Road & Laurelwood Drive



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	103	125	162	192	244	139	322	170	112	309	25
Future Volume (vph)	15	103	125	162	192	244	139	322	170	112	309	25
Ideal Flow (vphpl)	1775	1900	1750	1775	1650	1650	1775	1900	1750	1775	1650	1650
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.94	1.00	0.92		1.00	1.00	0.94	1.00	1.00	
Flpb, ped/bikes	0.95	1.00	1.00	0.97	1.00		1.00	1.00	1.00	0.99	1.00	
Frt	1.00	1.00	0.85	1.00	0.92		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1505	1810	1323	1509	1284		1599	1776	1339	1639	1523	
Flt Permitted	0.26	1.00	1.00	0.69	1.00		0.52	1.00	1.00	0.40	1.00	
Satd. Flow (perm)	407	1810	1323	1097	1284		874	1776	1339	682	1523	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	15	103	125	162	192	244	139	322	170	112	309	25
RTOR Reduction (vph)	0	0	88	0	76	0	0	0	113	0	5	0
Lane Group Flow (vph)	15	103	38	162	360	0	139	322	57	112	329	0
Confl. Peds. (#/hr)	79		23	23		79	9		27	27		9
Heavy Vehicles (%)	6%	5%	6%	8%	9%	7%	5%	7%	4%	2%	6%	17%
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2		2	6		
Actuated Green, G (s)	18.0	18.0	18.0	18.0	18.0		25.9	20.0	20.0	31.1	22.6	
Effective Green, g (s)	18.0	18.0	18.0	18.0	18.0		25.9	20.0	20.0	31.1	22.6	
Actuated g/C Ratio	0.30	0.30	0.30	0.30	0.30		0.43	0.33	0.33	0.52	0.38	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Lane Grp Cap (vph)	122	543	396	329	385		448	592	446	489	573	
v/s Ratio Prot		0.06			c0.28		c0.03	0.18		c0.03	c0.22	
v/s Ratio Perm	0.04		0.03	0.15			0.10		0.04	0.09		
v/c Ratio	0.12	0.19	0.09	0.49	0.93		0.31	0.54	0.13	0.23	0.57	
Uniform Delay, d1	15.3	15.6	15.1	17.2	20.4		10.6	16.3	13.9	7.9	14.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	2.1	0.8	0.5	5.2	32.0		1.8	3.6	0.6	1.1	4.1	
Delay (s)	17.3	16.4	15.6	22.4	52.4		12.4	19.9	14.5	9.0	19.0	
Level of Service	B	B	B	C	D		B	B	B	A	B	
Approach Delay (s)		16.0			44.3			16.8			16.5	
Approach LOS		B			D			B			B	

Intersection Summary					
HCM 2000 Control Delay	25.2	HCM 2000 Level of Service	C		
HCM 2000 Volume to Capacity ratio	0.68				
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	13.5		
Intersection Capacity Utilization	71.8%	ICU Level of Service	C		
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	360	34	147	727	325	32	25	83	182	45	31
Future Volume (vph)	21	360	34	147	727	325	32	25	83	182	45	31
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
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		0.989			0.963			0.920			0.984	
Flt Protected		0.997			0.994			0.989			0.966	
Satd. Flow (prot)	0	1490	0	0	1407	0	0	1380	0	0	1454	0
Flt Permitted		0.997			0.994			0.989			0.966	
Satd. Flow (perm)	0	1490	0	0	1407	0	0	1380	0	0	1454	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		213.7			555.1			104.8			136.8	
Travel Time (s)		15.4			40.0			7.5			9.8	
Confl. Peds. (#/hr)	10		4	4		10	7		10	10		7
Peak Hour 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
Heavy Vehicles (%)	0%	3%	0%	6%	6%	4%	0%	9%	1%	0%	0%	11%
Adj. Flow (vph)	21	360	34	147	727	325	32	25	83	182	45	31
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	415	0	0	1199	0	0	140	0	0	258	0
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Roundabout			
Intersection Capacity Utilization	142.9%	ICU Level of Service	H
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Traffic Volume (veh/h)	21	360	34	147	727	325	32	25	83	182	45	31
Future Volume (veh/h)	21	360	34	147	727	325	32	25	83	182	45	31
Peak Hour 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
Hourly flow rate (vph)	21	360	34	147	727	325	32	25	83	182	45	31
Approach Volume (veh/h)		415			1199			140			258	
Crossing Volume (veh/h)		374			78			563			906	
High Capacity (veh/h)		1032			1303			888			672	
High v/c (veh/h)		0.40			0.92			0.16			0.38	
Low Capacity (veh/h)		842			1087			714			526	
Low v/c (veh/h)		0.49			1.10			0.20			0.49	

Intersection Summary					
Maximum v/c High		0.92			
Maximum v/c Low		1.10			
Intersection Capacity Utilization	142.9%	ICU Level of Service		H	

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	105	23	123	209	19	45
Future Volume (vph)	105	23	123	209	19	45
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.976				0.905	
Flt Protected				0.982	0.985	
Satd. Flow (prot)	1572	0	0	1481	1514	0
Flt Permitted				0.982	0.985	
Satd. Flow (perm)	1572	0	0	1481	1514	0
Link Speed (k/h)	80			80	50	
Link Distance (m)	1200.3			667.7	811.2	
Travel Time (s)	54.0			30.0	58.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	0%	5%	12%	6%	3%
Adj. Flow (vph)	105	23	123	209	19	45
Shared Lane Traffic (%)						
Lane Group Flow (vph)	128	0	0	332	64	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	42.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	105	23	123	209	19	45
Future Volume (Veh/h)	105	23	123	209	19	45
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	105	23	123	209	19	45
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			128		572	116
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			128		572	116
tC, single (s)			4.1		6.5	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			91		96	95
cM capacity (veh/h)			1440		435	933

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	128	332	64
Volume Left	0	123	19
Volume Right	23	0	45
cSH	1700	1440	696
Volume to Capacity	0.08	0.09	0.09
Queue Length 95th (m)	0.0	2.2	2.4
Control Delay (s)	0.0	3.3	10.7
Lane LOS		A	B
Approach Delay (s)	0.0	3.3	10.7
Approach LOS			B

Intersection Summary			
Average Delay	3.4		
Intersection Capacity Utilization	42.6%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	8	128	137	15	6	210	162	125	1	134	0
Future Volume (vph)	0	8	128	137	15	6	210	162	125	1	134	0
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Storage Length (m)	0.0		0.0	50.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (m)	0.0			50.0			0.0			0.0		
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
Frt		0.873			0.995			0.966				
Flt Protected					0.958			0.979				
Satd. Flow (prot)	0	1353	0	0	1428	0	0	1452	0	0	1487	0
Flt Permitted					0.958			0.979				
Satd. Flow (perm)	0	1353	0	0	1428	0	0	1452	0	0	1487	0
Link Speed (k/h)		50			70			50			50	
Link Distance (m)		114.7			143.4			394.6			123.0	
Travel Time (s)		8.3			7.4			28.4			8.9	
Peak Hour 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
Heavy Vehicles (%)	0%	0%	0%	4%	0%	0%	0%	3%	0%	40%	4%	0%
Adj. Flow (vph)	0	8	128	137	15	6	210	162	125	1	134	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	136	0	0	158	0	0	497	0	0	135	0
Sign Control		Stop			Stop			Free			Free	

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	8	128	137	15	6	210	162	125	1	134	0
Future Volume (Veh/h)	0	8	128	137	15	6	210	162	125	1	134	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	0	8	128	137	15	6	210	162	125	1	134	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	794	843	134	912	780	224	134			287		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	794	843	134	912	780	224	134			287		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.5		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.6		
p0 queue free %	100	97	86	27	95	99	86			100		
cM capacity (veh/h)	261	259	920	189	281	820	1463			1086		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	136	158	497	135
Volume Left	0	137	210	1
Volume Right	128	6	125	0
cSH	800	201	1463	1086
Volume to Capacity	0.17	0.79	0.14	0.00
Queue Length 95th (m)	4.9	43.8	4.0	0.0
Control Delay (s)	10.4	67.9	4.1	0.1
Lane LOS	B	F	A	A
Approach Delay (s)	10.4	67.9	4.1	0.1
Approach LOS	B	F		

Intersection Summary				
Average Delay	15.3			
Intersection Capacity Utilization	77.0%	ICU Level of Service	D	
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	36	582	84	263	899	57	152	40	213	35	23	38
Future Volume (vph)	36	582	84	263	899	57	152	40	213	35	23	38
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.984			0.994			0.929			0.947	
Flt Protected		0.997			0.989			0.982			0.982	
Satd. Flow (prot)	0	1484	0	0	1478	0	0	1350	0	0	1441	0
Flt Permitted		0.997			0.989			0.982			0.982	
Satd. Flow (perm)	0	1484	0	0	1478	0	0	1350	0	0	1441	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		166.4			228.8			212.1			132.6	
Travel Time (s)		12.0			16.5			15.3			9.5	
Peak Hour 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
Heavy Vehicles (%)	0%	3%	0%	4%	3%	0%	7%	0%	4%	0%	0%	0%
Adj. Flow (vph)	36	582	84	263	899	57	152	40	213	35	23	38
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	702	0	0	1219	0	0	405	0	0	96	0
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Roundabout			
Intersection Capacity Utilization	171.9%	ICU Level of Service	H
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Traffic Volume (veh/h)	36	582	84	263	899	57	152	40	213	35	23	38
Future Volume (veh/h)	36	582	84	263	899	57	152	40	213	35	23	38
Peak Hour 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
Hourly flow rate (vph)	36	582	84	263	899	57	152	40	213	35	23	38
Approach Volume (veh/h)		702			1219			405			96	
Crossing Volume (veh/h)		321			228			653			1314#	
High Capacity (veh/h)		1076			1158			826			480	
High v/c (veh/h)		0.65			1.05			0.49			0.20	
Low Capacity (veh/h)		882			956			659			362	
Low v/c (veh/h)		0.80			1.28			0.61			0.27	

Intersection Summary					
Maximum v/c High		1.05			
Maximum v/c Low		1.28			
Intersection Capacity Utilization		171.9%	ICU Level of Service		H
# Crossing flow exceeds 1200, method is not applicable					

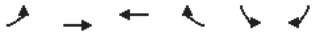
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	41	817	16	33	1242	58	9	2	20	23	2	30
Future Volume (vph)	41	817	16	33	1242	58	9	2	20	23	2	30
Ideal Flow (vphpl)	1650	1650	1900	1900	1650	1650	1900	1900	1900	1765	1900	1765
Lane Util. Factor	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		0.998			0.994			0.913			0.926	
Flt Protected		0.998			0.999			0.986			0.980	
Satd. Flow (prot)	0	1584	0	0	1602	0	0	1677	0	0	1723	0
Flt Permitted		0.998			0.999			0.986			0.980	
Satd. Flow (perm)	0	1584	0	0	1602	0	0	1677	0	0	1723	0
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		96.4			374.2			130.3			178.3	
Travel Time (s)		5.8			22.5			9.4			12.8	
Confl. Peds. (#/hr)	10					10						
Peak Hour 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
Heavy Vehicles (%)	0%	4%	2%	2%	2%	8%	2%	2%	2%	0%	2%	0%
Adj. Flow (vph)	41	817	16	33	1242	58	9	2	20	23	2	30
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	874	0	0	1333	0	0	31	0	0	55	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 104.0%		ICU Level of Service G	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	41	817	16	33	1242	58	9	2	20	23	2	30
Future Volume (Veh/h)	41	817	16	33	1242	58	9	2	20	23	2	30
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	41	817	16	33	1242	58	9	2	20	23	2	30
Pedestrians											10	
Lane Width (m)											3.6	
Walking Speed (m/s)											1.2	
Percent Blockage											1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1310			833			2275	2283	825	2275	2262	1281
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1310			833			2275	2283	825	2275	2262	1281
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	92			96			57	94	95	2	94	85
cM capacity (veh/h)	530			800			21	35	372	23	36	202

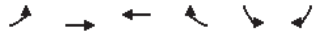
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	874	1333	31	55
Volume Left	41	33	9	23
Volume Right	16	58	20	30
cSH	530	800	57	46
Volume to Capacity	0.08	0.04	0.54	1.19
Queue Length 95th (m)	2.0	1.0	17.1	40.9
Control Delay (s)	2.4	1.9	125.4	332.8
Lane LOS	A	A	F	F
Approach Delay (s)	2.4	1.9	125.4	332.8
Approach LOS			F	F

Intersection Summary				
Average Delay		11.7		
Intersection Capacity Utilization		104.0%	ICU Level of Service	G
Analysis Period (min)		15		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	26	839	1315	54	26	26
Future Volume (vph)	26	839	1315	54	26	26
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.995		0.932	
Flt Protected		0.998			0.976	
Satd. Flow (prot)	0	1600	1588	0	1590	0
Flt Permitted		0.998			0.976	
Satd. Flow (perm)	0	1600	1588	0	1590	0
Link Speed (k/h)		60	60		50	
Link Distance (m)		374.2	1012.1		87.7	
Travel Time (s)		22.5	60.7		6.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	3%	3%	13%	2%	0%
Adj. Flow (vph)	26	839	1315	54	26	26
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	865	1369	0	52	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 93.5%		ICU Level of Service F	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	26	839	1315	54	26	26
Future Volume (Veh/h)	26	839	1315	54	26	26
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	26	839	1315	54	26	26
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1369				2233	1342
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1369				2233	1342
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	95				42	86
cM capacity (veh/h)	508				45	188

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	865	1369	52
Volume Left	26	0	26
Volume Right	0	54	26
cSH	508	1700	72
Volume to Capacity	0.05	0.81	0.72
Queue Length 95th (m)	1.3	0.0	26.7
Control Delay (s)	1.6	0.0	134.5
Lane LOS	A		F
Approach Delay (s)	1.6	0.0	134.5
Approach LOS			F

Intersection Summary				
Average Delay		3.7		
Intersection Capacity Utilization		93.5%	ICU Level of Service	F
Analysis Period (min)		15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	10	79	13	6	8	116	245	35	7	420	121
Future Volume (vph)	27	10	79	13	6	8	116	245	35	7	420	121
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Storage Length (m)	0.0		0.0	0.0		0.0	30.0		0.0	0.0		0.0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (m)	0.0			0.0			25.0			0.0		
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		0.908			0.960			0.988			0.970	
Flt Protected		0.988			0.976			0.986			0.999	
Satd. Flow (prot)	0	1363	0	0	1452	0	0	1470	0	0	1434	0
Flt Permitted		0.988			0.976			0.986			0.999	
Satd. Flow (perm)	0	1363	0	0	1452	0	0	1470	0	0	1434	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		77.1			66.0			326.3			223.3	
Travel Time (s)		5.6			4.8			23.5			16.1	
Confl. Peds. (#/hr)	7		1	1		7			5	5		
Peak Hour 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
Heavy Vehicles (%)	0%	0%	3%	0%	0%	0%	5%	2%	0%	0%	3%	11%
Adj. Flow (vph)	27	10	79	13	6	8	116	245	35	7	420	121
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	116	0	0	27	0	0	396	0	0	548	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 82.1%		ICU Level of Service E	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	27	10	79	13	6	8	116	245	35	7	420	121
Future Volume (Veh/h)	27	10	79	13	6	8	116	245	35	7	420	121
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	27	10	79	13	6	8	116	245	35	7	420	121
Pedestrians					5			1			7	
Lane Width (m)					3.6			3.6			3.6	
Walking Speed (m/s)					1.2			1.2			1.2	
Percent Blockage					0			0			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	21			90			472	152	56	309	187	17
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	21			90			472	152	56	309	187	17
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.4
p0 queue free %	98			99			47	66	97	98	39	88
cM capacity (veh/h)	1599			1517			219	717	1012	444	683	1030

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	116	27	396	548
Volume Left	27	13	116	7
Volume Right	79	8	35	121
cSH	1599	1517	437	733
Volume to Capacity	0.02	0.01	0.91	0.75
Queue Length 95th (m)	0.4	0.2	79.3	54.9
Control Delay (s)	1.8	3.6	54.0	23.0
Lane LOS	A	A	F	C
Approach Delay (s)	1.8	3.6	54.0	23.0
Approach LOS			F	C

Intersection Summary				
Average Delay		31.5		
Intersection Capacity Utilization		82.1%	ICU Level of Service	E
Analysis Period (min)		15		



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	36	3	184	56	4	142
Future Volume (vph)	36	3	184	56	4	142
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.990		0.968			
Flt Protected	0.956					0.999
Satd. Flow (prot)	1638	0	1566	0	0	1616
Flt Permitted	0.956					0.999
Satd. Flow (perm)	1638	0	1566	0	0	1616
Link Speed (k/h)	50		50			50
Link Distance (m)	135.9		143.4			554.5
Travel Time (s)	9.8		10.3			39.9
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	36	3	184	56	4	142
Shared Lane Traffic (%)						
Lane Group Flow (vph)	39	0	240	0	0	146
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 25.1%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	36	3	184	56	4	142
Future Volume (Veh/h)	36	3	184	56	4	142
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	36	3	184	56	4	142
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	362	212			240	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	362	212			240	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	94	100			100	
cM capacity (veh/h)	635	828			1327	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	39	240	146
Volume Left	36	0	4
Volume Right	3	56	0
cSH	647	1700	1327
Volume to Capacity	0.06	0.14	0.00
Queue Length 95th (m)	1.5	0.0	0.1
Control Delay (s)	10.9	0.0	0.2
Lane LOS	B		A
Approach Delay (s)	10.9	0.0	0.2
Approach LOS	B		

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	25.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	414	5	92	631	4	52
Future Volume (vph)	414	5	92	631	4	52
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.998				0.875	
Flt Protected				0.994	0.996	
Satd. Flow (prot)	1614	0	0	1608	1508	0
Flt Permitted				0.994	0.996	
Satd. Flow (perm)	1614	0	0	1608	1508	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	400.3			181.6	225.5	
Travel Time (s)	28.8			13.1	16.2	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	414	5	92	631	4	52
Shared Lane Traffic (%)						
Lane Group Flow (vph)	419	0	0	723	56	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	83.2%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	414	5	92	631	4	52
Future Volume (Veh/h)	414	5	92	631	4	52
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	414	5	92	631	4	52
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			419		1232	416
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			419		1232	416
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			92		98	92
cM capacity (veh/h)			1140		180	636

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	419	723	56
Volume Left	0	92	4
Volume Right	5	0	52
cSH	1700	1140	539
Volume to Capacity	0.25	0.08	0.10
Queue Length 95th (m)	0.0	2.1	2.8
Control Delay (s)	0.0	2.0	12.5
Lane LOS		A	B
Approach Delay (s)	0.0	2.0	12.5
Approach LOS			B

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	83.2%	ICU Level of Service	E
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	456	4	70	715	122	3	0	40	73	0	5
Future Volume (vph)	6	456	4	70	715	122	3	0	40	73	0	5
Ideal Flow (vphpl)	1650	1650	1900	1900	1650	1650	1900	1900	1900	1765	1900	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.999			0.982			0.874			0.991	
Flt Protected		0.999			0.996			0.997			0.955	
Satd. Flow (prot)	0	1614	0	0	1582	0	0	1623	0	0	1763	0
Flt Permitted		0.999			0.996			0.997			0.955	
Satd. Flow (perm)	0	1614	0	0	1582	0	0	1623	0	0	1763	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		181.6			170.9			154.4			161.8	
Travel Time (s)		13.1			12.3			11.1			11.6	
Peak Hour 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
Adj. Flow (vph)	6	456	4	70	715	122	3	0	40	73	0	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	466	0	0	907	0	0	43	0	0	78	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	105.6%	ICU Level of Service	G
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	456	4	70	715	122	3	0	40	73	0	5
Future Volume (Veh/h)	6	456	4	70	715	122	3	0	40	73	0	5
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	6	456	4	70	715	122	3	0	40	73	0	5
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	837			460			1391	1447	458	1426	1388	776
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	837			460			1391	1447	458	1426	1388	776
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			94			97	100	93	27	100	99
cM capacity (veh/h)	797			1101			112	122	603	100	133	397

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	466	907	43	78
Volume Left	6	70	3	73
Volume Right	4	122	40	5
cSH	797	1101	461	105
Volume to Capacity	0.01	0.06	0.09	0.74
Queue Length 95th (m)	0.2	1.6	2.5	31.9
Control Delay (s)	0.2	1.6	13.6	103.4
Lane LOS	A	A	B	F
Approach Delay (s)	0.2	1.6	13.6	103.4
Approach LOS			B	F

Intersection Summary				
Average Delay	6.9			
Intersection Capacity Utilization	105.6%	ICU Level of Service		G
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	558	8	158	871	59	34	3	112	33	3	2
Future Volume (vph)	3	558	8	158	871	59	34	3	112	33	3	2
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998			0.993			0.899			0.993	
Flt Protected					0.993			0.989			0.958	
Satd. Flow (prot)	0	1517	0	0	1498	0	0	1351	0	0	1446	0
Flt Permitted					0.993			0.989			0.958	
Satd. Flow (perm)	0	1517	0	0	1498	0	0	1351	0	0	1446	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		377.6			166.4			109.1			148.1	
Travel Time (s)		27.2			12.0			7.9			10.7	
Peak Hour 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
Adj. Flow (vph)	3	558	8	158	871	59	34	3	112	33	3	2
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	569	0	0	1088	0	0	149	0	0	38	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	128.4%	ICU Level of Service	H
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	558	8	158	871	59	34	3	112	33	3	2
Future Volume (Veh/h)	3	558	8	158	871	59	34	3	112	33	3	2
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	3	558	8	158	871	59	34	3	112	33	3	2
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	930			566			1788	1814	562	1898	1788	900
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	930			566			1788	1814	562	1898	1788	900
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			84			36	95	79	6	96	99
cM capacity (veh/h)	736			1006			53	66	526	35	68	337

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	569	1088	149	38
Volume Left	3	158	34	33
Volume Right	8	59	112	2
cSH	736	1006	166	38
Volume to Capacity	0.00	0.16	0.90	0.99
Queue Length 95th (m)	0.1	4.4	51.9	30.0
Control Delay (s)	0.1	4.1	100.2	300.3
Lane LOS	A	A	F	F
Approach Delay (s)	0.1	4.1	100.2	300.3
Approach LOS			F	F

Intersection Summary				
Average Delay	16.7			
Intersection Capacity Utilization	128.4%	ICU Level of Service		H
Analysis Period (min)	15			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	798	16	33	1158	37	9	2	20	22	2	9
Future Volume (vph)	17	798	16	33	1158	37	9	2	20	22	2	9
Ideal Flow (vphpl)	1650	1650	1900	1900	1650	1650	1900	1900	1900	1765	1900	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.997			0.996			0.913			0.963	
Flt Protected		0.999			0.999			0.986			0.968	
Satd. Flow (prot)	0	1611	0	0	1610	0	0	1677	0	0	1736	0
Flt Permitted		0.999			0.999			0.986			0.968	
Satd. Flow (perm)	0	1611	0	0	1610	0	0	1677	0	0	1736	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		228.8			210.5			133.9			114.8	
Travel Time (s)		16.5			15.2			9.6			8.3	
Peak Hour 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
Adj. Flow (vph)	17	798	16	33	1158	37	9	2	20	22	2	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	831	0	0	1228	0	0	31	0	0	33	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	102.6%	ICU Level of Service	G
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	17	798	16	33	1158	37	9	2	20	22	2	9
Future Volume (Veh/h)	17	798	16	33	1158	37	9	2	20	22	2	9
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	17	798	16	33	1158	37	9	2	20	22	2	9
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1195			814			2092	2101	806	2104	2090	1176
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1195			814			2092	2101	806	2104	2090	1176
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			96			73	96	95	33	96	96
cM capacity (veh/h)	584			813			34	48	382	33	49	233

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	831	1228	31	33
Volume Left	17	33	9	22
Volume Right	16	37	20	9
cSH	584	813	86	44
Volume to Capacity	0.03	0.04	0.36	0.75
Queue Length 95th (m)	0.7	1.0	11.2	23.2
Control Delay (s)	0.9	1.5	68.6	206.7
Lane LOS	A	A	F	F
Approach Delay (s)	0.9	1.5	68.6	206.7
Approach LOS			F	F

Intersection Summary				
Average Delay	5.4			
Intersection Capacity Utilization	102.6%	ICU Level of Service		G
Analysis Period (min)	15			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	804	16	33	1210	37	9	2	20	22	2	9
Future Volume (vph)	17	804	16	33	1210	37	9	2	20	22	2	9
Ideal Flow (vphpl)	1650	1650	1900	1900	1650	1650	1900	1900	1900	1765	1900	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.997			0.996			0.913			0.963	
Flt Protected		0.999			0.999			0.986			0.968	
Satd. Flow (prot)	0	1611	0	0	1610	0	0	1677	0	0	1736	0
Flt Permitted		0.999			0.999			0.986			0.968	
Satd. Flow (perm)	0	1611	0	0	1610	0	0	1677	0	0	1736	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		210.5			96.4			108.7			129.5	
Travel Time (s)		15.2			6.9			7.8			9.3	
Peak Hour 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
Adj. Flow (vph)	17	804	16	33	1210	37	9	2	20	22	2	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	837	0	0	1280	0	0	31	0	0	33	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	105.7%	ICU Level of Service	G
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	17	804	16	33	1210	37	9	2	20	22	2	9
Future Volume (Veh/h)	17	804	16	33	1210	37	9	2	20	22	2	9
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	17	804	16	33	1210	37	9	2	20	22	2	9
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1247			820			2150	2159	812	2162	2148	1228
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1247			820			2150	2159	812	2162	2148	1228
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			96			71	95	95	26	96	96
cM capacity (veh/h)	558			809			31	44	379	30	45	217

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	837	1280	31	33
Volume Left	17	33	9	22
Volume Right	16	37	20	9
cSH	558	809	79	40
Volume to Capacity	0.03	0.04	0.39	0.83
Queue Length 95th (m)	0.8	1.0	12.3	24.9
Control Delay (s)	0.9	1.7	77.5	244.5
Lane LOS	A	A	F	F
Approach Delay (s)	0.9	1.7	77.5	244.5
Approach LOS			F	F

Intersection Summary				
Average Delay		6.1		
Intersection Capacity Utilization		105.7%	ICU Level of Service	G
Analysis Period (min)		15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	0	10	9	0	22	13	356	16	35	306	29
Future Volume (vph)	21	0	10	9	0	22	13	356	16	35	306	29
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.956			0.904			0.994			0.989	
Flt Protected		0.967			0.986			0.998			0.995	
Satd. Flow (prot)	0	1405	0	0	1354	0	0	1507	0	0	1495	0
Flt Permitted		0.967			0.986			0.998			0.995	
Satd. Flow (perm)	0	1405	0	0	1354	0	0	1507	0	0	1495	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		174.2			151.1			248.8			212.1	
Travel Time (s)		12.5			10.9			17.9			15.3	
Peak Hour 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
Adj. Flow (vph)	21	0	10	9	0	22	13	356	16	35	306	29
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	31	0	0	31	0	0	385	0	0	370	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	51.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	21	0	10	9	0	22	13	356	16	35	306	29
Future Volume (Veh/h)	21	0	10	9	0	22	13	356	16	35	306	29
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	21	0	10	9	0	22	13	356	16	35	306	29
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	802	788	320	790	795	364	335			372		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	802	788	320	790	795	364	335			372		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	93	100	99	97	100	97	99			97		
cM capacity (veh/h)	283	310	720	294	308	681	1224			1186		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	31	31	385	370
Volume Left	21	9	13	35
Volume Right	10	22	16	29
cSH	352	493	1224	1186
Volume to Capacity	0.09	0.06	0.01	0.03
Queue Length 95th (m)	2.3	1.6	0.3	0.7
Control Delay (s)	16.2	12.8	0.4	1.0
Lane LOS	C	B	A	A
Approach Delay (s)	16.2	12.8	0.4	1.0
Approach LOS	C	B		

Intersection Summary					
Average Delay	1.7				
Intersection Capacity Utilization	51.9%	ICU Level of Service		A	
Analysis Period (min)	15				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	0	10	9	0	22	13	342	16	35	261	29
Future Volume (vph)	21	0	10	9	0	22	13	342	16	35	261	29
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.956			0.904			0.994			0.988	
Flt Protected		0.967			0.986			0.998			0.995	
Satd. Flow (prot)	0	1405	0	0	1354	0	0	1507	0	0	1494	0
Flt Permitted		0.967			0.986			0.998			0.995	
Satd. Flow (perm)	0	1405	0	0	1354	0	0	1507	0	0	1494	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		117.0			126.5			247.2			248.8	
Travel Time (s)		8.4			9.1			17.8			17.9	
Peak Hour 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
Adj. Flow (vph)	21	0	10	9	0	22	13	342	16	35	261	29
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	31	0	0	31	0	0	371	0	0	325	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	48.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	21	0	10	9	0	22	13	342	16	35	261	29
Future Volume (Veh/h)	21	0	10	9	0	22	13	342	16	35	261	29
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	21	0	10	9	0	22	13	342	16	35	261	29
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	744	730	276	732	736	350	290			358		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	744	730	276	732	736	350	290			358		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	93	100	99	97	100	97	99			97		
cM capacity (veh/h)	311	336	763	323	333	693	1272			1201		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	31	31	371	325
Volume Left	21	9	13	35
Volume Right	10	22	16	29
cSH	384	520	1272	1201
Volume to Capacity	0.08	0.06	0.01	0.03
Queue Length 95th (m)	2.1	1.5	0.2	0.7
Control Delay (s)	15.2	12.4	0.4	1.1
Lane LOS	C	B	A	A
Approach Delay (s)	15.2	12.4	0.4	1.1
Approach LOS	C	B		

Intersection Summary				
Average Delay		1.8		
Intersection Capacity Utilization		48.9%	ICU Level of Service	A
Analysis Period (min)		15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	64	0	24	12	0	31	45	515	21	48	463	103
Future Volume (vph)	64	0	24	12	0	31	45	515	21	48	463	103
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.963			0.903			0.995			0.977	
Flt Protected		0.965			0.986			0.996			0.996	
Satd. Flow (prot)	0	1412	0	0	1353	0	0	1506	0	0	1479	0
Flt Permitted		0.965			0.986			0.996			0.996	
Satd. Flow (perm)	0	1412	0	0	1353	0	0	1506	0	0	1479	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		128.4			112.6			130.6			488.0	
Travel Time (s)		9.2			8.1			9.4			35.1	
Peak Hour 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
Adj. Flow (vph)	64	0	24	12	0	31	45	515	21	48	463	103
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	88	0	0	43	0	0	581	0	0	614	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	72.9%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	64	0	24	12	0	31	45	515	21	48	463	103
Future Volume (Veh/h)	64	0	24	12	0	31	45	515	21	48	463	103
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	64	0	24	12	0	31	45	515	21	48	463	103
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1257	1236	514	1250	1278	526	566			536		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1257	1236	514	1250	1278	526	566			536		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	51	100	96	91	100	94	96			95		
cM capacity (veh/h)	130	160	560	133	151	552	1006			1032		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	88	43	581	614
Volume Left	64	12	45	48
Volume Right	24	31	21	103
cSH	165	294	1006	1032
Volume to Capacity	0.53	0.15	0.04	0.05
Queue Length 95th (m)	21.5	4.0	1.1	1.2
Control Delay (s)	49.6	19.3	1.2	1.2
Lane LOS	E	C	A	A
Approach Delay (s)	49.6	19.3	1.2	1.2
Approach LOS	E	C		

Intersection Summary				
Average Delay	5.0			
Intersection Capacity Utilization	72.9%	ICU Level of Service	C	
Analysis Period (min)	15			

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]
© Copyright TRL Limited, 2020

For sales and distribution information, program advice and maintenance, contact TRL:
Tel: +44 (0)1344 770758 email: software@trl.co.uk Web: http://www.trlsoftware.co.uk

The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: Laurelwood & Beaver Creek.arc8
Path: C:\Users\AdamMorrison\Paradigm\Projects - 170278 Beaver Creek Area TES\C5 - Analysis and Evaluation\Arcady
Report generation date: 2020-07-21 4:18:26 PM

Summary of intersection performance

There are warnings associated with this model run - see the 'Data Errors and Warnings' tables.

	AM					
	Queue (Veh)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS
	All - Total 2027					
Intersection 85% - Leg North	0.62	6.35	0.38	A	49.20	E
Intersection 85% - Leg West	11.85	46.50	0.97	E		
Intersection 85% - Leg South	13.06	158.33	1.07	F		
Intersection 85% - Leg East	0.68	5.98	0.41	A		
Intersection 90% - Leg North	0.56	5.73	0.36	A	28.97	D
Intersection 90% - Leg West	7.33	29.63	0.91	D		
Intersection 90% - Leg South	8.17	83.93	0.98	F		
Intersection 90% - Leg East	0.68	5.65	0.41	A		

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Intersection LOS and Intersection Delay are demand-weighted averages.

"D1 - Existing, AM" model duration: 8:00 AM - 9:00 AM
"D2 - Existing, PM" model duration: 4:00 PM - 5:00 PM
"D3 - Background 2022, AM" model duration: 8:00 AM - 9:00 AM
"D4 - Background 2022, PM" model duration: 4:00 PM - 5:00 PM
"D5 - Total 2022, AM" model duration: 8:00 AM - 9:00 AM
"D6 - Total 2022, PM" model duration: 4:00 PM - 5:00 PM
"D7 - Background 2025, AM" model duration: 8:00 AM - 9:00 AM
"D8 - Background 2025, PM" model duration: 4:00 PM - 5:00 PM
"D9 - Total 2025, AM" model duration: 8:00 AM - 9:00 AM
"D10 - Total 2025, PM" model duration: 4:00 PM - 5:00 PM
"D11 - Background 2027, AM" model duration: 8:00 AM - 9:00 AM
"D12 - Background 2027, PM" model duration: 4:00 PM - 5:00 PM
"D13 - Total 2027, AM " model duration: 8:00 AM - 9:00 AM
"D14 - Total 2027, PM" model duration: 4:00 PM - 5:00 PM
"D15 - Background 2032, AM" model duration: 8:00 AM - 9:00 AM
"D16 - Background 2032, PM" model duration: 4:00 PM - 5:00 PM
"D17 - Total 2032, AM" model duration: 8:00 AM - 9:00 AM
"D18 - Total 2032, PM" model duration: 4:00 PM - 5:00 PM

Run using Junctions 8.0.6.541 at 2020-07-21 4:18:24 PM

File summary

Title	Laurelwood & Beaver Creek
Location	Waterloo
Site Number	
Date	2017-12-05
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	170278
Analyst	Matt
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)
7.50	✓		N/A	0.90	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	Veh	Veh	perHour	s	-Min	perMin

All - Total 2027, AM

Data Errors and Warnings

Severity	Area	Item	Description
Last Run	Last Run	Intersection 85% - Leg East - Capacity	Pedestrian Crossing causes blocking on previous leg due to traffic queing to leave the intersection in 4 timesegment(s).
Last Run	Last Run	Intersection 90% - Leg East - Capacity	Pedestrian Crossing causes blocking on previous leg due to traffic queing to leave the intersection in 4 timesegment(s).

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
All	ARCADY		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
Total 2027, AM	Total 2027	AM		PHF	08:00	09:00	60	15				✓		

Intersection Network

Intersections

Junction	Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Do Geometric Delay	Intersection Delay (s)	Intersection LOS
85%	85%	Existing	Roundabout	North,West,South,East				49.20	E
90%	90%	Future	Roundabout	North,West,South,East				28.97	D

Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

Legs

Legs

Intersection	Leg	Leg	Name	Description
85%	**North**	North	Beaver Creek SB	
85%	**West**	West	Laurelwood EB	
85%	**South**	South	Beaver Creek NB	
85%	**East**	East	Laurelwood WB	
90%	**North**	North	Beaver Creek SB	
90%	**West**	West	Laurelwood EB	

90%	South	South	Beaver Creek NB	
90%	East	East	Laurelwood WB	

Capacity Options

Intersection	Leg	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)	Assume Flat Start Profile	Initial Queue (PCE)
85%	North	0.00	99999.00		0.00
85%	West	0.00	99999.00		0.00
85%	South	0.00	99999.00		0.00
85%	East	0.00	99999.00		0.00
90%	North	0.00	99999.00		0.00
90%	West	0.00	99999.00		0.00
90%	South	0.00	99999.00		0.00
90%	East	0.00	99999.00		0.00

Roundabout Geometry

Intersection	Leg	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
85%	North	3.50	4.50	30.00	20.00	30.00	25.00	
85%	West	3.50	4.50	30.00	20.00	30.00	25.00	
85%	South	3.50	4.50	30.00	20.00	30.00	25.00	
85%	East	3.50	4.50	30.00	20.00	30.00	25.00	
90%	North	3.50	4.50	30.00	20.00	30.00	25.00	
90%	West	3.50	4.50	30.00	20.00	30.00	25.00	
90%	South	3.50	4.50	30.00	20.00	30.00	25.00	
90%	East	3.50	4.50	30.00	20.00	30.00	25.00	

Pedestrian Crossings

Intersection	Leg	Crossing Type
85%	North	Unsignalled Pedestrian Crossing
85%	West	Unsignalled Pedestrian Crossing
85%	South	Unsignalled Pedestrian Crossing
85%	East	Unsignalled Pedestrian Crossing
90%	North	Unsignalled Pedestrian Crossing
90%	West	Unsignalled Pedestrian Crossing
90%	South	Unsignalled Pedestrian Crossing
90%	East	Unsignalled Pedestrian Crossing

Unsignalled Pedestrian Crossing Crossings

Intersection	Leg	Space between crossing and intersection entry (PCE)	Vehicles queueing on exit (PCE)	Central Refuge	Crossing Data Type	Crossing length (m)	Crossing time (s)	Crossing length (entry side) (m)	Crossing time (entry side) (s)	Crossing length (exit side) (m)	Crossing time (exit side) (s)
85%	North	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
85%	West	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
85%	South	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
85%	East	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
90%	North	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
90%	West	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
90%	South	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
90%	East	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50

Slope / Intercept / Capacity

Leg Intercept Adjustments

Intersection	Leg	Type	Reason	Direct Intercept Adjustment (PCE/hr)	Percentage Intercept Adjustment (%)
85%	North	Percentage	Region of Waterloo - Requirement		85.00
85%	West	Percentage	Region of Waterloo - Requirement		85.00
85%	South	Percentage	Region of Waterloo - Requirement		85.00
85%	East	Percentage	Region of Waterloo - Requirement		85.00
90%	North	Percentage	Region of Waterloo - Requirement		90.00

90%	West	Percentage	Region of Waterloo - Requirement		90.00
90%	South	Percentage	Region of Waterloo - Requirement		90.00
90%	East	Percentage	Region of Waterloo - Requirement		90.00

Roundabout Slope and Intercept used in model

Intersection	Leg	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
85%	North		(calculated)	(calculated)	0.593	1153.828
85%	West		(calculated)	(calculated)	0.593	1153.828
85%	South		(calculated)	(calculated)	0.593	1153.828
85%	East		(calculated)	(calculated)	0.593	1153.828
90%	North		(calculated)	(calculated)	0.593	1221.701
90%	West		(calculated)	(calculated)	0.593	1221.701
90%	South		(calculated)	(calculated)	0.593	1221.701
90%	East		(calculated)	(calculated)	0.593	1221.701

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCE Factor for a Truck (PCE)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Intersection	Leg	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
85%	North	PHF	✓	324.00	100.000
85%	West	PHF	✓	808.00	100.000
85%	South	PHF	✓	302.00	100.000
85%	East	PHF	✓	381.00	100.000
90%	North	PHF	✓	325.00	100.000
90%	West	PHF	✓	812.00	100.000
90%	South	PHF	✓	302.00	100.000
90%	East	PHF	✓	401.00	100.000

Peak Hour Factor Data

Intersection	Leg	Hourly Volume (Veh/hr)	Peak Hour Factor	Peak Time Segment
85%	North	324.00	0.92	SecondQuarter
85%	West	808.00	0.92	SecondQuarter
85%	South	302.00	0.92	SecondQuarter
85%	East	381.00	0.92	SecondQuarter
90%	North	325.00	0.92	SecondQuarter
90%	West	812.00	0.92	SecondQuarter
90%	South	302.00	0.92	SecondQuarter
90%	East	401.00	0.92	SecondQuarter

Pedestrian Flows

General Flows Data

Intersection	Leg	Profile Type	Average Pedestrian Flow (Ped/hr)

85%	North	PHF	10.00
85%	West	PHF	7.00
85%	South	PHF	4.00
85%	East	PHF	10.00
90%	North	PHF	10.00
90%	West	PHF	7.00
90%	South	PHF	4.00
90%	East	PHF	10.00

Peak Hour Factor Data

Intersection	Leg	Hourly Volume (Ped/hr)	Peak Hour Factor	Peak Time Segment
85%	North	10.00	1.00	SecondQuarter
85%	West	7.00	1.00	SecondQuarter
85%	South	4.00	1.00	SecondQuarter
85%	East	10.00	1.00	SecondQuarter
90%	North	10.00	1.00	SecondQuarter
90%	West	7.00	1.00	SecondQuarter
90%	South	4.00	1.00	SecondQuarter
90%	East	10.00	1.00	SecondQuarter

Turning Proportions

Turning Counts / Proportions (Veh/hr) - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.000	20.000	21.000	283.000
	West	32.000	0.000	89.000	687.000
	South	39.000	58.000	0.000	205.000
	East	119.000	224.000	38.000	0.000

Turning Proportions (Veh) - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.00	0.06	0.06	0.87
	West	0.04	0.00	0.11	0.85
	South	0.13	0.19	0.00	0.68
	East	0.31	0.59	0.10	0.00

Turning Counts / Proportions (Veh/hr) - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.000	22.000	21.000	282.000
	West	36.000	0.000	89.000	687.000
	South	39.000	58.000	0.000	205.000
	East	138.000	225.000	38.000	0.000

Turning Proportions (Veh) - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.00	0.07	0.06	0.87
	West	0.04	0.00	0.11	0.85
	South	0.13	0.19	0.00	0.68
	East	0.34	0.56	0.09	0.00

Vehicle Mix

Average PCE Per Vehicle - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	1.000	1.110	1.000	1.000
	West	1.000	1.000	1.000	1.030
	South	1.090	1.000	1.000	1.010
	East	1.040	1.060	1.060	1.000

Truck Percentages - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.0	11.0	0.0	0.0
	West	0.0	0.0	0.0	3.0
	South	9.0	0.0	0.0	1.0
	East	4.0	6.0	6.0	0.0

Average PCE Per Vehicle - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	1.000	1.110	1.000	1.000
	West	1.000	1.000	1.000	1.030
	South	1.090	1.000	1.000	1.010
	East	1.040	1.060	1.060	1.000

Truck Percentages - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.0	11.0	0.0	0.0
	West	0.0	0.0	0.0	3.0
	South	9.0	0.0	0.0	1.0
	East	4.0	6.0	6.0	0.0

Results

Results Summary for whole modelled period

Intersection	Leg	Max V/C Ratio	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Intersection Arrivals (Veh)	Total Queueing Delay (Veh-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (Veh-min/min)	Inclusive Total Queueing Delay (Veh-min)	Inclusive Average Queueing Delay (s)
85%	North	0.38	6.35	0.62	1.00	A	324.00	324.00	31.87	5.90	0.53	31.88	5.90
85%	West	0.97	46.50	11.85	45.00	E	808.00	808.00	443.64	32.94	7.39	444.41	33.00
85%	South	1.07	158.33	13.06	43.00	F	302.00	302.00	434.37	86.30	7.24	435.78	86.58
85%	East	0.41	5.98	0.68	~1	A	381.00	381.00	35.93	5.66	0.60	35.94	5.66
90%	North	0.36	5.73	0.56	1.00	A	325.00	325.00	28.97	5.35	0.48	28.97	5.35
90%	West	0.91	29.63	7.33	29.00	D	812.00	812.00	286.16	21.14	4.77	286.51	21.17
90%	South	0.98	83.93	8.17	29.00	F	302.00	302.00	267.35	53.12	4.46	267.68	53.18
90%	East	0.41	5.65	0.68	~1	A	401.00	401.00	35.59	5.33	0.59	35.60	5.33

Main Results for each time segment

Main results: (08:00-08:15)

Intersection	Leg	Total Demand (Veh/hr)	Intersection Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	V/C Ratio	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
85%	North	305.22	76.30	303.34	176.62	298.38	10.00	947.97	614.09	0.322	0.00	0.47	5.569	A
85%	West	761.16	190.29	745.51	281.52	320.19	7.00	936.07	724.53	0.813	0.00	3.91	17.674	C

85%	South	284.49	71.12	276.19	137.36	928.35	4.00	409.18	236.83	0.695	0.00	2.08	25.705	D
85%	East	358.91	89.73	356.77	1086.30	118.23	10.00	1021.44	1006.78	0.351	0.00	0.54	5.399	A
90%	North	306.16	76.54	304.44	198.56	299.77	10.00	1012.52	671.70	0.302	0.00	0.43	5.072	A
90%	West	764.93	191.23	752.87	284.78	319.43	7.00	1002.62	761.12	0.763	0.00	3.01	13.726	B
90%	South	284.49	71.12	278.10	137.79	934.51	4.00	452.05	223.29	0.629	0.00	1.60	20.034	C
90%	East	377.75	94.44	375.63	1089.91	122.70	10.00	1082.04	1059.40	0.349	0.00	0.53	5.081	A

Main results: (08:15-08:30)

Intersection	Leg	Total Demand (Veh/hr)	Intersection Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	V/C Ratio	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
85%	North	352.17	88.04	351.59	199.98	339.84	10.00	918.02	614.09	0.384	0.47	0.62	6.348	A
85%	West	878.26	219.56	846.51	320.29	371.14	7.00	905.63	724.53	0.970	3.91	11.85	45.361	E
85%	South	328.26	82.07	288.73	157.28	1060.37	4.00	307.21	236.83	1.069	2.08	11.96	112.824	F
85%	East	414.13	103.53	413.55	1222.84	126.26	10.00	1015.25	1006.78	0.408	0.54	0.68	5.976	A
90%	North	353.26	88.31	352.75	227.16	343.48	10.00	980.57	671.70	0.360	0.43	0.56	5.729	A
90%	West	882.61	220.65	865.36	326.11	370.12	7.00	972.18	761.12	0.908	3.01	7.33	29.634	D
90%	South	328.26	82.07	301.96	158.89	1076.59	4.00	333.53	223.29	0.984	1.60	8.17	80.567	F
90%	East	435.87	108.97	435.28	1243.19	135.35	10.00	1072.37	1059.40	0.406	0.53	0.68	5.646	A

Main results: (08:30-08:45)

Intersection	Leg	Total Demand (Veh/hr)	Intersection Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	V/C Ratio	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
85%	North	333.39	83.35	333.58	195.10	328.55	10.00	926.35	614.09	0.360	0.62	0.57	6.077	A
85%	West	831.42	207.85	834.04	310.02	352.11	7.00	916.88	724.53	0.907	11.85	11.19	46.504	E
85%	South	310.75	77.69	306.34	152.61	1033.55	4.00	322.27	236.83	0.964	11.96	13.06	158.330	F
85%	East	392.04	98.01	392.22	1208.46	131.43	10.00	1012.60	1006.78	0.387	0.68	0.64	5.804	A
90%	North	334.42	83.60	334.59	219.75	330.91	10.00	989.93	671.70	0.338	0.56	0.51	5.496	A
90%	West	835.54	208.88	839.78	314.44	351.06	7.00	983.55	761.12	0.850	7.33	6.27	26.032	D
90%	South	310.75	77.69	313.28	152.78	1038.06	4.00	359.92	223.29	0.863	8.17	7.54	83.927	F
90%	East	412.62	103.16	412.81	1213.49	137.86	10.00	1071.56	1059.40	0.385	0.68	0.63	5.466	A

Main results: (08:45-09:00)

Intersection	Leg	Total Demand (Veh/hr)	Intersection Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	V/C Ratio	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
85%	North	305.22	76.30	305.55	184.69	308.52	10.00	940.93	614.09	0.324	0.57	0.48	5.668	A
85%	West	761.16	190.29	786.41	291.55	322.52	7.00	934.52	724.53	0.814	11.19	4.88	27.207	D
85%	South	284.49	71.12	320.10	142.26	966.68	4.00	368.73	236.83	0.772	13.06	4.16	85.733	F
85%	East	358.91	89.73	359.25	1152.81	133.96	10.00	1011.82	1006.78	0.355	0.64	0.55	5.519	A
90%	North	306.16	76.54	306.46	204.04	306.73	10.00	1007.61	671.70	0.304	0.51	0.44	5.138	A
90%	West	764.93	191.23	776.22	291.65	321.54	7.00	1001.26	761.12	0.764	6.27	3.44	16.715	C
90%	South	284.49	71.12	305.93	140.71	957.05	4.00	426.12	223.29	0.668	7.54	2.18	34.098	D
90%	East	377.75	94.44	378.10	1130.31	132.68	10.00	1075.84	1059.40	0.351	0.63	0.55	5.163	A

Queueing Delay Results for each time segment

Queueing Delay results: (08:00-08:15)

Intersection	Leg	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	6.83	0.46	5.569	A	A
85%	West	50.17	3.34	17.674	C	B
85%	South	26.79	1.79	25.705	D	C
85%	East	7.78	0.52	5.399	A	A
90%	North	6.25	0.42	5.072	A	A
90%	West	40.12	2.67	13.726	B	B
90%	South	21.32	1.42	20.034	C	C
90%	East	7.72	0.51	5.081	A	A

Queueing Delay results: (08:15-08:30)

Intersection	Leg	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service

85%	North	9.00	0.60	6.348	A	A
85%	West	132.35	8.82	45.361	E	D
85%	South	114.84	7.66	112.824	F	F
85%	East	9.98	0.67	5.976	A	A
90%	North	8.18	0.55	5.729	A	A
90%	West	89.97	6.00	29.634	D	C
90%	South	84.59	5.64	80.567	F	F
90%	East	9.94	0.66	5.646	A	A

Queueing Delay results: (08:30-08:45)

Intersection	Leg	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	8.64	0.58	6.077	A	A
85%	West	172.21	11.48	46.504	E	D
85%	South	187.95	12.53	158.330	F	F
85%	East	9.69	0.65	5.804	A	A
90%	North	7.82	0.52	5.496	A	A
90%	West	99.33	6.62	26.032	D	C
90%	South	117.19	7.81	83.927	F	F
90%	East	9.60	0.64	5.466	A	A

Queueing Delay results: (08:45-09:00)

Intersection	Leg	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	7.40	0.49	5.668	A	A
85%	West	88.90	5.93	27.207	D	C
85%	South	104.81	6.99	85.733	F	F
85%	East	8.47	0.56	5.519	A	A
90%	North	6.71	0.45	5.138	A	A
90%	West	56.74	3.78	16.715	C	B
90%	South	44.24	2.95	34.098	D	C
90%	East	8.33	0.56	5.163	A	A

Queue Variation Results for each time segment

Queue Variation results: (08:00-08:15)

Intersection	Leg	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.47	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	3.91	0.00	1.00	9.00	13.00			N/A	N/A
85%	South	2.08	0.00	0.00	4.00	7.00			N/A	N/A
85%	East	0.54	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.43	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	3.01	0.00	0.00	7.00	10.00			N/A	N/A
90%	South	1.60	0.00	0.00	3.00	5.00			N/A	N/A
90%	East	0.53	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:15-08:30)

Intersection	Leg	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.62	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	11.85	0.00	4.00	30.00	43.00			N/A	N/A
85%	South	11.96	0.00	8.00	24.00	30.00			N/A	N/A
85%	East	0.68	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very		N/A	N/A

							small or very big.			
90%	**North**	0.56	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	**West**	7.33	0.00	0.00	18.00	29.00			N/A	N/A
90%	**South**	8.17	0.00	4.00	19.00	25.00			N/A	N/A
90%	**East**	0.68	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:30-08:45)

Intersection	Leg	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	**North**	0.57	0.00	0.00	0.00	1.00			N/A	N/A
85%	**West**	11.19	0.00	0.00	27.00	45.00			N/A	N/A
85%	**South**	13.06	0.00	6.00	32.00	43.00			N/A	N/A
85%	**East**	0.64	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	**North**	0.51	0.00	0.00	0.00	1.00			N/A	N/A
90%	**West**	6.27	0.00	0.00	7.00	21.00			N/A	N/A
90%	**South**	7.54	0.00	0.00	19.00	29.00			N/A	N/A
90%	**East**	0.63	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:45-09:00)

Intersection	Leg	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	**North**	0.48	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	**West**	4.88	0.00	0.00	6.00	17.00			N/A	N/A
85%	**South**	4.16	0.00	0.00	6.00	15.00			N/A	N/A
85%	**East**	0.55	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	**North**	0.44	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	**West**	3.44	0.00	0.00	5.00	12.00			N/A	N/A
90%	**South**	2.18	0.00	0.00	2.00	7.00			N/A	N/A
90%	**East**	0.55	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]
© Copyright TRL Limited, 2020

For sales and distribution information, program advice and maintenance, contact TRL:
Tel: +44 (0)1344 770758 email: software@trl.co.uk Web: http://www.trlsoftware.co.uk

The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: Laurelwood & Beaver Creek.arc8
Path: C:\Users\AdamMorrison\Paradigm\Projects - 170278 Beaver Creek Area TES\C5 - Analysis and Evaluation\Arcady
Report generation date: 2020-07-21 4:18:48 PM

Summary of intersection performance

There are warnings associated with this model run - see the 'Data Errors and Warnings' tables.

	PM					
	Queue (Veh)	**Delay (s)**	**V/C Ratio**	**LOS**	**Intersection Delay (s)**	**Intersection LOS**
	All - Total 2027					
Intersection 85% - Leg North	0.89	11.66	0.48	B	246.10	F
Intersection 85% - Leg West	0.97	7.84	0.50	A		
Intersection 85% - Leg South	0.27	6.43	0.21	A		
Intersection 85% - Leg East	126.14	408.13	1.21	F		
Intersection 90% - Leg North	0.82	10.68	0.46	B	156.93	F
Intersection 90% - Leg West	0.86	6.96	0.47	A		
Intersection 90% - Leg South	0.24	5.82	0.20	A		
Intersection 90% - Leg East	81.40	258.53	1.15	F		

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Intersection LOS and Intersection Delay are demand-weighted averages.

"D1 - Existing, AM" model duration: 8:00 AM - 9:00 AM
"D2 - Existing, PM" model duration: 4:00 PM - 5:00 PM
"D3 - Background 2022, AM" model duration: 8:00 AM - 9:00 AM
"D4 - Background 2022, PM" model duration: 4:00 PM - 5:00 PM
"D5 - Total 2022, AM" model duration: 8:00 AM - 9:00 AM
"D6 - Total 2022, PM" model duration: 4:00 PM - 5:00 PM
"D7 - Background 2025, AM" model duration: 8:00 AM - 9:00 AM
"D8 - Background 2025, PM" model duration: 4:00 PM - 5:00 PM
"D9 - Total 2025, AM" model duration: 8:00 AM - 9:00 AM
"D10 - Total 2025, PM" model duration: 4:00 PM - 5:00 PM
"D11 - Background 2027, AM" model duration: 8:00 AM - 9:00 AM
"D12 - Background 2027, PM" model duration: 4:00 PM - 5:00 PM
"D13 - Total 2027, AM" model duration: 8:00 AM - 9:00 AM
"D14 - Total 2027, PM " model duration: 4:00 PM - 5:00 PM
"D15 - Background 2032, AM" model duration: 8:00 AM - 9:00 AM
"D16 - Background 2032, PM" model duration: 4:00 PM - 5:00 PM
"D17 - Total 2032, AM" model duration: 8:00 AM - 9:00 AM
"D18 - Total 2032, PM" model duration: 4:00 PM - 5:00 PM

Run using Junctions 8.0.6.541 at 2020-07-21 4:18:47 PM

File summary

Title	Laurelwood & Beaver Creek
Location	Waterloo
Site Number	
Date	2017-12-05
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	170278
Analyst	Matt
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)
7.50	✓		N/A	0.90	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	Veh	Veh	perHour	s	-Min	perMin

All - Total 2027, PM

Data Errors and Warnings

Severity	Area	Item	Description
Last Run	Last Run	Intersection 85% - Leg West - Capacity	Pedestrian Crossing causes blocking on previous leg due to traffic queing to leave the intersection in 4 timesegment(s).
Last Run	Last Run	Intersection 90% - Leg West - Capacity	Pedestrian Crossing causes blocking on previous leg due to traffic queing to leave the intersection in 4 timesegment(s).

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
All	ARCADY		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
Total 2027, PM	Total 2027	PM		PHF	16:00	17:00	60	15				✓		

Intersection Network

Intersections

Junction	Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Do Geometric Delay	Intersection Delay (s)	Intersection LOS
85%	85%	Existing	Roundabout	North,West,South,East				246.10	F
90%	90%	Future	Roundabout	North,West,South,East				156.93	F

Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

Legs

Legs

Intersection	Leg	Leg	Name	Description
85%	**North**	North	Beaver Creek SB	
85%	**West**	West	Laurelwood EB	
85%	**South**	South	Beaver Creek NB	
85%	**East**	East	Laurelwood WB	
90%	**North**	North	Beaver Creek SB	
90%	**West**	West	Laurelwood EB	
90%	**South**	South	Beaver Creek NB	
90%	**East**	East	Laurelwood WB	

Capacity Options

Intersection	Leg	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)	Assume Flat Start Profile	Initial Queue (PCE)
85%	**North**	0.00	99999.00		0.00
85%	**West**	0.00	99999.00		0.00
85%	**South**	0.00	99999.00		0.00
85%	**East**	0.00	99999.00		0.00
90%	**North**	0.00	99999.00		0.00
90%	**West**	0.00	99999.00		0.00
90%	**South**	0.00	99999.00		0.00
90%	**East**	0.00	99999.00		0.00

Roundabout Geometry

Intersection	Leg	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
85%	**North**	3.50	4.50	30.00	20.00	30.00	25.00	
85%	**West**	3.50	4.50	30.00	20.00	30.00	25.00	
85%	**South**	3.50	4.50	30.00	20.00	30.00	25.00	
85%	**East**	3.50	4.50	30.00	20.00	30.00	25.00	
90%	**North**	3.50	4.50	30.00	20.00	30.00	25.00	
90%	**West**	3.50	4.50	30.00	20.00	30.00	25.00	
90%	**South**	3.50	4.50	30.00	20.00	30.00	25.00	
90%	**East**	3.50	4.50	30.00	20.00	30.00	25.00	

Pedestrian Crossings

Intersection	Leg	Crossing Type
85%	**North**	Unsignalled Pedestrian Crossing
85%	**West**	Unsignalled Pedestrian Crossing
85%	**South**	Unsignalled Pedestrian Crossing
85%	**East**	Unsignalled Pedestrian Crossing
90%	**North**	Unsignalled Pedestrian Crossing
90%	**West**	Unsignalled Pedestrian Crossing
90%	**South**	Unsignalled Pedestrian Crossing
90%	**East**	Unsignalled Pedestrian Crossing

Unsignalled Pedestrian Crossing Crossings

Intersection	Leg	Space between crossing and intersection entry (PCE)	Vehicles queueing on exit (PCE)	Central Refuge	Crossing Data Type	Crossing length (m)	Crossing time (s)	Crossing length (entry side) (m)	Crossing time (entry side) (s)	Crossing length (exit side) (m)	Crossing time (exit side) (s)
85%	**North**	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
85%	**West**	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
85%	**South**	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
85%	**East**	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
90%	**North**	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
90%	**West**	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
90%	**South**	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
90%	**East**	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50

Slope / Intercept / Capacity

Leg Intercept Adjustments

Intersection	Leg	Type	Reason	Direct Intercept Adjustment (PCE/hr)	Percentage Intercept Adjustment (%)
85%	**North**	Percentage	Region of Waterloo - Requirement		85.00
85%	**West**	Percentage	Region of Waterloo - Requirement		85.00
85%	**South**	Percentage	Region of Waterloo - Requirement		85.00
85%	**East**	Percentage	Region of Waterloo - Requirement		85.00
90%	**North**	Percentage	Region of Waterloo - Requirement		90.00

90%	West	Percentage	Region of Waterloo - Requirement		90.00
90%	South	Percentage	Region of Waterloo - Requirement		90.00
90%	East	Percentage	Region of Waterloo - Requirement		90.00

Roundabout Slope and Intercept used in model

Intersection	Leg	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
85%	North		(calculated)	(calculated)	0.593	1153.828
85%	West		(calculated)	(calculated)	0.593	1153.828
85%	South		(calculated)	(calculated)	0.593	1153.828
85%	East		(calculated)	(calculated)	0.593	1153.828
90%	North		(calculated)	(calculated)	0.593	1221.701
90%	West		(calculated)	(calculated)	0.593	1221.701
90%	South		(calculated)	(calculated)	0.593	1221.701
90%	East		(calculated)	(calculated)	0.593	1221.701

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCE Factor for a Truck (PCE)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Intersection	Leg	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
85%	North	PHF	✓	258.00	100.000
85%	West	PHF	✓	413.00	100.000
85%	South	PHF	✓	140.00	100.000
85%	East	PHF	✓	1193.00	100.000
90%	North	PHF	✓	258.00	100.000
90%	West	PHF	✓	416.00	100.000
90%	South	PHF	✓	140.00	100.000
90%	East	PHF	✓	1199.00	100.000

Peak Hour Factor Data

Intersection	Leg	Hourly Volume (Veh/hr)	Peak Hour Factor	Peak Time Segment
85%	North	258.00	0.92	SecondQuarter
85%	West	413.00	0.92	SecondQuarter
85%	South	140.00	0.92	SecondQuarter
85%	East	1193.00	0.92	SecondQuarter
90%	North	258.00	0.92	SecondQuarter
90%	West	416.00	0.92	SecondQuarter
90%	South	140.00	0.92	SecondQuarter
90%	East	1199.00	0.92	SecondQuarter

Pedestrian Flows

General Flows Data

Intersection	Leg	Profile Type	Average Pedestrian Flow (Ped/hr)

85%	North	PHF	9.00
85%	West	PHF	6.00
85%	South	PHF	4.00
85%	East	PHF	8.00
90%	North	PHF	9.00
90%	West	PHF	6.00
90%	South	PHF	4.00
90%	East	PHF	8.00

Peak Hour Factor Data

Intersection	Leg	Hourly Volume (Ped/hr)	Peak Hour Factor	Peak Time Segment
85%	North	9.00	1.00	SecondQuarter
85%	West	6.00	1.00	SecondQuarter
85%	South	4.00	1.00	SecondQuarter
85%	East	8.00	1.00	SecondQuarter
90%	North	9.00	1.00	SecondQuarter
90%	West	6.00	1.00	SecondQuarter
90%	South	4.00	1.00	SecondQuarter
90%	East	8.00	1.00	SecondQuarter

Turning Proportions

Turning Counts / Proportions (Veh/hr) - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.000	31.000	45.000	182.000
	West	19.000	1.000	34.000	359.000
	South	25.000	32.000	0.000	83.000
	East	323.000	723.000	147.000	0.000

Turning Proportions (Veh) - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.00	0.12	0.17	0.71
	West	0.05	0.00	0.08	0.87
	South	0.18	0.23	0.00	0.59
	East	0.27	0.61	0.12	0.00

Turning Counts / Proportions (Veh/hr) - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.000	31.000	45.000	182.000
	West	21.000	1.000	34.000	360.000
	South	25.000	32.000	0.000	83.000
	East	325.000	727.000	147.000	0.000

Turning Proportions (Veh) - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.00	0.12	0.17	0.71
	West	0.05	0.00	0.08	0.87
	South	0.18	0.23	0.00	0.59
	East	0.27	0.61	0.12	0.00

Vehicle Mix

Average PCE Per Vehicle - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	1.000	1.000	1.030	1.000
	West	1.000	1.000	1.000	1.020
	South	1.000	1.000	1.000	1.000
	East	1.000	1.010	1.000	1.000

Truck Percentages - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.0	0.0	3.0	0.0
	West	0.0	0.0	0.0	2.0
	South	0.0	0.0	0.0	0.0
	East	0.0	1.0	0.0	0.0

Average PCE Per Vehicle - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	1.000	1.000	1.030	1.000
	West	1.000	1.000	1.000	1.020
	South	1.000	1.000	1.000	1.000
	East	1.000	1.010	1.000	1.000

Truck Percentages - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.0	0.0	3.0	0.0
	West	0.0	0.0	0.0	2.0
	South	0.0	0.0	0.0	0.0
	East	0.0	1.0	0.0	0.0

Results

Results Summary for whole modelled period

Intersection	Leg	Max V/C Ratio	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Intersection Arrivals (Veh)	Total Queueing Delay (Veh-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (Veh-min/min)	Inclusive Total Queueing Delay (Veh-min)	Inclusive Average Queueing Delay (s)
85%	North	0.48	11.66	0.89	~1	B	258.00	258.00	45.99	10.69	0.77	46.01	10.70
85%	West	0.50	7.84	0.97	~1	A	413.00	413.00	49.03	7.12	0.82	49.04	7.12
85%	South	0.21	6.43	0.27	~1	A	140.00	140.00	13.78	5.90	0.23	13.78	5.90
85%	East	1.21	408.13	126.14	?	F	1193.00	1193.00	4209.69	211.72	70.16	4650.72	233.90
90%	North	0.46	10.68	0.82	1.00	B	258.00	258.00	42.02	9.77	0.70	42.04	9.78
90%	West	0.47	6.96	0.86	~1	A	416.00	416.00	44.17	6.37	0.74	44.19	6.37
90%	South	0.20	5.82	0.24	~1	A	140.00	140.00	12.54	5.37	0.21	12.54	5.37
90%	East	1.15	258.53	81.40	200.00	F	1199.00	1199.00	2948.61	147.55	49.14	3122.04	156.23

Main Results for each time segment

Main results: (16:00-16:15)

Intersection	Leg	Total Demand (Veh/hr)	Intersection Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	V/C Ratio	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
85%	North	243.04	60.76	240.45	321.87	786.94	9.00	610.92	575.90	0.398	0.00	0.65	9.650	A
85%	West	389.06	97.26	386.22	688.09	339.30	6.00	929.58	752.22	0.419	0.00	0.71	6.591	A

85%	South	131.88	32.97	131.08	201.48	524.04	4.00	780.30	301.36	0.169	0.00	0.20	5.538	A
85%	East	1123.84	280.96	1036.74	583.04	72.07	8.00	1084.35	1027.52	1.036	0.00	21.78	49.767	E
90%	North	243.04	60.76	240.70	333.77	812.67	9.00	652.32	601.97	0.373	0.00	0.58	8.697	A
90%	West	391.88	97.97	389.31	710.10	343.27	6.00	993.37	799.59	0.395	0.00	0.64	5.935	A
90%	South	131.88	32.97	131.15	205.29	527.29	4.00	841.27	298.21	0.157	0.00	0.18	5.064	A
90%	East	1129.50	282.37	1072.46	584.45	73.98	8.00	1147.68	1087.00	0.984	0.00	14.26	35.628	E

Main results: (16:15-16:30)

Intersection	Leg	Total Demand (Veh/hr)	Intersection Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	V/C Ratio	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
85%	North	280.44	70.11	279.46	338.14	818.03	9.00	587.18	575.90	0.478	0.65	0.89	11.659	B
85%	West	448.92	112.23	447.89	719.44	378.05	6.00	905.92	752.22	0.496	0.71	0.97	7.841	A
85%	South	152.17	38.04	151.90	217.78	608.16	4.00	711.10	301.36	0.214	0.20	0.27	6.435	A
85%	East	1296.74	324.18	1072.64	676.52	83.54	8.00	1075.40	1027.52	1.206	21.78	77.80	177.278	F
90%	North	280.44	70.11	279.50	356.44	860.13	9.00	615.69	601.97	0.455	0.58	0.82	10.676	B
90%	West	452.17	113.04	451.29	755.07	384.56	6.00	967.93	799.59	0.467	0.64	0.86	6.957	A
90%	South	152.17	38.04	151.94	224.28	611.57	4.00	770.11	298.21	0.198	0.18	0.24	5.819	A
90%	East	1303.27	325.82	1130.84	677.78	85.73	8.00	1137.28	1087.00	1.146	14.26	57.36	125.301	F

Main results: (16:30-16:45)

Intersection	Leg	Total Demand (Veh/hr)	Intersection Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	V/C Ratio	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
85%	North	265.48	66.37	265.69	336.95	819.52	9.00	586.55	575.90	0.453	0.89	0.84	11.232	B
85%	West	424.97	106.24	425.31	718.72	366.49	6.00	912.91	752.22	0.466	0.97	0.88	7.391	A
85%	South	144.06	36.01	144.16	214.08	577.71	4.00	736.35	301.36	0.196	0.27	0.25	6.079	A
85%	East	1227.58	306.90	1077.19	642.58	79.29	8.00	1078.02	1027.52	1.139	77.80	115.40	329.839	F
90%	North	265.48	66.37	265.66	355.72	863.23	9.00	613.90	601.97	0.432	0.82	0.77	10.347	B
90%	West	428.06	107.01	428.35	755.68	373.22	6.00	974.80	799.59	0.439	0.86	0.79	6.593	A
90%	South	144.06	36.01	144.15	220.82	580.74	4.00	796.39	298.21	0.181	0.24	0.22	5.519	A
90%	East	1233.76	308.44	1137.62	643.55	81.34	8.00	1139.92	1087.00	1.082	57.36	81.40	227.449	F

Main results: (16:45-17:00)

Intersection	Leg	Total Demand (Veh/hr)	Intersection Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	V/C Ratio	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
85%	North	243.04	60.76	243.54	334.15	819.37	9.00	587.37	575.90	0.414	0.84	0.72	10.488	B
85%	West	389.06	97.26	389.65	715.44	347.46	6.00	924.43	752.22	0.421	0.88	0.74	6.741	A
85%	South	131.88	32.97	132.04	207.74	529.36	4.00	776.02	301.36	0.170	0.25	0.21	5.593	A
85%	East	1123.84	280.96	1080.89	588.77	72.63	8.00	1082.28	1027.52	1.038	115.40	126.14	408.131	F
90%	North	243.04	60.76	243.53	349.59	854.58	9.00	621.12	601.97	0.391	0.77	0.65	9.549	A
90%	West	391.88	97.97	392.39	745.34	352.77	6.00	987.29	799.59	0.397	0.79	0.67	6.058	A
90%	South	131.88	32.97	132.02	213.05	532.11	4.00	837.30	298.21	0.158	0.22	0.19	5.104	A
90%	East	1129.50	282.37	1129.67	589.63	74.50	8.00	1144.87	1087.00	0.987	81.40	81.35	258.527	F

Queueing Delay Results for each time segment

Queueing Delay results: (16:00-16:15)

Intersection	Leg	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	9.22	0.61	9.650	A	A
85%	West	10.22	0.68	6.591	A	A
85%	South	2.94	0.20	5.538	A	A
85%	East	200.22	13.35	49.767	E	D
90%	North	8.35	0.56	8.697	A	A
90%	West	9.31	0.62	5.935	A	A
90%	South	2.70	0.18	5.064	A	A
90%	East	145.30	9.69	35.628	E	D

Queueing Delay results: (16:15-16:30)

Intersection	Leg	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service

85%	North	12.85	0.86	11.659	B	B
85%	West	14.02	0.93	7.841	A	A
85%	South	3.96	0.26	6.435	A	A
85%	East	748.69	49.91	177.278	F	F
90%	North	11.81	0.79	10.676	B	B
90%	West	12.59	0.84	6.957	A	A
90%	South	3.59	0.24	5.819	A	A
90%	East	541.52	36.10	125.301	F	F

Queueing Delay results: (16:30-16:45)

Intersection	Leg	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	12.83	0.86	11.232	B	B
85%	West	13.48	0.90	7.391	A	A
85%	South	3.73	0.25	6.079	A	A
85%	East	1449.20	96.61	329.839	F	F
90%	North	11.79	0.79	10.347	B	B
90%	West	12.08	0.81	6.593	A	A
90%	South	3.38	0.23	5.519	A	A
90%	East	1041.15	69.41	227.449	F	F

Queueing Delay results: (16:45-17:00)

Intersection	Leg	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	11.08	0.74	10.488	B	B
85%	West	11.30	0.75	6.741	A	A
85%	South	3.15	0.21	5.593	A	A
85%	East	1811.59	120.77	408.131	F	F
90%	North	10.07	0.67	9.549	A	A
90%	West	10.20	0.68	6.058	A	A
90%	South	2.87	0.19	5.104	A	A
90%	East	1220.64	81.38	258.527	F	F

Queue Variation Results for each time segment

Queue Variation results: (16:00-16:15)

Intersection	Leg	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.65	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	0.71	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.20	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	21.78	?	?	?	?	No excess capacity in final time segment - unable to calculate queue statistics		N/A	N/A
90%	North	0.58	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	0.64	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.18	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	14.26	0.00	0.00	0.00	15.00			N/A	N/A

Queue Variation results: (16:15-16:30)

Intersection	Leg	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.89	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

85%	West	0.97	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.27	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	77.80	?	?	?	?	No excess capacity in final time segment - unable to calculate queue statistics		N/A	N/A
90%	North	0.82	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	0.86	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.24	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	57.36	0.00	10.00	158.00	>199			N/A	N/A

Queue Variation results: (16:30-16:45)

Intersection	Leg	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.84	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	0.88	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.25	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	115.40	?	?	?	?	No excess capacity in final time segment - unable to calculate queue statistics		N/A	N/A
90%	North	0.77	0.00	0.00	0.00	1.00			N/A	N/A
90%	West	0.79	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.22	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	81.40	0.00	37.00	>199	>199			N/A	N/A

Queue Variation results: (16:45-17:00)

Intersection	Leg	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.72	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	0.74	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.21	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	126.14	?	?	?	?	No excess capacity in final time segment - unable to calculate queue statistics		N/A	N/A
90%	North	0.65	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	0.67	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.19	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	81.35	0.00	36.00	>199	>199			N/A	N/A

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]
© Copyright TRL Limited, 2020

For sales and distribution information, program advice and maintenance, contact TRL:
Tel: +44 (0)1344 770758 email: software@trl.co.uk Web: http://www.trlsoftware.co.uk

The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: Conservation & Beaver Creek.arc8
Path: C:\Users\AdamMorrison\Paradigm\Projects - 170278 Beaver Creek Area TES\C5 - Analysis and Evaluation\Arcady
Report generation date: 2020-07-21 4:28:13 PM

Summary of intersection performance

	AM					
	Queue (PCE)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS
	All - Total 2027					
Intersection 85% - Leg North	0.50	7.10	0.32	A	277.85	F
Intersection 85% - Leg West	150.57	533.68	1.27	F		
Intersection 85% - Leg South	1.38	14.24	0.58	B		
Intersection 85% - Leg East	1.37	8.57	0.57	A		
Intersection 90% - Leg North	0.44	6.52	0.30	A	190.31	F
Intersection 90% - Leg West	115.59	370.22	1.20	F		
Intersection 90% - Leg South	1.38	13.42	0.58	B		
Intersection 90% - Leg East	1.40	8.18	0.57	A		

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Intersection LOS and Intersection Delay are demand-weighted averages.

"D1 - Existing, AM" model duration: 8:00 AM - 9:30 AM
"D2 - Existing, PM" model duration: 5:00 PM - 6:30 PM
"D3 - Background 2022, AM" model duration: 8:00 AM - 9:30 AM
"D4 - Background 2022, PM" model duration: 5:00 PM - 6:30 PM
"D5 - Total 2022, AM" model duration: 8:00 AM - 9:30 AM
"D6 - Total 2022, PM" model duration: 5:00 PM - 6:30 PM
"D7 - Background 2025, AM" model duration: 8:00 AM - 9:30 AM
"D8 - Background 2025, PM" model duration: 5:00 PM - 6:30 PM
"D9 - Total 2025, AM" model duration: 8:00 AM - 9:30 AM
"D10 - Total 2025, PM" model duration: 5:00 PM - 6:30 PM
"D11 - Background 2027, AM" model duration: 8:00 AM - 9:30 AM
"D12 - Background 2027, PM" model duration: 5:00 PM - 6:30 PM
"D13 - Total 2027, AM " model duration: 8:00 AM - 9:30 AM
"D14 - Total 2027, PM" model duration: 5:00 PM - 6:30 PM
"D15 - Background 2032, AM" model duration: 8:00 AM - 9:30 AM
"D16 - Background 2032, PM" model duration: 5:00 PM - 6:30 PM
"D17 - Total 2032, AM" model duration: 8:00 AM - 9:30 AM
"D18 - Total 2032, PM" model duration: 5:00 PM - 6:30 PM

Run using Junctions 8.0.6.541 at 2020-07-21 4:28:12 PM

File summary

Title	(untitled)
Location	
Site Number	
Date	2018-09-11
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	170278
Analyst	AdamMorrison
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)
7.50	✓		N/A	0.85	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	PCE	PCE	perHour	s	-Min	perMin

All - Total 2027, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
All	ARCADY		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
Total 2027, AM	Total 2027	AM		ONE HOUR	08:00	09:30	90	15				✓		

Intersection Network

Intersections

Junction	Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Do Geometric Delay	Intersection Delay (s)	Intersection LOS
85%	85%	Conservation Drive & Beaver Creek Road	Roundabout	North,West,South,East				277.85	F
90%	90%	Conservation Drive & Beaver Creek Road	Roundabout	North,West,South,East				190.31	F

Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

Legs

Legs

Intersection	Leg	Leg	Name	Description
85%	**North**	North	Beaver Creek Road	
85%	**West**	West	Conservation Drive	
85%	**South**	South	Beaver Creek Road	
85%	**East**	East	Conservation Drive	
90%	**North**	North	Beaver Creek Road	
90%	**West**	West	Conservation Drive	
90%	**South**	South	Beaver Creek Road	
90%	**East**	East	Conservation Drive	

Capacity Options

Intersection	Leg	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)	Assume Flat Start Profile	Initial Queue (PCE)
85%	North	0.00	99999.00		0.00
85%	West	0.00	99999.00		0.00
85%	South	0.00	99999.00		0.00
85%	East	0.00	99999.00		0.00
90%	North	0.00	99999.00		0.00
90%	West	0.00	99999.00		0.00
90%	South	0.00	99999.00		0.00
90%	East	0.00	99999.00		0.00

Roundabout Geometry

Intersection	Leg	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
85%	North	3.50	4.50	30.00	20.00	40.00	25.00	
85%	West	3.50	4.50	30.00	20.00	40.00	25.00	
85%	South	3.50	4.50	30.00	20.00	40.00	25.00	
85%	East	3.50	4.50	30.00	20.00	40.00	25.00	
90%	North	3.50	4.50	30.00	20.00	40.00	25.00	
90%	West	3.50	4.50	30.00	20.00	40.00	25.00	
90%	South	3.50	4.50	30.00	20.00	40.00	25.00	
90%	East	3.50	4.50	30.00	20.00	40.00	25.00	

Slope / Intercept / Capacity

Leg Intercept Adjustments

Intersection	Leg	Type	Reason	Direct Intercept Adjustment (PCE/hr)	Percentage Intercept Adjustment (%)
85%	North	Percentage	Region of Waterloo		85.00
85%	West	Percentage	Region of Waterloo		85.00
85%	South	Percentage	Region of Waterloo		85.00
85%	East	Percentage	Region of Waterloo		85.00
90%	North	Percentage	Region of Waterloo		90.00
90%	West	Percentage	Region of Waterloo		90.00
90%	South	Percentage	Region of Waterloo		90.00
90%	East	Percentage	Region of Waterloo		90.00

Roundabout Slope and Intercept used in model

Intersection	Leg	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
85%	North		(calculated)	(calculated)	0.579	1153.828
85%	West		(calculated)	(calculated)	0.579	1153.828
85%	South		(calculated)	(calculated)	0.579	1153.828
85%	East		(calculated)	(calculated)	0.579	1153.828
90%	North		(calculated)	(calculated)	0.579	1221.701
90%	West		(calculated)	(calculated)	0.579	1221.701
90%	South		(calculated)	(calculated)	0.579	1221.701
90%	East		(calculated)	(calculated)	0.579	1221.701

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCE Factor for a Truck (PCE)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Intersection	Leg	Profile Type	Use Turning Counts	Average Demand Flow (PCE/hr)	Flow Scaling Factor (%)
85%	North	ONE HOUR	✓	230.00	100.000
85%	West	ONE HOUR	✓	1132.00	100.000
85%	South	ONE HOUR	✓	323.00	100.000
85%	East	ONE HOUR	✓	528.00	100.000
90%	North	ONE HOUR	✓	223.00	100.000
90%	West	ONE HOUR	✓	1135.00	100.000
90%	South	ONE HOUR	✓	342.00	100.000
90%	East	ONE HOUR	✓	564.00	100.000

Turning Proportions

Turning Counts / Proportions (PCE/hr) - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.000	120.000	50.000	60.000
	West	126.000	0.000	130.000	876.000
	South	37.000	64.000	0.000	222.000
	East	18.000	352.000	158.000	0.000

Turning Proportions (PCE) - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.00	0.52	0.22	0.26
	West	0.11	0.00	0.11	0.77
	South	0.11	0.20	0.00	0.69
	East	0.03	0.67	0.30	0.00

Turning Counts / Proportions (PCE/hr) - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.000	109.000	54.000	60.000
	West	117.000	0.000	128.000	890.000
	South	39.000	75.000	0.000	228.000
	East	18.000	379.000	167.000	0.000

Turning Proportions (PCE) - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.00	0.49	0.24	0.27
	West	0.10	0.00	0.11	0.78
	South	0.11	0.22	0.00	0.67
	East	0.03	0.67	0.30	0.00

Vehicle Mix

Average PCE Per Vehicle - Intersection 85% (for whole period)

		To			
		North	West	South	East

From	North	1.000	1.110	1.000	1.000
	West	1.000	1.000	1.000	1.030
	South	1.090	1.000	1.000	1.010
	East	1.040	1.060	1.060	1.000

Truck Percentages - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.0	11.0	0.0	0.0
	West	0.0	0.0	0.0	3.0
	South	9.0	0.0	0.0	1.0
	East	4.0	6.0	6.0	0.0

Average PCE Per Vehicle - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	1.000	1.110	1.000	1.000
	West	1.000	1.000	1.000	1.030
	South	1.090	1.000	1.000	1.010
	East	1.040	1.060	1.060	1.000

Truck Percentages - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.0	11.0	0.0	0.0
	West	0.0	0.0	0.0	3.0
	South	9.0	0.0	0.0	1.0
	East	4.0	6.0	6.0	0.0

Results

Results Summary for whole modelled period

Intersection	Leg	Max V/C Ratio	Max Delay (s)	Max Queue (PCE)	Max 95th percentile Queue (PCE)	Max LOS	Average Demand (PCE/hr)	Total Intersection Arrivals (PCE)	Total Queueing Delay (PCE-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCE-min/min)	Inclusive Total Queueing Delay (PCE-min)	Inclusive Average Queueing Delay (s)
85%	North	0.32	7.10	0.50	1.05	A	211.05	316.58	32.19	6.10	0.36	32.19	6.10
85%	West	1.27	533.68	150.57	204.61	F	1038.74	1558.11	6890.35	265.33	76.56	7216.58	277.90
85%	South	0.58	14.24	1.38	2.03	B	296.39	444.59	85.83	11.58	0.95	85.86	11.59
85%	East	0.57	8.57	1.37	1.06	A	484.50	726.75	86.12	7.11	0.96	86.13	7.11
90%	North	0.30	6.52	0.44	~1	A	204.63	306.94	28.84	5.64	0.32	28.84	5.64
90%	West	1.20	370.22	115.59	176.02	F	1041.50	1562.24	4846.33	186.13	53.85	4903.65	188.33
90%	South	0.58	13.42	1.38	2.03	B	313.83	470.74	84.62	10.79	0.94	84.64	10.79
90%	East	0.57	8.18	1.40	1.06	A	517.54	776.30	87.47	6.76	0.97	87.48	6.76

Main Results for each time segment

Main results: (08:00-08:15)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	173.16	43.29	172.17	134.06	429.27	0.00	905.38	530.22	0.191	0.00	0.25	5.171	A
85%	West	852.23	213.06	835.34	400.90	200.53	0.00	1037.77	836.79	0.821	0.00	4.22	17.006	C
85%	South	243.17	60.79	241.04	251.55	784.32	0.00	699.89	645.09	0.347	0.00	0.53	7.940	A
85%	East	397.51	99.38	394.98	857.01	168.35	0.00	1056.39	983.18	0.376	0.00	0.63	5.744	A
90%	North	167.89	41.97	166.99	129.31	464.60	0.00	952.81	553.74	0.176	0.00	0.22	4.810	A
90%	West	854.49	213.62	841.18	421.25	210.34	0.00	1099.97	880.10	0.777	0.00	3.33	13.617	B
90%	South	257.48	64.37	255.43	260.27	791.25	0.00	763.76	683.55	0.337	0.00	0.51	7.169	A
90%	East	424.61	106.15	422.05	874.82	171.86	0.00	1122.24	1037.32	0.378	0.00	0.64	5.427	A

Main results: (08:15-08:30)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	206.77	51.69	206.42	156.98	514.80	0.00	855.88	530.23	0.242	0.25	0.33	5.843	A
85%	West	1017.64	254.41	967.77	480.76	240.47	0.00	1014.66	836.79	1.003	4.22	16.69	51.666	F
85%	South	290.37	72.59	289.07	297.76	910.48	0.00	626.88	645.09	0.463	0.53	0.86	10.791	B
85%	East	474.66	118.67	473.68	1001.44	198.11	0.00	1039.17	983.18	0.457	0.63	0.88	6.730	A
90%	North	200.47	50.12	200.17	153.27	557.02	0.00	899.32	553.74	0.223	0.22	0.30	5.408	A
90%	West	1020.34	255.09	991.39	505.03	252.16	0.00	1075.76	880.10	0.948	3.33	10.56	35.180	E
90%	South	307.45	76.86	306.21	310.11	933.44	0.00	681.46	683.55	0.451	0.51	0.82	9.719	A
90%	East	507.02	126.76	506.02	1035.39	204.27	0.00	1103.48	1037.32	0.459	0.64	0.89	6.373	A

Main results: (08:30-08:45)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	253.23	63.31	252.60	169.45	629.75	0.00	789.35	530.22	0.321	0.33	0.49	7.063	A
85%	West	1246.36	311.59	980.95	588.15	294.20	0.00	983.56	836.79	1.267	16.69	83.04	193.793	F
85%	South	355.63	88.91	353.64	340.96	934.19	0.00	613.15	645.09	0.580	0.86	1.36	13.990	B
85%	East	581.34	145.33	579.44	1068.07	219.77	0.00	1026.64	983.18	0.566	0.88	1.35	8.487	A
90%	North	245.53	61.38	244.97	169.39	681.36	0.00	827.36	553.74	0.297	0.30	0.44	6.491	A
90%	West	1249.66	312.41	1037.34	617.81	308.52	0.00	1043.14	880.10	1.198	10.56	63.64	140.409	F
90%	South	376.55	94.14	374.43	359.59	986.26	0.00	650.89	683.55	0.579	0.82	1.35	13.129	B
90%	East	620.98	155.24	619.01	1128.95	231.74	0.00	1087.58	1037.32	0.571	0.89	1.38	8.104	A

Main results: (08:45-09:00)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	253.23	63.31	253.22	169.92	631.91	0.00	788.11	530.22	0.321	0.49	0.50	7.096	A
85%	West	1246.36	311.59	982.71	590.08	295.05	0.00	983.07	836.79	1.268	83.04	148.95	428.203	F
85%	South	355.63	88.91	355.52	341.85	935.91	0.00	612.16	645.09	0.581	1.36	1.38	14.244	B
85%	East	581.34	145.33	581.28	1070.88	220.55	0.00	1026.18	983.18	0.567	1.35	1.37	8.569	A
90%	North	245.53	61.38	245.52	170.14	683.65	0.00	826.03	553.74	0.297	0.44	0.44	6.516	A
90%	West	1249.66	312.41	1041.88	619.80	309.36	0.00	1042.65	880.10	1.199	63.64	115.59	315.319	F
90%	South	376.55	94.14	376.43	360.80	990.44	0.00	648.48	683.55	0.581	1.35	1.38	13.423	B
90%	East	620.98	155.24	620.92	1133.99	232.88	0.00	1086.92	1037.32	0.571	1.38	1.40	8.181	A

Main results: (09:00-09:15)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	206.77	51.69	207.39	162.25	518.13	0.00	853.96	530.23	0.242	0.50	0.34	5.878	A
85%	West	1017.64	254.41	1011.18	483.74	241.78	0.00	1013.90	836.79	1.004	148.95	150.57	533.679	F
85%	South	290.37	72.59	292.05	303.80	949.15	0.00	604.50	645.09	0.480	1.38	0.96	11.777	B
85%	East	474.66	118.67	476.51	1037.33	203.87	0.00	1035.83	983.18	0.458	1.37	0.91	6.839	A
90%	North	200.47	50.12	201.02	161.34	560.49	0.00	897.31	553.74	0.223	0.44	0.30	5.439	A
90%	West	1020.34	255.09	1065.57	508.05	253.46	0.00	1075.01	880.10	0.949	115.59	104.28	370.222	F
90%	South	307.45	76.86	309.17	319.54	999.49	0.00	643.24	683.55	0.478	1.38	0.95	11.007	B
90%	East	507.02	126.76	508.93	1095.76	212.90	0.00	1098.48	1037.32	0.462	1.40	0.92	6.488	A

Main results: (09:15-09:30)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	173.16	43.29	173.51	156.18	433.30	0.00	903.05	530.22	0.192	0.34	0.25	5.207	A
85%	West	852.23	213.06	1029.79	404.58	202.23	0.00	1036.79	836.79	0.822	150.57	106.18	449.828	F
85%	South	243.17	60.79	244.20	275.23	956.79	0.00	600.08	645.09	0.405	0.96	0.71	10.314	B
85%	East	397.51	99.38	398.50	1010.00	190.98	0.00	1043.30	983.18	0.381	0.91	0.66	5.922	A

90%	North	167.89	41.97	168.20	155.25	468.72	0.00	950.42	553.74	0.177	0.30	0.23	4.839	A
90%	West	854.49	213.62	1088.32	424.91	212.01	0.00	1099.00	880.10	0.778	104.28	45.82	250.847	F
90%	South	257.48	64.37	258.47	289.49	1010.84	0.00	636.67	683.55	0.404	0.95	0.70	9.699	A
90%	East	424.61	106.15	425.63	1070.96	198.35	0.00	1106.91	1037.32	0.384	0.92	0.67	5.605	A

Queueing Delay Results for each time segment

Queueing Delay results: (08:00-08:15)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	3.61	0.24	5.171	A	A
85%	West	54.14	3.61	17.006	C	B
85%	South	7.66	0.51	7.940	A	A
85%	East	9.15	0.61	5.744	A	A
90%	North	3.26	0.22	4.810	A	A
90%	West	44.14	2.94	13.617	B	B
90%	South	7.35	0.49	7.169	A	A
90%	East	9.25	0.62	5.427	A	A

Queueing Delay results: (08:15-08:30)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	4.89	0.33	5.843	A	A
85%	West	173.85	11.59	51.666	F	D
85%	South	12.30	0.82	10.791	B	B
85%	East	12.79	0.85	6.730	A	A
90%	North	4.40	0.29	5.408	A	A
90%	West	121.26	8.08	35.180	E	D
90%	South	11.79	0.79	9.719	A	A
90%	East	12.95	0.86	6.373	A	A

Queueing Delay results: (08:30-08:45)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	7.18	0.48	7.063	A	A
85%	West	750.17	50.01	193.793	F	F
85%	South	19.16	1.28	13.990	B	B
85%	East	19.45	1.30	8.487	A	A
90%	North	6.41	0.43	6.491	A	A
90%	West	561.56	37.44	140.409	F	F
90%	South	19.08	1.27	13.129	B	B
90%	East	19.86	1.32	8.104	A	A

Queueing Delay results: (08:45-09:00)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	7.42	0.49	7.096	A	A
85%	West	1740.10	116.01	428.203	F	F
85%	South	20.58	1.37	14.244	B	B
85%	East	20.45	1.36	8.569	A	A
90%	North	6.61	0.44	6.516	A	A
90%	West	1344.53	89.64	315.319	F	F
90%	South	20.54	1.37	13.423	B	B
90%	East	20.86	1.39	8.181	A	A

Queueing Delay results: (09:00-09:15)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	5.23	0.35	5.878	A	A
85%	West	2246.45	149.76	533.679	F	F
85%	South	15.13	1.01	11.777	B	B
85%	East	14.11	0.94	6.839	A	A

90%	North	4.68	0.31	5.439	A	A
90%	West	1649.04	109.94	370.222	F	F
90%	South	14.94	1.00	11.007	B	B
90%	East	14.29	0.95	6.488	A	A

Queueing Delay results: (09:15-09:30)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	3.86	0.26	5.207	A	A
85%	West	1925.65	128.38	449.828	F	F
85%	South	10.99	0.73	10.314	B	B
85%	East	10.15	0.68	5.922	A	A
90%	North	3.47	0.23	4.839	A	A
90%	West	1125.80	75.05	250.847	F	F
90%	South	10.92	0.73	9.699	A	A
90%	East	10.25	0.68	5.605	A	A

Queue Variation Results for each time segment

Queue Variation results: (08:00-08:15)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.25	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	4.22	0.00	0.00	8.18	15.35			N/A	N/A
85%	South	0.53	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	0.63	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.22	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	3.33	0.00	0.00	7.16	11.26			N/A	N/A
90%	South	0.51	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.64	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:15-08:30)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.33	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	16.69	0.00	9.21	39.90	54.22			N/A	N/A
85%	South	0.86	0.00	0.00	0.00	1.02			N/A	N/A
85%	East	0.88	0.00	0.00	0.00	1.06			N/A	N/A
90%	North	0.30	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	10.56	0.00	5.12	25.58	34.79			N/A	N/A
90%	South	0.82	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.89	0.00	0.00	0.00	1.06			N/A	N/A

Queue Variation results: (08:30-08:45)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.49	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

85%	West	83.04	41.95	78.78	119.70	134.02			N/A	N/A
85%	South	1.36	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	1.35	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.44	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	63.64	28.65	59.36	94.15	106.43			N/A	N/A
90%	South	1.35	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	1.38	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:45-09:00)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.50	0.00	0.00	0.00	1.05			N/A	N/A
85%	West	148.95	92.08	145.27	197.45	>199			N/A	N/A
85%	South	1.38	0.00	0.00	0.00	2.03			N/A	N/A
85%	East	1.37	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.44	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	115.59	64.47	111.55	159.65	176.02			N/A	N/A
90%	South	1.38	0.00	0.00	0.00	2.03			N/A	N/A
90%	East	1.40	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (09:00-09:15)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.34	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	150.57	85.94	145.27	>199	>199			N/A	N/A
85%	South	0.96	0.00	0.00	1.02	1.02			N/A	N/A
85%	East	0.91	0.00	0.00	0.00	1.06			N/A	N/A
90%	North	0.30	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	104.28	50.15	99.27	153.51	170.90			N/A	N/A
90%	South	0.95	0.00	0.00	1.02	1.02			N/A	N/A
90%	East	0.92	0.00	0.00	0.00	1.06			N/A	N/A

Queue Variation results: (09:15-09:30)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.25	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	106.18	43.99	99.24	163.69	186.20			N/A	N/A
85%	South	0.71	0.00	0.00	0.00	1.02			N/A	N/A
85%	East	0.66	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.23	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	45.82	17.40	41.96	71.64	81.87			N/A	N/A
90%	South	0.70	0.00	0.00	0.00	1.02			N/A	N/A
90%	East	0.67	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]
© Copyright TRL Limited, 2020

For sales and distribution information, program advice and maintenance, contact TRL:
Tel: +44 (0)1344 770758 email: software@trl.co.uk Web: http://www.trlsoftware.co.uk

The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: Conservation & Beaver Creek.arc8
Path: C:\Users\AdamMorrison\Paradigm\Projects - 170278 Beaver Creek Area TES\C5 - Analysis and Evaluation\Arcady
Report generation date: 2020-07-21 4:28:35 PM

Summary of intersection performance

	PM					
	Queue (PCE)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS
	All - Total 2027					
Intersection 85% - Leg North	0.27	9.20	0.21	A	341.03	F
Intersection 85% - Leg West	3.25	15.83	0.77	C		
Intersection 85% - Leg South	1.47	12.05	0.60	B		
Intersection 85% - Leg East	196.96	664.53	1.32	F		
Intersection 90% - Leg North	0.25	8.52	0.20	A	251.94	F
Intersection 90% - Leg West	2.76	13.14	0.74	B		
Intersection 90% - Leg South	1.22	10.00	0.55	A		
Intersection 90% - Leg East	149.37	489.01	1.25	F		

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Intersection LOS and Intersection Delay are demand-weighted averages.

"D1 - Existing, AM" model duration: 8:00 AM - 9:30 AM
"D2 - Existing, PM" model duration: 5:00 PM - 6:30 PM
"D3 - Background 2022, AM" model duration: 8:00 AM - 9:30 AM
"D4 - Background 2022, PM" model duration: 5:00 PM - 6:30 PM
"D5 - Total 2022, AM" model duration: 8:00 AM - 9:30 AM
"D6 - Total 2022, PM" model duration: 5:00 PM - 6:30 PM
"D7 - Background 2025, AM" model duration: 8:00 AM - 9:30 AM
"D8 - Background 2025, PM" model duration: 5:00 PM - 6:30 PM
"D9 - Total 2025, AM" model duration: 8:00 AM - 9:30 AM
"D10 - Total 2025, PM" model duration: 5:00 PM - 6:30 PM
"D11 - Background 2027, AM" model duration: 8:00 AM - 9:30 AM
"D12 - Background 2027, PM" model duration: 5:00 PM - 6:30 PM
"D13 - Total 2027, AM" model duration: 8:00 AM - 9:30 AM
"D14 - Total 2027, PM " model duration: 5:00 PM - 6:30 PM
"D15 - Background 2032, AM" model duration: 8:00 AM - 9:30 AM
"D16 - Background 2032, PM" model duration: 5:00 PM - 6:30 PM
"D17 - Total 2032, AM" model duration: 8:00 AM - 9:30 AM
"D18 - Total 2032, PM" model duration: 5:00 PM - 6:30 PM

Run using Junctions 8.0.6.541 at 2020-07-21 4:28:33 PM

File summary

Title	(untitled)
Location	
Site Number	
Date	2018-09-11
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	170278
Analyst	AdamMorrison
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)
7.50	✓		N/A	0.85	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	PCE	PCE	perHour	s	-Min	perMin

All - Total 2027, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
All	ARCADY		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
Total 2027, PM	Total 2027	PM		ONE HOUR	17:00	18:30	90	15				✓		

Intersection Network

Intersections

Junction	Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Do Geometric Delay	Intersection Delay (s)	Intersection LOS
85%	85%	Conservation Drive & Beaver Creek Road	Roundabout	North,West,South,East				341.03	F
90%	90%	Conservation Drive & Beaver Creek Road	Roundabout	North,West,South,East				251.94	F

Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

Legs

Legs

Intersection	Leg	Leg	Name	Description
85%	**North**	North	Beaver Creek Road	
85%	**West**	West	Conservation Drive	
85%	**South**	South	Beaver Creek Road	
85%	**East**	East	Conservation Drive	
90%	**North**	North	Beaver Creek Road	
90%	**West**	West	Conservation Drive	
90%	**South**	South	Beaver Creek Road	
90%	**East**	East	Conservation Drive	

Capacity Options

Intersection	Leg	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)	Assume Flat Start Profile	Initial Queue (PCE)
85%	North	0.00	99999.00		0.00
85%	West	0.00	99999.00		0.00
85%	South	0.00	99999.00		0.00
85%	East	0.00	99999.00		0.00
90%	North	0.00	99999.00		0.00
90%	West	0.00	99999.00		0.00
90%	South	0.00	99999.00		0.00
90%	East	0.00	99999.00		0.00

Roundabout Geometry

Intersection	Leg	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
85%	North	3.50	4.50	30.00	20.00	40.00	25.00	
85%	West	3.50	4.50	30.00	20.00	40.00	25.00	
85%	South	3.50	4.50	30.00	20.00	40.00	25.00	
85%	East	3.50	4.50	30.00	20.00	40.00	25.00	
90%	North	3.50	4.50	30.00	20.00	40.00	25.00	
90%	West	3.50	4.50	30.00	20.00	40.00	25.00	
90%	South	3.50	4.50	30.00	20.00	40.00	25.00	
90%	East	3.50	4.50	30.00	20.00	40.00	25.00	

Slope / Intercept / Capacity

Leg Intercept Adjustments

Intersection	Leg	Type	Reason	Direct Intercept Adjustment (PCE/hr)	Percentage Intercept Adjustment (%)
85%	North	Percentage	Region of Waterloo		85.00
85%	West	Percentage	Region of Waterloo		85.00
85%	South	Percentage	Region of Waterloo		85.00
85%	East	Percentage	Region of Waterloo		85.00
90%	North	Percentage	Region of Waterloo		90.00
90%	West	Percentage	Region of Waterloo		90.00
90%	South	Percentage	Region of Waterloo		90.00
90%	East	Percentage	Region of Waterloo		90.00

Roundabout Slope and Intercept used in model

Intersection	Leg	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
85%	North		(calculated)	(calculated)	0.579	1153.828
85%	West		(calculated)	(calculated)	0.579	1153.828
85%	South		(calculated)	(calculated)	0.579	1153.828
85%	East		(calculated)	(calculated)	0.579	1153.828
90%	North		(calculated)	(calculated)	0.579	1221.701
90%	West		(calculated)	(calculated)	0.579	1221.701
90%	South		(calculated)	(calculated)	0.579	1221.701
90%	East		(calculated)	(calculated)	0.579	1221.701

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCE Factor for a Truck (PCE)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Intersection	Leg	Profile Type	Use Turning Counts	Average Demand Flow (PCE/hr)	Flow Scaling Factor (%)
85%	North	ONE HOUR	✓	96.00	100.000
85%	West	ONE HOUR	✓	692.00	100.000
85%	South	ONE HOUR	✓	405.00	100.000
85%	East	ONE HOUR	✓	1206.00	100.000
90%	North	ONE HOUR	✓	96.00	100.000
90%	West	ONE HOUR	✓	702.00	100.000
90%	South	ONE HOUR	✓	405.00	100.000
90%	East	ONE HOUR	✓	1219.00	100.000

Turning Proportions

Turning Counts / Proportions (PCE/hr) - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.000	38.000	23.000	35.000
	West	34.000	0.000	84.000	574.000
	South	40.000	154.000	0.000	211.000
	East	57.000	890.000	259.000	0.000

Turning Proportions (PCE) - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.00	0.40	0.24	0.36
	West	0.05	0.00	0.12	0.83
	South	0.10	0.38	0.00	0.52
	East	0.05	0.74	0.21	0.00

Turning Counts / Proportions (PCE/hr) - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.000	38.000	23.000	35.000
	West	36.000	0.000	84.000	582.000
	South	40.000	152.000	0.000	213.000
	East	57.000	899.000	263.000	0.000

Turning Proportions (PCE) - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.00	0.40	0.24	0.36
	West	0.05	0.00	0.12	0.83
	South	0.10	0.38	0.00	0.53
	East	0.05	0.74	0.22	0.00

Vehicle Mix

Average PCE Per Vehicle - Intersection 85% (for whole period)

		To			
		North	West	South	East

From	North	1.000	1.000	1.030	1.000
	West	1.000	1.000	1.000	1.020
	South	1.000	1.000	1.000	1.000
	East	1.000	1.010	1.000	1.000

Truck Percentages - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.0	0.0	3.0	0.0
	West	0.0	0.0	0.0	2.0
	South	0.0	0.0	0.0	0.0
	East	0.0	1.0	0.0	0.0

Average PCE Per Vehicle - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	1.000	1.000	1.030	1.000
	West	1.000	1.000	1.000	1.020
	South	1.000	1.000	1.000	1.000
	East	1.000	1.010	1.000	1.000

Truck Percentages - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.0	0.0	3.0	0.0
	West	0.0	0.0	0.0	2.0
	South	0.0	0.0	0.0	0.0
	East	0.0	1.0	0.0	0.0

Results

Results Summary for whole modelled period

Intersection	Leg	Max V/C Ratio	Max Delay (s)	Max Queue (PCE)	Max 95th percentile Queue (PCE)	Max LOS	Average Demand (PCE/hr)	Total Intersection Arrivals (PCE)	Total Queueing Delay (PCE-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCE-min/min)	Inclusive Total Queueing Delay (PCE-min)	Inclusive Average Queueing Delay (s)
85%	North	0.21	9.20	0.27	~1	A	88.09	132.14	18.63	8.46	0.21	18.63	8.46
85%	West	0.77	15.83	3.25	9.15	C	634.99	952.49	174.89	11.02	1.94	174.93	11.02
85%	South	0.60	12.05	1.47	2.00	B	371.64	557.45	82.30	8.86	0.91	82.32	8.86
85%	East	1.32	664.53	196.96	201.47	F	1106.65	1659.97	8990.83	324.98	99.90	9735.55	351.89
90%	North	0.20	8.52	0.25	~1	A	88.09	132.14	17.14	7.78	0.19	17.14	7.78
90%	West	0.74	13.14	2.76	7.12	B	644.17	966.25	153.44	9.53	1.70	153.47	9.53
90%	South	0.55	10.00	1.22	?	A	371.64	557.45	71.02	7.64	0.79	71.03	7.65
90%	East	1.25	489.01	149.37	201.47	F	1118.58	1677.86	6815.69	243.73	75.73	7083.95	253.32

Main Results for each time segment

Main results: (17:00-17:15)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	72.27	18.07	71.73	97.21	959.96	0.00	598.24	490.04	0.121	0.00	0.14	6.878	A
85%	West	520.97	130.24	516.79	797.91	233.77	0.00	1018.53	863.19	0.511	0.00	1.05	7.236	A
85%	South	304.91	76.23	302.79	270.35	480.20	0.00	875.91	611.49	0.348	0.00	0.53	6.259	A
85%	East	907.94	226.99	886.73	612.56	170.43	0.00	1055.19	959.76	0.860	0.00	5.30	19.588	C
90%	North	72.27	18.07	71.78	98.98	972.91	0.00	658.62	520.05	0.110	0.00	0.12	6.172	A

90%	West	528.50	132.13	524.69	806.86	237.83	0.00	1084.05	912.85	0.488	0.00	0.95	6.498	A
90%	South	304.91	76.23	303.00	274.45	488.08	0.00	939.22	646.86	0.325	0.00	0.48	5.641	A
90%	East	917.73	229.43	901.34	620.52	170.55	0.00	1122.99	1017.12	0.817	0.00	4.10	15.391	C

Main results: (17:15-17:30)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	86.30	21.58	86.06	113.91	1097.56	0.00	518.60	490.04	0.166	0.14	0.20	8.378	A
85%	West	622.09	155.52	619.74	915.34	268.28	0.00	998.56	863.18	0.623	1.05	1.64	9.598	A
85%	South	364.09	91.02	363.06	312.13	575.89	0.00	820.53	611.49	0.444	0.53	0.79	7.851	A
85%	East	1084.17	271.04	1007.11	734.58	204.36	0.00	1035.55	959.76	1.047	5.30	24.57	66.811	F
90%	North	86.30	21.58	86.07	117.19	1136.32	0.00	564.05	520.05	0.153	0.12	0.18	7.581	A
90%	West	631.08	157.77	629.05	944.05	278.34	0.00	1060.61	912.85	0.595	0.95	1.46	8.439	A
90%	South	364.09	91.02	363.22	322.23	585.16	0.00	883.03	646.86	0.412	0.48	0.69	6.914	A
90%	East	1095.86	273.96	1049.05	743.93	204.45	0.00	1103.37	1017.12	0.993	4.10	15.80	45.888	E

Main results: (17:30-17:45)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	105.70	26.42	105.43	128.57	1128.99	0.00	500.42	490.04	0.211	0.20	0.27	9.171	A
85%	West	761.91	190.48	755.84	954.23	280.19	0.00	991.67	863.18	0.768	1.64	3.15	15.129	C
85%	South	445.91	111.48	443.32	333.50	702.53	0.00	747.23	611.49	0.597	0.79	1.43	11.743	B
85%	East	1327.83	331.96	1008.06	896.35	249.49	0.00	1009.43	959.76	1.315	24.57	104.51	239.939	F
90%	North	105.70	26.42	105.43	133.45	1190.44	0.00	532.72	520.05	0.198	0.18	0.25	8.479	A
90%	West	772.92	193.23	768.00	1000.44	295.43	0.00	1050.72	912.85	0.736	1.46	2.69	12.722	B
90%	South	445.91	111.48	443.87	348.89	714.54	0.00	808.15	646.86	0.552	0.69	1.20	9.827	A
90%	East	1342.14	335.54	1074.07	908.60	249.81	0.00	1077.12	1017.12	1.246	15.80	82.82	175.545	F

Main results: (17:45-18:00)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	105.70	26.42	105.69	129.10	1130.23	0.00	499.70	490.04	0.212	0.27	0.27	9.200	A
85%	West	761.91	190.48	761.50	955.50	280.41	0.00	991.54	863.18	0.768	3.15	3.25	15.828	C
85%	South	445.91	111.48	445.78	334.32	707.59	0.00	744.30	611.49	0.599	1.43	1.47	12.047	B
85%	East	1327.83	331.96	1008.38	902.43	250.95	0.00	1008.59	959.76	1.317	104.51	184.37	517.534	F
90%	North	105.70	26.42	105.69	133.97	1193.05	0.00	531.21	520.05	0.199	0.25	0.25	8.519	A
90%	West	772.92	193.23	772.65	1002.73	296.01	0.00	1050.38	912.85	0.736	2.69	2.76	13.141	B
90%	South	445.91	111.48	445.83	349.93	718.73	0.00	805.73	646.86	0.553	1.20	1.22	10.001	A
90%	East	1342.14	335.54	1076.04	913.58	250.98	0.00	1076.44	1017.12	1.247	82.82	149.34	392.562	F

Main results: (18:00-18:15)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	86.30	21.58	86.53	115.94	1124.37	0.00	503.09	490.04	0.172	0.27	0.21	8.707	A
85%	West	622.09	155.52	628.14	936.60	274.30	0.00	995.08	863.18	0.625	3.25	1.74	10.130	B
85%	South	364.09	91.02	366.68	319.00	583.44	0.00	816.16	611.49	0.446	1.47	0.82	8.056	A
85%	East	1084.17	271.04	1033.80	743.61	206.51	0.00	1034.31	959.76	1.048	184.37	196.96	664.533	F
90%	North	86.30	21.58	86.52	120.01	1181.93	0.00	537.65	520.05	0.161	0.25	0.19	8.041	A
90%	West	631.08	157.77	635.91	979.77	288.68	0.00	1054.62	912.85	0.598	2.76	1.55	8.837	A
90%	South	364.09	91.02	366.11	333.23	591.37	0.00	879.44	646.86	0.414	1.22	0.72	7.042	A
90%	East	1095.86	273.96	1095.76	751.30	206.18	0.00	1102.37	1017.12	0.994	149.34	149.37	489.011	F

Main results: (18:15-18:30)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	72.27	18.07	72.44	105.51	1115.54	0.00	508.20	490.04	0.142	0.21	0.17	8.322	A
85%	West	520.97	130.24	523.43	918.98	269.00	0.00	998.14	863.19	0.522	1.74	1.13	7.749	A
85%	South	304.91	76.23	306.00	306.12	486.30	0.00	872.38	611.49	0.350	0.82	0.54	6.367	A
85%	East	907.94	226.99	1048.75	620.01	172.30	0.00	1054.11	959.76	0.861	196.96	161.76	616.229	F

90%	North	72.27	18.07	72.42	109.53	1177.19	0.00	540.39	520.05	0.134	0.19	0.16	7.750	A
90%	West	528.50	132.13	530.58	965.40	284.22	0.00	1057.21	912.85	0.500	1.55	1.03	6.978	A
90%	South	304.91	76.23	305.82	321.30	493.49	0.00	936.09	646.86	0.326	0.72	0.49	5.719	A
90%	East	917.73	229.43	1114.53	627.12	172.19	0.00	1122.04	1017.12	0.818	149.37	100.17	404.120	F

Queueing Delay Results for each time segment

Queueing Delay results: (17:00-17:15)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	1.99	0.13	6.878	A	A
85%	West	14.93	1.00	7.236	A	A
85%	South	7.63	0.51	6.259	A	A
85%	East	65.75	4.38	19.588	C	B
90%	North	1.79	0.12	6.172	A	A
90%	West	13.67	0.91	6.498	A	A
90%	South	6.91	0.46	5.641	A	A
90%	East	53.06	3.54	15.391	C	B

Queueing Delay results: (17:15-17:30)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	2.90	0.19	8.378	A	A
85%	West	23.31	1.55	9.598	A	A
85%	South	11.38	0.76	7.851	A	A
85%	East	238.74	15.92	66.811	F	E
90%	North	2.63	0.18	7.581	A	A
90%	West	20.95	1.40	8.439	A	A
90%	South	10.08	0.67	6.914	A	A
90%	East	167.28	11.15	45.888	E	D

Queueing Delay results: (17:30-17:45)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	3.89	0.26	9.171	A	A
85%	West	42.96	2.86	15.129	C	B
85%	South	20.25	1.35	11.743	B	B
85%	East	969.16	64.61	239.939	F	F
90%	North	3.60	0.24	8.479	A	A
90%	West	37.24	2.48	12.722	B	B
90%	South	17.15	1.14	9.827	A	A
90%	East	742.20	49.48	175.545	F	F

Queueing Delay results: (17:45-18:00)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	4.01	0.27	9.200	A	A
85%	West	48.20	3.21	15.828	C	B
85%	South	21.83	1.46	12.047	B	B
85%	East	2166.68	144.45	517.534	F	F
90%	North	3.72	0.25	8.519	A	A
90%	West	40.96	2.73	13.141	B	B
90%	South	18.23	1.22	10.001	A	A
90%	East	1741.34	116.09	392.562	F	F

Queueing Delay results: (18:00-18:15)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	3.25	0.22	8.707	A	A
85%	West	27.83	1.86	10.130	B	B
85%	South	12.82	0.85	8.056	A	A
85%	East	2860.05	190.67	664.533	F	F

90%	North	2.99	0.20	8.041	A	A
90%	West	24.55	1.64	8.837	A	A
90%	South	11.15	0.74	7.042	A	A
90%	East	2240.32	149.35	489.011	F	F

Queueing Delay results: (18:15-18:30)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	2.59	0.17	8.322	A	A
85%	West	17.66	1.18	7.749	A	A
85%	South	8.40	0.56	6.367	A	A
85%	East	2690.46	179.36	616.229	F	F
90%	North	2.41	0.16	7.750	A	A
90%	West	16.06	1.07	6.978	A	A
90%	South	7.51	0.50	5.719	A	A
90%	East	1871.49	124.77	404.120	F	F

Queue Variation Results for each time segment

Queue Variation results: (17:00-17:15)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.14	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	1.05	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.53	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	5.30	0.00	0.00	6.04	18.13			N/A	N/A
90%	North	0.12	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	0.95	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.48	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	4.10	0.00	0.00	9.07	15.11			N/A	N/A

Queue Variation results: (17:15-17:30)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.20	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	1.64	0.00	0.00	3.05	4.07			N/A	N/A
85%	South	0.79	0.00	0.00	0.00	1.00			N/A	N/A
85%	East	24.57	0.00	14.10	59.43	79.58			N/A	N/A
90%	North	0.18	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	1.46	0.00	0.00	2.03	4.07			N/A	N/A
90%	South	0.69	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	15.80	0.00	9.07	37.27	51.38			N/A	N/A

Queue Variation results: (17:30-17:45)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.27	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

85%	West	3.15	0.00	0.00	2.03	9.15			N/A	N/A
85%	South	1.43	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	104.51	52.38	99.73	151.10	169.24			N/A	N/A
90%	North	0.25	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	2.69	0.00	0.00	1.02	7.12			N/A	N/A
90%	South	1.20	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	82.82	41.30	78.57	118.87	132.97			N/A	N/A

Queue Variation results: (17:45-18:00)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.27	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	3.25	0.00	0.00	0.00	5.08			N/A	N/A
85%	South	1.47	0.00	0.00	0.00	2.00			N/A	N/A
85%	East	184.37	117.86	180.32	>199	>199			N/A	N/A
90%	North	0.25	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	2.76	0.00	0.00	0.00	3.05			N/A	N/A
90%	South	1.22	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	149.34	92.68	145.06	198.45	>199			N/A	N/A

Queue Variation results: (18:00-18:15)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.21	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	1.74	0.00	0.00	3.05	5.08			N/A	N/A
85%	South	0.82	0.00	0.00	1.00	1.00			N/A	N/A
85%	East	196.96	121.89	191.40	>199	>199			N/A	N/A
90%	North	0.19	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	1.55	0.00	0.00	3.05	4.07			N/A	N/A
90%	South	0.72	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	149.37	84.62	144.05	>199	>199			N/A	N/A

Queue Variation results: (18:15-18:30)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.17	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	1.13	0.00	0.00	2.03	3.05			N/A	N/A
85%	South	0.54	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	161.76	84.62	155.13	>199	>199			N/A	N/A
90%	North	0.16	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	1.03	0.00	0.00	1.02	3.05			N/A	N/A
90%	South	0.49	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	100.17	40.29	92.68	156.14	178.30			N/A	N/A

Appendix I

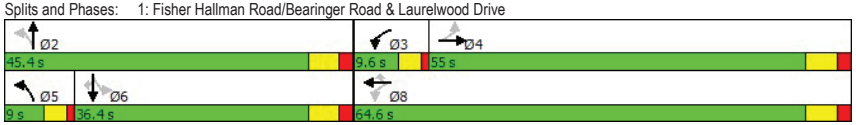
2032 Background Traffic Operations Reports

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	384	282	250	47	43	16	85	711	108	52	283	95
Future Volume (vph)	384	282	250	47	43	16	85	711	108	52	283	95
Ideal Flow (vphpl)	1775	1650	1650	1775	1900	1750	1775	1775	1775	1775	1900	1750
Storage Length (m)	85.0		0.0	90.0		90.0	90.0		0.0	60.0		60.0
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (m)	35.0			7.5			45.0			70.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Ped Bike Factor	1.00	0.99				0.99	1.00	1.00		1.00		0.98
Frt		0.930				0.850		0.980				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1653	1483	0	1188	1845	1488	1506	3199	0	1686	3574	1430
Flt Permitted	0.729			0.184			0.493			0.294		
Satd. Flow (perm)	1265	1483	0	230	1845	1465	780	3199	0	521	3574	1397
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		54				69		18				109
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		133.2			228.2			160.2			234.1	
Travel Time (s)		9.6			16.4			11.5			16.9	
Confl. Peds. (#/hr)	2		7	7		2	2		3	3		2
Peak Hour 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
Heavy Vehicles (%)	2%	1%	4%	42%	3%	0%	12%	1%	16%	0%	1%	4%
Adj. Flow (vph)	384	282	250	47	43	16	85	711	108	52	283	95
Shared Lane Traffic (%)												
Lane Group Flow (vph)	384	532	0	47	43	16	85	819	0	52	283	95
Turn Type	Perm	NA		pm+pt	NA	Perm	pm+pt	NA		Perm	NA	Perm
Protected Phases		4		3	8		5	2			6	
Permitted Phases	4			8		8	2			6		6
Detector Phase	4	4		3	8	8	5	2		6	6	6
Switch Phase												
Minimum Initial (s)	20.0	20.0		5.0	20.0	20.0	5.0	30.0		30.0	30.0	30.0
Minimum Split (s)	26.0	26.0		9.5	26.0	26.0	9.0	36.0		36.0	36.0	36.0
Total Split (s)	55.0	55.0		9.6	64.6	64.6	9.0	45.4		36.4	36.4	36.4
Total Split (%)	50.0%	50.0%		8.7%	58.7%	58.7%	8.2%	41.3%		33.1%	33.1%	33.1%
Maximum Green (s)	49.0	49.0		5.6	58.6	58.6	5.0	39.4		30.4	30.4	30.4
Yellow Time (s)	4.0	4.0		3.0	4.0	4.0	3.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		1.0	2.0	2.0	1.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		0.0	-2.0	-2.0	0.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lag	Lag		Lead			Lead			Lag	Lag	Lag
Lead-Lag Optimize?				Yes								
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None	None	None	Max		Max	Max	Max
Walk Time (s)	12.0	12.0			12.0	12.0		9.0		9.0	9.0	9.0
Flash Dont Walk (s)	10.0	10.0			10.0	10.0		21.0		21.0	21.0	21.0
Pedestrian Calls (#/hr)	0	0			0	0		0		0	0	0
Act Effct Green (s)	38.5	38.5		43.7	43.7	43.7	42.5	42.5		35.6	35.6	35.6
Actuated g/C Ratio	0.41	0.41		0.46	0.46	0.46	0.45	0.45		0.38	0.38	0.38
v/c Ratio	0.74	0.84		0.29	0.05	0.02	0.22	0.56		0.27	0.21	0.16

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	33.5	35.1		16.8	12.3	0.1	21.8	23.6		32.8	24.9	5.1
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	33.5	35.1		16.8	12.3	0.1	21.8	23.6		32.8	24.9	5.1
LOS	C	D		B	B	A	C	C		C	C	A
Approach Delay		34.4			12.4			23.4			21.5	
Approach LOS		C			B			C			C	
Queue Length 50th (m)	65.0	86.7		4.7	4.2	0.0	10.4	65.4		7.8	21.9	0.0
Queue Length 95th (m)	101.0	132.6		10.7	9.7	0.0	24.0	101.2		21.7	37.4	9.8
Internal Link Dist (m)		109.2			204.2			136.2			210.1	
Turn Bay Length (m)	85.0			90.0		90.0	90.0			60.0		60.0
Base Capacity (vph)	701	846		164	1216	989	390	1450		196	1349	595
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.55	0.63		0.29	0.04	0.02	0.22	0.56		0.27	0.21	0.16

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 94.4			
Natural Cycle: 85			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay: 26.8		Intersection LOS: C	
Intersection Capacity Utilization 101.8%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 1: Fisher Hallman Road/Bearinger Road & Laurelwood Drive



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	384	282	250	47	43	16	85	711	108	52	283	95
Future Volume (vph)	384	282	250	47	43	16	85	711	108	52	283	95
Ideal Flow (vphpl)	1775	1650	1650	1775	1900	1750	1775	1775	1775	1775	1900	1750
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.99	1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.93		1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1649	1483		1188	1845	1466	1504	3200		1684	3574	1397
Flt Permitted	0.73	1.00		0.18	1.00	1.00	0.49	1.00		0.29	1.00	1.00
Satd. Flow (perm)	1265	1483		230	1845	1466	781	3200		522	3574	1397
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	384	282	250	47	43	16	85	711	108	52	283	95
RTOR Reduction (vph)	0	33	0	0	0	8	0	10	0	0	0	60
Lane Group Flow (vph)	384	499	0	47	43	8	85	809	0	52	283	35
Confl. Peds. (#/hr)	2		7	7		2	2		3	3		2
Heavy Vehicles (%)	2%	1%	4%	42%	3%	0%	12%	1%	16%	0%	1%	4%
Turn Type	Perm	NA		pm+pt	NA	Perm	pm+pt	NA		Perm	NA	Perm
Protected Phases		4		3	8		5	2			6	
Permitted Phases	4			8		8	2			6		6
Actuated Green, G (s)	36.5	36.5		43.5	43.5	43.5	41.4	41.4		33.6	33.6	33.6
Effective Green, g (s)	38.5	38.5		43.5	45.5	45.5	41.4	43.4		35.6	35.6	35.6
Actuated g/C Ratio	0.40	0.40		0.45	0.47	0.47	0.43	0.45		0.37	0.37	0.37
Clearance Time (s)	6.0	6.0		4.0	6.0	6.0	4.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	502	589		132	866	688	362	1433		191	1313	513
v/s Ratio Prot		c0.34		c0.01	0.02		0.01	c0.25			0.08	
v/s Ratio Perm	0.30			0.15		0.01	0.09			0.10		0.02
v/c Ratio	0.76	0.85		0.36	0.05	0.01	0.23	0.56		0.27	0.22	0.07
Uniform Delay, d1	25.3	26.5		18.7	14.0	13.7	17.0	19.8		21.5	21.1	19.9
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	6.8	10.9		1.6	0.0	0.0	0.3	1.6		3.5	0.4	0.3
Delay (s)	32.1	37.5		20.3	14.0	13.7	17.4	21.4		25.0	21.4	20.1
Level of Service	C	D		C	B	B	B	C		C	C	C
Approach Delay (s)		35.2			16.8			21.0			21.6	
Approach LOS		D			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	26.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	96.9	Sum of lost time (s)	16.0
Intersection Capacity Utilization	101.8%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	144	42	403	53	34	14	83	188	26	12	324	22
Future Volume (vph)	144	42	403	53	34	14	83	188	26	12	324	22
Ideal Flow (vphpl)	1650	1650	1750	1550	1550	1550	1775	1650	1650	1550	1550	1550
Storage Length (m)	0.0		25.0	0.0		0.0	25.0		0.0	0.0		0.0
Storage Lanes	0		1	0		0	1		0	0		0
Taper Length (m)	0.0			0.0			35.0			0.0		
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			0.850		0.981			0.982			0.992	
Flt Protected		0.963			0.974		0.950				0.998	
Satd. Flow (prot)	0	1531	1473	0	1447	0	1606	1556	0	0	1492	0
Flt Permitted		0.963			0.974		0.950				0.998	
Satd. Flow (perm)	0	1531	1473	0	1447	0	1606	1556	0	0	1492	0
Link Speed (k/h)		60			50			50			50	
Link Distance (m)		1012.1			151.5			558.2			326.3	
Travel Time (s)		60.7			10.9			40.2			23.5	
Confl. Peds. (#/hr)	3		1	1		3	3		1	1		3
Peak Hour 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
Heavy Vehicles (%)	4%	3%	1%	0%	7%	0%	5%	4%	5%	20%	2%	6%
Adj. Flow (vph)	144	42	403	53	34	14	83	188	26	12	324	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	186	403	0	101	0	83	214	0	0	358	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	68.1%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	144	42	403	53	34	14	83	188	26	12	324	22
Future Volume (vph)	144	42	403	53	34	14	83	188	26	12	324	22
Peak Hour 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
Hourly flow rate (vph)	144	42	403	53	34	14	83	188	26	12	324	22

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1
Volume Total (vph)	186	403	101	83	214	358
Volume Left (vph)	144	0	53	83	0	12
Volume Right (vph)	0	403	14	0	26	22
Hadj (s)	0.45	-0.68	0.06	0.58	-0.01	0.02
Departure Headway (s)	7.5	6.3	8.1	8.0	7.4	7.2
Degree Utilization, x	0.39	0.71	0.23	0.18	0.44	0.71
Capacity (veh/h)	467	550	385	423	450	479
Control Delay (s)	13.9	21.8	13.4	11.6	14.8	25.9
Approach Delay (s)	19.3		13.4	13.9		25.9
Approach LOS	C		B	B		D

Intersection Summary				
Delay	19.4			
Level of Service	C			
Intersection Capacity Utilization	68.1%	ICU Level of Service	C	
Analysis Period (min)	15			

Intersection	
Intersection Delay, s/veh	21.7
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	144	42	403	53	34	14	83	188	26	12	324	22
Future Vol, veh/h	144	42	403	53	34	14	83	188	26	12	324	22
Peak Hour 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
Heavy Vehicles, %	4	3	1	0	7	0	5	4	5	20	2	6
Mvmt Flow	144	42	403	53	34	14	83	188	26	12	324	22
Number of Lanes	0	1	1	0	1	0	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	2
HCM Control Delay	21.3	13.8	15.1	30
HCM LOS	C	B	C	D

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	100%	0%	77%	0%	52%	3%
Vol Thru, %	0%	88%	23%	0%	34%	91%
Vol Right, %	0%	12%	0%	100%	14%	6%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	83	214	186	403	101	358
LT Vol	83	0	144	0	53	12
Through Vol	0	188	42	0	34	324
RT Vol	0	26	0	403	14	22
Lane Flow Rate	83	214	186	403	101	358
Geometry Grp	7	7	7	7	6	6
Degree of Util (X)	0.187	0.444	0.391	0.72	0.231	0.75
Departure Headway (Hd)	8.091	7.472	7.563	6.434	8.23	7.542
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	443	482	476	560	435	480
Service Time	5.847	5.228	5.312	4.182	6.304	5.592
HCM Lane V/C Ratio	0.187	0.444	0.391	0.72	0.232	0.746
HCM Control Delay	12.7	16.1	15.1	24.1	13.8	30
HCM Lane LOS	B	C	C	C	B	D
HCM 95th-tile Q	0.7	2.2	1.8	5.9	0.9	6.3

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	195	102	143	70	34	352
Future Volume (vph)	195	102	143	70	34	352
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.954				0.877	
Flt Protected				0.968	0.996	
Satd. Flow (prot)	1513	0	0	1551	1496	0
Flt Permitted				0.968	0.996	
Satd. Flow (perm)	1513	0	0	1551	1496	0
Link Speed (k/h)	80			80	50	
Link Distance (m)	1516.2			424.2	223.3	
Travel Time (s)	68.2			19.1	16.1	
Confl. Peds. (#/hr)		1	1			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	6%	2%	5%	14%	2%
Adj. Flow (vph)	195	102	143	70	34	352
Shared Lane Traffic (%)						
Lane Group Flow (vph)	297	0	0	213	386	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 67.8%		ICU Level of Service C	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	195	102	143	70	34	352
Future Volume (Veh/h)	195	102	143	70	34	352
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	195	102	143	70	34	352
Pedestrians					1	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			298		603	247
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			298		603	247
tC, single (s)			4.1		6.5	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			89		91	56
cM capacity (veh/h)			1262		392	791

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	297	213	386
Volume Left	0	143	34
Volume Right	102	0	352
cSH	1700	1262	726
Volume to Capacity	0.17	0.11	0.53
Queue Length 95th (m)	0.0	3.1	25.3
Control Delay (s)	0.0	5.8	15.4
Lane LOS		A	C
Approach Delay (s)	0.0	5.8	15.4
Approach LOS			C

Intersection Summary				
Average Delay		8.0		
Intersection Capacity Utilization		67.8%	ICU Level of Service	C
Analysis Period (min)		15		



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	16	85	117	51	202	76
Future Volume (vph)	16	85	117	51	202	76
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.886		0.959			
Flt Protected	0.992					0.965
Satd. Flow (prot)	1393	0	1470	0	0	1526
Flt Permitted	0.992					0.965
Satd. Flow (perm)	1393	0	1470	0	0	1526
Link Speed (k/h)	80		80			80
Link Distance (m)	1200.3		1761.7			383.9
Travel Time (s)	54.0		79.3			17.3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	8%	12%	11%	0%	3%	8%
Adj. Flow (vph)	16	85	117	51	202	76
Shared Lane Traffic (%)						
Lane Group Flow (vph)	101	0	168	0	0	278
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	44.8%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	16	85	117	51	202	76
Future Volume (Veh/h)	16	85	117	51	202	76
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	16	85	117	51	202	76
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	622	142			168	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	622	142			168	
tC, single (s)	6.5	6.3			4.1	
tC, 2 stage (s)						
tF (s)	3.6	3.4			2.2	
p0 queue free %	96	90			86	
cM capacity (veh/h)	377	879			1404	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	101	168	278
Volume Left	16	0	202
Volume Right	85	51	0
cSH	726	1700	1404
Volume to Capacity	0.14	0.10	0.14
Queue Length 95th (m)	3.9	0.0	4.0
Control Delay (s)	10.8	0.0	6.1
Lane LOS	B		A
Approach Delay (s)	10.8	0.0	6.1
Approach LOS	B		

Intersection Summary			
Average Delay	5.1		
Intersection Capacity Utilization	44.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	27	86	85	84	62	34
Future Volume (vph)	27	86	85	84	62	34
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.897		0.933			
Flt Protected	0.988					0.969
Satd. Flow (prot)	1438	0	1495	0	0	1500
Flt Permitted	0.988					0.969
Satd. Flow (perm)	1438	0	1495	0	0	1500
Link Speed (k/h)	80		80			80
Link Distance (m)	605.5		233.8			1761.7
Travel Time (s)	27.2		10.5			79.3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	5%	10%	3%	3%	8%	4%
Adj. Flow (vph)	27	86	85	84	62	34
Shared Lane Traffic (%)						
Lane Group Flow (vph)	113	0	169	0	0	96
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	34.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	27	86	85	84	62	34
Future Volume (Veh/h)	27	86	85	84	62	34
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	27	86	85	84	62	34
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	285	127			169	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	285	127			169	
tC, single (s)	6.4	6.3			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.4			2.3	
p0 queue free %	96	90			95	
cM capacity (veh/h)	667	902			1373	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	113	169	96
Volume Left	27	0	62
Volume Right	86	84	0
cSH	832	1700	1373
Volume to Capacity	0.14	0.10	0.05
Queue Length 95th (m)	3.8	0.0	1.1
Control Delay (s)	10.0	0.0	5.1
Lane LOS	B		A
Approach Delay (s)	10.0	0.0	5.1
Approach LOS	B		

Intersection Summary			
Average Delay	4.3		
Intersection Capacity Utilization	34.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	51	5	84	31	28	0	174	149	68	131	0
Future Volume (vph)	7	51	5	84	31	28	0	174	149	68	131	0
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.989			0.974			0.938				
Flt Protected		0.994			0.971						0.983	
Satd. Flow (prot)	0	1499	0	0	1405	0	0	1383	0	0	1429	0
Flt Permitted		0.994			0.971						0.983	
Satd. Flow (perm)	0	1499	0	0	1405	0	0	1383	0	0	1429	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		187.7			400.3			618.6			394.6	
Travel Time (s)		13.5			28.8			44.5			28.4	
Peak Hour 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
Heavy Vehicles (%)	0%	2%	0%	6%	0%	4%	0%	7%	3%	4%	8%	0%
Adj. Flow (vph)	7	51	5	84	31	28	0	174	149	68	131	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	63	0	0	143	0	0	323	0	0	199	0
Sign Control		Stop			Stop			Free			Free	

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	51	5	84	31	28	0	174	149	68	131	0
Future Volume (Veh/h)	7	51	5	84	31	28	0	174	149	68	131	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	7	51	5	84	31	28	0	174	149	68	131	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	559	590	131	546	516	248	131			323		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	559	590	131	546	516	248	131			323		
tC, single (s)	7.1	6.5	6.2	7.2	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.0	3.3	2.2			2.2		
p0 queue free %	98	87	99	78	93	96	100			94		
cM capacity (veh/h)	387	397	924	380	440	785	1467			1226		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	63	143	323	199
Volume Left	7	84	0	68
Volume Right	5	28	149	0
cSH	414	437	1467	1226
Volume to Capacity	0.15	0.33	0.00	0.06
Queue Length 95th (m)	4.3	11.2	0.0	1.4
Control Delay (s)	15.2	17.2	0.0	3.1
Lane LOS	C	C		A
Approach Delay (s)	15.2	17.2	0.0	3.1
Approach LOS	C	C		

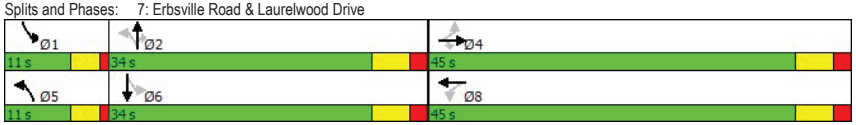
Intersection Summary				
Average Delay		5.5		
Intersection Capacity Utilization	61.9%	ICU Level of Service	B	
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	256	219	64	118	52	192	281	129	143	259	22
Future Volume (vph)	21	256	219	64	118	52	192	281	129	143	259	22
Ideal Flow (vphpl)	1775	1900	1750	1775	1650	1650	1775	1900	1750	1775	1650	1650
Storage Length (m)	20.0		20.0	25.0		0.0	65.0		30.0	25.0		0.0
Storage Lanes	1		1	1		0	1		1	1		0
Taper Length (m)	35.0			10.0			80.0			35.0		
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	0.84		0.92	0.96	0.93		0.99		0.91	0.96	1.00	
Frt			0.850		0.954				0.850		0.988	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1591	1810	1403	1561	1357	0	1606	1776	1430	1653	1521	0
Flt Permitted	0.650			0.492			0.540			0.587		
Satd. Flow (perm)	919	1810	1296	778	1357	0	901	1776	1307	982	1521	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			211		31				127		5	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		123.5			178.3			236.9			930.8	
Travel Time (s)		8.9			12.8			17.1			67.0	
Confl. Peds. (#/hr)	79		23	23		79	9		27	27		9
Peak Hour 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
Heavy Vehicles (%)	6%	5%	6%	8%	9%	7%	5%	7%	4%	2%	6%	17%
Adj. Flow (vph)	21	256	219	64	118	52	192	281	129	143	259	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	21	256	219	64	170	0	192	281	129	143	281	0
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2		2	6		
Detector Phase	4	4	4	8	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0		5.0	28.0	28.0	5.0	28.0	
Minimum Split (s)	14.0	14.0	14.0	14.0	14.0		9.0	34.0	34.0	9.0	34.0	
Total Split (s)	45.0	45.0	45.0	45.0	45.0		11.0	34.0	34.0	11.0	34.0	
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%		12.2%	37.8%	37.8%	12.2%	37.8%	
Maximum Green (s)	39.0	39.0	39.0	39.0	39.0		7.0	28.0	28.0	7.0	28.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		1.0	2.0	2.0	1.0	2.0	
Lost Time Adjust (s)	0.0	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	6.0		4.0	6.0	6.0	4.0	6.0	
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	None	None		None	Max	Max	None	Max	
Walk Time (s)	7.0	7.0	7.0	7.0	7.0			7.0	7.0		7.0	
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0			11.0	11.0		11.0	
Pedestrian Calls (#/hr)	0	0	0	0	0			0	0		0	
Act Effct Green (s)	14.5	14.5	14.5	14.5	14.5		38.0	30.5	30.5	36.9	28.1	
Actuated g/C Ratio	0.22	0.22	0.22	0.22	0.22		0.58	0.46	0.46	0.56	0.43	
v/c Ratio	0.10	0.64	0.49	0.37	0.52		0.32	0.34	0.19	0.23	0.43	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	20.8	30.8	7.8	27.9	24.2		7.9	14.8	4.0	7.1	16.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	20.8	30.8	7.8	27.9	24.2		7.9	14.8	4.0	7.1	16.5	
LOS	C	C	A	C	C		A	B	A	A	B	
Approach Delay		20.3			25.2			10.3			13.3	
Approach LOS		C			C			B			B	
Queue Length 50th (m)	2.2	29.9	0.8	7.0	15.5		8.9	23.3	0.2	6.4	23.5	
Queue Length 95th (m)	7.2	51.0	15.9	17.2	32.4		22.1	47.6	10.0	16.7	49.7	
Internal Link Dist (m)		99.5			154.3			212.9			906.8	
Turn Bay Length (m)	20.0		20.0	25.0			65.0		30.0	25.0		
Base Capacity (vph)	547	1078	857	463	820		596	824	674	626	653	
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Reduced v/c Ratio	0.04	0.24	0.26	0.14	0.21		0.32	0.34	0.19	0.23	0.43	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 65.7			
Natural Cycle: 60			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.64			
Intersection Signal Delay: 15.8		Intersection LOS: B	
Intersection Capacity Utilization 74.5%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 7: Erbsville Road & Laurelwood Drive



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	256	219	64	118	52	192	281	129	143	259	22
Future Volume (vph)	21	256	219	64	118	52	192	281	129	143	259	22
Ideal Flow (vphpl)	1775	1900	1750	1775	1650	1650	1775	1900	1750	1775	1650	1650
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0		4.0	6.0	6.0	4.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.94	1.00	0.95		1.00	1.00	0.93	1.00	1.00	
Flpb, ped/bikes	0.88	1.00	1.00	0.97	1.00		0.99	1.00	1.00	0.98	1.00	
Frt	1.00	1.00	0.85	1.00	0.95		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1407	1810	1317	1518	1380		1597	1776	1332	1622	1522	
Flt Permitted	0.65	1.00	1.00	0.49	1.00		0.54	1.00	1.00	0.59	1.00	
Satd. Flow (perm)	963	1810	1317	786	1380		908	1776	1332	1002	1522	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	21	256	219	64	118	52	192	281	129	143	259	22
RTOR Reduction (vph)	0	0	165	0	24	0	0	0	69	0	3	0
Lane Group Flow (vph)	21	256	54	64	146	0	192	281	60	143	278	0
Confl. Peds. (#/hr)	79		23	23		79	9		27	27		9
Heavy Vehicles (%)	6%	5%	6%	8%	9%	7%	5%	7%	4%	2%	6%	17%
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2		2	6		
Actuated Green, G (s)	14.5	14.5	14.5	14.5	14.5		37.5	30.5	30.5	34.5	29.0	
Effective Green, g (s)	14.5	14.5	14.5	14.5	14.5		37.5	30.5	30.5	34.5	29.0	
Actuated g/C Ratio	0.22	0.22	0.22	0.22	0.22		0.56	0.46	0.46	0.52	0.44	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		4.0	6.0	6.0	4.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	209	394	287	171	300		584	814	610	571	663	
v/s Ratio Prot		c0.14			0.11		c0.03	0.16		0.02	c0.18	
v/s Ratio Perm	0.02		0.04	0.08			0.15		0.05	0.11		
v/c Ratio	0.10	0.65	0.19	0.37	0.49		0.33	0.35	0.10	0.25	0.42	
Uniform Delay, d1	20.8	23.7	21.2	22.1	22.7		7.2	11.6	10.2	8.4	12.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.2	3.7	0.3	1.4	1.2		0.3	1.2	0.3	0.2	1.9	
Delay (s)	21.0	27.4	21.5	23.5	24.0		7.6	12.7	10.5	8.7	14.9	
Level of Service	C	C	C	C	C		A	B	B	A	B	
Approach Delay (s)		24.5			23.9			10.6			12.8	
Approach LOS		C			C			B			B	

Intersection Summary				
HCM 2000 Control Delay	16.8	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.47			
Actuated Cycle Length (s)	66.5	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	74.5%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	621	96	41	197	30	63	42	220	42	22	11
Future Volume (vph)	34	621	96	41	197	30	63	42	220	42	22	11
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
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		0.983			0.985			0.909			0.980	
Flt Protected		0.998			0.992			0.990			0.973	
Satd. Flow (prot)	0	1484	0	0	1432	0	0	1370	0	0	1455	0
Flt Permitted		0.998			0.992			0.990			0.973	
Satd. Flow (perm)	0	1484	0	0	1432	0	0	1370	0	0	1455	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		213.7			555.1			104.8			136.8	
Travel Time (s)		15.4			40.0			7.5			9.8	
Confl. Peds. (#/hr)	10		4	4		10	7		10	10		7
Peak Hour 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
Heavy Vehicles (%)	0%	3%	0%	6%	6%	4%	0%	9%	1%	0%	0%	11%
Adj. Flow (vph)	34	621	96	41	197	30	63	42	220	42	22	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	751	0	0	268	0	0	325	0	0	75	0
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Roundabout			
Intersection Capacity Utilization	85.0%	ICU Level of Service	E
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Traffic Volume (veh/h)	34	621	96	41	197	30	63	42	220	42	22	11
Future Volume (veh/h)	34	621	96	41	197	30	63	42	220	42	22	11
Peak Hour 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
Hourly flow rate (vph)	34	621	96	41	197	30	63	42	220	42	22	11
Approach Volume (veh/h)		751			268			325			75	
Crossing Volume (veh/h)		105			139			697			301	
High Capacity (veh/h)		1276			1242			797			1093	
High v/c (veh/h)		0.59			0.22			0.41			0.07	
Low Capacity (veh/h)		1062			1032			634			897	
Low v/c (veh/h)		0.71			0.26			0.51			0.08	

Intersection Summary				
Maximum v/c High		0.59		
Maximum v/c Low		0.71		
Intersection Capacity Utilization		85.0%	ICU Level of Service	E



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	225	23	23	81	20	86
Future Volume (vph)	225	23	23	81	20	86
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.987				0.890	
Flt Protected				0.989	0.991	
Satd. Flow (prot)	1585	0	0	1477	1503	0
Flt Permitted				0.989	0.991	
Satd. Flow (perm)	1585	0	0	1477	1503	0
Link Speed (k/h)	80			80	50	
Link Distance (m)	1200.3			667.7	811.2	
Travel Time (s)	54.0			30.0	58.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	0%	5%	12%	6%	3%
Adj. Flow (vph)	225	23	23	81	20	86
Shared Lane Traffic (%)						
Lane Group Flow (vph)	248	0	0	104	106	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	38.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	225	23	23	81	20	86
Future Volume (Veh/h)	225	23	23	81	20	86
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	225	23	23	81	20	86
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			248		364	236
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			248		364	236
tC, single (s)			4.1		6.5	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			98		97	89
cM capacity (veh/h)			1300		617	800

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	248	104	106
Volume Left	0	23	20
Volume Right	23	0	86
cSH	1700	1300	758
Volume to Capacity	0.15	0.02	0.14
Queue Length 95th (m)	0.0	0.4	3.9
Control Delay (s)	0.0	1.8	10.5
Lane LOS		A	B
Approach Delay (s)	0.0	1.8	10.5
Approach LOS			B

Intersection Summary			
Average Delay		2.9	
Intersection Capacity Utilization		38.5%	ICU Level of Service A
Analysis Period (min)		15	

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	28	0	108	67	6	139
Future Volume (vph)	28	0	108	67	6	139
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.948			
Flt Protected	0.950					0.998
Satd. Flow (prot)	1612	0	1536	0	0	1561
Flt Permitted	0.950					0.998
Satd. Flow (perm)	1612	0	1536	0	0	1561
Link Speed (k/h)	70		50			50
Link Distance (m)	143.4		394.6			123.0
Travel Time (s)	7.4		28.4			8.9
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	4%	0%	3%	0%	40%	4%
Adj. Flow (vph)	28	0	108	67	6	139
Shared Lane Traffic (%)						
Lane Group Flow (vph)	28	0	175	0	0	145
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 24.0%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	28	0	108	67	6	139
Future Volume (Veh/h)	28	0	108	67	6	139
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	28	0	108	67	6	139
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	292	142			175	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	292	142			175	
tC, single (s)	6.4	6.2			4.5	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.6	
p0 queue free %	96	100			100	
cM capacity (veh/h)	691	912			1202	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	28	175	145
Volume Left	28	0	6
Volume Right	0	67	0
cSH	691	1700	1202
Volume to Capacity	0.04	0.10	0.00
Queue Length 95th (m)	1.0	0.0	0.1
Control Delay (s)	10.4	0.0	0.4
Lane LOS	B		A
Approach Delay (s)	10.4	0.0	0.4
Approach LOS	B		

Intersection Summary			
Average Delay		1.0	
Intersection Capacity Utilization		24.0%	ICU Level of Service A
Analysis Period (min)		15	



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	257	20	60	129	18	89
Future Volume (vph)	257	20	60	129	18	89
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.990				0.888	
Flt Protected				0.984	0.992	
Satd. Flow (prot)	1589	0	0	1571	1488	0
Flt Permitted				0.984	0.992	
Satd. Flow (perm)	1589	0	0	1571	1488	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	166.4			228.8	212.1	
Travel Time (s)	12.0			16.5	15.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	0%	4%	3%	7%	4%
Adj. Flow (vph)	257	20	60	129	18	89
Shared Lane Traffic (%)						
Lane Group Flow (vph)	277	0	0	189	107	0
Sign Control	Free			Free	Stop	

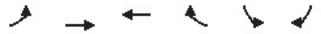
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	45.6%	ICU Level of Service A	
Analysis Period (min)	15		



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	257	20	60	129	18	89
Future Volume (Veh/h)	257	20	60	129	18	89
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	257	20	60	129	18	89
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			277		516	267
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			277		516	267
tC, single (s)			4.1		6.5	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			95		96	88
cM capacity (veh/h)			1274		486	767

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	277	189	107
Volume Left	0	60	18
Volume Right	20	0	89
cSH	1700	1274	699
Volume to Capacity	0.16	0.05	0.15
Queue Length 95th (m)	0.0	1.2	4.3
Control Delay (s)	0.0	2.8	11.1
Lane LOS		A	B
Approach Delay (s)	0.0	2.8	11.1
Approach LOS			B

Intersection Summary			
Average Delay		3.0	
Intersection Capacity Utilization		45.6%	ICU Level of Service A
Analysis Period (min)		15	



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	14	314	150	16	80	36
Future Volume (vph)	14	314	150	16	80	36
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.987		0.958	
Flt Protected		0.998			0.967	
Satd. Flow (prot)	0	1586	1588	0	1635	0
Flt Permitted		0.998			0.967	
Satd. Flow (perm)	0	1586	1588	0	1635	0
Link Speed (k/h)		60	60		50	
Link Distance (m)		98.4	372.2		168.6	
Travel Time (s)		5.9	22.3		12.1	
Confl. Peds. (#/hr)	10			10		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	4%	2%	8%	0%	0%
Adj. Flow (vph)	14	314	150	16	80	36
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	328	166	0	116	0
Sign Control		Free	Free		Stop	

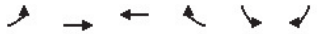
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 45.9%			ICU Level of Service A
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	14	314	150	16	80	36
Future Volume (Veh/h)	14	314	150	16	80	36
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	14	314	150	16	80	36
Pedestrians					10	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	176				510	168
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	176				510	168
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				85	96
cM capacity (veh/h)	1401				517	874

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	328	166	116
Volume Left	14	0	80
Volume Right	0	16	36
cSH	1401	1700	592
Volume to Capacity	0.01	0.10	0.20
Queue Length 95th (m)	0.2	0.0	5.8
Control Delay (s)	0.4	0.0	12.6
Lane LOS	A		B
Approach Delay (s)	0.4	0.0	12.6
Approach LOS			B

Intersection Summary			
Average Delay		2.6	
Intersection Capacity Utilization		45.9%	ICU Level of Service A
Analysis Period (min)		15	



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	17	378	133	30	73	33
Future Volume (vph)	17	378	133	30	73	33
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.975		0.958	
Flt Protected		0.998			0.967	
Satd. Flow (prot)	0	1601	1534	0	1613	0
Flt Permitted		0.998			0.967	
Satd. Flow (perm)	0	1601	1534	0	1613	0
Link Speed (k/h)		60	60		50	
Link Distance (m)		372.2	1012.1		87.7	
Travel Time (s)		22.3	60.7		6.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	3%	3%	13%	2%	0%
Adj. Flow (vph)	17	378	133	30	73	33
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	395	163	0	106	0
Sign Control		Free	Free		Stop	

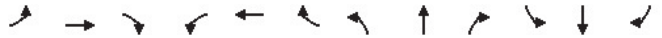
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 50.7%			ICU Level of Service A
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	17	378	133	30	73	33
Future Volume (Veh/h)	17	378	133	30	73	33
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	17	378	133	30	73	33
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	163				560	148
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	163				560	148
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				85	96
cM capacity (veh/h)	1428				484	904

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	395	163	106
Volume Left	17	0	73
Volume Right	0	30	33
cSH	1428	1700	566
Volume to Capacity	0.01	0.10	0.19
Queue Length 95th (m)	0.3	0.0	5.5
Control Delay (s)	0.4	0.0	12.8
Lane LOS	A		B
Approach Delay (s)	0.4	0.0	12.8
Approach LOS			B

Intersection Summary			
Average Delay		2.3	
Intersection Capacity Utilization		50.7%	ICU Level of Service A
Analysis Period (min)		15	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	96	6	79	34	2	9	25	368	5	6	253	23
Future Volume (vph)	96	6	79	34	2	9	25	368	5	6	253	23
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
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		0.941			0.973			0.998			0.989	
Flt Protected		0.974			0.964			0.997			0.999	
Satd. Flow (prot)	0	1402	0	0	1454	0	0	1510	0	0	1478	0
Flt Permitted		0.974			0.964			0.997			0.999	
Satd. Flow (perm)	0	1402	0	0	1454	0	0	1510	0	0	1478	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		77.1			66.0			326.3			223.3	
Travel Time (s)		5.6			4.8			23.5			16.1	
Confl. Peds. (#/hr)	7		1	1		7			5	5		
Peak Hour 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
Heavy Vehicles (%)	0%	0%	3%	0%	0%	0%	5%	2%	0%	0%	3%	11%
Adj. Flow (vph)	96	6	79	34	2	9	25	368	5	6	253	23
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	181	0	0	45	0	0	398	0	0	282	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 59.7%		ICU Level of Service B	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	96	6	79	34	2	9	25	368	5	6	253	23
Future Volume (Veh/h)	96	6	79	34	2	9	25	368	5	6	253	23
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	96	6	79	34	2	9	25	368	5	6	253	23
Pedestrians					5			1			7	
Lane Width (m)					3.6			3.6			3.6	
Walking Speed (m/s)					1.2			1.2			1.2	
Percent Blockage					0			0			1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	18			86			462	324	52	513	360	14
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	18			86			462	324	52	513	360	14
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.4
p0 queue free %	94			98			91	32	100	97	51	98
cM capacity (veh/h)	1603			1522			285	542	1017	199	516	1035

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	181	45	398	282
Volume Left	96	34	25	6
Volume Right	79	9	5	23
cSH	1603	1522	516	520
Volume to Capacity	0.06	0.02	0.77	0.54
Queue Length 95th (m)	1.5	0.5	55.3	25.7
Control Delay (s)	4.1	5.6	31.8	19.8
Lane LOS	A	A	D	C
Approach Delay (s)	4.1	5.6	31.8	19.8
Approach LOS			D	C

Intersection Summary					
Average Delay			21.2		
Intersection Capacity Utilization			59.7%	ICU Level of Service	B
Analysis Period (min)			15		

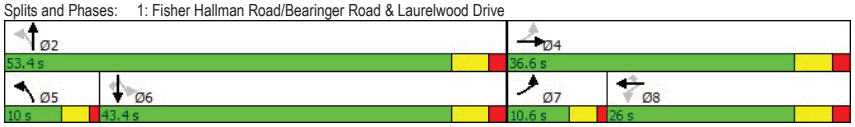


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	156	164	143	116	281	33	191	408	96	32	818	420
Future Volume (vph)	156	164	143	116	281	33	191	408	96	32	818	420
Ideal Flow (vphpl)	1775	1650	1650	1775	1900	1750	1775	1775	1775	1775	1900	1750
Storage Length (m)	85.0		0.0	90.0		90.0	90.0		0.0	60.0		60.0
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (m)	35.0			7.5			45.0			70.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Ped Bike Factor	1.00	0.98		0.98		0.99	1.00	1.00		1.00		0.98
Frt		0.930				0.850		0.971				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1670	1485	0	1686	1900	1488	1637	3261	0	1686	3610	1488
Flt Permitted	0.279			0.573			0.211			0.467		
Satd. Flow (perm)	490	1485	0	998	1900	1468	364	3261	0	828	3610	1456
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		55				133		50				416
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		133.2			228.2			160.2			234.1	
Travel Time (s)		9.6			16.4			11.5			16.9	
Confl. Peds. (#/hr)	1		23	23		1	1		2	2		1
Peak Hour 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
Heavy Vehicles (%)	1%	0%	3%	0%	0%	0%	3%	0%	0%	0%	0%	0%
Adj. Flow (vph)	156	164	143	116	281	33	191	408	96	32	818	420
Shared Lane Traffic (%)												
Lane Group Flow (vph)	156	307	0	116	281	33	191	504	0	32	818	420
Turn Type	pm+pt	NA		Perm	NA	Perm	pm+pt	NA		Perm	NA	Perm
Protected Phases	7	4			8		5	2			6	
Permitted Phases	4			8		8	2			6		6
Detector Phase	7	4		8	8	8	5	2		6	6	6
Switch Phase												
Minimum Initial (s)	5.0	20.0		20.0	20.0	20.0	5.0	37.0		37.0	37.0	37.0
Minimum Split (s)	9.5	26.0		26.0	26.0	26.0	9.0	43.0		43.0	43.0	43.0
Total Split (s)	10.6	36.6		26.0	26.0	26.0	10.0	53.4		43.4	43.4	43.4
Total Split (%)	11.8%	40.7%		28.9%	28.9%	28.9%	11.1%	59.3%		48.2%	48.2%	48.2%
Maximum Green (s)	6.6	30.6		20.0	20.0	20.0	6.0	47.4		37.4	37.4	37.4
Yellow Time (s)	3.0	4.0		4.0	4.0	4.0	3.0	4.0		4.0	4.0	4.0
All-Red Time (s)	1.0	2.0		2.0	2.0	2.0	1.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	-2.0		-2.0	-2.0	-2.0	0.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lead			Lag	Lag	Lag	Lead			Lag	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None	None	None	Max		Max	Max	Max
Walk Time (s)		12.0		12.0	12.0	12.0		16.0		16.0	16.0	16.0
Flash Dont Walk (s)		10.0		10.0	10.0	10.0		21.0		21.0	21.0	21.0
Pedestrian Calls (#/hr)		0		0	0	0		0		0	0	0
Act Effct Green (s)	32.6	32.6		22.0	22.0	22.0	49.4	49.4		39.4	39.4	39.4
Actuated g/C Ratio	0.36	0.36		0.24	0.24	0.24	0.55	0.55		0.44	0.44	0.44
v/c Ratio	0.59	0.54		0.48	0.61	0.07	0.67	0.28		0.09	0.52	0.48

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	30.8	22.5		36.8	36.6	0.3	24.4	10.1		15.8	19.9	3.8
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	30.8	22.5		36.8	36.6	0.3	24.4	10.1		15.8	19.9	3.8
LOS	C	C		D	D	A	C	B		B	B	A
Approach Delay		25.3			33.9			14.1			14.5	
Approach LOS		C			C			B			B	
Queue Length 50th (m)	19.7	35.4		18.1	45.5	0.0	16.6	21.3		3.3	55.2	0.4
Queue Length 95th (m)	34.7	61.5		35.6	72.1	0.0	#32.1	30.7		9.0	72.5	17.1
Internal Link Dist (m)		109.2			204.2			136.2			210.1	
Turn Bay Length (m)	85.0			90.0		90.0	90.0			60.0		60.0
Base Capacity (vph)	264	572		243	464	459	284	1812		362	1580	871
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.59	0.54		0.48	0.61	0.07	0.67	0.28		0.09	0.52	0.48

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.67			
Intersection Signal Delay: 19.0		Intersection LOS: B	
Intersection Capacity Utilization 112.7%		ICU Level of Service H	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 1: Fisher Hallman Road/Bearinger Road & Laurelwood Drive



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	156	164	143	116	281	33	191	408	96	32	818	420
Future Volume (vph)	156	164	143	116	281	33	191	408	96	32	818	420
Ideal Flow (vphpl)	1775	1650	1650	1775	1900	1750	1775	1775	1775	1775	1900	1750
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.98		1.00	1.00	0.99	1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		0.98	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.93		1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1669	1486		1655	1900	1468	1637	3262		1684	3610	1456
Flt Permitted	0.28	1.00		0.57	1.00	1.00	0.21	1.00		0.47	1.00	1.00
Satd. Flow (perm)	491	1486		999	1900	1468	364	3262		828	3610	1456
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	156	164	143	116	281	33	191	408	96	32	818	420
RTOR Reduction (vph)	0	35	0	0	0	25	0	23	0	0	0	234
Lane Group Flow (vph)	156	272	0	116	281	8	191	481	0	32	818	186
Confl. Peds. (#/hr)	1		23	23		1	1		2	2		1
Heavy Vehicles (%)	1%	0%	3%	0%	0%	0%	3%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA		Perm	NA	Perm	pm+pt	NA		Perm	NA	Perm
Protected Phases	7	4			8		5	2			6	
Permitted Phases	4			8		8	2			6		6
Actuated Green, G (s)	30.6	30.6		20.0	20.0	20.0	47.4	47.4		37.4	37.4	37.4
Effective Green, g (s)	30.6	32.6		22.0	22.0	22.0	47.4	49.4		39.4	39.4	39.4
Actuated g/C Ratio	0.34	0.36		0.24	0.24	0.24	0.53	0.55		0.44	0.44	0.44
Clearance Time (s)	4.0	6.0		6.0	6.0	6.0	4.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	253	538		244	464	358	276	1790		362	1580	637
v/s Ratio Prot	c0.05	0.18			0.15		c0.05	0.15			0.23	
v/s Ratio Perm	c0.16			0.12		0.01	c0.32			0.04		0.13
v/c Ratio	0.62	0.51		0.48	0.61	0.02	0.69	0.27		0.09	0.52	0.29
Uniform Delay, d1	22.7	22.4		29.1	30.2	25.8	13.5	10.7		14.8	18.4	16.3
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	4.4	0.7		1.5	2.2	0.0	7.3	0.4		0.5	1.2	1.2
Delay (s)	27.1	23.2		30.5	32.4	25.9	20.8	11.1		15.3	19.6	17.5
Level of Service	C	C		C	C	C	C	B		B	B	B
Approach Delay (s)		24.5			31.4			13.8			18.8	
Approach LOS		C			C			B			B	

Intersection Summary					
HCM 2000 Control Delay	20.4	HCM 2000 Level of Service		C	
HCM 2000 Volume to Capacity ratio	0.68				
Actuated Cycle Length (s)	90.0	Sum of lost time (s)		16.0	
Intersection Capacity Utilization	112.7%	ICU Level of Service		H	
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	38	145	22	36	15	386	326	47	10	361	176
Future Volume (vph)	51	38	145	22	36	15	386	326	47	10	361	176
Ideal Flow (vphpl)	1650	1650	1750	1550	1550	1550	1775	1650	1650	1550	1550	1550
Storage Length (m)	0.0		25.0	0.0		0.0	25.0		0.0	0.0		0.0
Storage Lanes	0		1	0		0	1		0	0		0
Taper Length (m)	0.0			0.0			35.0			0.0		
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			0.850		0.972			0.981			0.957	
Flt Protected		0.972			0.985		0.950				0.999	
Satd. Flow (prot)	0	1542	1473	0	1434	0	1653	1605	0	0	1465	0
Flt Permitted		0.972			0.985		0.950				0.999	
Satd. Flow (perm)	0	1542	1473	0	1434	0	1653	1605	0	0	1465	0
Link Speed (k/h)		60			50			50			50	
Link Distance (m)		1012.1			151.5			558.2			326.3	
Travel Time (s)		60.7			10.9			40.2			23.5	
Confl. Peds. (#/hr)	1					1						
Peak Hour 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
Heavy Vehicles (%)	7%	0%	1%	0%	7%	0%	2%	1%	0%	25%	1%	0%
Adj. Flow (vph)	51	38	145	22	36	15	386	326	47	10	361	176
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	89	145	0	73	0	386	373	0	0	547	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	81.8%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	51	38	145	22	36	15	386	326	47	10	361	176
Future Volume (vph)	51	38	145	22	36	15	386	326	47	10	361	176
Peak Hour 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
Hourly flow rate (vph)	51	38	145	22	36	15	386	326	47	10	361	176

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1
Volume Total (vph)	89	145	73	386	373	547
Volume Left (vph)	51	0	22	386	0	10
Volume Right (vph)	0	145	15	0	47	176
Hadj (s)	0.35	-0.68	0.00	0.53	-0.07	-0.17
Departure Headway (s)	8.4	7.3	8.6	7.2	6.5	6.5
Degree Utilization, x	0.21	0.30	0.18	0.77	0.68	0.99
Capacity (veh/h)	424	483	406	493	551	547
Control Delay (s)	12.4	12.2	13.5	29.0	21.1	60.4
Approach Delay (s)	12.3		13.5	25.1		60.4
Approach LOS	B		B	D		F

Intersection Summary					
Delay	34.7				
Level of Service	D				
Intersection Capacity Utilization	81.8%	ICU Level of Service		D	
Analysis Period (min)	15				

Intersection	
Intersection Delay, s/veh	41.4
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	51	38	145	22	36	15	386	326	47	10	361	176
Future Vol, veh/h	51	38	145	22	36	15	386	326	47	10	361	176
Peak Hour 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
Heavy Vehicles, %	7	0	1	0	7	0	2	1	0	25	1	0
Mvmt Flow	51	38	145	22	36	15	386	326	47	10	361	176
Number of Lanes	0	1	1	0	1	0	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	2
HCM Control Delay	13.3	13.6	25.4	79.4
HCM LOS	B	B	D	F

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	100%	0%	57%	0%	30%	2%
Vol Thru, %	0%	87%	43%	0%	49%	66%
Vol Right, %	0%	13%	0%	100%	21%	32%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	386	373	89	145	73	547
LT Vol	386	0	51	0	22	10
Through Vol	0	326	38	0	36	361
RT Vol	0	47	0	145	15	176
Lane Flow Rate	386	373	89	145	73	547
Geometry Grp	7	7	7	7	6	6
Degree of Util (X)	0.755	0.667	0.205	0.289	0.171	1.049
Departure Headway (Hd)	7.244	6.625	8.566	7.421	8.805	6.904
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	502	548	422	487	410	525
Service Time	4.944	4.325	6.266	5.121	6.805	4.96
HCM Lane V/C Ratio	0.769	0.681	0.211	0.298	0.178	1.042
HCM Control Delay	29	21.6	13.5	13.1	13.6	79.4
HCM Lane LOS	D	C	B	B	B	F
HCM 95th-tile Q	6.5	4.9	0.8	1.2	0.6	15.9

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	103	64	584	241	89	207
Future Volume (vph)	103	64	584	241	89	207
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.948				0.906	
Flt Protected				0.966	0.985	
Satd. Flow (prot)	1504	0	0	1594	1529	0
Flt Permitted				0.966	0.985	
Satd. Flow (perm)	1504	0	0	1594	1529	0
Link Speed (k/h)	80			80	50	
Link Distance (m)	1516.2			424.2	223.3	
Travel Time (s)	68.2			19.1	16.1	
Confl. Peds. (#/hr)		1	1			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	4%	4%	0%	0%	3%	3%
Adj. Flow (vph)	103	64	584	241	89	207
Shared Lane Traffic (%)						
Lane Group Flow (vph)	167	0	0	825	296	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 91.7%		ICU Level of Service F	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	103	64	584	241	89	207
Future Volume (Veh/h)	103	64	584	241	89	207
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	103	64	584	241	89	207
Pedestrians					1	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			168		1545	136
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			168		1545	136
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			59		0	77
cM capacity (veh/h)			1421		74	909

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	167	825	296
Volume Left	0	584	89
Volume Right	64	0	207
cSH	1700	1421	207
Volume to Capacity	0.10	0.41	1.43
Queue Length 95th (m)	0.0	16.4	140.2
Control Delay (s)	0.0	7.9	264.0
Lane LOS		A	F
Approach Delay (s)	0.0	7.9	264.0
Approach LOS			F

Intersection Summary			
Average Delay		65.7	
Intersection Capacity Utilization		91.7%	ICU Level of Service F
Analysis Period (min)		15	

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	65	191	116	17	119	188
Future Volume (vph)	65	191	116	17	119	188
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.899		0.983			
Flt Protected	0.987					0.981
Satd. Flow (prot)	1555	0	1567	0	0	1572
Flt Permitted	0.987					0.981
Satd. Flow (perm)	1555	0	1567	0	0	1572
Link Speed (k/h)	80		80			80
Link Distance (m)	1200.3		1761.7			383.9
Travel Time (s)	54.0		79.3			17.3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	4%	0%	3%	3%
Adj. Flow (vph)	65	191	116	17	119	188
Shared Lane Traffic (%)						
Lane Group Flow (vph)	256	0	133	0	0	307
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 53.7%			ICU Level of Service A
Analysis Period (min) 15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	65	191	116	17	119	188
Future Volume (Veh/h)	65	191	116	17	119	188
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	65	191	116	17	119	188
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	550	124			133	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	550	124			133	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	86	79			92	
cM capacity (veh/h)	458	929			1446	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	256	133	307
Volume Left	65	0	119
Volume Right	191	17	0
cSH	737	1700	1446
Volume to Capacity	0.35	0.08	0.08
Queue Length 95th (m)	12.5	0.0	2.1
Control Delay (s)	12.5	0.0	3.4
Lane LOS	B		A
Approach Delay (s)	12.5	0.0	3.4
Approach LOS	B		

Intersection Summary			
Average Delay		6.1	
Intersection Capacity Utilization		53.7%	ICU Level of Service A
Analysis Period (min)		15	

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	89	79	48	39	137	121
Future Volume (vph)	89	79	48	39	137	121
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.937		0.939			
Flt Protected	0.974					0.974
Satd. Flow (prot)	1588	0	1508	0	0	1558
Flt Permitted	0.974					0.974
Satd. Flow (perm)	1588	0	1508	0	0	1558
Link Speed (k/h)	80		80			80
Link Distance (m)	605.5		233.8			1761.7
Travel Time (s)	27.2		10.5			79.3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	3%	5%	0%	5%	1%
Adj. Flow (vph)	89	79	48	39	137	121
Shared Lane Traffic (%)						
Lane Group Flow (vph)	168	0	87	0	0	258
Sign Control	Stop		Free			Free

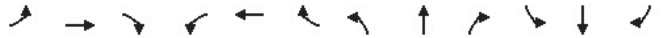
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 39.9%			ICU Level of Service A
Analysis Period (min) 15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	89	79	48	39	137	121
Future Volume (Veh/h)	89	79	48	39	137	121
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	89	79	48	39	137	121
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	462	68			87	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	462	68			87	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	83	92			91	
cM capacity (veh/h)	510	993			1490	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	168	87	258
Volume Left	89	0	137
Volume Right	79	39	0
cSH	661	1700	1490
Volume to Capacity	0.25	0.05	0.09
Queue Length 95th (m)	8.0	0.0	2.4
Control Delay (s)	12.3	0.0	4.4
Lane LOS	B		A
Approach Delay (s)	12.3	0.0	4.4
Approach LOS	B		

Intersection Summary			
Average Delay		6.3	
Intersection Capacity Utilization		39.9%	ICU Level of Service A
Analysis Period (min)		15	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	28	2	159	67	74	1	145	121	34	249	17
Future Volume (vph)	2	28	2	159	67	74	1	145	121	34	249	17
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.992			0.967			0.939			0.992	
Flt Protected		0.997			0.974						0.994	
Satd. Flow (prot)	0	1533	0	0	1428	0	0	1422	0	0	1485	0
Flt Permitted		0.997			0.974						0.994	
Satd. Flow (perm)	0	1533	0	0	1428	0	0	1422	0	0	1485	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		187.7			400.3			618.6			394.6	
Travel Time (s)		13.5			28.8			44.5			28.4	
Peak Hour 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
Heavy Vehicles (%)	0%	0%	0%	1%	0%	7%	0%	1%	4%	4%	3%	0%
Adj. Flow (vph)	2	28	2	159	67	74	1	145	121	34	249	17
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	32	0	0	300	0	0	267	0	0	300	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 75.4%		ICU Level of Service D	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	28	2	159	67	74	1	145	121	34	249	17
Future Volume (Veh/h)	2	28	2	159	67	74	1	145	121	34	249	17
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	2	28	2	159	67	74	1	145	121	34	249	17
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	640	594	258	549	542	206	266			266		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	640	594	258	549	542	206	266			266		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.3	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.4	2.2			2.2		
p0 queue free %	99	93	100	62	85	91	100			97		
cM capacity (veh/h)	308	409	786	415	438	823	1310			1286		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	32	300	267	300
Volume Left	2	159	1	34
Volume Right	2	74	121	17
cSH	413	479	1310	1286
Volume to Capacity	0.08	0.63	0.00	0.03
Queue Length 95th (m)	2.0	33.8	0.0	0.7
Control Delay (s)	14.4	24.3	0.0	1.1
Lane LOS	B	C	A	A
Approach Delay (s)	14.4	24.3	0.0	1.1
Approach LOS	B	C		

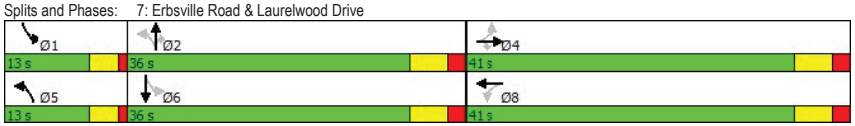
Intersection Summary				
Average Delay			9.0	
Intersection Capacity Utilization			75.4%	ICU Level of Service
Analysis Period (min)			15	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	111	134	168	207	123	150	273	172	49	277	27
Future Volume (vph)	16	111	134	168	207	123	150	273	172	49	277	27
Ideal Flow (vphpl)	1775	1900	1750	1775	1650	1650	1775	1900	1750	1775	1650	1650
Storage Length (m)	20.0		20.0	25.0		0.0	65.0		30.0	25.0		0.0
Storage Lanes	1		1	1		0	1		1	1		0
Taper Length (m)	35.0			10.0			80.0			35.0		
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	0.99	0.98		0.99		0.97	0.99	1.00	
Frt			0.850		0.944				0.850		0.987	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1686	1776	1417	1670	1513	0	1621	1881	1488	1686	1610	0
Flt Permitted	0.380			0.685			0.540			0.532		
Satd. Flow (perm)	665	1776	1371	1191	1513	0	916	1881	1442	938	1610	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			134		39				172		6	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		123.5			178.3			236.9			930.8	
Travel Time (s)		8.9			12.8			17.1			67.0	
Confl. Peds. (#/hr)	20		10	10		20	7		7	7		7
Peak Hour 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
Heavy Vehicles (%)	0%	7%	5%	1%	2%	0%	4%	1%	0%	0%	1%	0%
Adj. Flow (vph)	16	111	134	168	207	123	150	273	172	49	277	27
Shared Lane Traffic (%)												
Lane Group Flow (vph)	16	111	134	168	330	0	150	273	172	49	304	0
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2		2	6		
Detector Phase	4	4	4	8	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0		5.0	30.0	30.0	5.0	30.0	
Minimum Split (s)	14.0	14.0	14.0	14.0	14.0		9.0	36.0	36.0	9.0	36.0	
Total Split (s)	41.0	41.0	41.0	41.0	41.0		13.0	36.0	36.0	13.0	36.0	
Total Split (%)	45.6%	45.6%	45.6%	45.6%	45.6%		14.4%	40.0%	40.0%	14.4%	40.0%	
Maximum Green (s)	35.0	35.0	35.0	35.0	35.0		9.0	30.0	30.0	9.0	30.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		1.0	2.0	2.0	1.0	2.0	
Lost Time Adjust (s)	0.0	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	6.0		4.0	6.0	6.0	4.0	6.0	
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None	None	None	None		None	Max	Max	Max	Max	
Walk Time (s)	15.0	15.0	15.0	15.0	15.0			12.0	12.0		12.0	
Flash Dont Walk (s)	21.0	21.0	21.0	21.0	21.0			18.0	18.0		18.0	
Pedestrian Calls (#/hr)	0	0	0	0	0			0	0		0	
Act Effct Green (s)	19.9	19.9	19.9	19.9	19.9		40.2	30.2	30.2	42.4	31.3	
Actuated g/C Ratio	0.26	0.26	0.26	0.26	0.26		0.53	0.40	0.40	0.56	0.42	
v/c Ratio	0.09	0.24	0.29	0.54	0.77		0.27	0.36	0.25	0.08	0.45	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	20.7	22.1	5.6	29.7	34.8		9.6	19.1	4.3	8.5	20.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	20.7	22.1	5.6	29.7	34.8		9.6	19.1	4.3	8.5	20.2	
LOS	C	C	A	C	C		A	B	A	A	C	
Approach Delay		13.6			33.1			12.4			18.6	
Approach LOS		B			C			B			B	
Queue Length 50th (m)	1.8	12.9	0.0	21.3	39.9		8.7	27.4	0.0	2.6	31.0	
Queue Length 95th (m)	6.3	24.7	11.4	39.0	67.8		23.2	57.0	13.1	9.3	66.2	
Internal Link Dist (m)		99.5			154.3			212.9			906.8	
Turn Bay Length (m)	20.0		20.0	25.0			65.0		30.0	25.0		
Base Capacity (vph)	311	831	713	557	729		587	754	681	618	672	
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Reduced v/c Ratio	0.05	0.13	0.19	0.30	0.45		0.26	0.36	0.25	0.08	0.45	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 75.3			
Natural Cycle: 65			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay: 19.9		Intersection LOS: B	
Intersection Capacity Utilization 73.1%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 7: Erbsville Road & Laurelwood Drive



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	111	134	168	207	123	150	273	172	49	277	27
Future Volume (vph)	16	111	134	168	207	123	150	273	172	49	277	27
Ideal Flow (vphpl)	1775	1900	1750	1775	1650	1650	1775	1900	1750	1775	1650	1650
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0		4.0	6.0	6.0	4.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	0.98		1.00	1.00	0.97	1.00	1.00	
Flpb, ped/bikes	0.99	1.00	1.00	0.99	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.94		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1666	1776	1374	1655	1515		1617	1881	1445	1681	1609	
Flt Permitted	0.38	1.00	1.00	0.69	1.00		0.54	1.00	1.00	0.53	1.00	
Satd. Flow (perm)	667	1776	1374	1194	1515		919	1881	1445	942	1609	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	16	111	134	168	207	123	150	273	172	49	277	27
RTOR Reduction (vph)	0	0	99	0	29	0	0	0	103	0	4	0
Lane Group Flow (vph)	16	111	35	168	301	0	150	273	69	49	300	0
Confl. Peds. (#/hr)	20		10	10		20	7		7	7		7
Heavy Vehicles (%)	0%	7%	5%	1%	2%	0%	4%	1%	0%	0%	1%	0%
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2		2	6		
Actuated Green, G (s)	19.9	19.9	19.9	19.9	19.9		38.2	30.2	30.2	40.4	31.3	
Effective Green, g (s)	19.9	19.9	19.9	19.9	19.9		38.2	30.2	30.2	40.4	31.3	
Actuated g/C Ratio	0.26	0.26	0.26	0.26	0.26		0.51	0.40	0.40	0.54	0.42	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		4.0	6.0	6.0	4.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	176	469	363	315	400		541	755	580	595	669	
v/s Ratio Prot		0.06			c0.20		c0.03	0.15		0.01	c0.19	
v/s Ratio Perm	0.02		0.03	0.14			0.11		0.05	0.03		
v/c Ratio	0.09	0.24	0.10	0.53	0.75		0.28	0.36	0.12	0.08	0.45	
Uniform Delay, d1	20.8	21.7	20.9	23.7	25.4		10.1	15.8	14.1	8.4	15.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.2	0.3	0.1	1.7	7.8		0.3	1.3	0.4	0.3	2.2	
Delay (s)	21.1	22.0	21.0	25.4	33.2		10.3	17.1	14.6	8.6	17.9	
Level of Service	C	C	C	C	C		B	B	B	A	B	
Approach Delay (s)		21.4			30.6			14.7			16.6	
Approach LOS		C			C			B			B	

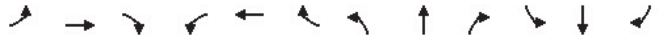
Intersection Summary					
HCM 2000 Control Delay	20.7	HCM 2000 Level of Service		C	
HCM 2000 Volume to Capacity ratio	0.53				
Actuated Cycle Length (s)	75.2	Sum of lost time (s)		16.0	
Intersection Capacity Utilization	73.1%	ICU Level of Service		D	
Analysis Period (min)	15				

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	317	37	159	643	48	34	27	90	32	48	27
Future Volume (vph)	12	317	37	159	643	48	34	27	90	32	48	27
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
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		0.986			0.992			0.920			0.966	
Flt Protected		0.998			0.991			0.989			0.985	
Satd. Flow (prot)	0	1499	0	0	1512	0	0	1410	0	0	1455	0
Flt Permitted		0.998			0.991			0.989			0.985	
Satd. Flow (perm)	0	1499	0	0	1512	0	0	1410	0	0	1455	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		213.7			555.1			104.8			136.8	
Travel Time (s)		15.4			40.0			7.5			9.8	
Confl. Peds. (#/hr)	9		4	4		9	6		8	8		6
Peak Hour 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
Heavy Vehicles (%)	0%	2%	0%	0%	1%	0%	0%	0%	0%	0%	3%	0%
Adj. Flow (vph)	12	317	37	159	643	48	34	27	90	32	48	27
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	366	0	0	850	0	0	151	0	0	107	0
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Roundabout			
Intersection Capacity Utilization	103.6%	ICU Level of Service	G
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Traffic Volume (veh/h)	12	317	37	159	643	48	34	27	90	32	48	27
Future Volume (veh/h)	12	317	37	159	643	48	34	27	90	32	48	27
Peak Hour 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
Hourly flow rate (vph)	12	317	37	159	643	48	34	27	90	32	48	27
Approach Volume (veh/h)		366			850			151			107	
Crossing Volume (veh/h)		239			73			361			836	
High Capacity (veh/h)		1148			1308			1043			712	
High v/c (veh/h)		0.32			0.65			0.14			0.15	
Low Capacity (veh/h)		947			1091			852			560	
Low v/c (veh/h)		0.39			0.78			0.18			0.19	

Intersection Summary					
Maximum v/c High		0.65			
Maximum v/c Low		0.78			
Intersection Capacity Utilization		103.6%	ICU Level of Service		G

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	113	25	96	225	21	28
Future Volume (vph)	113	25	96	225	21	28
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.976				0.923	
Flt Protected				0.985	0.979	
Satd. Flow (prot)	1584	0	0	1609	1595	0
Flt Permitted				0.985	0.979	
Satd. Flow (perm)	1584	0	0	1609	1595	0
Link Speed (k/h)	80			80	50	
Link Distance (m)	1200.3			667.7	811.2	
Travel Time (s)	54.0			30.0	58.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	0%	1%	1%	0%	0%
Adj. Flow (vph)	113	25	96	225	21	28
Shared Lane Traffic (%)						
Lane Group Flow (vph)	138	0	0	321	49	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	41.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	113	25	96	225	21	28
Future Volume (Veh/h)	113	25	96	225	21	28
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	113	25	96	225	21	28
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			138		542	126
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			138		542	126
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			93		96	97
cM capacity (veh/h)			1452		471	930

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	138	321	49
Volume Left	0	96	21
Volume Right	25	0	28
cSH	1700	1452	656
Volume to Capacity	0.08	0.07	0.07
Queue Length 95th (m)	0.0	1.7	1.9
Control Delay (s)	0.0	2.7	10.9
Lane LOS		A	B
Approach Delay (s)	0.0	2.7	10.9
Approach LOS			B

Intersection Summary			
Average Delay	2.8		
Intersection Capacity Utilization	41.7%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	92	6	175	65	1	144
Future Volume (vph)	92	6	175	65	1	144
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.992		0.963			
Flt Protected	0.955					
Satd. Flow (prot)	1626	0	1577	0	0	1650
Flt Permitted	0.955					
Satd. Flow (perm)	1626	0	1577	0	0	1650
Link Speed (k/h)	70		50			50
Link Distance (m)	143.4		394.6			123.0
Travel Time (s)	7.4		28.4			8.9
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	0%	1%	0%	0%	0%
Adj. Flow (vph)	92	6	175	65	1	144
Shared Lane Traffic (%)						
Lane Group Flow (vph)	98	0	240	0	0	145
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	27.7%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	92	6	175	65	1	144
Future Volume (Veh/h)	92	6	175	65	1	144
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	92	6	175	65	1	144
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	354	208			240	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	354	208			240	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	86	99			100	
cM capacity (veh/h)	642	838			1339	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	98	240	145
Volume Left	92	0	1
Volume Right	6	65	0
cSH	651	1700	1339
Volume to Capacity	0.15	0.14	0.00
Queue Length 95th (m)	4.2	0.0	0.0
Control Delay (s)	11.5	0.0	0.1
Lane LOS	B		A
Approach Delay (s)	11.5	0.0	0.1
Approach LOS	B		

Intersection Summary			
Average Delay	2.4		
Intersection Capacity Utilization	27.7%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	182	11	121	281	22	71
Future Volume (vph)	182	11	121	281	22	71
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.992				0.897	
Flt Protected				0.985	0.988	
Satd. Flow (prot)	1607	0	0	1598	1542	0
Flt Permitted				0.985	0.988	
Satd. Flow (perm)	1607	0	0	1598	1542	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	166.4			228.8	212.1	
Travel Time (s)	12.0			16.5	15.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	0%	1%	2%	6%	0%
Adj. Flow (vph)	182	11	121	281	22	71
Shared Lane Traffic (%)						
Lane Group Flow (vph)	193	0	0	402	93	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	52.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	182	11	121	281	22	71
Future Volume (Veh/h)	182	11	121	281	22	71
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	182	11	121	281	22	71
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			193		710	188
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			193		710	188
tC, single (s)			4.1		6.5	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			91		94	92
cM capacity (veh/h)			1386		359	860

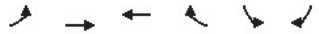
Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	193	402	93
Volume Left	0	121	22
Volume Right	11	0	71
cSH	1700	1386	647
Volume to Capacity	0.11	0.09	0.14
Queue Length 95th (m)	0.0	2.3	4.0
Control Delay (s)	0.0	2.9	11.5
Lane LOS		A	B
Approach Delay (s)	0.0	2.9	11.5
Approach LOS			B

Intersection Summary			
Average Delay	3.3		
Intersection Capacity Utilization	52.6%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	44	236	324	63	25	32
Future Volume (vph)	44	236	324	63	25	32
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.978		0.924	
Flt Protected		0.992			0.979	
Satd. Flow (prot)	0	1623	1600	0	1562	0
Flt Permitted		0.992			0.979	
Satd. Flow (perm)	0	1623	1600	0	1562	0
Link Speed (k/h)		60	60		50	
Link Distance (m)		98.4	372.2		168.6	
Travel Time (s)		5.9	22.3		12.1	
Confl. Peds. (#/hr)	1			1		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	1%	1%	0%	5%	0%
Adj. Flow (vph)	44	236	324	63	25	32
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	280	387	0	57	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 54.8%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	44	236	324	63	25	32
Future Volume (Veh/h)	44	236	324	63	25	32
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	44	236	324	63	25	32
Pedestrians					1	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	388				680	356
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	388				680	356
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	96				94	95
cM capacity (veh/h)	1181				396	692

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	280	387	57
Volume Left	44	0	25
Volume Right	0	63	32
cSH	1181	1700	521
Volume to Capacity	0.04	0.23	0.11
Queue Length 95th (m)	0.9	0.0	2.9
Control Delay (s)	1.6	0.0	12.8
Lane LOS	A		B
Approach Delay (s)	1.6	0.0	12.8
Approach LOS			B

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	54.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	28	239	367	58	28	28
Future Volume (vph)	28	239	367	58	28	28
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.982		0.932	
Flt Protected		0.995			0.976	
Satd. Flow (prot)	0	1613	1598	0	1606	0
Flt Permitted		0.995			0.976	
Satd. Flow (perm)	0	1613	1598	0	1606	0
Link Speed (k/h)		60	60		50	
Link Distance (m)		372.2	1012.1		87.7	
Travel Time (s)		22.3	60.7		6.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	2%	1%	4%	0%	0%
Adj. Flow (vph)	28	239	367	58	28	28
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	267	425	0	56	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 51.6%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	28	239	367	58	28	28
Future Volume (Veh/h)	28	239	367	58	28	28
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	28	239	367	58	28	28
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	425				691	396
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	425				691	396
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				93	96
cM capacity (veh/h)	1145				403	658

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	267	425	56
Volume Left	28	0	28
Volume Right	0	58	28
cSH	1145	1700	500
Volume to Capacity	0.02	0.25	0.11
Queue Length 95th (m)	0.6	0.0	3.0
Control Delay (s)	1.1	0.0	13.1
Lane LOS	A		B
Approach Delay (s)	1.1	0.0	13.1
Approach LOS			B

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	51.6%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	11	73	14	6	9	105	227	38	7	384	121
Future Volume (vph)	25	11	73	14	6	9	105	227	38	7	384	121
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
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		0.910			0.958			0.986			0.968	
Flt Protected		0.989			0.976			0.986			0.999	
Satd. Flow (prot)	0	1368	0	0	1449	0	0	1498	0	0	1499	0
Flt Permitted		0.989			0.976			0.986			0.999	
Satd. Flow (perm)	0	1368	0	0	1449	0	0	1498	0	0	1499	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		77.1			66.0			326.3			223.3	
Travel Time (s)		5.6			4.8			23.5			16.1	
Confl. Peds. (#/hr)	4					4			1	1		
Peak Hour 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
Heavy Vehicles (%)	0%	0%	3%	0%	0%	0%	0%	1%	0%	0%	0%	0%
Adj. Flow (vph)	25	11	73	14	6	9	105	227	38	7	384	121
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	109	0	0	29	0	0	370	0	0	512	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	77.3%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	11	73	14	6	9	105	227	38	7	384	121
Future Volume (Veh/h)	25	11	73	14	6	9	105	227	38	7	384	121
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	25	11	73	14	6	9	105	227	38	7	384	121
Pedestrians					1						4	
Lane Width (m)					3.6						3.6	
Walking Speed (m/s)					1.2						1.2	
Percent Blockage					0						0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	19			84			449	144	48	292	176	14
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	19			84			449	144	48	292	176	14
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			99			59	69	96	99	45	89
cM capacity (veh/h)	1605			1526			258	728	1025	473	701	1068

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	109	29	370	512
Volume Left	25	14	105	7
Volume Right	73	9	38	121
cSH	1605	1526	489	757
Volume to Capacity	0.02	0.01	0.76	0.68
Queue Length 95th (m)	0.4	0.2	51.9	42.7
Control Delay (s)	1.8	3.6	31.7	19.1
Lane LOS	A	A	D	C
Approach Delay (s)	1.8	3.6	31.7	19.1
Approach LOS			D	C

Intersection Summary				
Average Delay	21.4			
Intersection Capacity Utilization	77.3%	ICU Level of Service		D
Analysis Period (min)	15			

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]
© Copyright TRL Limited, 2020

For sales and distribution information, program advice and maintenance, contact TRL:
Tel: +44 (0)1344 770758 email: software@trl.co.uk Web: http://www.trlsoftware.co.uk

The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: Laurelwood & Beaver Creek.arc8
Path: C:\Users\AdamMorrison\Paradigm\Projects - 170278 Beaver Creek Area TES\C5 - Analysis and Evaluation\Arcady
Report generation date: 2020-07-21 4:19:09 PM

Summary of intersection performance

There are warnings associated with this model run - see the 'Data Errors and Warnings' tables.

	AM					
	Queue (Veh)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS
	All - Background 2032					
Intersection 85% - Leg North	0.10	4.28	0.09	A	13.25	B
Intersection 85% - Leg West	3.22	14.53	0.77	B		
Intersection 85% - Leg South	1.86	19.35	0.66	C		
Intersection 85% - Leg East	0.41	5.06	0.29	A		
Intersection 90% - Leg North	0.09	3.97	0.08	A	10.69	B
Intersection 90% - Leg West	2.58	11.58	0.73	B		
Intersection 90% - Leg South	1.48	15.34	0.61	C		
Intersection 90% - Leg East	0.37	4.64	0.27	A		

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Intersection LOS and Intersection Delay are demand-weighted averages.

"D1 - Existing, AM" model duration: 8:00 AM - 9:00 AM
"D2 - Existing, PM" model duration: 4:00 PM - 5:00 PM
"D3 - Background 2022, AM" model duration: 8:00 AM - 9:00 AM
"D4 - Background 2022, PM" model duration: 4:00 PM - 5:00 PM
"D5 - Total 2022, AM" model duration: 8:00 AM - 9:00 AM
"D6 - Total 2022, PM" model duration: 4:00 PM - 5:00 PM
"D7 - Background 2025, AM" model duration: 8:00 AM - 9:00 AM
"D8 - Background 2025, PM" model duration: 4:00 PM - 5:00 PM
"D9 - Total 2025, AM" model duration: 8:00 AM - 9:00 AM
"D10 - Total 2025, PM" model duration: 4:00 PM - 5:00 PM
"D11 - Background 2027, AM" model duration: 8:00 AM - 9:00 AM
"D12 - Background 2027, PM" model duration: 4:00 PM - 5:00 PM
"D13 - Total 2027, AM" model duration: 8:00 AM - 9:00 AM
"D14 - Total 2027, PM" model duration: 4:00 PM - 5:00 PM
"D15 - Background 2032, AM " model duration: 8:00 AM - 9:00 AM
"D16 - Background 2032, PM" model duration: 4:00 PM - 5:00 PM
"D17 - Total 2032, AM" model duration: 8:00 AM - 9:00 AM
"D18 - Total 2032, PM" model duration: 4:00 PM - 5:00 PM

Run using Junctions 8.0.6.541 at 2020-07-21 4:19:08 PM

File summary

Title	Laurelwood & Beaver Creek
Location	Waterloo
Site Number	
Date	2017-12-05
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	170278
Analyst	Matt
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)
7.50	✓		N/A	0.90	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	Veh	Veh	perHour	s	-Min	perMin

All - Background 2032, AM

Data Errors and Warnings

Severity	Area	Item	Description
Last Run	Last Run	Intersection 85% - Leg East - Capacity	Pedestrian Crossing causes blocking on previous leg due to traffic queing to leave the intersection in 4 timesegment(s).
Last Run	Last Run	Intersection 90% - Leg East - Capacity	Pedestrian Crossing causes blocking on previous leg due to traffic queing to leave the intersection in 4 timesegment(s).

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
All	ARCADY		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
Background 2032, AM	Background 2032	AM		PHF	08:00	09:00	60	15				✓		

Intersection Network

Intersections

Junction	Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Do Geometric Delay	Intersection Delay (s)	Intersection LOS
85%	85%	Existing	Roundabout	North,West,South,East				13.25	B
90%	90%	Future	Roundabout	North,West,South,East				10.69	B

Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

Legs

Legs

Intersection	Leg	Leg	Name	Description
85%	**North**	North	Beaver Creek SB	
85%	**West**	West	Laurelwood EB	
85%	**South**	South	Beaver Creek NB	
85%	**East**	East	Laurelwood WB	
90%	**North**	North	Beaver Creek SB	
90%	**West**	West	Laurelwood EB	
90%	**South**	South	Beaver Creek NB	
90%	**East**	East	Laurelwood WB	

Capacity Options

Intersection	Leg	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)	Assume Flat Start Profile	Initial Queue (PCE)
85%	North	0.00	99999.00		0.00
85%	West	0.00	99999.00		0.00
85%	South	0.00	99999.00		0.00
85%	East	0.00	99999.00		0.00
90%	North	0.00	99999.00		0.00
90%	West	0.00	99999.00		0.00
90%	South	0.00	99999.00		0.00
90%	East	0.00	99999.00		0.00

Roundabout Geometry

Intersection	Leg	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
85%	North	3.50	4.50	30.00	20.00	30.00	25.00	
85%	West	3.50	4.50	30.00	20.00	30.00	25.00	
85%	South	3.50	4.50	30.00	20.00	30.00	25.00	
85%	East	3.50	4.50	30.00	20.00	30.00	25.00	
90%	North	3.50	4.50	30.00	20.00	30.00	25.00	
90%	West	3.50	4.50	30.00	20.00	30.00	25.00	
90%	South	3.50	4.50	30.00	20.00	30.00	25.00	
90%	East	3.50	4.50	30.00	20.00	30.00	25.00	

Pedestrian Crossings

Intersection	Leg	Crossing Type
85%	North	Unsignalled Pedestrian Crossing
85%	West	Unsignalled Pedestrian Crossing
85%	South	Unsignalled Pedestrian Crossing
85%	East	Unsignalled Pedestrian Crossing
90%	North	Unsignalled Pedestrian Crossing
90%	West	Unsignalled Pedestrian Crossing
90%	South	Unsignalled Pedestrian Crossing
90%	East	Unsignalled Pedestrian Crossing

Unsignalled Pedestrian Crossing Crossings

Intersection	Leg	Space between crossing and intersection entry (PCE)	Vehicles queueing on exit (PCE)	Central Refuge	Crossing Data Type	Crossing length (m)	Crossing time (s)	Crossing length (entry side) (m)	Crossing time (entry side) (s)	Crossing length (exit side) (m)	Crossing time (exit side) (s)
85%	North	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
85%	West	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
85%	South	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
85%	East	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
90%	North	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
90%	West	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
90%	South	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
90%	East	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50

Slope / Intercept / Capacity

Leg Intercept Adjustments

Intersection	Leg	Type	Reason	Direct Intercept Adjustment (PCE/hr)	Percentage Intercept Adjustment (%)
85%	North	Percentage	Region of Waterloo - Requirement		85.00
85%	West	Percentage	Region of Waterloo - Requirement		85.00
85%	South	Percentage	Region of Waterloo - Requirement		85.00
85%	East	Percentage	Region of Waterloo - Requirement		85.00
90%	North	Percentage	Region of Waterloo - Requirement		90.00
90%	West	Percentage	Region of Waterloo - Requirement		90.00
90%	South	Percentage	Region of Waterloo - Requirement		90.00
90%	East	Percentage	Region of Waterloo - Requirement		90.00

Roundabout Slope and Intercept used in model

Intersection	Leg	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
85%	North		(calculated)	(calculated)	0.593	1153.828
85%	West		(calculated)	(calculated)	0.593	1153.828
85%	South		(calculated)	(calculated)	0.593	1153.828
85%	East		(calculated)	(calculated)	0.593	1153.828
90%	North		(calculated)	(calculated)	0.593	1221.701
90%	West		(calculated)	(calculated)	0.593	1221.701
90%	South		(calculated)	(calculated)	0.593	1221.701
90%	East		(calculated)	(calculated)	0.593	1221.701

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCE Factor for a Truck (PCE)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Intersection	Leg	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
85%	North	PHF	✓	75.00	100.000
85%	West	PHF	✓	751.00	100.000
85%	South	PHF	✓	325.00	100.000
85%	East	PHF	✓	268.00	100.000
90%	North	PHF	✓	75.00	100.000
90%	West	PHF	✓	751.00	100.000
90%	South	PHF	✓	325.00	100.000
90%	East	PHF	✓	268.00	100.000

Peak Hour Factor Data

Intersection	Leg	Hourly Volume (Veh/hr)	Peak Hour Factor	Peak Time Segment
85%	North	75.00	0.92	SecondQuarter
85%	West	751.00	0.92	SecondQuarter
85%	South	325.00	0.92	SecondQuarter
85%	East	268.00	0.92	SecondQuarter
90%	North	75.00	0.92	SecondQuarter
90%	West	751.00	0.92	SecondQuarter
90%	South	325.00	0.92	SecondQuarter
90%	East	268.00	0.92	SecondQuarter

Pedestrian Flows

General Flows Data

Intersection	Leg	Profile Type	Average Pedestrian Flow (Ped/hr)
85%	North	PHF	10.00
85%	West	PHF	7.00
85%	South	PHF	4.00
85%	East	PHF	10.00
90%	North	PHF	10.00
90%	West	PHF	7.00
90%	South	PHF	4.00
90%	East	PHF	10.00

Peak Hour Factor Data

Intersection	Leg	Hourly Volume (Ped/hr)	Peak Hour Factor	Peak Time Segment
85%	North	10.00	1.00	SecondQuarter
85%	West	7.00	1.00	SecondQuarter
85%	South	4.00	1.00	SecondQuarter
85%	East	10.00	1.00	SecondQuarter
90%	North	10.00	1.00	SecondQuarter
90%	West	7.00	1.00	SecondQuarter
90%	South	4.00	1.00	SecondQuarter
90%	East	10.00	1.00	SecondQuarter

Turning Proportions

Turning Counts / Proportions (Veh/hr) - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.000	11.000	22.000	42.000
	West	34.000	0.000	96.000	621.000
	South	42.000	63.000	0.000	220.000
	East	30.000	197.000	41.000	0.000

Turning Proportions (Veh) - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.00	0.15	0.29	0.56
	West	0.05	0.00	0.13	0.83
	South	0.13	0.19	0.00	0.68
	East	0.11	0.74	0.15	0.00

Turning Counts / Proportions (Veh/hr) - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.000	11.000	22.000	42.000
	West	34.000	0.000	96.000	621.000
	South	42.000	63.000	0.000	220.000
	East	30.000	197.000	41.000	0.000

Turning Proportions (Veh) - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.00	0.15	0.29	0.56
	West	0.05	0.00	0.13	0.83
	South	0.13	0.19	0.00	0.68
	East	0.11	0.74	0.15	0.00

Vehicle Mix

Average PCE Per Vehicle - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	1.000	1.110	1.000	1.000
	West	1.000	1.000	1.000	1.030
	South	1.090	1.000	1.000	1.010
	East	1.040	1.060	1.060	1.000

Truck Percentages - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.0	11.0	0.0	0.0
	West	0.0	0.0	0.0	3.0
	South	9.0	0.0	0.0	1.0
	East	4.0	6.0	6.0	0.0

Average PCE Per Vehicle - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	1.000	1.110	1.000	1.000
	West	1.000	1.000	1.000	1.030
	South	1.090	1.000	1.000	1.010
	East	1.040	1.060	1.060	1.000

Truck Percentages - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.0	11.0	0.0	0.0
	West	0.0	0.0	0.0	3.0
	South	9.0	0.0	0.0	1.0
	East	4.0	6.0	6.0	0.0

Results

Results Summary for whole modelled period

Intersection	Leg	Max V/C Ratio	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Intersection Arrivals (Veh)	Total Queueing Delay (Veh-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (Veh-min/min)	Inclusive Total Queueing Delay (Veh-min)	Inclusive Average Queueing Delay (s)
85%	North	0.09	4.28	0.10	~1	A	75.00	75.00	5.19	4.16	0.09	5.19	4.16
85%	West	0.77	14.53	3.22	10.00	B	751.00	751.00	147.30	11.77	2.46	147.42	11.78
85%	South	0.66	19.35	1.86	5.00	C	325.00	325.00	78.21	14.44	1.30	78.26	14.45
85%	East	0.29	5.06	0.41	~1	A	268.00	268.00	21.63	4.84	0.36	21.64	4.84
90%	North	0.08	3.97	0.09	~1	A	75.00	75.00	4.83	3.86	0.08	4.83	3.86
90%	West	0.73	11.58	2.58	6.00	B	751.00	751.00	121.06	9.67	2.02	121.14	9.68
90%	South	0.61	15.34	1.48	2.00	C	325.00	325.00	64.16	11.85	1.07	64.19	11.85
90%	East	0.27	4.64	0.37	~1	A	268.00	268.00	19.92	4.46	0.33	19.92	4.46

Main Results for each time segment

Main results: (08:00-08:15)

Intersection	Leg	Total Demand (Veh/hr)	Intersection Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	V/C Ratio	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
85%	North	70.65	17.66	70.33	98.88	281.66	10.00	952.54	442.92	0.074	0.00	0.08	4.080	A
85%	West	707.46	176.87	699.78	253.55	98.44	7.00	1064.05	791.62	0.665	0.00	1.92	9.690	A
85%	South	306.16	76.54	302.43	148.51	649.71	4.00	627.18	377.66	0.488	0.00	0.93	10.966	B
85%	East	252.46	63.12	251.15	822.76	129.39	10.00	1014.77	993.52	0.249	0.00	0.33	4.707	A
90%	North	70.65	17.66	70.36	99.01	281.85	10.00	1018.44	455.02	0.069	0.00	0.07	3.797	A
90%	West	707.46	176.87	700.93	253.73	98.47	7.00	1130.02	841.82	0.626	0.00	1.63	8.269	A
90%	South	306.16	76.54	302.97	148.67	650.73	4.00	682.35	380.03	0.449	0.00	0.80	9.416	A
90%	East	252.46	63.12	251.25	824.08	129.61	10.00	1078.69	1054.82	0.234	0.00	0.30	4.344	A

Main results: (08:15-08:30)

Intersection	Leg	Total Demand (Veh/hr)	Intersection Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	V/C Ratio	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
85%	North	81.52	20.38	81.45	114.47	326.18	10.00	921.54	442.92	0.088	0.08	0.10	4.285	A
85%	West	816.30	204.08	811.09	293.60	114.03	7.00	1053.52	791.62	0.775	1.92	3.22	14.525	B
85%	South	353.26	88.32	349.54	172.09	753.02	4.00	531.91	377.66	0.664	0.93	1.86	19.347	C
85%	East	291.30	72.83	290.99	952.91	149.65	10.00	1002.61	993.52	0.291	0.33	0.41	5.056	A
90%	North	81.52	20.38	81.46	114.66	326.40	10.00	987.13	455.02	0.083	0.07	0.09	3.974	A

90%	West	816.30	204.08	812.53	293.82	114.03	7.00	1119.42	841.82	0.729	1.63	2.58	11.581	B
90%	South	353.26	88.32	350.54	172.28	754.28	4.00	582.51	380.03	0.606	0.80	1.48	15.338	C
90%	East	291.30	72.83	291.03	954.78	150.04	10.00	1066.40	1054.82	0.273	0.30	0.37	4.642	A

Main results: (08:30-08:45)

Intersection	Leg	Total Demand (Veh/hr)	Intersection Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	V/C Ratio	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
85%	North	77.17	19.29	77.20	109.34	310.09	10.00	932.82	442.92	0.083	0.10	0.09	4.208	A
85%	West	772.77	193.19	774.37	279.20	108.08	7.00	1057.52	791.62	0.731	3.22	2.82	12.808	B
85%	South	334.42	83.61	335.81	163.84	718.62	4.00	563.27	377.66	0.594	1.86	1.52	15.936	C
85%	East	275.77	68.94	275.87	910.88	143.55	10.00	1006.29	993.52	0.274	0.41	0.38	4.930	A
90%	North	77.17	19.29	77.20	109.28	310.02	10.00	998.73	455.02	0.077	0.09	0.08	3.906	A
90%	West	772.77	193.19	774.00	279.13	108.08	7.00	1123.47	841.82	0.688	2.58	2.27	10.348	B
90%	South	334.42	83.61	335.47	163.79	718.29	4.00	617.01	380.03	0.542	1.48	1.22	12.842	B
90%	East	275.77	68.94	275.86	910.33	143.43	10.00	1070.40	1054.82	0.258	0.37	0.35	4.531	A

Main results: (08:45-09:00)

Intersection	Leg	Total Demand (Veh/hr)	Intersection Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	V/C Ratio	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
85%	North	70.65	17.66	70.69	100.28	284.11	10.00	950.87	442.92	0.074	0.09	0.08	4.090	A
85%	West	707.46	176.87	710.57	255.83	98.98	7.00	1063.64	791.62	0.665	2.82	2.05	10.289	B
85%	South	306.16	76.54	308.20	150.22	659.33	4.00	618.06	377.66	0.495	1.52	1.01	11.696	B
85%	East	252.46	63.12	252.65	835.78	131.74	10.00	1013.38	993.52	0.249	0.38	0.33	4.733	A
90%	North	70.65	17.66	70.69	100.17	283.98	10.00	1016.97	455.02	0.069	0.08	0.07	3.803	A
90%	West	707.46	176.87	709.68	255.70	98.97	7.00	1129.65	841.82	0.626	2.27	1.72	8.620	A
90%	South	306.16	76.54	307.64	150.10	658.55	4.00	674.61	380.03	0.454	1.22	0.85	9.849	A
90%	East	252.46	63.12	252.63	834.66	131.52	10.00	1077.56	1054.82	0.234	0.35	0.31	4.364	A

Queueing Delay Results for each time segment

Queueing Delay results: (08:00-08:15)

Intersection	Leg	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	1.17	0.08	4.080	A	A
85%	West	26.65	1.78	9.690	A	A
85%	South	13.08	0.87	10.966	B	B
85%	East	4.80	0.32	4.707	A	A
90%	North	1.09	0.07	3.797	A	A
90%	West	22.95	1.53	8.269	A	A
90%	South	11.32	0.75	9.416	A	A
90%	East	4.44	0.30	4.344	A	A

Queueing Delay results: (08:15-08:30)

Intersection	Leg	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	1.43	0.10	4.285	A	A
85%	West	44.37	2.96	14.525	B	B
85%	South	25.48	1.70	19.347	C	B
85%	East	5.98	0.40	5.056	A	A
90%	North	1.33	0.09	3.974	A	A
90%	West	36.14	2.41	11.581	B	B
90%	South	20.64	1.38	15.338	C	B
90%	East	5.50	0.37	4.642	A	A

Queueing Delay results: (08:30-08:45)

Intersection	Leg	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	1.37	0.09	4.208	A	A
85%	West	43.94	2.93	12.808	B	B
85%	South	23.79	1.59	15.936	C	B
85%	East	5.77	0.38	4.930	A	A
90%	North	1.27	0.08	3.906	A	A
90%	West	35.13	2.34	10.348	B	B
90%	South	18.95	1.26	12.842	B	B

90%	East	5.29	0.35	4.531	A	A

Queueing Delay results: (08:45-09:00)

Intersection	Leg	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	1.22	0.08	4.090	A	A
85%	West	32.35	2.16	10.289	B	B
85%	South	15.86	1.06	11.696	B	B
85%	East	5.08	0.34	4.733	A	A
90%	North	1.14	0.08	3.803	A	A
90%	West	26.84	1.79	8.620	A	A
90%	South	13.24	0.88	9.849	A	A
90%	East	4.68	0.31	4.364	A	A

Queue Variation Results for each time segment

Queue Variation results: (08:00-08:15)

Intersection	Leg	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.08	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	1.92	0.00	0.00	4.00	5.00			N/A	N/A
85%	South	0.93	0.00	0.00	1.00	1.00			N/A	N/A
85%	East	0.33	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.07	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	1.63	0.00	0.00	3.00	4.00			N/A	N/A
90%	South	0.80	0.00	0.00	0.00	1.00			N/A	N/A
90%	East	0.30	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:15-08:30)

Intersection	Leg	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.10	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	3.22	0.00	0.00	2.00	10.00			N/A	N/A
85%	South	1.86	0.00	0.00	0.00	5.00			N/A	N/A
85%	East	0.41	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.09	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	2.58	0.00	0.00	0.00	6.00			N/A	N/A
90%	South	1.48	0.00	0.00	0.00	2.00			N/A	N/A
90%	East	0.37	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:30-08:45)

Intersection	Leg	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.09	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	2.82	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	1.52	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	0.38	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.08	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

90%	West	2.27	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	1.22	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.35	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:45-09:00)

Intersection	Leg	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.08	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	2.05	0.00	0.00	4.00	7.00			N/A	N/A
85%	South	1.01	0.00	0.00	1.00	2.00			N/A	N/A
85%	East	0.33	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.07	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	1.72	0.00	0.00	3.00	5.00			N/A	N/A
90%	South	0.85	0.00	0.00	1.00	1.00			N/A	N/A
90%	East	0.31	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]
© Copyright TRL Limited, 2020

For sales and distribution information, program advice and maintenance, contact TRL:
Tel: +44 (0)1344 770758 email: software@trl.co.uk Web: http://www.trlsoftware.co.uk

The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: Laurelwood & Beaver Creek.arc8
Path: C:\Users\AdamMorrison\Paradigm\Projects - 170278 Beaver Creek Area TES\C5 - Analysis and Evaluation\Arcady
Report generation date: 2020-07-21 4:19:41 PM

Summary of intersection performance

	PM					
	Queue (Veh)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS
	All - Background 2032					
Intersection 85% - Leg North	0.28	8.69	0.22	A	13.59	B
Intersection 85% - Leg West	0.69	6.27	0.41	A		
Intersection 85% - Leg South	0.23	5.05	0.19	A		
Intersection 85% - Leg East	4.76	18.91	0.84	C		
Intersection 90% - Leg North	0.24	7.65	0.20	A	10.65	B
Intersection 90% - Leg West	0.62	5.63	0.38	A		
Intersection 90% - Leg South	0.21	4.63	0.17	A		
Intersection 90% - Leg East	3.59	14.29	0.79	B		

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Intersection LOS and Intersection Delay are demand-weighted averages.

"D1 - Existing, AM" model duration: 8:00 AM - 9:00 AM
"D2 - Existing, PM" model duration: 4:00 PM - 5:00 PM
"D3 - Background 2022, AM" model duration: 8:00 AM - 9:00 AM
"D4 - Background 2022, PM" model duration: 4:00 PM - 5:00 PM
"D5 - Total 2022, AM" model duration: 8:00 AM - 9:00 AM
"D6 - Total 2022, PM" model duration: 4:00 PM - 5:00 PM
"D7 - Background 2025, AM" model duration: 8:00 AM - 9:00 AM
"D8 - Background 2025, PM" model duration: 4:00 PM - 5:00 PM
"D9 - Total 2025, AM" model duration: 8:00 AM - 9:00 AM
"D10 - Total 2025, PM" model duration: 4:00 PM - 5:00 PM
"D11 - Background 2027, AM" model duration: 8:00 AM - 9:00 AM
"D12 - Background 2027, PM" model duration: 4:00 PM - 5:00 PM
"D13 - Total 2027, AM" model duration: 8:00 AM - 9:00 AM
"D14 - Total 2027, PM" model duration: 4:00 PM - 5:00 PM
"D15 - Background 2032, AM" model duration: 8:00 AM - 9:00 AM
"D16 - Background 2032, PM " model duration: 4:00 PM - 5:00 PM
"D17 - Total 2032, AM" model duration: 8:00 AM - 9:00 AM
"D18 - Total 2032, PM" model duration: 4:00 PM - 5:00 PM

Run using Junctions 8.0.6.541 at 2020-07-21 4:19:40 PM

File summary

Title	Laurelwood & Beaver Creek
Location	Waterloo
Site Number	
Date	2017-12-05
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	170278
Analyst	Matt
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)

7.50	✓		N/A	0.90	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	Veh	Veh	perHour	s	-Min	perMin

All - Background 2032, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
All	ARCADY		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
Background 2032, PM	Background 2032	PM		PHF	16:00	17:00	60	15				✓		

Intersection Network

Intersections

Junction	Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Do Geometric Delay	Intersection Delay (s)	Intersection LOS
85%	85%	Existing	Roundabout	North,West,South,East				13.59	B
90%	90%	Future	Roundabout	North,West,South,East				10.65	B

Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

Legs

Legs

Intersection	Leg	Leg	Name	Description
85%	**North**	North	Beaver Creek SB	
85%	**West**	West	Laurelwood EB	
85%	**South**	South	Beaver Creek NB	
85%	**East**	East	Laurelwood WB	
90%	**North**	North	Beaver Creek SB	
90%	**West**	West	Laurelwood EB	
90%	**South**	South	Beaver Creek NB	
90%	**East**	East	Laurelwood WB	

Capacity Options

Intersection	Leg	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)	Assume Flat Start Profile	Initial Queue (PCE)
85%	**North**	0.00	99999.00		0.00
85%	**West**	0.00	99999.00		0.00
85%	**South**	0.00	99999.00		0.00
85%	**East**	0.00	99999.00		0.00

90%	**North**	0.00	99999.00		0.00
90%	**West**	0.00	99999.00		0.00
90%	**South**	0.00	99999.00		0.00
90%	**East**	0.00	99999.00		0.00

Roundabout Geometry

Intersection	Leg	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
85%	**North**	3.50	4.50	30.00	20.00	30.00	25.00	
85%	**West**	3.50	4.50	30.00	20.00	30.00	25.00	
85%	**South**	3.50	4.50	30.00	20.00	30.00	25.00	
85%	**East**	3.50	4.50	30.00	20.00	30.00	25.00	
90%	**North**	3.50	4.50	30.00	20.00	30.00	25.00	
90%	**West**	3.50	4.50	30.00	20.00	30.00	25.00	
90%	**South**	3.50	4.50	30.00	20.00	30.00	25.00	
90%	**East**	3.50	4.50	30.00	20.00	30.00	25.00	

Pedestrian Crossings

Intersection	Leg	Crossing Type
85%	**North**	Unsignalled Pedestrian Crossing
85%	**West**	Unsignalled Pedestrian Crossing
85%	**South**	Unsignalled Pedestrian Crossing
85%	**East**	Unsignalled Pedestrian Crossing
90%	**North**	Unsignalled Pedestrian Crossing
90%	**West**	Unsignalled Pedestrian Crossing
90%	**South**	Unsignalled Pedestrian Crossing
90%	**East**	Unsignalled Pedestrian Crossing

Unsignalled Pedestrian Crossing Crossings

Intersection	Leg	Space between crossing and intersection entry (PCE)	Vehicles queueing on exit (PCE)	Central Refuge	Crossing Data Type	Crossing length (m)	Crossing time (s)	Crossing length (entry side) (m)	Crossing time (entry side) (s)	Crossing length (exit side) (m)	Crossing time (exit side) (s)
85%	**North**	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
85%	**West**	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
85%	**South**	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
85%	**East**	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
90%	**North**	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
90%	**West**	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
90%	**South**	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
90%	**East**	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50

Slope / Intercept / Capacity

Leg Intercept Adjustments

Intersection	Leg	Type	Reason	Direct Intercept Adjustment (PCE/hr)	Percentage Intercept Adjustment (%)
85%	**North**	Percentage	Region of Waterloo - Requirement		85.00
85%	**West**	Percentage	Region of Waterloo - Requirement		85.00
85%	**South**	Percentage	Region of Waterloo - Requirement		85.00
85%	**East**	Percentage	Region of Waterloo - Requirement		85.00
90%	**North**	Percentage	Region of Waterloo - Requirement		90.00
90%	**West**	Percentage	Region of Waterloo - Requirement		90.00
90%	**South**	Percentage	Region of Waterloo - Requirement		90.00
90%	**East**	Percentage	Region of Waterloo - Requirement		90.00

Roundabout Slope and Intercept used in model

Intersection	Leg	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
85%	**North**		(calculated)	(calculated)	0.593	1153.828
85%	**West**		(calculated)	(calculated)	0.593	1153.828
85%	**South**		(calculated)	(calculated)	0.593	1153.828
85%	**East**		(calculated)	(calculated)	0.593	1153.828
90%	**North**		(calculated)	(calculated)	0.593	1221.701
90%	**West**		(calculated)	(calculated)	0.593	1221.701

90%	South		(calculated)	(calculated)	0.593	1221.701
90%	East		(calculated)	(calculated)	0.593	1221.701

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCE Factor for a Truck (PCE)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Intersection	Leg	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
85%	North	PHF	✓	107.00	100.000
85%	West	PHF	✓	367.00	100.000
85%	South	PHF	✓	151.00	100.000
85%	East	PHF	✓	850.00	100.000
90%	North	PHF	✓	107.00	100.000
90%	West	PHF	✓	367.00	100.000
90%	South	PHF	✓	151.00	100.000
90%	East	PHF	✓	850.00	100.000

Peak Hour Factor Data

Intersection	Leg	Hourly Volume (Veh/hr)	Peak Hour Factor	Peak Time Segment
85%	North	107.00	0.92	SecondQuarter
85%	West	367.00	0.92	SecondQuarter
85%	South	151.00	0.92	SecondQuarter
85%	East	850.00	0.92	SecondQuarter
90%	North	107.00	0.92	SecondQuarter
90%	West	367.00	0.92	SecondQuarter
90%	South	151.00	0.92	SecondQuarter
90%	East	850.00	0.92	SecondQuarter

Pedestrian Flows

General Flows Data

Intersection	Leg	Profile Type	Average Pedestrian Flow (Ped/hr)
85%	North	PHF	9.00
85%	West	PHF	6.00
85%	South	PHF	4.00
85%	East	PHF	8.00
90%	North	PHF	9.00
90%	West	PHF	6.00
90%	South	PHF	4.00
90%	East	PHF	8.00

Peak Hour Factor Data

Intersection	Leg	Hourly Volume (Ped/hr)	Peak Hour Factor	Peak Time Segment
85%	North	9.00	1.00	SecondQuarter
85%	West	6.00	1.00	SecondQuarter
85%	South	4.00	1.00	SecondQuarter
85%	East	8.00	1.00	SecondQuarter

90%	North	9.00	1.00	SecondQuarter
90%	West	6.00	1.00	SecondQuarter
90%	South	4.00	1.00	SecondQuarter
90%	East	8.00	1.00	SecondQuarter

Turning Proportions

Turning Counts / Proportions (Veh/hr) - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.000	27.000	48.000	32.000
	West	12.000	1.000	37.000	317.000
	South	27.000	34.000	0.000	90.000
	East	48.000	643.000	159.000	0.000

Turning Proportions (Veh) - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.00	0.25	0.45	0.30
	West	0.03	0.00	0.10	0.86
	South	0.18	0.23	0.00	0.60
	East	0.06	0.76	0.19	0.00

Turning Counts / Proportions (Veh/hr) - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.000	27.000	48.000	32.000
	West	12.000	1.000	37.000	317.000
	South	27.000	34.000	0.000	90.000
	East	48.000	643.000	159.000	0.000

Turning Proportions (Veh) - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.00	0.25	0.45	0.30
	West	0.03	0.00	0.10	0.86
	South	0.18	0.23	0.00	0.60
	East	0.06	0.76	0.19	0.00

Vehicle Mix

Average PCE Per Vehicle - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	1.000	1.000	1.030	1.000
	West	1.000	1.000	1.000	1.020
	South	1.000	1.000	1.000	1.000
	East	1.000	1.010	1.000	1.000

Truck Percentages - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.0	0.0	3.0	0.0
	West	0.0	0.0	0.0	2.0
	South	0.0	0.0	0.0	0.0
	East	0.0	1.0	0.0	0.0

Average PCE Per Vehicle - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	1.000	1.000	1.030	1.000
	West	1.000	1.000	1.000	1.020
	South	1.000	1.000	1.000	1.000
	East	1.000	1.010	1.000	1.000

Truck Percentages - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.0	0.0	3.0	0.0
	West	0.0	0.0	0.0	2.0
	South	0.0	0.0	0.0	0.0
	East	0.0	1.0	0.0	0.0

Results

Results Summary for whole modelled period

Intersection	Leg	Max V/C Ratio	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Intersection Arrivals (Veh)	Total Queueing Delay (Veh-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (Veh-min/min)	Inclusive Total Queueing Delay (Veh-min)	Inclusive Average Queueing Delay (s)
85%	North	0.22	8.69	0.28	~1	A	107.00	107.00	13.73	7.70	0.23	13.73	7.70
85%	West	0.41	6.27	0.69	~1	A	367.00	367.00	35.61	5.82	0.59	35.62	5.82
85%	South	0.19	5.05	0.23	~1	A	151.00	151.00	12.07	4.79	0.20	12.07	4.79
85%	East	0.84	18.91	4.76	17.00	C	850.00	850.00	206.87	14.60	3.45	207.08	14.62
90%	North	0.20	7.65	0.24	~1	A	107.00	107.00	12.18	6.83	0.20	12.18	6.83
90%	West	0.38	5.63	0.62	1.00	A	367.00	367.00	32.17	5.26	0.54	32.18	5.26
90%	South	0.17	4.63	0.21	~1	A	151.00	151.00	11.10	4.41	0.18	11.10	4.41
90%	East	0.79	14.29	3.59	11.00	B	850.00	850.00	162.35	11.46	2.71	162.48	11.47

Main Results for each time segment

Main results: (16:00-16:15)

Intersection	Leg	Total Demand (Veh/hr)	Intersection Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	V/C Ratio	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
85%	North	100.80	25.20	100.02	81.19	778.77	9.00	617.48	397.63	0.163	0.00	0.19	6.947	A
85%	West	345.72	86.43	343.61	656.11	222.67	6.00	995.22	814.02	0.347	0.00	0.53	5.507	A
85%	South	142.25	35.56	141.52	227.40	338.89	4.00	919.06	452.18	0.155	0.00	0.18	4.626	A
85%	East	800.73	200.18	790.61	411.06	69.34	8.00	1103.31	1016.41	0.726	0.00	2.53	11.181	B
90%	North	100.80	25.20	100.10	81.30	780.42	9.00	677.16	405.80	0.149	0.00	0.17	6.230	A
90%	West	345.72	86.43	343.81	657.46	223.06	6.00	1061.12	864.20	0.326	0.00	0.48	5.006	A
90%	South	142.25	35.56	141.57	227.78	339.08	4.00	984.61	458.23	0.144	0.00	0.17	4.266	A
90%	East	800.73	200.18	792.35	411.29	69.37	8.00	1170.57	1080.63	0.684	0.00	2.09	9.324	A

Main results: (16:15-16:30)

Intersection	Leg	Total Demand (Veh/hr)	Intersection Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	V/C Ratio	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
85%	North	116.30	29.08	115.97	94.01	901.31	9.00	529.97	397.63	0.219	0.19	0.28	8.688	A
85%	West	398.91	99.73	398.27	759.42	257.86	6.00	971.60	814.02	0.411	0.53	0.69	6.273	A
85%	South	164.13	41.03	163.94	263.33	392.80	4.00	876.00	452.18	0.187	0.18	0.23	5.054	A
85%	East	923.92	230.98	914.99	476.40	80.34	8.00	1096.48	1016.41	0.843	2.53	4.76	18.907	C
90%	North	116.30	29.08	116.02	94.18	904.09	9.00	586.44	405.80	0.198	0.17	0.24	7.647	A
90%	West	398.91	99.73	398.35	761.66	258.45	6.00	1037.14	864.20	0.385	0.48	0.62	5.631	A
90%	South	164.13	41.03	163.96	263.91	392.89	4.00	940.78	458.23	0.174	0.17	0.21	4.633	A
90%	East	923.92	230.98	917.92	476.51	80.35	8.00	1163.74	1080.63	0.794	2.09	3.59	14.286	B

Main results: (16:30-16:45)

Intersection	Leg	Total Demand (Veh/hr)	Intersection Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	V/C Ratio	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
85%	North	110.10	27.53	110.22	89.68	863.63	9.00	556.85	397.63	0.198	0.28	0.25	8.063	A
85%	West	377.64	94.41	377.86	727.36	246.48	6.00	979.30	814.02	0.386	0.69	0.63	5.989	A
85%	South	155.38	38.84	155.44	251.61	372.73	4.00	892.21	452.18	0.174	0.23	0.21	4.888	A
85%	East	874.64	218.66	877.13	451.99	76.18	8.00	1099.06	1016.41	0.796	4.76	4.14	16.471	C
90%	North	110.10	27.53	110.20	89.64	863.04	9.00	616.55	405.80	0.179	0.24	0.22	7.110	A
90%	West	377.64	94.41	377.83	726.89	246.35	6.00	1045.40	864.20	0.361	0.62	0.57	5.393	A
90%	South	155.38	38.84	155.44	251.49	372.70	4.00	957.42	458.23	0.162	0.21	0.19	4.488	A
90%	East	874.64	218.66	876.51	451.96	76.18	8.00	1166.33	1080.63	0.750	3.59	3.13	12.525	B

Main results: (16:45-17:00)

Intersection	Leg	Total Demand (Veh/hr)	Intersection Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	V/C Ratio	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
85%	North	100.80	25.20	100.99	82.30	793.70	9.00	606.85	397.63	0.166	0.25	0.20	7.121	A
85%	West	345.72	86.43	346.10	668.36	226.32	6.00	992.81	814.02	0.348	0.63	0.54	5.571	A
85%	South	142.25	35.56	142.36	231.01	341.41	4.00	917.09	452.18	0.155	0.21	0.18	4.648	A
85%	East	800.73	200.18	806.23	414.00	69.77	8.00	1103.03	1016.41	0.726	4.14	2.76	12.353	B
90%	North	100.80	25.20	100.96	82.19	791.87	9.00	668.80	405.81	0.151	0.22	0.18	6.343	A
90%	West	345.72	86.43	346.05	666.90	225.93	6.00	1059.21	864.20	0.326	0.57	0.49	5.051	A
90%	South	142.25	35.56	142.35	230.63	341.36	4.00	982.81	458.24	0.145	0.19	0.17	4.285	A
90%	East	800.73	200.18	804.30	413.94	69.76	8.00	1170.32	1080.62	0.684	3.13	2.23	9.934	A

Queueing Delay Results for each time segment

Queueing Delay results: (16:00-16:15)

Intersection	Leg	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	2.80	0.19	6.947	A	A
85%	West	7.65	0.51	5.507	A	A
85%	South	2.66	0.18	4.626	A	A
85%	East	34.44	2.30	11.181	B	B
90%	North	2.52	0.17	6.230	A	A
90%	West	6.97	0.46	5.006	A	A
90%	South	2.46	0.16	4.266	A	A
90%	East	29.04	1.94	9.324	A	A

Queueing Delay results: (16:15-16:30)

Intersection	Leg	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	4.05	0.27	8.688	A	A
85%	West	10.07	0.67	6.273	A	A
85%	South	3.38	0.23	5.054	A	A
85%	East	63.16	4.21	18.907	C	B
90%	North	3.58	0.24	7.647	A	A
90%	West	9.07	0.60	5.631	A	A
90%	South	3.10	0.21	4.633	A	A
90%	East	49.22	3.28	14.286	B	B

Queueing Delay results: (16:30-16:45)

Intersection	Leg	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	3.80	0.25	8.063	A	A
85%	West	9.65	0.64	5.989	A	A
85%	South	3.22	0.21	4.888	A	A
85%	East	64.86	4.32	16.471	C	B
90%	North	3.34	0.22	7.110	A	A
90%	West	8.67	0.58	5.393	A	A
90%	South	2.95	0.20	4.488	A	A
90%	East	48.73	3.25	12.525	B	B

Queueing Delay results: (16:45-17:00)

Intersection	Leg	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service

85%	North	3.08	0.21	7.121	A	A
85%	West	8.24	0.55	5.571	A	A
85%	South	2.81	0.19	4.648	A	A
85%	East	44.41	2.96	12.353	B	B
90%	North	2.74	0.18	6.343	A	A
90%	West	7.46	0.50	5.051	A	A
90%	South	2.59	0.17	4.285	A	A
90%	East	35.37	2.36	9.934	A	A

Queue Variation Results for each time segment

Queue Variation results: (16:00-16:15)

Intersection	Leg	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.19	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	0.53	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.18	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	2.53	0.00	0.00	5.00	8.00			N/A	N/A
90%	North	0.17	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	0.48	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.17	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	2.09	0.00	0.00	4.00	6.00			N/A	N/A

Queue Variation results: (16:15-16:30)

Intersection	Leg	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.28	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	0.69	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.23	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	4.76	0.00	0.00	7.00	17.00			N/A	N/A
90%	North	0.24	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	0.62	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.21	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	3.59	0.00	0.00	3.00	11.00			N/A	N/A

Queue Variation results: (16:30-16:45)

Intersection	Leg	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.25	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	0.63	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.21	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	4.14	0.00	0.00	0.00	7.00			N/A	N/A
90%	North	0.22	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	0.57	0.00	0.00	0.00	1.00			N/A	N/A

90%	South	0.19	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.	N/A	N/A
90%	East	3.13	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.	N/A	N/A

Queue Variation results: (16:45-17:00)

Intersection	Leg	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.20	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	0.54	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.18	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	2.76	0.00	0.00	5.00	10.00			N/A	N/A
90%	North	0.18	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	0.49	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.17	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	2.23	0.00	0.00	4.00	8.00			N/A	N/A

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]
© Copyright TRL Limited, 2020

For sales and distribution information, program advice and maintenance, contact TRL:
Tel: +44 (0)1344 770758 email: software@trl.co.uk Web: http://www.trlsoftware.co.uk

The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: Conservation & Beaver Creek.arc8
Path: C:\Users\AdamMorrison\Paradigm\Projects - 170278 Beaver Creek Area TES\C5 - Analysis and Evaluation\Arcady
Report generation date: 2020-07-21 4:29:06 PM

Summary of intersection performance

	AM					
	Queue (PCE)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS
	All - Background 2032					
Intersection 85% - Leg North	0.00	0.00	0.00	A	4.33	A
Intersection 85% - Leg West	0.39	4.56	0.27	A		
Intersection 85% - Leg South	0.14	4.16	0.12	A		
Intersection 85% - Leg East	0.24	4.08	0.18	A		
Intersection 90% - Leg North	0.00	0.00	0.00	A	4.01	A
Intersection 90% - Leg West	0.36	4.21	0.26	A		
Intersection 90% - Leg South	0.13	3.86	0.11	A		
Intersection 90% - Leg East	0.22	3.81	0.17	A		

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Intersection LOS and Intersection Delay are demand-weighted averages.

"D1 - Existing, AM" model duration: 8:00 AM - 9:30 AM
"D2 - Existing, PM" model duration: 5:00 PM - 6:30 PM
"D3 - Background 2022, AM" model duration: 8:00 AM - 9:30 AM
"D4 - Background 2022, PM" model duration: 5:00 PM - 6:30 PM
"D5 - Total 2022, AM" model duration: 8:00 AM - 9:30 AM
"D6 - Total 2022, PM" model duration: 5:00 PM - 6:30 PM
"D7 - Background 2025, AM" model duration: 8:00 AM - 9:30 AM
"D8 - Background 2025, PM" model duration: 5:00 PM - 6:30 PM
"D9 - Total 2025, AM" model duration: 8:00 AM - 9:30 AM
"D10 - Total 2025, PM" model duration: 5:00 PM - 6:30 PM
"D11 - Background 2027, AM" model duration: 8:00 AM - 9:30 AM
"D12 - Background 2027, PM" model duration: 5:00 PM - 6:30 PM
"D13 - Total 2027, AM" model duration: 8:00 AM - 9:30 AM
"D14 - Total 2027, PM" model duration: 5:00 PM - 6:30 PM
"D15 - Background 2032, AM " model duration: 8:00 AM - 9:30 AM
"D16 - Background 2032, PM" model duration: 5:00 PM - 6:30 PM
"D17 - Total 2032, AM" model duration: 8:00 AM - 9:30 AM
"D18 - Total 2032, PM" model duration: 5:00 PM - 6:30 PM

Run using Junctions 8.0.6.541 at 2020-07-21 4:29:05 PM

File summary

Title	(untitled)
Location	
Site Number	
Date	2018-09-11
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	170278
Analyst	AdamMorrison
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)

7.50	✓		N/A	0.85	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	PCE	PCE	perHour	s	-Min	perMin

All - Background 2032, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
All	ARCADY		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
Background 2032, AM	Background 2032	AM		ONE HOUR	08:00	09:30	90	15				✓		

Intersection Network

Intersections

Junction	Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Do Geometric Delay	Intersection Delay (s)	Intersection LOS
85%	85%	Conservation Drive & Beaver Creek Road	Roundabout	North,West,South,East				4.33	A
90%	90%	Conservation Drive & Beaver Creek Road	Roundabout	North,West,South,East				4.01	A

Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

Legs

Legs

Intersection	Leg	Leg	Name	Description
85%	**North**	North	Beaver Creek Road	
85%	**West**	West	Conservation Drive	
85%	**South**	South	Beaver Creek Road	
85%	**East**	East	Conservation Drive	
90%	**North**	North	Beaver Creek Road	
90%	**West**	West	Conservation Drive	
90%	**South**	South	Beaver Creek Road	
90%	**East**	East	Conservation Drive	

Capacity Options

Intersection	Leg	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)	Assume Flat Start Profile	Initial Queue (PCE)
85%	**North**	0.00	99999.00		0.00
85%	**West**	0.00	99999.00		0.00
85%	**South**	0.00	99999.00		0.00

85%	East	0.00	99999.00		0.00
90%	North	0.00	99999.00		0.00
90%	West	0.00	99999.00		0.00
90%	South	0.00	99999.00		0.00
90%	East	0.00	99999.00		0.00

Roundabout Geometry

Intersection	Leg	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
85%	North	3.50	4.50	30.00	20.00	40.00	25.00	
85%	West	3.50	4.50	30.00	20.00	40.00	25.00	
85%	South	3.50	4.50	30.00	20.00	40.00	25.00	
85%	East	3.50	4.50	30.00	20.00	40.00	25.00	
90%	North	3.50	4.50	30.00	20.00	40.00	25.00	
90%	West	3.50	4.50	30.00	20.00	40.00	25.00	
90%	South	3.50	4.50	30.00	20.00	40.00	25.00	
90%	East	3.50	4.50	30.00	20.00	40.00	25.00	

Slope / Intercept / Capacity

Leg Intercept Adjustments

Intersection	Leg	Type	Reason	Direct Intercept Adjustment (PCE/hr)	Percentage Intercept Adjustment (%)
85%	North	Percentage	Region of Waterloo		85.00
85%	West	Percentage	Region of Waterloo		85.00
85%	South	Percentage	Region of Waterloo		85.00
85%	East	Percentage	Region of Waterloo		85.00
90%	North	Percentage	Region of Waterloo		90.00
90%	West	Percentage	Region of Waterloo		90.00
90%	South	Percentage	Region of Waterloo		90.00
90%	East	Percentage	Region of Waterloo		90.00

Roundabout Slope and Intercept used in model

Intersection	Leg	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
85%	North		(calculated)	(calculated)	0.579	1153.828
85%	West		(calculated)	(calculated)	0.579	1153.828
85%	South		(calculated)	(calculated)	0.579	1153.828
85%	East		(calculated)	(calculated)	0.579	1153.828
90%	North		(calculated)	(calculated)	0.579	1221.701
90%	West		(calculated)	(calculated)	0.579	1221.701
90%	South		(calculated)	(calculated)	0.579	1221.701
90%	East		(calculated)	(calculated)	0.579	1221.701

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCE Factor for a Truck (PCE)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Intersection	Leg	Profile Type	Use Turning Counts	Average Demand Flow (PCE/hr)	Flow Scaling Factor (%)
85%	North	ONE HOUR	✓	0.00	100.000
85%	West	ONE HOUR	✓	277.00	100.000
85%	South	ONE HOUR	✓	107.00	100.000

85%	East	ONE HOUR	✓	189.00	100.000
90%	North	ONE HOUR	✓	0.00	100.000
90%	West	ONE HOUR	✓	277.00	100.000
90%	South	ONE HOUR	✓	107.00	100.000
90%	East	ONE HOUR	✓	189.00	100.000

Turning Proportions

Turning Counts / Proportions (PCE/hr) - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.000	0.000	0.000	0.000
	West	0.000	0.000	20.000	257.000
	South	0.000	18.000	0.000	89.000
	East	0.000	129.000	60.000	0.000

Turning Proportions (PCE) - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.25	0.25	0.25	0.25
	West	0.00	0.00	0.07	0.93
	South	0.00	0.17	0.00	0.83
	East	0.00	0.68	0.32	0.00

Turning Counts / Proportions (PCE/hr) - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.000	0.000	0.000	0.000
	West	0.000	0.000	20.000	257.000
	South	0.000	18.000	0.000	89.000
	East	0.000	129.000	60.000	0.000

Turning Proportions (PCE) - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.25	0.25	0.25	0.25
	West	0.00	0.00	0.07	0.93
	South	0.00	0.17	0.00	0.83
	East	0.00	0.68	0.32	0.00

Vehicle Mix

Average PCE Per Vehicle - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	1.000	1.110	1.000	1.000
	West	1.000	1.000	1.000	1.030
	South	1.090	1.000	1.000	1.010
	East	1.040	1.060	1.060	1.000

Truck Percentages - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.0	11.0	0.0	0.0
	West	0.0	0.0	0.0	3.0
	South	9.0	0.0	0.0	1.0
	East	4.0	6.0	6.0	0.0

Average PCE Per Vehicle - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	1.000	1.110	1.000	1.000
	West	1.000	1.000	1.000	1.030
	South	1.090	1.000	1.000	1.010
	East	1.040	1.060	1.060	1.000

Truck Percentages - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.0	11.0	0.0	0.0
	West	0.0	0.0	0.0	3.0
	South	9.0	0.0	0.0	1.0
	East	4.0	6.0	6.0	0.0

Results

Results Summary for whole modelled period

Intersection	Leg	Max V/C Ratio	Max Delay (s)	Max Queue (PCE)	Max 95th percentile Queue (PCE)	Max LOS	Average Demand (PCE/hr)	Total Intersection Arrivals (PCE)	Total Queueing Delay (PCE-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCE-min/min)	Inclusive Total Queueing Delay (PCE-min)	Inclusive Average Queueing Delay (s)
85%	North	0.00	0.00	0.00	~1	A	0.00	0.00	0.00	0.00	0.00	0.00	0.00
85%	West	0.27	4.56	0.39	~1	A	254.18	381.27	27.20	4.28	0.30	27.20	4.28
85%	South	0.12	4.16	0.14	~1	A	98.19	147.28	9.72	3.96	0.11	9.72	3.96
85%	East	0.18	4.08	0.24	~1	A	173.43	260.14	17.04	3.93	0.19	17.04	3.93
90%	North	0.00	0.00	0.00	~1	A	0.00	0.00	0.00	0.00	0.00	0.00	0.00
90%	West	0.26	4.21	0.36	~1	A	254.18	381.27	25.22	3.97	0.28	25.22	3.97
90%	South	0.11	3.86	0.13	~1	A	98.19	147.28	9.05	3.68	0.10	9.05	3.69
90%	East	0.17	3.81	0.22	~1	A	173.43	260.14	15.92	3.67	0.18	15.93	3.67

Main Results for each time segment

Main results: (08:00-08:15)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	0.00	0.00	0.00	0.00	155.19	0.00	1064.01	503.31	0.000	0.00	0.00	0.000	A
85%	West	208.54	52.14	207.61	110.20	44.98	0.00	1127.80	747.60	0.185	0.00	0.23	4.016	A
85%	South	80.56	20.14	80.22	59.97	192.62	0.00	1042.35	606.74	0.077	0.00	0.08	3.773	A
85%	East	142.29	35.57	141.69	259.35	13.49	0.00	1146.02	1021.93	0.124	0.00	0.15	3.797	A
90%	North	0.00	0.00	0.00	0.00	155.23	0.00	1131.86	532.91	0.000	0.00	0.00	0.000	A
90%	West	208.54	52.14	207.68	110.23	44.99	0.00	1195.66	791.57	0.174	0.00	0.22	3.741	A
90%	South	80.56	20.14	80.24	59.99	192.68	0.00	1110.18	642.43	0.073	0.00	0.08	3.524	A
90%	East	142.29	35.57	141.73	259.42	13.50	0.00	1213.89	1082.05	0.117	0.00	0.14	3.557	A

Main results: (08:15-08:30)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	0.00	0.00	0.00	0.00	185.94	0.00	1046.22	503.31	0.000	0.00	0.00	0.000	A
85%	West	249.02	62.25	248.78	132.04	53.90	0.00	1122.64	747.60	0.222	0.23	0.29	4.233	A
85%	South	96.19	24.05	96.11	71.86	230.82	0.00	1020.24	606.74	0.094	0.08	0.10	3.927	A
85%	East	169.91	42.48	169.77	310.76	16.17	0.00	1144.47	1021.93	0.148	0.15	0.18	3.915	A
90%	North	0.00	0.00	0.00	0.00	185.95	0.00	1114.08	532.91	0.000	0.00	0.00	0.000	A
90%	West	249.02	62.25	248.80	132.05	53.90	0.00	1190.51	791.57	0.209	0.22	0.27	3.928	A
90%	South	96.19	24.05	96.12	71.86	230.84	0.00	1088.10	642.43	0.088	0.08	0.10	3.658	A
90%	East	169.91	42.48	169.78	310.78	16.17	0.00	1212.34	1082.05	0.140	0.14	0.17	3.659	A

Main results: (08:30-08:45)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	0.00	0.00	0.00	0.00	227.69	0.00	1022.05	503.31	0.000	0.00	0.00	0.000	A
85%	West	304.98	76.25	304.61	161.69	66.00	0.00	1115.63	747.60	0.273	0.29	0.38	4.560	A
85%	South	117.81	29.45	117.69	87.99	282.62	0.00	990.26	606.74	0.119	0.10	0.14	4.160	A
85%	East	208.09	52.02	207.89	380.51	19.80	0.00	1142.37	1021.93	0.182	0.18	0.23	4.082	A
90%	North	0.00	0.00	0.00	0.00	227.70	0.00	1089.91	532.91	0.000	0.00	0.00	0.000	A
90%	West	304.98	76.25	304.65	161.70	66.00	0.00	1183.50	791.57	0.258	0.27	0.35	4.210	A
90%	South	117.81	29.45	117.70	88.00	282.65	0.00	1058.11	642.43	0.111	0.10	0.13	3.860	A
90%	East	208.09	52.02	207.90	380.55	19.80	0.00	1210.24	1082.05	0.172	0.17	0.22	3.806	A

Main results: (08:45-09:00)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	0.00	0.00	0.00	0.00	227.91	0.00	1021.92	503.31	0.000	0.00	0.00	0.000	A
85%	West	304.98	76.25	304.98	161.85	66.06	0.00	1115.60	747.60	0.273	0.38	0.39	4.564	A
85%	South	117.81	29.45	117.81	88.08	282.96	0.00	990.06	606.74	0.119	0.14	0.14	4.161	A
85%	East	208.09	52.02	208.09	380.95	19.82	0.00	1142.36	1021.93	0.182	0.23	0.24	4.084	A
90%	North	0.00	0.00	0.00	0.00	227.91	0.00	1089.80	532.91	0.000	0.00	0.00	0.000	A
90%	West	304.98	76.25	304.98	161.85	66.06	0.00	1183.47	791.57	0.258	0.35	0.36	4.211	A
90%	South	117.81	29.45	117.81	88.08	282.96	0.00	1057.94	642.43	0.111	0.13	0.13	3.860	A
90%	East	208.09	52.02	208.09	380.95	19.82	0.00	1210.23	1082.05	0.172	0.22	0.22	3.806	A

Main results: (09:00-09:15)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	0.00	0.00	0.00	0.00	186.31	0.00	1046.00	503.31	0.000	0.00	0.00	0.000	A
85%	West	249.02	62.25	249.38	132.31	54.00	0.00	1122.57	747.60	0.222	0.39	0.29	4.238	A
85%	South	96.19	24.05	96.31	72.01	231.37	0.00	1019.92	606.74	0.094	0.14	0.11	3.931	A
85%	East	169.91	42.48	170.11	311.48	16.20	0.00	1144.45	1021.93	0.148	0.24	0.19	3.918	A
90%	North	0.00	0.00	0.00	0.00	186.29	0.00	1113.88	532.91	0.000	0.00	0.00	0.000	A
90%	West	249.02	62.25	249.35	132.29	54.00	0.00	1190.45	791.57	0.209	0.36	0.27	3.932	A
90%	South	96.19	24.05	96.30	72.00	231.34	0.00	1087.81	642.43	0.088	0.13	0.10	3.663	A
90%	East	169.91	42.48	170.09	311.45	16.20	0.00	1212.32	1082.05	0.140	0.22	0.17	3.663	A

Main results: (09:15-09:30)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	0.00	0.00	0.00	0.00	155.99	0.00	1063.55	503.31	0.000	0.00	0.00	0.000	A
85%	West	208.54	52.14	208.78	110.78	45.22	0.00	1127.66	747.60	0.185	0.29	0.23	4.027	A
85%	South	80.56	20.14	80.64	60.29	193.71	0.00	1041.72	606.74	0.077	0.11	0.08	3.779	A
85%	East	142.29	35.57	142.43	260.78	13.57	0.00	1145.98	1021.93	0.124	0.19	0.15	3.805	A
90%	North	0.00	0.00	0.00	0.00	155.98	0.00	1131.42	532.91	0.000	0.00	0.00	0.000	A
90%	West	208.54	52.14	208.76	110.77	45.21	0.00	1195.53	791.57	0.174	0.27	0.22	3.752	A
90%	South	80.56	20.14	80.63	60.29	193.69	0.00	1109.60	642.43	0.073	0.10	0.08	3.529	A
90%	East	142.29	35.57	142.42	260.75	13.56	0.00	1213.85	1082.05	0.117	0.17	0.14	3.563	A

Queueing Delay Results for each time segment

Queueing Delay results: (08:00-08:15)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	0.00	0.00	0.000	A	A
85%	West	3.40	0.23	4.016	A	A
85%	South	1.24	0.08	3.773	A	A
85%	East	2.20	0.15	3.797	A	A
90%	North	0.00	0.00	0.000	A	A
90%	West	3.17	0.21	3.741	A	A
90%	South	1.16	0.08	3.524	A	A
90%	East	2.06	0.14	3.557	A	A

Queueing Delay results: (08:15-08:30)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	0.00	0.00	0.000	A	A
85%	West	4.30	0.29	4.233	A	A
85%	South	1.55	0.10	3.927	A	A
85%	East	2.72	0.18	3.915	A	A
90%	North	0.00	0.00	0.000	A	A
90%	West	4.00	0.27	3.928	A	A
90%	South	1.44	0.10	3.658	A	A
90%	East	2.55	0.17	3.659	A	A

Queueing Delay results: (08:30-08:45)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	0.00	0.00	0.000	A	A
85%	West	5.65	0.38	4.560	A	A
85%	South	2.00	0.13	4.160	A	A
85%	East	3.47	0.23	4.082	A	A
90%	North	0.00	0.00	0.000	A	A
90%	West	5.23	0.35	4.210	A	A
90%	South	1.86	0.12	3.860	A	A
90%	East	3.24	0.22	3.806	A	A

Queueing Delay results: (08:45-09:00)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	0.00	0.00	0.000	A	A
85%	West	5.77	0.38	4.564	A	A
85%	South	2.04	0.14	4.161	A	A
85%	East	3.53	0.24	4.084	A	A
90%	North	0.00	0.00	0.000	A	A
90%	West	5.33	0.36	4.211	A	A
90%	South	1.89	0.13	3.860	A	A
90%	East	3.29	0.22	3.806	A	A

Queueing Delay results: (09:00-09:15)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	0.00	0.00	0.000	A	A
85%	West	4.50	0.30	4.238	A	A
85%	South	1.61	0.11	3.931	A	A
85%	East	2.83	0.19	3.918	A	A
90%	North	0.00	0.00	0.000	A	A
90%	West	4.17	0.28	3.932	A	A
90%	South	1.49	0.10	3.663	A	A
90%	East	2.64	0.18	3.663	A	A

Queueing Delay results: (09:15-09:30)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	0.00	0.00	0.000	A	A
85%	West	3.57	0.24	4.027	A	A
85%	South	1.29	0.09	3.779	A	A
85%	East	2.30	0.15	3.805	A	A
90%	North	0.00	0.00	0.000	A	A
90%	West	3.32	0.22	3.752	A	A
90%	South	1.20	0.08	3.529	A	A
90%	East	2.15	0.14	3.563	A	A

Queue Variation Results for each time segment

Queue Variation results: (08:00-08:15)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.00	~1	~1	~1	~1			N/A	N/A
85%	West	0.23	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.08	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	0.15	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.00	~1	~1	~1	~1			N/A	N/A
90%	West	0.22	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.08	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.14	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:15-08:30)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.00	~1	~1	~1	~1			N/A	N/A
85%	West	0.29	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.10	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	0.18	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.00	~1	~1	~1	~1			N/A	N/A
90%	West	0.27	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.10	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.17	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:30-08:45)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.00	~1	~1	~1	~1			N/A	N/A
85%	West	0.38	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.14	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	0.23	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.00	~1	~1	~1	~1			N/A	N/A
90%	West	0.35	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.13	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.22	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:45-09:00)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.00	~1	~1	~1	~1			N/A	N/A
85%	West	0.39	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.14	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

85%	East	0.24	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.00	~1	~1	~1	~1			N/A	N/A
90%	West	0.36	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.13	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.22	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (09:00-09:15)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.00	~1	~1	~1	~1			N/A	N/A
85%	West	0.29	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.11	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	0.19	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.00	~1	~1	~1	~1			N/A	N/A
90%	West	0.27	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.10	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.17	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (09:15-09:30)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.00	~1	~1	~1	~1			N/A	N/A
85%	West	0.23	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.08	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	0.15	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.00	~1	~1	~1	~1			N/A	N/A
90%	West	0.22	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.08	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.14	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]
© Copyright TRL Limited, 2020

For sales and distribution information, program advice and maintenance, contact TRL:
Tel: +44 (0)1344 770758 email: software@trl.co.uk Web: http://www.trlsoftware.co.uk

The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: Conservation & Beaver Creek.arc8
Path: C:\Users\AdamMorrison\Paradigm\Projects - 170278 Beaver Creek Area TES\C5 - Analysis and Evaluation\Arcady
Report generation date: 2020-07-21 4:29:27 PM

Summary of intersection performance

	PM					
	Queue (PCE)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS
	All - Background 2032					
Intersection 85% - Leg North	0.00	0.00	0.00	A	4.75	A
Intersection 85% - Leg West	0.25	4.24	0.20	A		
Intersection 85% - Leg South	0.11	3.85	0.10	A		
Intersection 85% - Leg East	0.64	5.20	0.39	A		
Intersection 90% - Leg North	0.00	0.00	0.00	A	4.36	A
Intersection 90% - Leg West	0.23	3.93	0.19	A		
Intersection 90% - Leg South	0.10	3.59	0.09	A		
Intersection 90% - Leg East	0.58	4.74	0.37	A		

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Intersection LOS and Intersection Delay are demand-weighted averages.

"D1 - Existing, AM" model duration: 8:00 AM - 9:30 AM
"D2 - Existing, PM" model duration: 5:00 PM - 6:30 PM
"D3 - Background 2022, AM" model duration: 8:00 AM - 9:30 AM
"D4 - Background 2022, PM" model duration: 5:00 PM - 6:30 PM
"D5 - Total 2022, AM" model duration: 8:00 AM - 9:30 AM
"D6 - Total 2022, PM" model duration: 5:00 PM - 6:30 PM
"D7 - Background 2025, AM" model duration: 8:00 AM - 9:30 AM
"D8 - Background 2025, PM" model duration: 5:00 PM - 6:30 PM
"D9 - Total 2025, AM" model duration: 8:00 AM - 9:30 AM
"D10 - Total 2025, PM" model duration: 5:00 PM - 6:30 PM
"D11 - Background 2027, AM" model duration: 8:00 AM - 9:30 AM
"D12 - Background 2027, PM" model duration: 5:00 PM - 6:30 PM
"D13 - Total 2027, AM" model duration: 8:00 AM - 9:30 AM
"D14 - Total 2027, PM" model duration: 5:00 PM - 6:30 PM
"D15 - Background 2032, AM" model duration: 8:00 AM - 9:30 AM
"D16 - Background 2032, PM " model duration: 5:00 PM - 6:30 PM
"D17 - Total 2032, AM" model duration: 8:00 AM - 9:30 AM
"D18 - Total 2032, PM" model duration: 5:00 PM - 6:30 PM

Run using Junctions 8.0.6.541 at 2020-07-21 4:29:26 PM

File summary

Title	(untitled)
Location	
Site Number	
Date	2018-09-11
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	170278
Analyst	AdamMorrison
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)

7.50	✓		N/A	0.85	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	PCE	PCE	perHour	s	-Min	perMin

All - Background 2032, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
All	ARCADY		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
Background 2032, PM	Background 2032	PM		ONE HOUR	17:00	18:30	90	15				✓		

Intersection Network

Intersections

Junction	Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Do Geometric Delay	Intersection Delay (s)	Intersection LOS
85%	85%	Conservation Drive & Beaver Creek Road	Roundabout	North,West,South,East				4.75	A
90%	90%	Conservation Drive & Beaver Creek Road	Roundabout	North,West,South,East				4.36	A

Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

Legs

Legs

Intersection	Leg	Leg	Name	Description
85%	**North**	North	Beaver Creek Road	
85%	**West**	West	Conservation Drive	
85%	**South**	South	Beaver Creek Road	
85%	**East**	East	Conservation Drive	
90%	**North**	North	Beaver Creek Road	
90%	**West**	West	Conservation Drive	
90%	**South**	South	Beaver Creek Road	
90%	**East**	East	Conservation Drive	

Capacity Options

Intersection	Leg	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)	Assume Flat Start Profile	Initial Queue (PCE)
85%	**North**	0.00	99999.00		0.00
85%	**West**	0.00	99999.00		0.00
85%	**South**	0.00	99999.00		0.00
85%	**East**	0.00	99999.00		0.00
90%	**North**	0.00	99999.00		0.00
90%	**West**	0.00	99999.00		0.00
90%	**South**	0.00	99999.00		0.00
90%	**East**	0.00	99999.00		0.00

Roundabout Geometry

Intersection	Leg	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
85%	**North**	3.50	4.50	30.00	20.00	40.00	25.00	
85%	**West**	3.50	4.50	30.00	20.00	40.00	25.00	
85%	**South**	3.50	4.50	30.00	20.00	40.00	25.00	
85%	**East**	3.50	4.50	30.00	20.00	40.00	25.00	
90%	**North**	3.50	4.50	30.00	20.00	40.00	25.00	
90%	**West**	3.50	4.50	30.00	20.00	40.00	25.00	
90%	**South**	3.50	4.50	30.00	20.00	40.00	25.00	
90%	**East**	3.50	4.50	30.00	20.00	40.00	25.00	

Slope / Intercept / Capacity

Leg Intercept Adjustments

Intersection	Leg	Type	Reason	Direct Intercept Adjustment (PCE/hr)	Percentage Intercept Adjustment (%)
85%	**North**	Percentage	Region of Waterloo		85.00
85%	**West**	Percentage	Region of Waterloo		85.00
85%	**South**	Percentage	Region of Waterloo		85.00
85%	**East**	Percentage	Region of Waterloo		85.00
90%	**North**	Percentage	Region of Waterloo		90.00
90%	**West**	Percentage	Region of Waterloo		90.00
90%	**South**	Percentage	Region of Waterloo		90.00
90%	**East**	Percentage	Region of Waterloo		90.00

Roundabout Slope and Intercept used in model

Intersection	Leg	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
85%	**North**		(calculated)	(calculated)	0.579	1153.828
85%	**West**		(calculated)	(calculated)	0.579	1153.828
85%	**South**		(calculated)	(calculated)	0.579	1153.828
85%	**East**		(calculated)	(calculated)	0.579	1153.828
90%	**North**		(calculated)	(calculated)	0.579	1221.701
90%	**West**		(calculated)	(calculated)	0.579	1221.701
90%	**South**		(calculated)	(calculated)	0.579	1221.701
90%	**East**		(calculated)	(calculated)	0.579	1221.701

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCE Factor for a Truck (PCE)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Intersection	Leg	Profile Type	Use Turning Counts	Average Demand Flow (PCE/hr)	Flow Scaling Factor (%)
85%	**North**	ONE HOUR	✓	0.00	100.000
85%	**West**	ONE HOUR	✓	193.00	100.000
85%	**South**	ONE HOUR	✓	93.00	100.000

85%	East	ONE HOUR	✓	402.00	100.000
90%	North	ONE HOUR	✓	0.00	100.000
90%	West	ONE HOUR	✓	193.00	100.000
90%	South	ONE HOUR	✓	93.00	100.000
90%	East	ONE HOUR	✓	402.00	100.000

Turning Proportions

Turning Counts / Proportions (PCE/hr) - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.000	0.000	0.000	0.000
	West	0.000	0.000	11.000	182.000
	South	0.000	22.000	0.000	71.000
	East	0.000	281.000	121.000	0.000

Turning Proportions (PCE) - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.25	0.25	0.25	0.25
	West	0.00	0.00	0.06	0.94
	South	0.00	0.24	0.00	0.76
	East	0.00	0.70	0.30	0.00

Turning Counts / Proportions (PCE/hr) - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.000	0.000	0.000	0.000
	West	0.000	0.000	11.000	182.000
	South	0.000	22.000	0.000	71.000
	East	0.000	281.000	121.000	0.000

Turning Proportions (PCE) - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.25	0.25	0.25	0.25
	West	0.00	0.00	0.06	0.94
	South	0.00	0.24	0.00	0.76
	East	0.00	0.70	0.30	0.00

Vehicle Mix

Average PCE Per Vehicle - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	1.000	1.000	1.030	1.000
	West	1.000	1.000	1.000	1.020
	South	1.000	1.000	1.000	1.000
	East	1.000	1.010	1.000	1.000

Truck Percentages - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.0	0.0	3.0	0.0
	West	0.0	0.0	0.0	2.0
	South	0.0	0.0	0.0	0.0
	East	0.0	1.0	0.0	0.0

Average PCE Per Vehicle - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	1.000	1.000	1.030	1.000
	West	1.000	1.000	1.000	1.020
	South	1.000	1.000	1.000	1.000
	East	1.000	1.010	1.000	1.000

Truck Percentages - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.0	0.0	3.0	0.0
	West	0.0	0.0	0.0	2.0
	South	0.0	0.0	0.0	0.0
	East	0.0	1.0	0.0	0.0

Results

Results Summary for whole modelled period

Intersection	Leg	Max V/C Ratio	Max Delay (s)	Max Queue (PCE)	Max 95th percentile Queue (PCE)	Max LOS	Average Demand (PCE/hr)	Total Intersection Arrivals (PCE)	Total Queueing Delay (PCE-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCE-min/min)	Inclusive Total Queueing Delay (PCE-min)	Inclusive Average Queueing Delay (s)
85%	North	0.00	0.00	0.00	~1	A	0.00	0.00	0.00	0.00	0.00	0.00	0.00
85%	West	0.20	4.24	0.25	~1	A	177.10	265.65	17.84	4.03	0.20	17.84	4.03
85%	South	0.10	3.85	0.11	~1	A	85.34	128.01	7.91	3.71	0.09	7.91	3.71
85%	East	0.39	5.20	0.64	1.01	A	368.88	553.32	43.64	4.73	0.48	43.64	4.73
90%	North	0.00	0.00	0.00	~1	A	0.00	0.00	0.00	0.00	0.00	0.00	0.00
90%	West	0.19	3.93	0.23	~1	A	177.10	265.65	16.60	3.75	0.18	16.60	3.75
90%	South	0.09	3.59	0.10	~1	A	85.34	128.01	7.39	3.46	0.08	7.39	3.46
90%	East	0.37	4.74	0.58	1.01	A	368.88	553.32	40.07	4.35	0.45	40.08	4.35

Main Results for each time segment

Main results: (17:00-17:15)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	0.00	0.00	0.00	0.00	317.70	0.00	969.95	493.11	0.000	0.00	0.00	0.000	A
85%	West	145.30	36.33	144.68	227.04	90.66	0.00	1101.36	765.37	0.132	0.00	0.15	3.832	A
85%	South	70.02	17.50	69.74	98.91	136.44	0.00	1074.86	593.42	0.065	0.00	0.07	3.581	A
85%	East	302.65	75.66	301.21	189.68	16.50	0.00	1144.28	1001.23	0.264	0.00	0.36	4.293	A
90%	North	0.00	0.00	0.00	0.00	317.82	0.00	1037.76	522.12	0.000	0.00	0.00	0.000	A
90%	West	145.30	36.33	144.72	227.12	90.69	0.00	1169.21	810.39	0.124	0.00	0.14	3.578	A
90%	South	70.02	17.50	69.76	98.94	136.48	0.00	1142.71	628.32	0.061	0.00	0.07	3.355	A
90%	East	302.65	75.66	301.31	189.73	16.50	0.00	1212.15	1060.13	0.250	0.00	0.33	3.974	A

Main results: (17:15-17:30)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	0.00	0.00	0.00	0.00	380.74	0.00	933.47	493.11	0.000	0.00	0.00	0.000	A
85%	West	173.50	43.38	173.35	272.09	108.65	0.00	1090.94	765.37	0.159	0.15	0.19	3.997	A
85%	South	83.61	20.90	83.54	118.53	163.47	0.00	1059.22	593.42	0.079	0.07	0.09	3.689	A
85%	East	361.39	90.35	360.98	227.25	19.76	0.00	1142.39	1001.23	0.316	0.36	0.46	4.637	A
90%	North	0.00	0.00	0.00	0.00	380.78	0.00	1001.32	522.12	0.000	0.00	0.00	0.000	A
90%	West	173.50	43.38	173.36	272.12	108.66	0.00	1158.81	810.39	0.150	0.14	0.18	3.721	A
90%	South	83.61	20.90	83.55	118.55	163.48	0.00	1127.08	628.32	0.074	0.07	0.08	3.449	A
90%	East	361.39	90.35	361.02	227.27	19.76	0.00	1210.26	1060.13	0.299	0.33	0.43	4.266	A

Main results: (17:30-17:45)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	0.00	0.00	0.00	0.00	466.13	0.00	884.05	493.11	0.000	0.00	0.00	0.000	A
85%	West	212.50	53.12	212.27	333.11	133.02	0.00	1076.84	765.37	0.197	0.19	0.25	4.241	A
85%	South	102.39	25.60	102.30	145.12	200.17	0.00	1037.98	593.42	0.099	0.09	0.11	3.847	A
85%	East	442.61	110.65	441.93	278.27	24.20	0.00	1139.82	1001.23	0.388	0.46	0.63	5.188	A
90%	North	0.00	0.00	0.00	0.00	466.20	0.00	951.88	522.12	0.000	0.00	0.00	0.000	A
90%	West	212.50	53.12	212.29	333.16	133.04	0.00	1144.70	810.39	0.186	0.18	0.23	3.932	A
90%	South	102.39	25.60	102.31	145.14	200.19	0.00	1105.84	628.32	0.093	0.08	0.10	3.586	A
90%	East	442.61	110.65	442.00	278.29	24.20	0.00	1207.69	1060.13	0.366	0.43	0.58	4.730	A

Main results: (17:45-18:00)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	0.00	0.00	0.00	0.00	466.82	0.00	883.65	493.11	0.000	0.00	0.00	0.000	A
85%	West	212.50	53.12	212.49	333.60	133.22	0.00	1076.73	765.37	0.197	0.25	0.25	4.243	A
85%	South	102.39	25.60	102.39	145.33	200.38	0.00	1037.85	593.42	0.099	0.11	0.11	3.848	A
85%	East	442.61	110.65	442.60	278.55	24.22	0.00	1139.81	1001.23	0.388	0.63	0.64	5.198	A
90%	North	0.00	0.00	0.00	0.00	466.82	0.00	951.52	522.12	0.000	0.00	0.00	0.000	A
90%	West	212.50	53.12	212.49	333.60	133.22	0.00	1144.60	810.39	0.186	0.23	0.23	3.934	A
90%	South	102.39	25.60	102.39	145.33	200.38	0.00	1105.73	628.32	0.093	0.10	0.10	3.587	A
90%	East	442.61	110.65	442.60	278.56	24.22	0.00	1207.68	1060.13	0.367	0.58	0.58	4.737	A

Main results: (18:00-18:15)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	0.00	0.00	0.00	0.00	381.86	0.00	932.83	493.11	0.000	0.00	0.00	0.000	A
85%	West	173.50	43.38	173.73	272.88	108.98	0.00	1090.76	765.37	0.159	0.25	0.19	4.001	A
85%	South	83.61	20.90	83.70	118.88	163.83	0.00	1059.01	593.42	0.079	0.11	0.09	3.693	A
85%	East	361.39	90.35	362.06	227.72	19.80	0.00	1142.37	1001.23	0.316	0.64	0.47	4.651	A
90%	North	0.00	0.00	0.00	0.00	381.78	0.00	1000.74	522.12	0.000	0.00	0.00	0.000	A
90%	West	173.50	43.38	173.71	272.83	108.96	0.00	1158.64	810.39	0.150	0.23	0.18	3.726	A
90%	South	83.61	20.90	83.69	118.86	163.81	0.00	1126.90	628.32	0.074	0.10	0.08	3.453	A
90%	East	361.39	90.35	361.98	227.70	19.80	0.00	1210.24	1060.13	0.299	0.58	0.43	4.277	A

Main results: (18:15-18:30)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	0.00	0.00	0.00	0.00	319.64	0.00	968.83	493.11	0.000	0.00	0.00	0.000	A
85%	West	145.30	36.33	145.45	228.42	91.22	0.00	1101.03	765.37	0.132	0.19	0.16	3.840	A
85%	South	70.02	17.50	70.08	99.51	137.16	0.00	1074.44	593.42	0.065	0.09	0.07	3.583	A
85%	East	302.65	75.66	303.07	190.66	16.58	0.00	1144.23	1001.23	0.265	0.47	0.36	4.311	A
90%	North	0.00	0.00	0.00	0.00	319.60	0.00	1036.73	522.12	0.000	0.00	0.00	0.000	A
90%	West	145.30	36.33	145.44	228.39	91.21	0.00	1168.91	810.39	0.124	0.18	0.15	3.586	A
90%	South	70.02	17.50	70.07	99.50	137.15	0.00	1142.32	628.32	0.061	0.08	0.07	3.356	A
90%	East	302.65	75.66	303.02	190.65	16.58	0.00	1212.11	1060.13	0.250	0.43	0.34	3.990	A

Queueing Delay Results for each time segment

Queueing Delay results: (17:00-17:15)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	0.00	0.00	0.000	A	A
85%	West	2.26	0.15	3.832	A	A
85%	South	1.02	0.07	3.581	A	A
85%	East	5.26	0.35	4.293	A	A
90%	North	0.00	0.00	0.000	A	A
90%	West	2.12	0.14	3.578	A	A
90%	South	0.96	0.06	3.355	A	A
90%	East	4.88	0.33	3.974	A	A

Queueing Delay results: (17:15-17:30)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	0.00	0.00	0.000	A	A
85%	West	2.83	0.19	3.997	A	A
85%	South	1.26	0.08	3.689	A	A
85%	East	6.81	0.45	4.637	A	A
90%	North	0.00	0.00	0.000	A	A
90%	West	2.64	0.18	3.721	A	A
90%	South	1.18	0.08	3.449	A	A
90%	East	6.28	0.42	4.266	A	A

Queueing Delay results: (17:30-17:45)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	0.00	0.00	0.000	A	A
85%	West	3.68	0.25	4.241	A	A
85%	South	1.61	0.11	3.847	A	A
85%	East	9.28	0.62	5.188	A	A
90%	North	0.00	0.00	0.000	A	A
90%	West	3.41	0.23	3.932	A	A
90%	South	1.50	0.10	3.586	A	A
90%	East	8.48	0.57	4.730	A	A

Queueing Delay results: (17:45-18:00)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	0.00	0.00	0.000	A	A
85%	West	3.74	0.25	4.243	A	A
85%	South	1.64	0.11	3.848	A	A
85%	East	9.53	0.64	5.198	A	A
90%	North	0.00	0.00	0.000	A	A
90%	West	3.47	0.23	3.934	A	A
90%	South	1.53	0.10	3.587	A	A
90%	East	8.69	0.58	4.737	A	A

Queueing Delay results: (18:00-18:15)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	0.00	0.00	0.000	A	A
85%	West	2.95	0.20	4.001	A	A
85%	South	1.31	0.09	3.693	A	A
85%	East	7.19	0.48	4.651	A	A
90%	North	0.00	0.00	0.000	A	A
90%	West	2.75	0.18	3.726	A	A
90%	South	1.22	0.08	3.453	A	A
90%	East	6.60	0.44	4.277	A	A

Queueing Delay results: (18:15-18:30)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	0.00	0.00	0.000	A	A
85%	West	2.37	0.16	3.840	A	A
85%	South	1.06	0.07	3.583	A	A
85%	East	5.57	0.37	4.311	A	A
90%	North	0.00	0.00	0.000	A	A
90%	West	2.21	0.15	3.586	A	A
90%	South	1.00	0.07	3.356	A	A
90%	East	5.14	0.34	3.990	A	A

Queue Variation Results for each time segment

Queue Variation results: (17:00-17:15)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.00	~1	~1	~1	~1			N/A	N/A

85%	West	0.15	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.07	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	0.36	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.00	~1	~1	~1	~1			N/A	N/A
90%	West	0.14	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.07	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.33	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (17:15-17:30)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.00	~1	~1	~1	~1			N/A	N/A
85%	West	0.19	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.09	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	0.46	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.00	~1	~1	~1	~1			N/A	N/A
90%	West	0.18	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.08	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.43	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (17:30-17:45)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.00	~1	~1	~1	~1			N/A	N/A
85%	West	0.25	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.11	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	0.63	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.00	~1	~1	~1	~1			N/A	N/A
90%	West	0.23	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.10	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.58	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (17:45-18:00)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.00	~1	~1	~1	~1			N/A	N/A
85%	West	0.25	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.11	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

85%	East	0.64	0.00	0.00	0.00	1.01			N/A	N/A
90%	North	0.00	~1	~1	~1	~1			N/A	N/A
90%	West	0.23	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.10	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.58	0.00	0.00	0.00	1.01			N/A	N/A

Queue Variation results: (18:00-18:15)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.00	~1	~1	~1	~1			N/A	N/A
85%	West	0.19	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.09	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	0.47	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.00	~1	~1	~1	~1			N/A	N/A
90%	West	0.18	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.08	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.43	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (18:15-18:30)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.00	~1	~1	~1	~1			N/A	N/A
85%	West	0.16	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.07	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	0.36	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.00	~1	~1	~1	~1			N/A	N/A
90%	West	0.15	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.07	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.34	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Appendix J

2032 Total Traffic Operations Reports



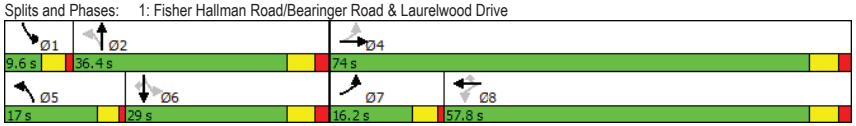
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	384	373	514	47	77	16	184	711	108	52	283	95
Future Volume (vph)	384	373	514	47	77	16	184	711	108	52	283	95
Ideal Flow (vphpl)	1775	1650	1650	1775	1900	1750	1775	1775	1775	1775	1900	1750
Storage Length (m)	85.0		0.0	90.0		90.0	90.0		0.0	60.0		60.0
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (m)	35.0			7.5			45.0			70.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Ped Bike Factor	1.00	0.99				0.98	1.00	1.00		1.00		0.97
Frt		0.913				0.850		0.980				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1653	1444	0	1188	1845	1488	1506	3197	0	1686	3574	1430
Flt Permitted	0.668			0.202			0.399			0.154		
Satd. Flow (perm)	1159	1444	0	252	1845	1464	630	3197	0	273	3574	1392
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		99				145		14				145
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		133.2			228.2			160.2			234.1	
Travel Time (s)		9.6			16.4			11.5			16.9	
Confl. Peds. (#/hr)	2		7	7		2	2		3	3		2
Peak Hour 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
Heavy Vehicles (%)	2%	1%	4%	42%	3%	0%	12%	1%	16%	0%	1%	4%
Adj. Flow (vph)	384	373	514	47	77	16	184	711	108	52	283	95
Shared Lane Traffic (%)												
Lane Group Flow (vph)	384	887	0	47	77	16	184	819	0	52	283	95
Turn Type	pm+pt	NA		Perm	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4			8		8	2			6		6
Detector Phase	7	4		8	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	9.5	24.0		30.0	30.0	30.0	9.5	24.0		9.5	24.0	24.0
Total Split (s)	16.2	74.0		57.8	57.8	57.8	17.0	36.4		9.6	29.0	29.0
Total Split (%)	13.5%	61.7%		48.2%	48.2%	48.2%	14.2%	30.3%		8.0%	24.2%	24.2%
Maximum Green (s)	11.7	68.0		51.8	51.8	51.8	13.0	30.4		5.1	23.0	23.0
Yellow Time (s)	3.5	4.0		4.0	4.0	4.0	3.0	4.0		3.5	4.0	4.0
All-Red Time (s)	1.0	2.0		2.0	2.0	2.0	1.0	2.0		1.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0	-2.0	0.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	2.5	4.0		4.0	4.0	4.0	4.0	4.0		2.5	4.0	4.0
Lead/Lag	Lead			Lag	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None	None	None	Max		None	Max	Max
Walk Time (s)		7.0		7.0	7.0	7.0		7.0			7.0	7.0
Flash Dont Walk (s)		11.0		11.0	11.0	11.0		11.0			11.0	11.0
Pedestrian Calls (#/hr)		0		0	0	0		0			0	0
Act Effct Green (s)	71.5	70.0		44.6	44.6	44.6	41.6	33.9		33.6	25.0	25.0
Actuated g/C Ratio	0.60	0.59		0.37	0.37	0.37	0.35	0.28		0.28	0.21	0.21
v/c Ratio	0.48	1.00		0.51	0.11	0.03	0.59	0.89		0.32	0.38	0.23

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	15.2	53.5		43.8	20.9	0.1	37.9	54.3		31.4	42.5	2.8
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	15.2	53.5		43.8	20.9	0.1	37.9	54.3		31.4	42.5	2.8
LOS	B	D		D	C	A	D	D		C	D	A
Approach Delay		42.0			26.2			51.3			32.4	
Approach LOS		D			C			D			C	
Queue Length 50th (m)	47.3	~199.0		7.7	10.7	0.0	33.6	103.2		8.4	32.0	0.0
Queue Length 95th (m)	68.8	#298.9		21.5	20.3	0.0	53.9	#143.5		17.5	45.8	4.0
Internal Link Dist (m)		109.2			204.2			136.2			210.1	
Turn Bay Length (m)	85.0			90.0		90.0	90.0			60.0		60.0
Base Capacity (vph)	797	886		113	830	738	314	916		161	747	405
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.48	1.00		0.42	0.09	0.02	0.59	0.89		0.32	0.38	0.23

Intersection Summary		
Area Type:	Other	
Cycle Length: 120		
Actuated Cycle Length: 119.6		
Natural Cycle: 110		
Control Type: Semi Act-Uncoord		
Maximum v/c Ratio: 1.00		
Intersection Signal Delay: 43.0		Intersection LOS: D
Intersection Capacity Utilization 98.2%		ICU Level of Service F
Analysis Period (min) 15		

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

Splits and Phases: 1: Fisher Hallman Road/Bearinger Road & Laurelwood Drive



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	384	373	514	47	77	16	184	711	108	52	283	95
Future Volume (vph)	384	373	514	47	77	16	184	711	108	52	283	95
Ideal Flow (vphpl)	1775	1650	1650	1775	1900	1750	1775	1775	1775	1775	1900	1750
Total Lost time (s)	2.5	4.0		4.0	4.0	4.0	4.0	4.0		2.5	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.98		1.00	1.00	0.98	1.00	1.00		1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.91		1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1650	1444		1185	1845	1464	1504	3198		1686	3574	1392
Flt Permitted	0.67	1.00		0.20	1.00	1.00	0.40	1.00		0.15	1.00	1.00
Satd. Flow (perm)	1160	1444		252	1845	1464	632	3198		274	3574	1392
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	384	373	514	47	77	16	184	711	108	52	283	95
RTOR Reduction (vph)	0	41	0	0	0	10	0	10	0	0	0	75
Lane Group Flow (vph)	384	846	0	47	77	6	184	809	0	52	283	20
Confl. Peds. (#/hr)	2		7	7		2	2		3	3		2
Heavy Vehicles (%)	2%	1%	4%	42%	3%	0%	12%	1%	16%	0%	1%	4%
Turn Type	pm+pt	NA		Perm	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4			8		8	2			6		6
Actuated Green, G (s)	69.2	69.2		41.3	41.3	41.3	40.5	31.9		28.0	23.9	23.9
Effective Green, g (s)	71.2	71.2		43.3	43.3	43.3	40.5	33.9		32.0	25.9	25.9
Actuated g/C Ratio	0.59	0.59		0.36	0.36	0.36	0.33	0.28		0.26	0.21	0.21
Clearance Time (s)	4.5	6.0		6.0	6.0	6.0	4.0	6.0		4.5	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	780	844		89	656	520	300	890		142	760	296
v/s Ratio Prot	0.10	c0.59			0.04		c0.06	c0.25		0.02	0.08	
v/s Ratio Perm	0.18			0.19		0.00	0.14			0.08		0.01
v/c Ratio	0.49	1.00		0.53	0.12	0.01	0.61	0.91		0.37	0.37	0.07
Uniform Delay, d1	13.7	25.2		31.1	26.4	25.4	31.3	42.4		35.2	41.0	38.3
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.5	31.5		5.6	0.1	0.0	3.7	14.8		1.6	1.4	0.4
Delay (s)	14.2	56.8		36.7	26.4	25.4	34.9	57.2		36.8	42.3	38.7
Level of Service	B	E		D	C	C	C	E		D	D	D
Approach Delay (s)		43.9			29.7			53.1			40.9	
Approach LOS		D			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	46.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	121.7	Sum of lost time (s)	14.5
Intersection Capacity Utilization	98.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	198	42	1342	53	34	14	386	194	26	12	344	42
Future Volume (vph)	198	42	1342	53	34	14	386	194	26	12	344	42
Ideal Flow (vphpl)	1650	1650	1750	1550	1550	1550	1775	1650	1650	1550	1550	1550
Storage Length (m)	0.0		50.0	0.0		0.0	25.0		0.0	0.0		50.0
Storage Lanes	0		1	0		0	1		0	0		0
Taper Length (m)	0.0			0.0			35.0			0.0		
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			0.850		0.981			0.982			0.986	
Flt Protected		0.960			0.974		0.950				0.998	
Satd. Flow (prot)	0	1526	1473	0	1447	0	1606	1556	0	0	1481	0
Flt Permitted		0.960			0.974		0.950				0.998	
Satd. Flow (perm)	0	1526	1473	0	1447	0	1606	1556	0	0	1481	0
Link Speed (k/h)		60			50			50			50	
Link Distance (m)		1012.1			151.5			545.8			326.3	
Travel Time (s)		60.7			10.9			39.3			23.5	
Confl. Peds. (#/hr)	3		1	1		3	3		1	1		3
Peak Hour 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
Heavy Vehicles (%)	4%	3%	1%	0%	7%	0%	5%	4%	5%	20%	2%	6%
Adj. Flow (vph)	198	42	1342	53	34	14	386	194	26	12	344	42
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	240	1342	0	101	0	386	220	0	0	398	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	134.0%	ICU Level of Service	H
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	198	42	1342	53	34	14	386	194	26	12	344	42
Future Volume (vph)	198	42	1342	53	34	14	386	194	26	12	344	42
Peak Hour 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
Hourly flow rate (vph)	198	42	1342	53	34	14	386	194	26	12	344	42

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1
Volume Total (vph)	240	1342	101	386	220	398
Volume Left (vph)	198	0	53	386	0	12
Volume Right (vph)	0	1342	14	0	26	42
Hadj (s)	0.48	-0.68	0.06	0.58	-0.01	-0.01
Departure Headway (s)	8.7	7.5	9.8	8.7	8.1	8.1
Degree Utilization, x	0.58	2.78	0.27	0.93	0.49	0.90
Capacity (veh/h)	404	484	353	408	441	429
Control Delay (s)	21.6	821.2	16.5	56.9	17.5	49.7
Approach Delay (s)	699.9		16.5	42.6		49.7
Approach LOS	F		C	E		E

Intersection Summary				
Delay	429.6			
Level of Service	F			
Intersection Capacity Utilization	134.0%	ICU Level of Service	H	
Analysis Period (min)	15			

Intersection	
Intersection Delay, s/veh	441.8
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	198	42	1342	53	34	14	386	194	26	12	344	42
Future Vol, veh/h	198	42	1342	53	34	14	386	194	26	12	344	42
Peak Hour 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
Heavy Vehicles, %	4	3	1	0	7	0	5	4	5	20	2	6
Mvmt Flow	198	42	1342	53	34	14	386	194	26	12	344	42
Number of Lanes	0	1	1	0	1	0	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	2
HCM Control Delay	711.9	19.9	52.4	68.4
HCM LOS	F	C	F	F

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	100%	0%	82%	0%	52%	3%
Vol Thru, %	0%	88%	18%	0%	34%	86%
Vol Right, %	0%	12%	0%	100%	14%	11%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	386	220	240	1342	101	398
LT Vol	386	0	198	0	53	12
Through Vol	0	194	42	0	34	344
RT Vol	0	26	0	1342	14	42
Lane Flow Rate	386	220	240	1342	101	398
Geometry Grp	7	7	7	7	6	6
Degree of Util (X)	0.936	0.497	0.58	2.807	0.281	0.939
Departure Headway (Hd)	11.072	10.441	8.699	7.53	12.197	10.647
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	332	348	413	497	297	342
Service Time	8.772	8.141	6.494	5.324	10.197	8.647
HCM Lane V/C Ratio	1.163	0.632	0.581	2.7	0.34	1.164
HCM Control Delay	69.2	23	22.9	835.1	19.9	68.4
HCM Lane LOS	F	C	C	F	C	F
HCM 95th-tile Q	9.5	2.6	3.6	111.1	1.1	9.7

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	224	102	166	81	34	414
Future Volume (vph)	224	102	166	81	34	414
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Storage Length (m)		0.0	0.0		0.0	30.0
Storage Lanes		0	0		1	0
Taper Length (m)			0.0		0.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.958				0.875	
Flt Protected				0.967	0.996	
Satd. Flow (prot)	1521	0	0	1549	1495	0
Flt Permitted				0.967	0.996	
Satd. Flow (perm)	1521	0	0	1549	1495	0
Link Speed (k/h)	80			80	50	
Link Distance (m)	1516.2			424.2	223.3	
Travel Time (s)	68.2			19.1	16.1	
Confl. Peds. (#/hr)		1	1			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	6%	2%	5%	14%	2%
Adj. Flow (vph)	224	102	166	81	34	414
Shared Lane Traffic (%)						
Lane Group Flow (vph)	326	0	0	247	448	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	75.8%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	224	102	166	81	34	414
Future Volume (Veh/h)	224	102	166	81	34	414
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	224	102	166	81	34	414
Pedestrians					1	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			327		689	276
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			327		689	276
tC, single (s)			4.1		6.5	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			87		90	46
cM capacity (veh/h)			1232		340	762

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	326	247	448
Volume Left	0	166	34
Volume Right	102	0	414
cSH	1700	1232	697
Volume to Capacity	0.19	0.13	0.64
Queue Length 95th (m)	0.0	3.7	37.6
Control Delay (s)	0.0	6.0	19.0
Lane LOS		A	C
Approach Delay (s)	0.0	6.0	19.0
Approach LOS			C

Intersection Summary			
Average Delay	9.8		
Intersection Capacity Utilization	75.8%	ICU Level of Service	D
Analysis Period (min)	15		



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	16	85	117	51	202	76
Future Volume (vph)	16	85	117	51	202	76
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.886		0.959			
Flt Protected	0.992					0.965
Satd. Flow (prot)	1393	0	1470	0	0	1526
Flt Permitted	0.992					0.965
Satd. Flow (perm)	1393	0	1470	0	0	1526
Link Speed (k/h)	80		80			80
Link Distance (m)	1200.3		1761.7			72.7
Travel Time (s)	54.0		79.3			3.3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	8%	12%	11%	0%	3%	8%
Adj. Flow (vph)	16	85	117	51	202	76
Shared Lane Traffic (%)						
Lane Group Flow (vph)	101	0	168	0	0	278
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	44.8%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	16	85	117	51	202	76
Future Volume (Veh/h)	16	85	117	51	202	76
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	16	85	117	51	202	76
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	622	142			168	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	622	142			168	
tC, single (s)	6.5	6.3			4.1	
tC, 2 stage (s)						
tF (s)	3.6	3.4			2.2	
p0 queue free %	96	90			86	
cM capacity (veh/h)	377	879			1404	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	101	168	278
Volume Left	16	0	202
Volume Right	85	51	0
cSH	726	1700	1404
Volume to Capacity	0.14	0.10	0.14
Queue Length 95th (m)	3.9	0.0	4.0
Control Delay (s)	10.8	0.0	6.1
Lane LOS	B		A
Approach Delay (s)	10.8	0.0	6.1
Approach LOS	B		

Intersection Summary			
Average Delay	5.1		
Intersection Capacity Utilization	44.8%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	27	86	85	84	62	34
Future Volume (vph)	27	86	85	84	62	34
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.897		0.933			
Flt Protected	0.988					0.969
Satd. Flow (prot)	1438	0	1495	0	0	1500
Flt Permitted	0.988					0.969
Satd. Flow (perm)	1438	0	1495	0	0	1500
Link Speed (k/h)	80		80			80
Link Distance (m)	605.5		233.8			1761.7
Travel Time (s)	27.2		10.5			79.3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	5%	10%	3%	3%	8%	4%
Adj. Flow (vph)	27	86	85	84	62	34
Shared Lane Traffic (%)						
Lane Group Flow (vph)	113	0	169	0	0	96
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	34.4%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	27	86	85	84	62	34
Future Volume (Veh/h)	27	86	85	84	62	34
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	27	86	85	84	62	34
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	285	127			169	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	285	127			169	
tC, single (s)	6.4	6.3			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.4			2.3	
p0 queue free %	96	90			95	
cM capacity (veh/h)	667	902			1373	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	113	169	96
Volume Left	27	0	62
Volume Right	86	84	0
cSH	832	1700	1373
Volume to Capacity	0.14	0.10	0.05
Queue Length 95th (m)	3.8	0.0	1.1
Control Delay (s)	10.0	0.0	5.1
Lane LOS	B		A
Approach Delay (s)	10.0	0.0	5.1
Approach LOS	B		

Intersection Summary			
Average Delay	4.3		
Intersection Capacity Utilization	34.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	51	5	205	52	112	5	214	319	274	215	0
Future Volume (vph)	12	51	5	205	52	112	5	214	319	274	215	0
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		50.0	50.0		0.0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (m)	0.0			0.0			0.0			65.0		
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
Frt		0.990			0.959			0.920				
Flt Protected		0.991			0.973						0.973	
Satd. Flow (prot)	0	1498	0	0	1383	0	0	1364	0	0	1426	0
Flt Permitted		0.991			0.973						0.973	
Satd. Flow (perm)	0	1498	0	0	1383	0	0	1364	0	0	1426	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		187.7			400.3			488.0			394.6	
Travel Time (s)		13.5			28.8			35.1			28.4	
Peak Hour 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
Heavy Vehicles (%)	0%	2%	0%	6%	0%	4%	0%	7%	3%	4%	8%	0%
Adj. Flow (vph)	12	51	5	205	52	112	5	214	319	274	215	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	68	0	0	369	0	0	538	0	0	489	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 112.9%		ICU Level of Service H	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	51	5	205	52	112	5	214	319	274	215	0
Future Volume (Veh/h)	12	51	5	205	52	112	5	214	319	274	215	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	12	51	5	205	52	112	5	214	319	274	215	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1284	1306	215	1177	1146	374	215			533		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1284	1306	215	1177	1146	374	215			533		
tC, single (s)	7.1	6.5	6.2	7.2	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.0	3.3	2.2			2.2		
p0 queue free %	83	56	99	0	65	83	100			73		
cM capacity (veh/h)	69	117	830	87	147	668	1367			1025		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	68	369	538	489
Volume Left	12	205	5	274
Volume Right	5	112	319	0
cSH	110	128	1367	1025
Volume to Capacity	0.62	2.88	0.00	0.27
Queue Length 95th (m)	24.4	273.2	0.1	8.7
Control Delay (s)	79.7	919.0	0.1	6.8
Lane LOS	F	F	A	A
Approach Delay (s)	79.7	919.0	0.1	6.8
Approach LOS	F	F		

Intersection Summary				
Average Delay		237.6		
Intersection Capacity Utilization		112.9%	ICU Level of Service	H
Analysis Period (min)		15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	256	219	74	118	93	192	298	129	254	340	22
Future Volume (vph)	21	256	219	74	118	93	192	298	129	254	340	22
Ideal Flow (vphpl)	1775	1900	1750	1775	1650	1650	1775	1900	1750	1775	1650	1650
Storage Length (m)	20.0		20.0	25.0		0.0	65.0		30.0	25.0		0.0
Storage Lanes	1		1	1		0	1		1	1		0
Taper Length (m)	35.0			10.0			80.0			35.0		
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	0.90		0.94	0.97	0.93		0.99		0.94	0.98	1.00	
Frt			0.850		0.934				0.850		0.991	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1591	1810	1403	1561	1332	0	1606	1776	1430	1653	1530	0
Flt Permitted	0.588			0.518			0.482			0.424		
Satd. Flow (perm)	891	1810	1323	830	1332	0	808	1776	1339	720	1530	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			219		68				129		6	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		123.5			178.3			236.9			930.8	
Travel Time (s)		8.9			12.8			17.1			67.0	
Confl. Peds. (#/hr)	79		23	23		79	9		27	27		9
Peak Hour 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
Heavy Vehicles (%)	6%	5%	6%	8%	9%	7%	5%	7%	4%	2%	6%	17%
Adj. Flow (vph)	21	256	219	74	118	93	192	298	129	254	340	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	21	256	219	74	211	0	192	298	129	254	362	0
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2		2	6		
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5		9.5	22.5	22.5	9.5	22.5	
Total Split (s)	22.5	22.5	22.5	22.5	22.5		10.4	24.5	24.5	13.0	27.1	
Total Split (%)	37.5%	37.5%	37.5%	37.5%	37.5%		17.3%	40.8%	40.8%	21.7%	45.2%	
Maximum Green (s)	18.0	18.0	18.0	18.0	18.0		5.9	20.0	20.0	8.5	22.6	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	
Walk Time (s)	7.0	7.0	7.0	7.0	7.0			7.0	7.0		7.0	
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0			11.0	11.0		11.0	
Pedestrian Calls (#/hr)	0	0	0	0	0			0	0		0	
Act Effct Green (s)	18.0	18.0	18.0	18.0	18.0		25.9	20.0	20.0	31.1	22.6	
Actuated g/C Ratio	0.30	0.30	0.30	0.30	0.30		0.43	0.33	0.33	0.52	0.38	
v/c Ratio	0.08	0.47	0.40	0.30	0.47		0.45	0.50	0.24	0.50	0.62	
Control Delay	16.1	20.6	5.3	20.2	15.6		11.5	19.6	4.6	11.1	20.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	16.1	20.6	5.3	20.2	15.6		11.5	19.6	4.6	11.1	20.7	
LOS	B	C	A	C	B		B	B	A	B	C	
Approach Delay		13.7			16.8			14.0			16.8	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		B			B			B			B	
Queue Length 50th (m)	1.7	23.9	0.0	6.5	12.8		10.2	27.1	0.0	14.0	32.5	
Queue Length 95th (m)	6.2	42.9	13.4	16.6	30.2		19.6	47.8	9.8	25.6	58.2	
Internal Link Dist (m)		99.5			154.3			212.9			906.8	
Turn Bay Length (m)	20.0		20.0	25.0			65.0		30.0	25.0		
Base Capacity (vph)	267	543	550	249	447		427	592	532	505	580	
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Reduced v/c Ratio	0.08	0.47	0.40	0.30	0.47		0.45	0.50	0.24	0.50	0.62	

Intersection Summary		
Area Type:	Other	
Cycle Length: 60		
Actuated Cycle Length: 60		
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green		
Natural Cycle: 60		
Control Type: Pretimed		
Maximum v/c Ratio: 0.62		
Intersection Signal Delay: 15.1		Intersection LOS: B
Intersection Capacity Utilization 68.8%		ICU Level of Service C
Analysis Period (min) 15		

Splits and Phases: 7: Erbsville Road & Laurelwood Drive



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	256	219	74	118	93	192	298	129	254	340	22
Future Volume (vph)	21	256	219	74	118	93	192	298	129	254	340	22
Ideal Flow (vphpl)	1775	1900	1750	1775	1650	1650	1775	1900	1750	1775	1650	1650
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.94	1.00	0.93		1.00	1.00	0.94	1.00	1.00	
Flpb, ped/bikes	0.90	1.00	1.00	0.97	1.00		1.00	1.00	1.00	0.99	1.00	
Frt	1.00	1.00	0.85	1.00	0.93		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1439	1810	1323	1522	1332		1600	1776	1339	1637	1530	
Flt Permitted	0.59	1.00	1.00	0.52	1.00		0.48	1.00	1.00	0.42	1.00	
Satd. Flow (perm)	891	1810	1323	831	1332		812	1776	1339	730	1530	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	21	256	219	74	118	93	192	298	129	254	340	22
RTOR Reduction (vph)	0	0	153	0	48	0	0	0	86	0	4	0
Lane Group Flow (vph)	21	256	66	74	163	0	192	298	43	254	358	0
Confl. Peds. (#/hr)	79		23	23		79	9		27	27		9
Heavy Vehicles (%)	6%	5%	6%	8%	9%	7%	5%	7%	4%	2%	6%	17%
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2		2	6		
Actuated Green, G (s)	18.0	18.0	18.0	18.0	18.0		25.9	20.0	20.0	31.1	22.6	
Effective Green, g (s)	18.0	18.0	18.0	18.0	18.0		25.9	20.0	20.0	31.1	22.6	
Actuated g/C Ratio	0.30	0.30	0.30	0.30	0.30		0.43	0.33	0.33	0.52	0.38	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Lane Grp Cap (vph)	267	543	396	249	399		428	592	446	506	576	
v/s Ratio Prot		c0.14			0.12		0.04	0.17		c0.07	c0.23	
v/s Ratio Perm	0.02		0.05	0.09			0.15		0.03	0.19		
v/c Ratio	0.08	0.47	0.17	0.30	0.41		0.45	0.50	0.10	0.50	0.62	
Uniform Delay, d1	15.1	17.1	15.5	16.1	16.8		11.1	16.0	13.8	8.6	15.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.6	2.9	0.9	3.0	3.1		3.4	3.0	0.4	3.5	5.0	
Delay (s)	15.6	20.0	16.4	19.2	19.9		14.4	19.1	14.2	12.2	20.2	
Level of Service	B	C	B	B	B		B	B	B	B	C	
Approach Delay (s)		18.2			19.7			16.6			16.9	
Approach LOS		B			B			B			B	

Intersection Summary				
HCM 2000 Control Delay	17.5	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.58			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	13.5	
Intersection Capacity Utilization	68.8%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	732	96	41	238	122	63	42	220	286	22	21
Future Volume (vph)	34	732	96	41	238	122	63	42	220	286	22	21
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
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		0.985			0.959			0.909			0.991	
Flt Protected		0.998			0.995			0.990			0.958	
Satd. Flow (prot)	0	1486	0	0	1403	0	0	1370	0	0	1461	0
Flt Permitted		0.998			0.995			0.990			0.958	
Satd. Flow (perm)	0	1486	0	0	1403	0	0	1370	0	0	1461	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		213.7			555.1			104.8			136.8	
Travel Time (s)		15.4			40.0			7.5			9.8	
Confl. Peds. (#/hr)	10		4	4		10	7		10	10		7
Peak Hour 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
Heavy Vehicles (%)	0%	3%	0%	6%	6%	4%	0%	9%	1%	0%	0%	11%
Adj. Flow (vph)	34	732	96	41	238	122	63	42	220	286	22	21
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	862	0	0	401	0	0	325	0	0	329	0
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Roundabout			
Intersection Capacity Utilization	119.9%	ICU Level of Service	H
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Traffic Volume (veh/h)	34	732	96	41	238	122	63	42	220	286	22	21
Future Volume (veh/h)	34	732	96	41	238	122	63	42	220	286	22	21
Peak Hour 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
Hourly flow rate (vph)	34	732	96	41	238	122	63	42	220	286	22	21
Approach Volume (veh/h)		862			401			325			329	
Crossing Volume (veh/h)		349			139			1052			342	
High Capacity (veh/h)		1053			1242			596			1059	
High v/c (veh/h)		0.82			0.32			0.54			0.31	
Low Capacity (veh/h)		861			1032			460			866	
Low v/c (veh/h)		1.00			0.39			0.71			0.38	

Intersection Summary				
Maximum v/c High		0.82		
Maximum v/c Low		1.00		
Intersection Capacity Utilization	119.9%	ICU Level of Service	H	



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	225	23	34	81	20	115
Future Volume (vph)	225	23	34	81	20	115
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.987				0.885	
Flt Protected				0.985	0.993	
Satd. Flow (prot)	1585	0	0	1478	1499	0
Flt Permitted				0.985	0.993	
Satd. Flow (perm)	1585	0	0	1478	1499	0
Link Speed (k/h)	80			80	50	
Link Distance (m)	1200.3			667.7	811.2	
Travel Time (s)	54.0			30.0	58.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	0%	5%	12%	6%	3%
Adj. Flow (vph)	225	23	34	81	20	115
Shared Lane Traffic (%)						
Lane Group Flow (vph)	248	0	0	115	135	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	41.2%	ICU Level of Service A	
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	225	23	34	81	20	115
Future Volume (Veh/h)	225	23	34	81	20	115
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	225	23	34	81	20	115
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			248		386	236
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			248		386	236
tC, single (s)			4.1		6.5	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			97		97	86
cM capacity (veh/h)			1300		594	800

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	248	115	135
Volume Left	0	34	20
Volume Right	23	0	115
cSH	1700	1300	761
Volume to Capacity	0.15	0.03	0.18
Queue Length 95th (m)	0.0	0.6	5.1
Control Delay (s)	0.0	2.5	10.7
Lane LOS		A	B
Approach Delay (s)	0.0	2.5	10.7
Approach LOS			B

Intersection Summary			
Average Delay		3.5	
Intersection Capacity Utilization		41.2%	ICU Level of Service A
Analysis Period (min)		15	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	12	233	90	5	0	93	108	98	6	139	0
Future Volume (vph)	0	12	233	90	5	0	93	108	98	6	139	0
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Storage Length (m)	0.0		0.0	50.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (m)	0.0			50.0			0.0			0.0		
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
Frt		0.872						0.956				
Flt Protected					0.955			0.985			0.998	
Satd. Flow (prot)	0	1352	0	0	1426	0	0	1444	0	0	1466	0
Flt Permitted					0.955			0.985			0.998	
Satd. Flow (perm)	0	1352	0	0	1426	0	0	1444	0	0	1466	0
Link Speed (k/h)		50			70			50			50	
Link Distance (m)		114.7			143.4			394.6			123.0	
Travel Time (s)		8.3			7.4			28.4			8.9	
Peak Hour 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
Heavy Vehicles (%)	0%	0%	0%	4%	0%	0%	0%	3%	0%	40%	4%	0%
Adj. Flow (vph)	0	12	233	90	5	0	93	108	98	6	139	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	245	0	0	95	0	0	299	0	0	145	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	68.2%	ICU Level of Service C	
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	12	233	90	5	0	93	108	98	6	139	0
Future Volume (Veh/h)	0	12	233	90	5	0	93	108	98	6	139	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	0	12	233	90	5	0	93	108	98	6	139	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	496	543	139	733	494	157	139			206		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	496	543	139	733	494	157	139			206		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.5		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.6		
p0 queue free %	100	97	75	61	99	100	94			99		
cM capacity (veh/h)	458	419	915	231	446	894	1457			1169		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	245	95	299	145
Volume Left	0	90	93	6
Volume Right	233	0	98	0
cSH	864	237	1457	1169
Volume to Capacity	0.28	0.40	0.06	0.01
Queue Length 95th (m)	9.4	14.6	1.6	0.1
Control Delay (s)	10.8	30.1	2.8	0.4
Lane LOS	B	D	A	A
Approach Delay (s)	10.8	30.1	2.8	0.4
Approach LOS	B	D		

Intersection Summary					
Average Delay		8.1			
Intersection Capacity Utilization		68.2%	ICU Level of Service		C
Analysis Period (min)		15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	126	894	132	162	361	18	65	37	229	60	50	120
Future Volume (vph)	126	894	132	162	361	18	65	37	229	60	50	120
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.985			0.996			0.907			0.930	
Flt Protected		0.995			0.985			0.990			0.987	
Satd. Flow (prot)	0	1485	0	0	1473	0	0	1336	0	0	1423	0
Flt Permitted		0.995			0.985			0.990			0.987	
Satd. Flow (perm)	0	1485	0	0	1473	0	0	1336	0	0	1423	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		166.4			228.8			212.1			132.6	
Travel Time (s)		12.0			16.5			15.3			9.5	
Peak Hour 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
Heavy Vehicles (%)	0%	3%	0%	4%	3%	0%	7%	0%	4%	0%	0%	0%
Adj. Flow (vph)	126	894	132	162	361	18	65	37	229	60	50	120
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1152	0	0	541	0	0	331	0	0	230	0
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary				
Area Type:	Other			
Control Type: Roundabout				
Intersection Capacity Utilization	118.3%		ICU Level of Service H	
Analysis Period (min)	15			



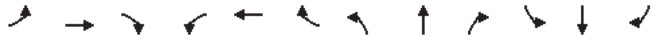
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Traffic Volume (veh/h)	126	894	132	162	361	18	65	37	229	60	50	120
Future Volume (veh/h)	126	894	132	162	361	18	65	37	229	60	50	120
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	126	894	132	162	361	18	65	37	229	60	50	120
Approach Volume (veh/h)		1152			541			331			230	
Crossing Volume (veh/h)		272			228			1080			588	
High Capacity (veh/h)		1119			1158			583			870	
High v/c (veh/h)		1.03			0.47			0.57			0.26	
Low Capacity (veh/h)		920			956			449			698	
Low v/c (veh/h)		1.25			0.57			0.74			0.33	

Intersection Summary					
Maximum v/c High		1.03			
Maximum v/c Low		1.25			
Intersection Capacity Utilization		118.3%	ICU Level of Service		H



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	1273	4	11	462	16	16	7	34	80	8	36
Future Volume (vph)	14	1273	4	11	462	16	16	7	34	80	8	36
Ideal Flow (vphpl)	1650	1650	1900	1900	1650	1650	1900	1900	1900	1765	1900	1765
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					0.996			0.919			0.961	
Flt Protected		0.999			0.999			0.986			0.969	
Satd. Flow (prot)	0	1586	0	0	1606	0	0	1688	0	0	1767	0
Flt Permitted		0.999			0.999			0.986			0.969	
Satd. Flow (perm)	0	1586	0	0	1606	0	0	1688	0	0	1767	0
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		96.4			374.2			130.3			178.3	
Travel Time (s)		5.8			22.5			9.4			12.8	
Confl. Peds. (#/hr)	10					10						
Peak Hour 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
Heavy Vehicles (%)	0%	4%	2%	2%	2%	8%	2%	2%	2%	0%	2%	0%
Adj. Flow (vph)	14	1273	4	11	462	16	16	7	34	80	8	36
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1291	0	0	489	0	0	57	0	0	124	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary					
Area Type:	Other				
Control Type: Unsignalized					
Intersection Capacity Utilization 105.5%			ICU Level of Service G		
Analysis Period (min) 15					



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	1273	4	11	462	16	16	7	34	80	8	36
Future Volume (Veh/h)	14	1273	4	11	462	16	16	7	34	80	8	36
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	14	1273	4	11	462	16	16	7	34	80	8	36
Pedestrians											10	
Lane Width (m)											3.6	
Walking Speed (m/s)											1.2	
Percent Blockage											1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	488			1277			1835	1813	1275	1842	1807	480
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	488			1277			1835	1813	1275	1842	1807	480
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			98			67	91	83	0	89	94
cM capacity (veh/h)	1077			544			49	75	204	43	76	585

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	1291	489	57	124
Volume Left	14	11	16	80
Volume Right	4	16	34	36
cSH	1077	544	97	62
Volume to Capacity	0.01	0.02	0.59	2.01
Queue Length 95th (m)	0.3	0.5	22.0	94.0
Control Delay (s)	0.5	0.6	85.1	613.3
Lane LOS	A	A	F	F
Approach Delay (s)	0.5	0.6	85.1	613.3
Approach LOS			F	F

Intersection Summary				
Average Delay			41.7	
Intersection Capacity Utilization			105.5%	ICU Level of Service G
Analysis Period (min)			15	



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	17	1371	456	30	73	33
Future Volume (vph)	17	1371	456	30	73	33
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.992		0.958	
Flt Protected		0.999			0.967	
Satd. Flow (prot)	0	1601	1580	0	1613	0
Flt Permitted		0.999			0.967	
Satd. Flow (perm)	0	1601	1580	0	1613	0
Link Speed (k/h)		60	60		50	
Link Distance (m)		374.2	1012.1		87.7	
Travel Time (s)		22.5	60.7		6.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	3%	3%	13%	2%	0%
Adj. Flow (vph)	17	1371	456	30	73	33
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1388	486	0	106	0
Sign Control		Free	Free		Stop	

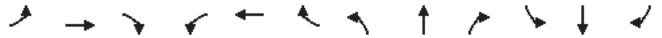
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 111.9%		ICU Level of Service H	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	17	1371	456	30	73	33
Future Volume (Veh/h)	17	1371	456	30	73	33
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	17	1371	456	30	73	33
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	486				1876	471
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	486				1876	471
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				6	94
cM capacity (veh/h)	1087				77	597

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	1388	486	106
Volume Left	17	0	73
Volume Right	0	30	33
cSH	1087	1700	106
Volume to Capacity	0.02	0.29	1.00
Queue Length 95th (m)	0.4	0.0	50.3
Control Delay (s)	0.8	0.0	161.7
Lane LOS	A		F
Approach Delay (s)	0.8	0.0	161.7
Approach LOS			F

Intersection Summary			
Average Delay	9.2		
Intersection Capacity Utilization	111.9%	ICU Level of Service	H
Analysis Period (min)	15		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	104	6	99	34	2	9	31	422	5	6	273	26
Future Volume (vph)	104	6	99	34	2	9	31	422	5	6	273	26
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Storage Length (m)	0.0		0.0	0.0		0.0	30.0		0.0	0.0		0.0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (m)	0.0			0.0			25.0			0.0		
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		0.936			0.973			0.999			0.988	
Flt Protected		0.976			0.964			0.997			0.999	
Satd. Flow (prot)	0	1396	0	0	1454	0	0	1511	0	0	1476	0
Flt Permitted		0.976			0.964			0.997			0.999	
Satd. Flow (perm)	0	1396	0	0	1454	0	0	1511	0	0	1476	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		77.1			66.0			326.3			223.3	
Travel Time (s)		5.6			4.8			23.5			16.1	
Confl. Peds. (#/hr)	7		1	1		7			5	5		
Peak Hour 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
Heavy Vehicles (%)	0%	0%	3%	0%	0%	0%	5%	2%	0%	0%	3%	11%
Adj. Flow (vph)	104	6	99	34	2	9	31	422	5	6	273	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	209	0	0	45	0	0	458	0	0	305	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	69.6%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	104	6	99	34	2	9	31	422	5	6	273	26
Future Volume (Veh/h)	104	6	99	34	2	9	31	422	5	6	273	26
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	104	6	99	34	2	9	31	422	5	6	273	26
Pedestrians					5			1			7	
Lane Width (m)					3.6			3.6			3.6	
Walking Speed (m/s)					1.2			1.2			1.2	
Percent Blockage					0			0			1	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	802	792	287	892	802	436	299			432		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	802	792	287	892	802	436	299			432		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	64	98	87	84	99	99	98			99		
cM capacity (veh/h)	289	313	749	219	308	618	1245			1134		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	209	45	458	305
Volume Left	104	34	31	6
Volume Right	99	9	5	26
cSH	409	256	1245	1134
Volume to Capacity	0.51	0.18	0.02	0.01
Queue Length 95th (m)	22.5	5.0	0.6	0.1
Control Delay (s)	22.6	22.1	0.8	0.2
Lane LOS	C	C	A	A
Approach Delay (s)	22.6	22.1	0.8	0.2
Approach LOS	C	C		

Intersection Summary				
Average Delay			6.0	
Intersection Capacity Utilization			69.6%	ICU Level of Service
Analysis Period (min)			15	



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	57	4	133	18	1	57
Future Volume (vph)	57	4	133	18	1	57
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.991		0.984			
Flt Protected	0.955					0.999
Satd. Flow (prot)	1638	0	1592	0	0	1616
Flt Permitted	0.955					0.999
Satd. Flow (perm)	1638	0	1592	0	0	1616
Link Speed (k/h)	50		50			50
Link Distance (m)	135.9		143.4			554.5
Travel Time (s)	9.8		10.3			39.9
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	57	4	133	18	1	57
Shared Lane Traffic (%)						
Lane Group Flow (vph)	61	0	151	0	0	58
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 19.6%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	57	4	133	18	1	57
Future Volume (Veh/h)	57	4	133	18	1	57
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	57	4	133	18	1	57
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	201	142			151	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	201	142			151	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	93	100			100	
cM capacity (veh/h)	787	906			1430	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	61	151	58
Volume Left	57	0	1
Volume Right	4	18	0
cSH	794	1700	1430
Volume to Capacity	0.08	0.09	0.00
Queue Length 95th (m)	2.0	0.0	0.0
Control Delay (s)	9.9	0.0	0.1
Lane LOS	A		A
Approach Delay (s)	9.9	0.0	0.1
Approach LOS	A		

Intersection Summary			
Average Delay		2.3	
Intersection Capacity Utilization		19.6%	ICU Level of Service A
Analysis Period (min)		15	



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	652	1	39	367	7	89
Future Volume (vph)	652	1	39	367	7	89
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.875	
Flt Protected				0.995	0.996	
Satd. Flow (prot)	1618	0	0	1610	1508	0
Flt Permitted				0.995	0.996	
Satd. Flow (perm)	1618	0	0	1610	1508	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	400.3			181.6	225.5	
Travel Time (s)	28.8			13.1	16.2	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	652	1	39	367	7	89
Shared Lane Traffic (%)						
Lane Group Flow (vph)	653	0	0	406	96	0
Sign Control	Free			Free	Stop	

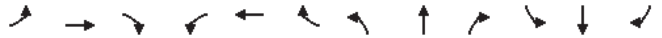
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	72.7%		ICU Level of Service C
Analysis Period (min)	15		



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	652	1	39	367	7	89
Future Volume (Veh/h)	652	1	39	367	7	89
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	652	1	39	367	7	89
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			653		1098	652
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			653		1098	652
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			96		97	81
cM capacity (veh/h)			934		226	468

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	653	406	96
Volume Left	0	39	7
Volume Right	1	0	89
cSH	1700	934	434
Volume to Capacity	0.38	0.04	0.22
Queue Length 95th (m)	0.0	1.0	6.7
Control Delay (s)	0.0	1.3	15.6
Lane LOS		A	C
Approach Delay (s)	0.0	1.3	15.6
Approach LOS			C

Intersection Summary			
Average Delay		1.8	
Intersection Capacity Utilization		72.7%	ICU Level of Service C
Analysis Period (min)		15	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	737	1	28	388	72	5	0	72	164	0	11
Future Volume (vph)	3	737	1	28	388	72	5	0	72	164	0	11
Ideal Flow (vphpl)	1650	1650	1900	1900	1650	1650	1900	1900	1900	1765	1900	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.980			0.874			0.992	
Flt Protected					0.997			0.997			0.955	
Satd. Flow (prot)	0	1618	0	0	1581	0	0	1623	0	0	1765	0
Flt Permitted					0.997			0.997			0.955	
Satd. Flow (perm)	0	1618	0	0	1581	0	0	1623	0	0	1765	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		181.6			170.9			154.4			161.8	
Travel Time (s)		13.1			12.3			11.1			11.6	
Peak Hour 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
Adj. Flow (vph)	3	737	1	28	388	72	5	0	72	164	0	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	741	0	0	488	0	0	77	0	0	175	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary				
Area Type:	Other			
Control Type: Unsignalized				
Intersection Capacity Utilization	75.8%		ICU Level of Service D	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	737	1	28	388	72	5	0	72	164	0	11
Future Volume (Veh/h)	3	737	1	28	388	72	5	0	72	164	0	11
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	3	737	1	28	388	72	5	0	72	164	0	11
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	460			738			1234	1260	738	1296	1224	424
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	460			738			1234	1260	738	1296	1224	424
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			97			97	100	83	0	100	98
cM capacity (veh/h)	1101			868			147	165	418	112	173	630

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	741	488	77	175
Volume Left	3	28	5	164
Volume Right	1	72	72	11
cSH	1101	868	373	118
Volume to Capacity	0.00	0.03	0.21	1.48
Queue Length 95th (m)	0.1	0.8	6.1	99.1
Control Delay (s)	0.1	0.9	17.1	322.2
Lane LOS	A	A	C	F
Approach Delay (s)	0.1	0.9	17.1	322.2
Approach LOS			C	F

Intersection Summary				
Average Delay			39.3	
Intersection Capacity Utilization			75.8%	ICU Level of Service
Analysis Period (min)			15	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	970	2	52	477	18	9	22	126	56	12	4
Future Volume (vph)	1	970	2	52	477	18	9	22	126	56	12	4
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.996			0.892			0.992	
Flt Protected					0.995			0.997			0.963	
Satd. Flow (prot)	0	1520	0	0	1506	0	0	1351	0	0	1452	0
Flt Permitted					0.995			0.997			0.963	
Satd. Flow (perm)	0	1520	0	0	1506	0	0	1351	0	0	1452	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		377.6			166.4			109.1			148.1	
Travel Time (s)		27.2			12.0			7.9			10.7	
Peak Hour 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
Adj. Flow (vph)	1	970	2	52	477	18	9	22	126	56	12	4
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	973	0	0	547	0	0	157	0	0	72	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary				
Area Type:	Other			
Control Type: Unsignalized				
Intersection Capacity Utilization	110.4%		ICU Level of Service H	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	970	2	52	477	18	9	22	126	56	12	4
Future Volume (Veh/h)	1	970	2	52	477	18	9	22	126	56	12	4
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	1	970	2	52	477	18	9	22	126	56	12	4
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	495			972			1573	1572	971	1700	1564	486
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	495			972			1573	1572	971	1700	1564	486
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			93			88	78	59	0	88	99
cM capacity (veh/h)	1069			709			76	102	307	34	103	581

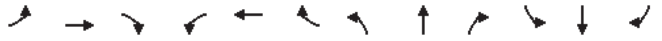
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	973	547	157	72
Volume Left	1	52	9	56
Volume Right	2	18	126	4
cSH	1069	709	211	40
Volume to Capacity	0.00	0.07	0.74	1.78
Queue Length 95th (m)	0.0	1.9	40.1	60.2
Control Delay (s)	0.0	2.0	59.5	589.2
Lane LOS	A	A	F	F
Approach Delay (s)	0.0	2.0	59.5	589.2
Approach LOS			F	F

Intersection Summary					
Average Delay			30.2		
Intersection Capacity Utilization			110.4%	ICU Level of Service	H
Analysis Period (min)			15		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	1173	4	11	502	13	16	7	34	39	8	20
Future Volume (vph)	6	1173	4	11	502	13	16	7	34	39	8	20
Ideal Flow (vphpl)	1650	1650	1900	1900	1650	1650	1900	1900	1900	1765	1900	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.997			0.919			0.960	
Flt Protected					0.999			0.986			0.972	
Satd. Flow (prot)	0	1618	0	0	1611	0	0	1688	0	0	1738	0
Flt Permitted					0.999			0.986			0.972	
Satd. Flow (perm)	0	1618	0	0	1611	0	0	1688	0	0	1738	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		228.8			210.5			133.9			114.8	
Travel Time (s)		16.5			15.2			9.6			8.3	
Peak Hour 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
Adj. Flow (vph)	6	1173	4	11	502	13	16	7	34	39	8	20
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1183	0	0	526	0	0	57	0	0	67	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary					
Area Type:	Other				
Control Type: Unsignalized					
Intersection Capacity Utilization	88.7%			ICU Level of Service	E
Analysis Period (min)	15				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	1173	4	11	502	13	16	7	34	39	8	20
Future Volume (Veh/h)	6	1173	4	11	502	13	16	7	34	39	8	20
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	6	1173	4	11	502	13	16	7	34	39	8	20
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	515			1177			1742	1724	1175	1755	1720	508
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	515			1177			1742	1724	1175	1755	1720	508
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			98			73	92	85	26	91	96
cM capacity (veh/h)	1051			593			60	87	233	52	87	565

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	1183	526	57	67
Volume Left	6	11	16	39
Volume Right	4	13	34	20
cSH	1051	593	115	77
Volume to Capacity	0.01	0.02	0.49	0.87
Queue Length 95th (m)	0.1	0.5	17.9	35.5
Control Delay (s)	0.2	0.5	63.3	161.6
Lane LOS	A	A	F	F
Approach Delay (s)	0.2	0.5	63.3	161.6
Approach LOS			F	F

Intersection Summary				
Average Delay			8.2	
Intersection Capacity Utilization			88.7%	ICU Level of Service E
Analysis Period (min)			15	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	1236	4	11	489	13	16	7	34	39	8	20
Future Volume (vph)	6	1236	4	11	489	13	16	7	34	39	8	20
Ideal Flow (vphpl)	1650	1650	1900	1900	1650	1650	1900	1900	1900	1765	1900	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.997			0.919			0.960	
Flt Protected					0.999			0.986			0.972	
Satd. Flow (prot)	0	1618	0	0	1611	0	0	1688	0	0	1738	0
Flt Permitted					0.999			0.986			0.972	
Satd. Flow (perm)	0	1618	0	0	1611	0	0	1688	0	0	1738	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		210.5			96.4			108.7			129.5	
Travel Time (s)		15.2			6.9			7.8			9.3	
Peak Hour 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
Adj. Flow (vph)	6	1236	4	11	489	13	16	7	34	39	8	20
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1246	0	0	513	0	0	57	0	0	67	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary				
Area Type:	Other			
Control Type: Unsignalized				
Intersection Capacity Utilization 92.5%				ICU Level of Service F
Analysis Period (min) 15				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	1236	4	11	489	13	16	7	34	39	8	20
Future Volume (Veh/h)	6	1236	4	11	489	13	16	7	34	39	8	20
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	6	1236	4	11	489	13	16	7	34	39	8	20
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	502			1240			1792	1774	1238	1805	1770	496
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	502			1240			1792	1774	1238	1805	1770	496
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			98			71	91	84	17	90	97
cM capacity (veh/h)	1062			562			55	81	214	47	81	574

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	1246	513	57	67
Volume Left	6	11	16	39
Volume Right	4	13	34	20
cSH	1062	562	106	70
Volume to Capacity	0.01	0.02	0.54	0.96
Queue Length 95th (m)	0.1	0.5	19.8	38.7
Control Delay (s)	0.2	0.6	72.7	196.4
Lane LOS	A	A	F	F
Approach Delay (s)	0.2	0.6	72.7	196.4
Approach LOS			F	F

Intersection Summary				
Average Delay			9.5	
Intersection Capacity Utilization			92.5%	ICU Level of Service
Analysis Period (min)			15	
				F

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	0	9	15	0	43	2	258	4	18	315	11
Future Volume (vph)	29	0	9	15	0	43	2	258	4	18	315	11
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.968			0.900			0.998			0.996	
Flt Protected		0.963			0.987						0.997	
Satd. Flow (prot)	0	1417	0	0	1350	0	0	1517	0	0	1509	0
Flt Permitted		0.963			0.987						0.997	
Satd. Flow (perm)	0	1417	0	0	1350	0	0	1517	0	0	1509	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		174.2			151.1			248.8			212.1	
Travel Time (s)		12.5			10.9			17.9			15.3	
Peak Hour 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
Adj. Flow (vph)	29	0	9	15	0	43	2	258	4	18	315	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	38	0	0	58	0	0	264	0	0	344	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary				
Area Type:	Other			
Control Type: Unsignalized				
Intersection Capacity Utilization	49.3%		ICU Level of Service	A
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	29	0	9	15	0	43	2	258	4	18	315	11
Future Volume (Veh/h)	29	0	9	15	0	43	2	258	4	18	315	11
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	29	0	9	15	0	43	2	258	4	18	315	11
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	664	622	320	630	626	260	326			262		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	664	622	320	630	626	260	326			262		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	92	100	99	96	100	94	100			99		
cM capacity (veh/h)	350	396	720	385	395	779	1234			1302		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	38	58	264	344
Volume Left	29	15	2	18
Volume Right	9	43	4	11
cSH	398	616	1234	1302
Volume to Capacity	0.10	0.09	0.00	0.01
Queue Length 95th (m)	2.5	2.5	0.0	0.3
Control Delay (s)	15.0	11.5	0.1	0.5
Lane LOS	B	B	A	A
Approach Delay (s)	15.0	11.5	0.1	0.5
Approach LOS	B	B		

Intersection Summary					
Average Delay			2.0		
Intersection Capacity Utilization			49.3%	ICU Level of Service	A
Analysis Period (min)			15		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	0	9	15	0	43	2	192	4	18	310	11
Future Volume (vph)	29	0	9	15	0	43	2	192	4	18	310	11
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.968			0.900			0.997			0.996	
Flt Protected		0.963			0.987			0.999			0.997	
Satd. Flow (prot)	0	1417	0	0	1350	0	0	1514	0	0	1509	0
Flt Permitted		0.963			0.987			0.999			0.997	
Satd. Flow (perm)	0	1417	0	0	1350	0	0	1514	0	0	1509	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		117.0			126.5			247.2			248.8	
Travel Time (s)		8.4			9.1			17.8			17.9	
Peak Hour 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
Adj. Flow (vph)	29	0	9	15	0	43	2	192	4	18	310	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	38	0	0	58	0	0	198	0	0	339	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary				
Area Type:	Other			
Control Type: Unsignalized				
Intersection Capacity Utilization	48.1%		ICU Level of Service	A
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	29	0	9	15	0	43	2	192	4	18	310	11
Future Volume (Veh/h)	29	0	9	15	0	43	2	192	4	18	310	11
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	29	0	9	15	0	43	2	192	4	18	310	11
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	592	552	316	558	555	194	321			196		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	592	552	316	558	555	194	321			196		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	93	100	99	97	100	95	100			99		
cM capacity (veh/h)	392	435	725	430	433	847	1239			1377		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	38	58	198	339
Volume Left	29	15	2	18
Volume Right	9	43	4	11
cSH	440	677	1239	1377
Volume to Capacity	0.09	0.09	0.00	0.01
Queue Length 95th (m)	2.3	2.2	0.0	0.3
Control Delay (s)	14.0	10.8	0.1	0.5
Lane LOS	B	B	A	A
Approach Delay (s)	14.0	10.8	0.1	0.5
Approach LOS	B	B		

Intersection Summary				
Average Delay			2.1	
Intersection Capacity Utilization			48.1%	ICU Level of Service
Analysis Period (min)			15	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	122	0	42	19	0	56	14	391	7	24	350	50
Future Volume (vph)	122	0	42	19	0	56	14	391	7	24	350	50
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.965			0.899			0.998			0.984	
Flt Protected		0.964			0.987			0.998			0.997	
Satd. Flow (prot)	0	1414	0	0	1348	0	0	1514	0	0	1491	0
Flt Permitted		0.964			0.987			0.998			0.997	
Satd. Flow (perm)	0	1414	0	0	1348	0	0	1514	0	0	1491	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		128.4			112.6			130.6			488.0	
Travel Time (s)		9.2			8.1			9.4			35.1	
Peak Hour 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
Adj. Flow (vph)	122	0	42	19	0	56	14	391	7	24	350	50
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	164	0	0	75	0	0	412	0	0	424	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary				
Area Type:	Other			
Control Type: Unsignalized				
Intersection Capacity Utilization	63.5%		ICU Level of Service B	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	122	0	42	19	0	56	14	391	7	24	350	50
Future Volume (Veh/h)	122	0	42	19	0	56	14	391	7	24	350	50
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	122	0	42	19	0	56	14	391	7	24	350	50
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	902	849	375	888	870	394	400			398		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	902	849	375	888	870	394	400			398		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	47	100	94	92	100	91	99			98		
cM capacity (veh/h)	231	288	671	242	280	655	1159			1161		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	164	75	412	424
Volume Left	122	19	14	24
Volume Right	42	56	7	50
cSH	277	457	1159	1161
Volume to Capacity	0.59	0.16	0.01	0.02
Queue Length 95th (m)	27.9	4.7	0.3	0.5
Control Delay (s)	35.1	14.4	0.4	0.7
Lane LOS	E	B	A	A
Approach Delay (s)	35.1	14.4	0.4	0.7
Approach LOS	E	B		

Intersection Summary					
Average Delay			6.8		
Intersection Capacity Utilization			63.5%	ICU Level of Service	B
Analysis Period (min)			15		



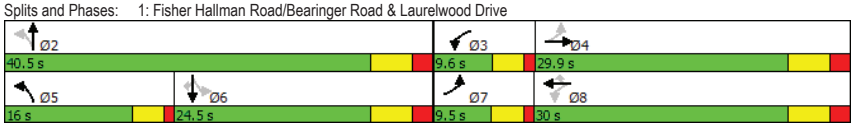
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	156	222	302	116	384	33	492	408	96	32	818	420
Future Volume (vph)	156	222	302	116	384	33	492	408	96	32	818	420
Ideal Flow (vphpl)	1775	1650	1650	1775	1900	1750	1775	1775	1775	1775	1900	1750
Storage Length (m)	85.0		0.0	90.0		90.0	90.0		0.0	60.0		60.0
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (m)	35.0			7.5			45.0			70.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Ped Bike Factor	1.00	0.99				0.99		0.99		1.00		0.98
Frt		0.914				0.850		0.971				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1653	1450	0	1188	1845	1488	1506	3137	0	1686	3574	1430
Flt Permitted	0.299			0.167			0.178			0.467		
Satd. Flow (perm)	520	1450	0	209	1845	1466	282	3137	0	826	3574	1395
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		91				150		47				290
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		133.2			228.2			160.2			234.1	
Travel Time (s)		9.6			16.4			11.5			16.9	
Confl. Peds. (#/hr)	2		7	7		2	2		3	3		2
Peak Hour 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
Heavy Vehicles (%)	2%	1%	4%	42%	3%	0%	12%	1%	16%	0%	1%	4%
Adj. Flow (vph)	156	222	302	116	384	33	492	408	96	32	818	420
Shared Lane Traffic (%)												
Lane Group Flow (vph)	156	524	0	116	384	33	492	504	0	32	818	420
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		Perm	NA	Perm
Protected Phases	7	4		3	8		5	2			6	
Permitted Phases	4			8		8	2			6		6
Detector Phase	7	4		3	8	8	5	2		6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	9.5	24.0		9.5	30.0	30.0	9.5	24.0		24.0	24.0	24.0
Total Split (s)	9.5	29.9		9.6	30.0	30.0	16.0	40.5		24.5	24.5	24.5
Total Split (%)	11.9%	37.4%		12.0%	37.5%	37.5%	20.0%	50.6%		30.6%	30.6%	30.6%
Maximum Green (s)	5.5	23.9		5.6	24.0	24.0	12.0	34.5		18.5	18.5	18.5
Yellow Time (s)	3.0	4.0		3.0	4.0	4.0	3.0	4.0		4.0	4.0	4.0
All-Red Time (s)	1.0	2.0		1.0	2.0	2.0	1.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	-2.0		0.0	-2.0	-2.0	0.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes			Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None	None	None	Max		Max	Max	Max
Walk Time (s)		7.0			7.0	7.0		7.0		7.0	7.0	7.0
Flash Dont Walk (s)		11.0			11.0	11.0		11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)		0			0	0		0		0	0	0
Act Effct Green (s)	31.4	25.9		31.6	26.0	26.0	36.5	36.5		20.5	20.5	20.5
Actuated g/C Ratio	0.39	0.32		0.40	0.32	0.32	0.46	0.46		0.26	0.26	0.26
v/c Ratio	0.56	0.99		0.77	0.64	0.06	1.58	0.35		0.15	0.89	0.73

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	22.9	61.3		50.4	28.9	0.2	295.3	13.4		25.3	42.8	17.5
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	22.9	61.3		50.4	28.9	0.2	295.3	13.4		25.3	42.8	17.5
LOS	C	E		D	C	A	F	B		C	D	B
Approach Delay		52.5			31.8			152.7			34.0	
Approach LOS		D			C			F			C	
Queue Length 50th (m)	14.8	70.6		11.0	51.8	0.0	~99.8	23.5		4.0	66.3	17.1
Queue Length 95th (m)	27.0	#137.1		#34.6	81.4	0.0	#159.1	34.8		11.3	#100.1	#55.2
Internal Link Dist (m)		109.2			204.2			136.2			210.1	
Turn Bay Length (m)	85.0			90.0		90.0	90.0			60.0		60.0
Base Capacity (vph)	281	530		151	599	577	312	1456		211	915	573
Starvation Cap Reductn	0	0		0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.56	0.99		0.77	0.64	0.06	1.58	0.35		0.15	0.89	0.73

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.58			
Intersection Signal Delay: 71.3		Intersection LOS: E	
Intersection Capacity Utilization 107.2%		ICU Level of Service G	
Analysis Period (min) 15			

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

Splits and Phases: 1: Fisher Hallman Road/Bearinger Road & Laurelwood Drive



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	156	222	302	116	384	33	492	408	96	32	818	420
Future Volume (vph)	156	222	302	116	384	33	492	408	96	32	818	420
Ideal Flow (vphpl)	1775	1650	1650	1775	1900	1750	1775	1775	1775	1775	1900	1750
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.99	1.00	0.99		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.91		1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1653	1449		1188	1845	1466	1506	3139		1681	3574	1395
Flt Permitted	0.30	1.00		0.17	1.00	1.00	0.18	1.00		0.47	1.00	1.00
Satd. Flow (perm)	519	1449		208	1845	1466	282	3139		826	3574	1395
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	156	222	302	116	384	33	492	408	96	32	818	420
RTOR Reduction (vph)	0	62	0	0	0	22	0	26	0	0	0	216
Lane Group Flow (vph)	156	462	0	116	384	11	492	478	0	32	818	204
Confl. Peds. (#/hr)	2		7	7		2	2		3	3		2
Heavy Vehicles (%)	2%	1%	4%	42%	3%	0%	12%	1%	16%	0%	1%	4%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		Perm	NA	Perm
Protected Phases	7	4		3	8		5	2			6	
Permitted Phases	4			8		8	2			6		6
Actuated Green, G (s)	29.4	23.9		29.6	24.0	24.0	34.5	34.5		18.5	18.5	18.5
Effective Green, g (s)	29.4	25.9		29.6	26.0	26.0	34.5	36.5		20.5	20.5	20.5
Actuated g/C Ratio	0.37	0.32		0.37	0.32	0.32	0.43	0.46		0.26	0.26	0.26
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0	4.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	268	469		145	599	476	305	1432		211	915	357
v/s Ratio Prot	0.04	c0.32		c0.06	0.21		c0.24	0.15			0.23	
v/s Ratio Perm	0.17			0.24		0.01	c0.45			0.04		0.15
v/c Ratio	0.58	0.99		0.80	0.64	0.02	1.61	0.33		0.15	0.89	0.57
Uniform Delay, d1	18.5	26.9		20.0	23.0	18.4	20.1	14.0		23.0	28.7	25.9
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	3.2	37.6		26.2	2.3	0.0	290.6	0.6		1.5	13.0	6.5
Delay (s)	21.7	64.5		46.2	25.4	18.4	310.7	14.6		24.5	41.7	32.5
Level of Service	C	E		D	C	B	F	B		C	D	C
Approach Delay (s)		54.6			29.5			160.9			38.2	
Approach LOS		D			C			F			D	

Intersection Summary					
HCM 2000 Control Delay	75.2	HCM 2000 Level of Service		E	
HCM 2000 Volume to Capacity ratio	1.31				
Actuated Cycle Length (s)	80.0	Sum of lost time (s)		16.0	
Intersection Capacity Utilization	107.2%	ICU Level of Service		G	
Analysis Period (min)	15				

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	87	38	719	22	36	15	1281	345	47	10	373	237
Future Volume (vph)	87	38	719	22	36	15	1281	345	47	10	373	237
Ideal Flow (vphpl)	1650	1650	1750	1550	1550	1550	1775	1650	1650	1550	1550	1550
Storage Length (m)	0.0		50.0	0.0		0.0	25.0		0.0	0.0		50.0
Storage Lanes	0		1	0		0	1		0	0		0
Taper Length (m)	0.0			0.0			35.0			0.0		
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			0.850		0.972			0.982			0.948	
Flt Protected		0.966			0.985		0.950				0.999	
Satd. Flow (prot)	0	1537	1473	0	1434	0	1606	1556	0	0	1414	0
Flt Permitted		0.966			0.985		0.950				0.999	
Satd. Flow (perm)	0	1537	1473	0	1434	0	1606	1556	0	0	1414	0
Link Speed (k/h)		60			50			50			50	
Link Distance (m)		1012.1			151.5			545.8			326.3	
Travel Time (s)		60.7			10.9			39.3			23.5	
Confl. Peds. (#/hr)	3		1	1		3	3		1	1		3
Peak Hour 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
Heavy Vehicles (%)	4%	3%	1%	0%	7%	0%	5%	4%	5%	20%	2%	6%
Adj. Flow (vph)	87	38	719	22	36	15	1281	345	47	10	373	237
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	125	719	0	73	0	1281	392	0	0	620	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	143.1%	ICU Level of Service	H
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	87	38	719	22	36	15	1281	345	47	10	373	237
Future Volume (vph)	87	38	719	22	36	15	1281	345	47	10	373	237
Peak Hour 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
Hourly flow rate (vph)	87	38	719	22	36	15	1281	345	47	10	373	237

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1
Volume Total (vph)	125	719	73	1281	392	620
Volume Left (vph)	87	0	22	1281	0	10
Volume Right (vph)	0	719	15	0	47	237
Hadj (s)	0.41	-0.68	0.00	0.58	-0.01	-0.16
Departure Headway (s)	8.5	7.4	10.0	8.6	8.0	7.9
Degree Utilization, x	0.30	1.49	0.20	3.07	0.87	1.36
Capacity (veh/h)	417	487	351	421	445	467
Control Delay (s)	13.9	249.1	15.6	952.6	44.3	198.0
Approach Delay (s)	214.3		15.6	739.8		198.0
Approach LOS	F		C	F		F

Intersection Summary					
Delay	480.5				
Level of Service	F				
Intersection Capacity Utilization	143.1%	ICU Level of Service		H	
Analysis Period (min)	15				

Intersection	
Intersection Delay, s/veh	486.5
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	87	38	719	22	36	15	1281	345	47	10	373	237
Future Vol, veh/h	87	38	719	22	36	15	1281	345	47	10	373	237
Peak Hour 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
Heavy Vehicles, %	4	3	1	0	7	0	5	4	5	20	2	6
Mvmt Flow	87	38	719	22	36	15	1281	345	47	10	373	237
Number of Lanes	0	1	1	0	1	0	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	2
HCM Control Delay	216.2	20	740.8	223
HCM LOS	F	C	F	F

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	100%	0%	70%	0%	30%	2%
Vol Thru, %	0%	88%	30%	0%	49%	60%
Vol Right, %	0%	12%	0%	100%	21%	38%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	1281	392	125	719	73	620
LT Vol	1281	0	87	0	22	10
Through Vol	0	345	38	0	36	373
RT Vol	0	47	0	719	15	237
Lane Flow Rate	1281	392	125	719	73	620
Geometry Grp	7	7	7	7	6	6
Degree of Util (X)	3.052	0.869	0.295	1.482	0.205	1.402
Departure Headway (Hd)	10.379	9.746	9.432	8.314	13.529	9.761
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	371	376	384	446	267	378
Service Time	8.079	7.446	7.132	6.014	11.529	7.761
HCM Lane V/C Ratio	3.453	1.043	0.326	1.612	0.273	1.64
HCM Control Delay	951.7	51.4	16	251	20	223
HCM Lane LOS	F	F	C	F	C	F
HCM 95th-tile Q	93.2	8.4	1.2	33.3	0.8	26

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	121	64	654	274	89	247
Future Volume (vph)	121	64	654	274	89	247
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Storage Length (m)		0.0	0.0		0.0	30.0
Storage Lanes		0	0		1	0
Taper Length (m)			0.0		0.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.953				0.901	
Flt Protected				0.966	0.987	
Satd. Flow (prot)	1511	0	0	1549	1492	0
Flt Permitted				0.966	0.987	
Satd. Flow (perm)	1511	0	0	1549	1492	0
Link Speed (k/h)	80			80	50	
Link Distance (m)	1516.2			424.2	223.3	
Travel Time (s)	68.2			19.1	16.1	
Confl. Peds. (#/hr)		1	1			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	6%	2%	5%	14%	2%
Adj. Flow (vph)	121	64	654	274	89	247
Shared Lane Traffic (%)						
Lane Group Flow (vph)	185	0	0	928	336	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 101.9%		ICU Level of Service G	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	121	64	654	274	89	247
Future Volume (Veh/h)	121	64	654	274	89	247
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	121	64	654	274	89	247
Pedestrians					1	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			186		1736	154
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			186		1736	154
tC, single (s)			4.1		6.5	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			53		0	72
cM capacity (veh/h)			1387		47	891

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	185	928	336
Volume Left	0	654	89
Volume Right	64	0	247
cSH	1700	1387	156
Volume to Capacity	0.11	0.47	2.16
Queue Length 95th (m)	0.0	20.8	217.2
Control Delay (s)	0.0	8.6	587.9
Lane LOS		A	F
Approach Delay (s)	0.0	8.6	587.9
Approach LOS			F

Intersection Summary			
Average Delay	141.8		
Intersection Capacity Utilization	101.9%	ICU Level of Service	G
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	65	191	116	17	119	188
Future Volume (vph)	65	191	116	17	119	188
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.899		0.983			
Flt Protected	0.987					0.981
Satd. Flow (prot)	1411	0	1480	0	0	1526
Flt Permitted	0.987					0.981
Satd. Flow (perm)	1411	0	1480	0	0	1526
Link Speed (k/h)	80		80			80
Link Distance (m)	1200.3		1761.7			72.7
Travel Time (s)	54.0		79.3			3.3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	8%	12%	11%	0%	3%	8%
Adj. Flow (vph)	65	191	116	17	119	188
Shared Lane Traffic (%)						
Lane Group Flow (vph)	256	0	133	0	0	307
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 53.7%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	65	191	116	17	119	188
Future Volume (Veh/h)	65	191	116	17	119	188
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	65	191	116	17	119	188
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	550	124			133	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	550	124			133	
tC, single (s)	6.5	6.3			4.1	
tC, 2 stage (s)						
tF (s)	3.6	3.4			2.2	
p0 queue free %	85	79			92	
cM capacity (veh/h)	446	900			1446	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	256	133	307
Volume Left	65	0	119
Volume Right	191	17	0
cSH	715	1700	1446
Volume to Capacity	0.36	0.08	0.08
Queue Length 95th (m)	13.0	0.0	2.1
Control Delay (s)	12.8	0.0	3.4
Lane LOS	B		A
Approach Delay (s)	12.8	0.0	3.4
Approach LOS	B		

Intersection Summary			
Average Delay		6.2	
Intersection Capacity Utilization		53.7%	ICU Level of Service A
Analysis Period (min)		15	



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	89	79	48	39	137	121
Future Volume (vph)	89	79	48	39	137	121
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.937		0.939			
Flt Protected	0.974					0.974
Satd. Flow (prot)	1501	0	1504	0	0	1514
Flt Permitted	0.974					0.974
Satd. Flow (perm)	1501	0	1504	0	0	1514
Link Speed (k/h)	80		80			80
Link Distance (m)	605.5		233.8			1761.7
Travel Time (s)	27.2		10.5			79.3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	5%	10%	3%	3%	8%	4%
Adj. Flow (vph)	89	79	48	39	137	121
Shared Lane Traffic (%)						
Lane Group Flow (vph)	168	0	87	0	0	258
Sign Control	Stop		Free			Free

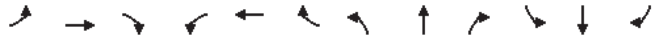
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 39.9%			ICU Level of Service A
Analysis Period (min) 15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	89	79	48	39	137	121
Future Volume (Veh/h)	89	79	48	39	137	121
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	89	79	48	39	137	121
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	462	68			87	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	462	68			87	
tC, single (s)	6.4	6.3			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.4			2.3	
p0 queue free %	82	92			91	
cM capacity (veh/h)	501	974			1472	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	168	87	258
Volume Left	89	0	137
Volume Right	79	39	0
cSH	649	1700	1472
Volume to Capacity	0.26	0.05	0.09
Queue Length 95th (m)	8.2	0.0	2.5
Control Delay (s)	12.5	0.0	4.4
Lane LOS	B		A
Approach Delay (s)	12.5	0.0	4.4
Approach LOS	B		

Intersection Summary			
Average Delay		6.3	
Intersection Capacity Utilization		39.9%	ICU Level of Service A
Analysis Period (min)		15	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	28	2	323	73	247	3	237	244	141	313	17
Future Volume (vph)	6	28	2	323	73	247	3	237	244	141	313	17
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		50.0	50.0		0.0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (m)	0.0			0.0			0.0			65.0		
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
Frt		0.992			0.948			0.932			0.995	
Flt Protected		0.992			0.975						0.985	
Satd. Flow (prot)	0	1502	0	0	1370	0	0	1377	0	0	1426	0
Flt Permitted		0.992			0.975						0.985	
Satd. Flow (perm)	0	1502	0	0	1370	0	0	1377	0	0	1426	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		187.7			400.3			488.0			394.6	
Travel Time (s)		13.5			28.8			35.1			28.4	
Peak Hour 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
Heavy Vehicles (%)	0%	2%	0%	6%	0%	4%	0%	7%	3%	4%	8%	0%
Adj. Flow (vph)	6	28	2	323	73	247	3	237	244	141	313	17
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	36	0	0	643	0	0	484	0	0	471	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	126.6%	ICU Level of Service H	
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	28	2	323	73	247	3	237	244	141	313	17
Future Volume (Veh/h)	6	28	2	323	73	247	3	237	244	141	313	17
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	6	28	2	323	73	247	3	237	244	141	313	17
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1252	1090	322	984	977	359	330			481		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1252	1090	322	984	977	359	330			481		
tC, single (s)	7.1	6.5	6.2	7.2	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.0	3.3	2.2			2.2		
p0 queue free %	91	85	100	0	67	64	100			87		
cM capacity (veh/h)	64	186	724	177	219	681	1241			1071		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	36	643	484	471
Volume Left	6	323	3	141
Volume Right	2	247	244	17
cSH	146	256	1241	1071
Volume to Capacity	0.25	2.52	0.00	0.13
Queue Length 95th (m)	7.4	423.9	0.1	3.6
Control Delay (s)	37.5	724.1	0.1	3.7
Lane LOS	E	F	A	A
Approach Delay (s)	37.5	724.1	0.1	3.7
Approach LOS	E	F		

Intersection Summary				
Average Delay		286.8		
Intersection Capacity Utilization		126.6%	ICU Level of Service	H
Analysis Period (min)		15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	111	134	174	207	249	150	338	180	114	329	27
Future Volume (vph)	16	111	134	174	207	249	150	338	180	114	329	27
Ideal Flow (vphpl)	1775	1900	1750	1775	1650	1650	1775	1900	1750	1775	1650	1650
Storage Length (m)	20.0		20.0	25.0		0.0	65.0		30.0	25.0		0.0
Storage Lanes	1		1	1		0	1		1	1		0
Taper Length (m)	35.0			10.0			80.0			35.0		
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	0.95		0.94	0.97	0.92		0.99		0.94	0.98	1.00	
Frt			0.850		0.918				0.850		0.989	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1591	1810	1403	1561	1289	0	1606	1776	1430	1653	1523	0
Flt Permitted	0.229			0.685			0.490			0.376		
Satd. Flow (perm)	364	1810	1323	1089	1289	0	821	1776	1339	640	1523	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			134		103				180		8	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		123.5			178.3			236.9			930.8	
Travel Time (s)		8.9			12.8			17.1			67.0	
Confl. Peds. (#/hr)	79		23	23		79	9		27	27		9
Peak Hour 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
Heavy Vehicles (%)	6%	5%	6%	8%	9%	7%	5%	7%	4%	2%	6%	17%
Adj. Flow (vph)	16	111	134	174	207	249	150	338	180	114	329	27
Shared Lane Traffic (%)												
Lane Group Flow (vph)	16	111	134	174	456	0	150	338	180	114	356	0
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2		2	6		
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5		9.5	22.5	22.5	9.5	22.5	
Total Split (s)	22.5	22.5	22.5	22.5	22.5		10.4	24.5	24.5	13.0	27.1	
Total Split (%)	37.5%	37.5%	37.5%	37.5%	37.5%		17.3%	40.8%	40.8%	21.7%	45.2%	
Maximum Green (s)	18.0	18.0	18.0	18.0	18.0		5.9	20.0	20.0	8.5	22.6	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	
Walk Time (s)	7.0	7.0	7.0	7.0	7.0			7.0	7.0		7.0	
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0			11.0	11.0		11.0	
Pedestrian Calls (#/hr)	0	0	0	0	0			0	0		0	
Act Effct Green (s)	18.0	18.0	18.0	18.0	18.0		25.9	20.0	20.0	31.1	22.6	
Actuated g/C Ratio	0.30	0.30	0.30	0.30	0.30		0.43	0.33	0.33	0.52	0.38	
v/c Ratio	0.15	0.20	0.27	0.53	1.00		0.35	0.57	0.32	0.24	0.62	
Control Delay	19.5	17.0	5.2	24.7	61.8		9.7	21.1	4.5	8.0	20.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	19.5	17.0	5.2	24.7	61.8		9.7	21.1	4.5	8.0	20.4	
LOS	B	B	A	C	E		A	C	A	A	C	
Approach Delay		11.1			51.5			14.1			17.4	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		B			D			B			B	
Queue Length 50th (m)	1.4	9.5	0.0	16.6	41.6		7.7	31.6	0.0	5.7	31.6	
Queue Length 95th (m)	5.8	20.2	10.6	34.4	#98.1		15.5	54.9	11.5	12.2	56.8	
Internal Link Dist (m)		99.5			154.3			212.9			906.8	
Turn Bay Length (m)	20.0		20.0	25.0			65.0		30.0	25.0		
Base Capacity (vph)	109	543	490	326	458		431	592	566	475	578	
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Reduced v/c Ratio	0.15	0.20	0.27	0.53	1.00		0.35	0.57	0.32	0.24	0.62	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 60			
Control Type: Pretimed			
Maximum v/c Ratio: 1.00			
Intersection Signal Delay: 26.1		Intersection LOS: C	
Intersection Capacity Utilization 75.0%		ICU Level of Service D	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 7: Erbsville Road & Laurelwood Drive



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	111	134	174	207	249	150	338	180	114	329	27
Future Volume (vph)	16	111	134	174	207	249	150	338	180	114	329	27
Ideal Flow (vphpl)	1775	1900	1750	1775	1650	1650	1775	1900	1750	1775	1650	1650
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.94	1.00	0.92		1.00	1.00	0.94	1.00	1.00	
Flpb, ped/bikes	0.95	1.00	1.00	0.97	1.00		1.00	1.00	1.00	0.99	1.00	
Frt	1.00	1.00	0.85	1.00	0.92		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1510	1810	1323	1510	1290		1600	1776	1339	1640	1523	
Flt Permitted	0.23	1.00	1.00	0.69	1.00		0.49	1.00	1.00	0.38	1.00	
Satd. Flow (perm)	364	1810	1323	1090	1290		825	1776	1339	649	1523	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	16	111	134	174	207	249	150	338	180	114	329	27
RTOR Reduction (vph)	0	0	94	0	72	0	0	0	120	0	5	0
Lane Group Flow (vph)	16	111	40	174	384	0	150	338	60	114	351	0
Confl. Peds. (#/hr)	79		23	23		79	9		27	27		9
Heavy Vehicles (%)	6%	5%	6%	8%	9%	7%	5%	7%	4%	2%	6%	17%
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2		2	6		
Actuated Green, G (s)	18.0	18.0	18.0	18.0	18.0		25.9	20.0	20.0	31.1	22.6	
Effective Green, g (s)	18.0	18.0	18.0	18.0	18.0		25.9	20.0	20.0	31.1	22.6	
Actuated g/C Ratio	0.30	0.30	0.30	0.30	0.30		0.43	0.33	0.33	0.52	0.38	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Lane Grp Cap (vph)	109	543	396	327	387		432	592	446	476	573	
v/s Ratio Prot		0.06			c0.30		c0.03	0.19		c0.03	c0.23	
v/s Ratio Perm	0.04		0.03	0.16			0.12		0.04	0.09		
v/c Ratio	0.15	0.20	0.10	0.53	0.99		0.35	0.57	0.13	0.24	0.61	
Uniform Delay, d1	15.4	15.7	15.2	17.5	20.9		10.7	16.5	14.0	8.0	15.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	2.8	0.8	0.5	6.1	43.8		2.2	4.0	0.6	1.2	4.8	
Delay (s)	18.2	16.5	15.7	23.6	64.7		12.9	20.4	14.6	9.2	20.0	
Level of Service	B	B	B	C	E		B	C	B	A	B	
Approach Delay (s)		16.2			53.4			17.2			17.4	
Approach LOS		B			D			B			B	

Intersection Summary					
HCM 2000 Control Delay	28.3	HCM 2000 Level of Service	C		
HCM 2000 Volume to Capacity ratio	0.73				
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	13.5		
Intersection Capacity Utilization	75.0%	ICU Level of Service	D		
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	382	37	159	769	326	34	27	90	184	48	33
Future Volume (vph)	20	382	37	159	769	326	34	27	90	184	48	33
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
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		0.989			0.965			0.920			0.983	
Flt Protected		0.998			0.994			0.989			0.966	
Satd. Flow (prot)	0	1491	0	0	1410	0	0	1380	0	0	1452	0
Flt Permitted		0.998			0.994			0.989			0.966	
Satd. Flow (perm)	0	1491	0	0	1410	0	0	1380	0	0	1452	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		213.7			555.1			104.8			136.8	
Travel Time (s)		15.4			40.0			7.5			9.8	
Confl. Peds. (#/hr)	10		4	4		10	7		10	10		7
Peak Hour 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
Heavy Vehicles (%)	0%	3%	0%	6%	6%	4%	0%	9%	1%	0%	0%	11%
Adj. Flow (vph)	20	382	37	159	769	326	34	27	90	184	48	33
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	439	0	0	1254	0	0	151	0	0	265	0
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Roundabout			
Intersection Capacity Utilization	148.6%	ICU Level of Service	H
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Traffic Volume (veh/h)	20	382	37	159	769	326	34	27	90	184	48	33
Future Volume (veh/h)	20	382	37	159	769	326	34	27	90	184	48	33
Peak Hour 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
Hourly flow rate (vph)	20	382	37	159	769	326	34	27	90	184	48	33
Approach Volume (veh/h)		439			1254			151			265	
Crossing Volume (veh/h)		391			81			586			962	
High Capacity (veh/h)		1018			1300			871			642	
High v/c (veh/h)		0.43			0.96			0.17			0.41	
Low Capacity (veh/h)		830			1084			699			500	
Low v/c (veh/h)		0.53			1.16			0.22			0.53	

Intersection Summary					
Maximum v/c High		0.96			
Maximum v/c Low		1.16			
Intersection Capacity Utilization	148.6%	ICU Level of Service		H	

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	113	25	129	225	21	46
Future Volume (vph)	113	25	129	225	21	46
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.976				0.907	
Flt Protected				0.982	0.985	
Satd. Flow (prot)	1572	0	0	1480	1517	0
Flt Permitted				0.982	0.985	
Satd. Flow (perm)	1572	0	0	1480	1517	0
Link Speed (k/h)	80			80	50	
Link Distance (m)	1200.3			667.7	811.2	
Travel Time (s)	54.0			30.0	58.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	0%	5%	12%	6%	3%
Adj. Flow (vph)	113	25	129	225	21	46
Shared Lane Traffic (%)						
Lane Group Flow (vph)	138	0	0	354	67	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	44.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	113	25	129	225	21	46
Future Volume (Veh/h)	113	25	129	225	21	46
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	113	25	129	225	21	46
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			138		608	126
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			138		608	126
tC, single (s)			4.1		6.5	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			91		95	95
cM capacity (veh/h)			1427		411	922

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	138	354	67
Volume Left	0	129	21
Volume Right	25	0	46
cSH	1700	1427	664
Volume to Capacity	0.08	0.09	0.10
Queue Length 95th (m)	0.0	2.4	2.7
Control Delay (s)	0.0	3.3	11.0
Lane LOS		A	B
Approach Delay (s)	0.0	3.3	11.0
Approach LOS			B

Intersection Summary			
Average Delay	3.4		
Intersection Capacity Utilization	44.7%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	8	125	142	14	6	202	175	128	1	144	0
Future Volume (vph)	0	8	125	142	14	6	202	175	128	1	144	0
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Storage Length (m)	0.0		0.0	50.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (m)	0.0			50.0			0.0			0.0		
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
Frt		0.873			0.995			0.966				
Flt Protected					0.958			0.980				
Satd. Flow (prot)	0	1353	0	0	1427	0	0	1452	0	0	1487	0
Flt Permitted					0.958			0.980				
Satd. Flow (perm)	0	1353	0	0	1427	0	0	1452	0	0	1487	0
Link Speed (k/h)		50			70			50			50	
Link Distance (m)		114.7			143.4			394.6			123.0	
Travel Time (s)		8.3			7.4			28.4			8.9	
Peak Hour 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
Heavy Vehicles (%)	0%	0%	0%	4%	0%	0%	0%	3%	0%	40%	4%	0%
Adj. Flow (vph)	0	8	125	142	14	6	202	175	128	1	144	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	133	0	0	162	0	0	505	0	0	145	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 78.2%		ICU Level of Service D	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	8	125	142	14	6	202	175	128	1	144	0
Future Volume (Veh/h)	0	8	125	142	14	6	202	175	128	1	144	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	0	8	125	142	14	6	202	175	128	1	144	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	802	853	144	918	789	239	144			303		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	802	853	144	918	789	239	144			303		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.5		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.6		
p0 queue free %	100	97	86	25	95	99	86			100		
cM capacity (veh/h)	260	257	909	188	280	805	1451			1070		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	133	162	505	145
Volume Left	0	142	202	1
Volume Right	125	6	128	0
cSH	788	199	1451	1070
Volume to Capacity	0.17	0.81	0.14	0.00
Queue Length 95th (m)	4.8	46.4	3.9	0.0
Control Delay (s)	10.5	72.4	4.0	0.1
Lane LOS	B	F	A	A
Approach Delay (s)	10.5	72.4	4.0	0.1
Approach LOS	B	F		

Intersection Summary				
Average Delay		16.0		
Intersection Capacity Utilization		78.2%	ICU Level of Service	D
Analysis Period (min)		15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	587	85	268	910	57	155	40	216	35	23	38
Future Volume (vph)	34	587	85	268	910	57	155	40	216	35	23	38
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.984			0.994			0.929			0.947	
Flt Protected		0.998			0.989			0.981			0.982	
Satd. Flow (prot)	0	1485	0	0	1478	0	0	1349	0	0	1441	0
Flt Permitted		0.998			0.989			0.981			0.982	
Satd. Flow (perm)	0	1485	0	0	1478	0	0	1349	0	0	1441	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		166.4			228.8			212.1			132.6	
Travel Time (s)		12.0			16.5			15.3			9.5	
Peak Hour 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
Heavy Vehicles (%)	0%	3%	0%	4%	3%	0%	7%	0%	4%	0%	0%	0%
Adj. Flow (vph)	34	587	85	268	910	57	155	40	216	35	23	38
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	706	0	0	1235	0	0	411	0	0	96	0
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Roundabout			
Intersection Capacity Utilization	173.6%	ICU Level of Service	H
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Traffic Volume (veh/h)	34	587	85	268	910	57	155	40	216	35	23	38
Future Volume (veh/h)	34	587	85	268	910	57	155	40	216	35	23	38
Peak Hour 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
Hourly flow rate (vph)	34	587	85	268	910	57	155	40	216	35	23	38
Approach Volume (veh/h)		706			1235			411			96	
Crossing Volume (veh/h)		326			229			656			1333#	
High Capacity (veh/h)		1072			1157			824			473	
High v/c (veh/h)		0.66			1.07			0.50			0.20	
Low Capacity (veh/h)		878			955			657			356	
Low v/c (veh/h)		0.80			1.29			0.63			0.27	

Intersection Summary					
Maximum v/c High		1.07			
Maximum v/c Low		1.29			
Intersection Capacity Utilization		173.6%	ICU Level of Service	H	
# Crossing flow exceeds 1200, method is not applicable					

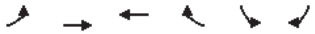
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	826	15	32	1248	63	9	2	20	25	2	32
Future Volume (vph)	44	826	15	32	1248	63	9	2	20	25	2	32
Ideal Flow (vphpl)	1650	1650	1900	1900	1650	1650	1900	1900	1900	1765	1900	1765
Lane Util. Factor	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		0.998			0.994			0.913			0.927	
Flt Protected		0.998			0.999			0.986			0.979	
Satd. Flow (prot)	0	1584	0	0	1602	0	0	1677	0	0	1723	0
Flt Permitted		0.998			0.999			0.986			0.979	
Satd. Flow (perm)	0	1584	0	0	1602	0	0	1677	0	0	1723	0
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		96.4			374.2			130.3			178.3	
Travel Time (s)		5.8			22.5			9.4			12.8	
Confl. Peds. (#/hr)	10					10						
Peak Hour 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
Heavy Vehicles (%)	0%	4%	2%	2%	2%	8%	2%	2%	2%	0%	2%	0%
Adj. Flow (vph)	44	826	15	32	1248	63	9	2	20	25	2	32
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	885	0	0	1343	0	0	31	0	0	59	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 104.3%		ICU Level of Service G	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	44	826	15	32	1248	63	9	2	20	25	2	32
Future Volume (Veh/h)	44	826	15	32	1248	63	9	2	20	25	2	32
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	44	826	15	32	1248	63	9	2	20	25	2	32
Pedestrians											10	
Lane Width (m)											3.6	
Walking Speed (m/s)											1.2	
Percent Blockage											1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1321			841			2298	2306	834	2296	2282	1290
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1321			841			2298	2306	834	2296	2282	1290
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	92			96			55	94	95	0	94	84
cM capacity (veh/h)	525			794			20	33	368	22	35	200

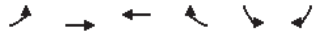
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	885	1343	31	59
Volume Left	44	32	9	25
Volume Right	15	63	20	32
cSH	525	794	54	44
Volume to Capacity	0.08	0.04	0.57	1.33
Queue Length 95th (m)	2.2	1.0	18.0	45.7
Control Delay (s)	2.6	1.9	136.4	393.8
Lane LOS	A	A	F	F
Approach Delay (s)	2.6	1.9	136.4	393.8
Approach LOS			F	F

Intersection Summary				
Average Delay		13.9		
Intersection Capacity Utilization		104.3%	ICU Level of Service	G
Analysis Period (min)		15		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	28	849	1323	58	28	28
Future Volume (vph)	28	849	1323	58	28	28
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.994		0.932	
Flt Protected		0.998			0.976	
Satd. Flow (prot)	0	1600	1586	0	1590	0
Flt Permitted		0.998			0.976	
Satd. Flow (perm)	0	1600	1586	0	1590	0
Link Speed (k/h)		60	60		50	
Link Distance (m)		374.2	1012.1		87.7	
Travel Time (s)		22.5	60.7		6.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	3%	3%	13%	2%	0%
Adj. Flow (vph)	28	849	1323	58	28	28
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	877	1381	0	56	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 94.4%		ICU Level of Service F	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	28	849	1323	58	28	28
Future Volume (Veh/h)	28	849	1323	58	28	28
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	28	849	1323	58	28	28
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1381				2257	1352
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1381				2257	1352
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	94				35	85
cM capacity (veh/h)	503				43	185

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	877	1381	56
Volume Left	28	0	28
Volume Right	0	58	28
cSH	503	1700	70
Volume to Capacity	0.06	0.81	0.81
Queue Length 95th (m)	1.4	0.0	30.5
Control Delay (s)	1.8	0.0	156.8
Lane LOS	A		F
Approach Delay (s)	1.8	0.0	156.8
Approach LOS			F

Intersection Summary			
Average Delay	4.5		
Intersection Capacity Utilization	94.4%	ICU Level of Service	F
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	11	85	14	6	9	124	263	38	7	445	130
Future Volume (vph)	29	11	85	14	6	9	124	263	38	7	445	130
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Storage Length (m)	0.0		0.0	0.0		0.0	30.0		0.0	0.0		0.0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (m)	0.0			0.0			25.0			0.0		
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		0.908			0.958			0.988			0.970	
Flt Protected		0.989			0.976			0.986			0.999	
Satd. Flow (prot)	0	1364	0	0	1449	0	0	1470	0	0	1434	0
Flt Permitted		0.989			0.976			0.986			0.999	
Satd. Flow (perm)	0	1364	0	0	1449	0	0	1470	0	0	1434	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		77.1			66.0			326.3			223.3	
Travel Time (s)		5.6			4.8			23.5			16.1	
Confl. Peds. (#/hr)	7		1	1		7			5	5		
Peak Hour 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
Heavy Vehicles (%)	0%	0%	3%	0%	0%	0%	5%	2%	0%	0%	3%	11%
Adj. Flow (vph)	29	11	85	14	6	9	124	263	38	7	445	130
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	125	0	0	29	0	0	425	0	0	582	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 87.0%		ICU Level of Service E	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	29	11	85	14	6	9	124	263	38	7	445	130
Future Volume (Veh/h)	29	11	85	14	6	9	124	263	38	7	445	130
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	29	11	85	14	6	9	124	263	38	7	445	130
Pedestrians					5			1			7	
Lane Width (m)					3.6			3.6			3.6	
Walking Speed (m/s)					1.2			1.2			1.2	
Percent Blockage					0			0			1	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1073	1078	511	1150	1124	294	575			306		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1073	1078	511	1150	1124	294	575			306		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	83	94	85	89	97	99	87			99		
cM capacity (veh/h)	171	191	560	128	179	743	983			1261		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	125	29	425	582
Volume Left	29	14	124	7
Volume Right	85	9	38	130
cSH	330	187	983	1261
Volume to Capacity	0.38	0.15	0.13	0.01
Queue Length 95th (m)	13.7	4.3	3.4	0.1
Control Delay (s)	22.4	27.7	3.7	0.2
Lane LOS	C	D	A	A
Approach Delay (s)	22.4	27.7	3.7	0.2
Approach LOS	C	D		

Intersection Summary				
Average Delay		4.5		
Intersection Capacity Utilization		87.0%	ICU Level of Service	E
Analysis Period (min)		15		



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	35	3	196	56	4	150
Future Volume (vph)	35	3	196	56	4	150
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.989		0.970			
Flt Protected	0.956					0.999
Satd. Flow (prot)	1636	0	1569	0	0	1616
Flt Permitted	0.956					0.999
Satd. Flow (perm)	1636	0	1569	0	0	1616
Link Speed (k/h)	50		50			50
Link Distance (m)	135.9		143.4			554.5
Travel Time (s)	9.8		10.3			39.9
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	35	3	196	56	4	150
Shared Lane Traffic (%)						
Lane Group Flow (vph)	38	0	252	0	0	154
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	25.8%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	35	3	196	56	4	150
Future Volume (Veh/h)	35	3	196	56	4	150
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	35	3	196	56	4	150
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	382	224			252	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	382	224			252	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	94	100			100	
cM capacity (veh/h)	619	815			1313	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	38	252	154
Volume Left	35	0	4
Volume Right	3	56	0
cSH	631	1700	1313
Volume to Capacity	0.06	0.15	0.00
Queue Length 95th (m)	1.5	0.0	0.1
Control Delay (s)	11.1	0.0	0.2
Lane LOS	B		A
Approach Delay (s)	11.1	0.0	0.2
Approach LOS	B		

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	25.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	419	4	81	642	4	48
Future Volume (vph)	419	4	81	642	4	48
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.999				0.875	
Flt Protected				0.994	0.996	
Satd. Flow (prot)	1616	0	0	1608	1508	0
Flt Permitted				0.994	0.996	
Satd. Flow (perm)	1616	0	0	1608	1508	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	400.3			181.6	225.5	
Travel Time (s)	28.8			13.1	16.2	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	419	4	81	642	4	48
Shared Lane Traffic (%)						
Lane Group Flow (vph)	423	0	0	723	52	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 83.2%		ICU Level of Service E	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	419	4	81	642	4	48
Future Volume (Veh/h)	419	4	81	642	4	48
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	419	4	81	642	4	48
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			423		1225	421
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			423		1225	421
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			93		98	92
cM capacity (veh/h)			1136		183	632

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	423	723	52
Volume Left	0	81	4
Volume Right	4	0	48
cSH	1700	1136	532
Volume to Capacity	0.25	0.07	0.10
Queue Length 95th (m)	0.0	1.8	2.6
Control Delay (s)	0.0	1.8	12.5
Lane LOS		A	B
Approach Delay (s)	0.0	1.8	12.5
Approach LOS			B

Intersection Summary				
Average Delay		1.6		
Intersection Capacity Utilization		83.2%	ICU Level of Service	E
Analysis Period (min)		15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	455	4	67	713	146	4	0	40	85	0	6
Future Volume (vph)	8	455	4	67	713	146	4	0	40	85	0	6
Ideal Flow (vphpl)	1650	1650	1900	1900	1650	1650	1900	1900	1900	1765	1900	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.999			0.979			0.877			0.991	
Flt Protected		0.999			0.996			0.995			0.955	
Satd. Flow (prot)	0	1614	0	0	1577	0	0	1625	0	0	1763	0
Flt Permitted		0.999			0.996			0.995			0.955	
Satd. Flow (perm)	0	1614	0	0	1577	0	0	1625	0	0	1763	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		181.6			170.9			154.4			161.8	
Travel Time (s)		13.1			12.3			11.1			11.6	
Peak Hour 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
Adj. Flow (vph)	8	455	4	67	713	146	4	0	40	85	0	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	467	0	0	926	0	0	44	0	0	91	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	107.8%	ICU Level of Service	G
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	455	4	67	713	146	4	0	40	85	0	6
Future Volume (Veh/h)	8	455	4	67	713	146	4	0	40	85	0	6
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	8	455	4	67	713	146	4	0	40	85	0	6
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	859			459			1399	1466	457	1433	1395	786
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	859			459			1399	1466	457	1433	1395	786
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			94			96	100	93	14	100	98
cM capacity (veh/h)	782			1102			110	119	604	99	131	392

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	467	926	44	91
Volume Left	8	67	4	85
Volume Right	4	146	40	6
cSH	782	1102	429	104
Volume to Capacity	0.01	0.06	0.10	0.88
Queue Length 95th (m)	0.2	1.6	2.7	40.7
Control Delay (s)	0.3	1.6	14.4	132.0
Lane LOS	A	A	B	F
Approach Delay (s)	0.3	1.6	14.4	132.0
Approach LOS			B	F

Intersection Summary				
Average Delay	9.3			
Intersection Capacity Utilization	107.8%	ICU Level of Service		G
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	570	7	139	905	59	19	4	103	33	3	2
Future Volume (vph)	3	570	7	139	905	59	19	4	103	33	3	2
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998			0.993			0.890			0.993	
Flt Protected					0.994			0.993			0.958	
Satd. Flow (prot)	0	1517	0	0	1500	0	0	1343	0	0	1446	0
Flt Permitted					0.994			0.993			0.958	
Satd. Flow (perm)	0	1517	0	0	1500	0	0	1343	0	0	1446	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		377.6			166.4			109.1			148.1	
Travel Time (s)		27.2			12.0			7.9			10.7	
Peak Hour 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
Adj. Flow (vph)	3	570	7	139	905	59	19	4	103	33	3	2
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	580	0	0	1103	0	0	126	0	0	38	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	128.9%	ICU Level of Service	H
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	570	7	139	905	59	19	4	103	33	3	2
Future Volume (Veh/h)	3	570	7	139	905	59	19	4	103	33	3	2
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	3	570	7	139	905	59	19	4	103	33	3	2
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	964			577			1796	1822	574	1897	1796	934
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	964			577			1796	1822	574	1897	1796	934
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			86			64	94	80	8	96	99
cM capacity (veh/h)	714			996			53	66	519	36	69	322

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	580	1103	126	38
Volume Left	3	139	19	33
Volume Right	7	59	103	2
cSH	714	996	205	39
Volume to Capacity	0.00	0.14	0.62	0.97
Queue Length 95th (m)	0.1	3.9	28.3	29.6
Control Delay (s)	0.1	3.7	47.2	289.0
Lane LOS	A	A	E	F
Approach Delay (s)	0.1	3.7	47.2	289.0
Approach LOS			E	F

Intersection Summary				
Average Delay	11.4			
Intersection Capacity Utilization	128.9%	ICU Level of Service	H	
Analysis Period (min)	15			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	807	15	32	1171	36	9	2	20	22	2	9
Future Volume (vph)	17	807	15	32	1171	36	9	2	20	22	2	9
Ideal Flow (vphpl)	1650	1650	1900	1900	1650	1650	1900	1900	1900	1765	1900	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998			0.996			0.913			0.963	
Flt Protected		0.999			0.999			0.986			0.968	
Satd. Flow (prot)	0	1613	0	0	1610	0	0	1677	0	0	1736	0
Flt Permitted		0.999			0.999			0.986			0.968	
Satd. Flow (perm)	0	1613	0	0	1610	0	0	1677	0	0	1736	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		228.8			210.5			133.9			114.8	
Travel Time (s)		16.5			15.2			9.6			8.3	
Peak Hour 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
Adj. Flow (vph)	17	807	15	32	1171	36	9	2	20	22	2	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	839	0	0	1239	0	0	31	0	0	33	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	102.7%	ICU Level of Service	G
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	17	807	15	32	1171	36	9	2	20	22	2	9
Future Volume (Veh/h)	17	807	15	32	1171	36	9	2	20	22	2	9
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	17	807	15	32	1171	36	9	2	20	22	2	9
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1207			822			2112	2120	814	2122	2109	1189
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1207			822			2112	2120	814	2122	2109	1189
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			96			73	96	95	31	96	96
cM capacity (veh/h)	578			807			33	47	378	32	48	229

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	839	1239	31	33
Volume Left	17	32	9	22
Volume Right	15	36	20	9
cSH	578	807	84	43
Volume to Capacity	0.03	0.04	0.37	0.78
Queue Length 95th (m)	0.7	1.0	11.6	23.8
Control Delay (s)	0.9	1.5	71.4	218.1
Lane LOS	A	A	F	F
Approach Delay (s)	0.9	1.5	71.4	218.1
Approach LOS			F	F

Intersection Summary				
Average Delay	5.6			
Intersection Capacity Utilization	102.7%	ICU Level of Service		G
Analysis Period (min)	15			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	815	15	32	1221	36	9	2	20	22	2	9
Future Volume (vph)	17	815	15	32	1221	36	9	2	20	22	2	9
Ideal Flow (vphpl)	1650	1650	1900	1900	1650	1650	1900	1900	1900	1765	1900	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998			0.996			0.913			0.963	
Flt Protected		0.999			0.999			0.986			0.968	
Satd. Flow (prot)	0	1613	0	0	1610	0	0	1677	0	0	1736	0
Flt Permitted		0.999			0.999			0.986			0.968	
Satd. Flow (perm)	0	1613	0	0	1610	0	0	1677	0	0	1736	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		210.5			96.4			108.7			129.5	
Travel Time (s)		15.2			6.9			7.8			9.3	
Peak Hour 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
Adj. Flow (vph)	17	815	15	32	1221	36	9	2	20	22	2	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	847	0	0	1289	0	0	31	0	0	33	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	105.8%	ICU Level of Service	G
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	17	815	15	32	1221	36	9	2	20	22	2	9
Future Volume (Veh/h)	17	815	15	32	1221	36	9	2	20	22	2	9
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	17	815	15	32	1221	36	9	2	20	22	2	9
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1257			830			2170	2178	822	2180	2167	1239
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1257			830			2170	2178	822	2180	2167	1239
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			96			70	95	95	23	95	96
cM capacity (veh/h)	553			802			30	43	374	29	44	214

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	847	1289	31	33
Volume Left	17	32	9	22
Volume Right	15	36	20	9
cSH	553	802	77	39
Volume to Capacity	0.03	0.04	0.40	0.86
Queue Length 95th (m)	0.8	1.0	12.7	25.5
Control Delay (s)	0.9	1.7	80.7	257.9
Lane LOS	A	A	F	F
Approach Delay (s)	0.9	1.7	80.7	257.9
Approach LOS			F	F

Intersection Summary				
Average Delay	6.3			
Intersection Capacity Utilization	105.8%	ICU Level of Service		G
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	0	9	9	0	22	11	363	15	34	315	27
Future Volume (vph)	20	0	9	9	0	22	11	363	15	34	315	27
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.958			0.904			0.995			0.990	
Flt Protected		0.967			0.986			0.999			0.995	
Satd. Flow (prot)	0	1408	0	0	1354	0	0	1510	0	0	1497	0
Flt Permitted		0.967			0.986			0.999			0.995	
Satd. Flow (perm)	0	1408	0	0	1354	0	0	1510	0	0	1497	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		174.2			151.1			248.8			212.1	
Travel Time (s)		12.5			10.9			17.9			15.3	
Peak Hour 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
Adj. Flow (vph)	20	0	9	9	0	22	11	363	15	34	315	27
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	29	0	0	31	0	0	389	0	0	376	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	53.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	0	9	9	0	22	11	363	15	34	315	27
Future Volume (Veh/h)	20	0	9	9	0	22	11	363	15	34	315	27
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	20	0	9	9	0	22	11	363	15	34	315	27
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	811	796	328	798	802	370	342			378		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	811	796	328	798	802	370	342			378		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	93	100	99	97	100	97	99			97		
cM capacity (veh/h)	280	308	713	292	305	675	1217			1180		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	29	31	389	376
Volume Left	20	9	11	34
Volume Right	9	22	15	27
cSH	345	489	1217	1180
Volume to Capacity	0.08	0.06	0.01	0.03
Queue Length 95th (m)	2.2	1.6	0.2	0.7
Control Delay (s)	16.4	12.9	0.3	1.0
Lane LOS	C	B	A	A
Approach Delay (s)	16.4	12.9	0.3	1.0
Approach LOS	C	B		

Intersection Summary					
Average Delay		1.7			
Intersection Capacity Utilization	53.0%	ICU Level of Service		A	
Analysis Period (min)	15				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	0	9	9	0	22	11	347	15	34	272	27
Future Volume (vph)	20	0	9	9	0	22	11	347	15	34	272	27
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.958			0.904			0.995			0.989	
Flt Protected		0.967			0.986			0.999			0.995	
Satd. Flow (prot)	0	1408	0	0	1354	0	0	1510	0	0	1495	0
Flt Permitted		0.967			0.986			0.999			0.995	
Satd. Flow (perm)	0	1408	0	0	1354	0	0	1510	0	0	1495	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		117.0			126.5			247.2			248.8	
Travel Time (s)		8.4			9.1			17.8			17.9	
Peak Hour 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
Adj. Flow (vph)	20	0	9	9	0	22	11	347	15	34	272	27
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	29	0	0	31	0	0	373	0	0	333	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	50.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	0	9	9	0	22	11	347	15	34	272	27
Future Volume (Veh/h)	20	0	9	9	0	22	11	347	15	34	272	27
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	20	0	9	9	0	22	11	347	15	34	272	27
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	752	738	286	739	744	354	299			362		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	752	738	286	739	744	354	299			362		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	93	100	99	97	100	97	99			97		
cM capacity (veh/h)	307	333	754	320	330	689	1262			1197		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	29	31	373	333
Volume Left	20	9	11	34
Volume Right	9	22	15	27
cSH	376	516	1262	1197
Volume to Capacity	0.08	0.06	0.01	0.03
Queue Length 95th (m)	2.0	1.5	0.2	0.7
Control Delay (s)	15.4	12.4	0.3	1.1
Lane LOS	C	B	A	A
Approach Delay (s)	15.4	12.4	0.3	1.1
Approach LOS	C	B		

Intersection Summary				
Average Delay	1.7			
Intersection Capacity Utilization	50.1%	ICU Level of Service		A
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	63	0	24	10	0	28	44	539	21	46	493	99
Future Volume (vph)	63	0	24	10	0	28	44	539	21	46	493	99
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.963			0.901			0.995			0.979	
Flt Protected		0.965			0.987			0.996			0.996	
Satd. Flow (prot)	0	1412	0	0	1351	0	0	1506	0	0	1482	0
Flt Permitted		0.965			0.987			0.996			0.996	
Satd. Flow (perm)	0	1412	0	0	1351	0	0	1506	0	0	1482	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		128.4			112.6			130.6			488.0	
Travel Time (s)		9.2			8.1			9.4			35.1	
Peak Hour 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
Adj. Flow (vph)	63	0	24	10	0	28	44	539	21	46	493	99
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	87	0	0	38	0	0	604	0	0	638	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	74.3%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	63	0	24	10	0	28	44	539	21	46	493	99
Future Volume (Veh/h)	63	0	24	10	0	28	44	539	21	46	493	99
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	63	0	24	10	0	28	44	539	21	46	493	99
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1300	1282	542	1296	1322	550	592			560		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1300	1282	542	1296	1322	550	592			560		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	48	100	96	92	100	95	96			95		
cM capacity (veh/h)	122	151	540	124	143	535	984			1011		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	87	38	604	638
Volume Left	63	10	44	46
Volume Right	24	28	21	99
cSH	155	286	984	1011
Volume to Capacity	0.56	0.13	0.04	0.05
Queue Length 95th (m)	22.9	3.6	1.1	1.1
Control Delay (s)	54.3	19.5	1.2	1.2
Lane LOS	F	C	A	A
Approach Delay (s)	54.3	19.5	1.2	1.2
Approach LOS	F	C		

Intersection Summary				
Average Delay	5.1			
Intersection Capacity Utilization	74.3%	ICU Level of Service		D
Analysis Period (min)	15			

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]
© Copyright TRL Limited, 2020

For sales and distribution information, program advice and maintenance, contact TRL:
Tel: +44 (0)1344 770758 email: software@trl.co.uk Web: http://www.trlsoftware.co.uk

The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: Laurelwood & Beaver Creek.arc8
Path: C:\Users\AdamMorrison\Paradigm\Projects - 170278 Beaver Creek Area TES\C5 - Analysis and Evaluation\Arcady
Report generation date: 2020-07-07 3:05:58 PM

Summary of intersection performance

There are warnings associated with this model run - see the 'Data Errors and Warnings' tables.

	AM					
	Queue (Veh)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS
	All - Total 2032					
Intersection 85% - Leg North	0.65	6.56	0.40	A	107.59	F
Intersection 85% - Leg West	22.50	94.98	1.04	F		
Intersection 85% - Leg South	31.99	371.89	1.22	F		
Intersection 85% - Leg East	0.74	6.20	0.43	A		
Intersection 90% - Leg North	0.58	5.90	0.37	A	62.34	F
Intersection 90% - Leg West	12.52	45.67	0.97	E		
Intersection 90% - Leg South	22.04	239.47	1.15	F		
Intersection 90% - Leg East	0.74	5.85	0.43	A		

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Intersection LOS and Intersection Delay are demand-weighted averages.

"D1 - Existing, AM" model duration: 8:00 AM - 9:00 AM
"D2 - Existing, PM" model duration: 4:00 PM - 5:00 PM
"D3 - Background 2022, AM" model duration: 8:00 AM - 9:00 AM
"D4 - Background 2022, PM" model duration: 4:00 PM - 5:00 PM
"D5 - Total 2022, AM" model duration: 8:00 AM - 9:00 AM
"D6 - Total 2022, PM" model duration: 4:00 PM - 5:00 PM
"D7 - Background 2025, AM" model duration: 8:00 AM - 9:00 AM
"D8 - Background 2025, PM" model duration: 4:00 PM - 5:00 PM
"D9 - Total 2025, AM" model duration: 8:00 AM - 9:00 AM
"D10 - Total 2025, PM" model duration: 4:00 PM - 5:00 PM
"D11 - Background 2027, AM" model duration: 8:00 AM - 9:00 AM
"D12 - Background 2027, PM" model duration: 4:00 PM - 5:00 PM
"D13 - Total 2027, AM" model duration: 8:00 AM - 9:00 AM
"D14 - Total 2027, PM" model duration: 4:00 PM - 5:00 PM
"D15 - Background 2032, AM" model duration: 8:00 AM - 9:00 AM
"D16 - Background 2032, PM" model duration: 4:00 PM - 5:00 PM
"D17 - Total 2032, AM " model duration: 8:00 AM - 9:00 AM
"D18 - Total 2032, PM" model duration: 4:00 PM - 5:00 PM

Run using Junctions 8.0.6.541 at 2020-07-07 3:05:57 PM

File summary

Title	Laurelwood & Beaver Creek
Location	Waterloo
Site Number	
Date	2017-12-05
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	170278
Analyst	Matt
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)
7.50	✓		N/A	0.90	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	Veh	Veh	perHour	s	-Min	perMin

All - Total 2032, AM

Data Errors and Warnings

Severity	Area	Item	Description
Last Run	Last Run	Intersection 85% - Leg East - Capacity	Pedestrian Crossing causes blocking on previous leg due to traffic queing to leave the intersection in 4 timesegment(s).
Last Run	Last Run	Intersection 90% - Leg East - Capacity	Pedestrian Crossing causes blocking on previous leg due to traffic queing to leave the intersection in 4 timesegment(s).

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
All	ARCADY		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
Total 2032, AM	Total 2032	AM		PHF	08:00	09:00	60	15				✓		

Intersection Network

Intersections

Junction	Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Do Geometric Delay	Intersection Delay (s)	Intersection LOS
85%	85%	Existing	Roundabout	North,West,South,East				107.59	F
90%	90%	Future	Roundabout	North,West,South,East				62.34	F

Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

Legs

Legs

Intersection	Leg	Leg	Name	Description
85%	**North**	North	Beaver Creek SB	
85%	**West**	West	Laurelwood EB	
85%	**South**	South	Beaver Creek NB	
85%	**East**	East	Laurelwood WB	
90%	**North**	North	Beaver Creek SB	
90%	**West**	West	Laurelwood EB	

90%	South	South	Beaver Creek NB	
90%	East	East	Laurelwood WB	

Capacity Options

Intersection	Leg	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)	Assume Flat Start Profile	Initial Queue (PCE)
85%	North	0.00	99999.00		0.00
85%	West	0.00	99999.00		0.00
85%	South	0.00	99999.00		0.00
85%	East	0.00	99999.00		0.00
90%	North	0.00	99999.00		0.00
90%	West	0.00	99999.00		0.00
90%	South	0.00	99999.00		0.00
90%	East	0.00	99999.00		0.00

Roundabout Geometry

Intersection	Leg	V - Approach road half-width (m)	E - Entry width (m)	I' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
85%	North	3.50	4.50	30.00	20.00	30.00	25.00	
85%	West	3.50	4.50	30.00	20.00	30.00	25.00	
85%	South	3.50	4.50	30.00	20.00	30.00	25.00	
85%	East	3.50	4.50	30.00	20.00	30.00	25.00	
90%	North	3.50	4.50	30.00	20.00	30.00	25.00	
90%	West	3.50	4.50	30.00	20.00	30.00	25.00	
90%	South	3.50	4.50	30.00	20.00	30.00	25.00	
90%	East	3.50	4.50	30.00	20.00	30.00	25.00	

Pedestrian Crossings

Intersection	Leg	Crossing Type
85%	North	Unsignalled Pedestrian Crossing
85%	West	Unsignalled Pedestrian Crossing
85%	South	Unsignalled Pedestrian Crossing
85%	East	Unsignalled Pedestrian Crossing
90%	North	Unsignalled Pedestrian Crossing
90%	West	Unsignalled Pedestrian Crossing
90%	South	Unsignalled Pedestrian Crossing
90%	East	Unsignalled Pedestrian Crossing

Unsignalled Pedestrian Crossing Crossings

Intersection	Leg	Space between crossing and intersection entry (PCE)	Vehicles queueing on exit (PCE)	Central Refuge	Crossing Data Type	Crossing length (m)	Crossing time (s)	Crossing length (entry side) (m)	Crossing time (entry side) (s)	Crossing length (exit side) (m)	Crossing time (exit side) (s)
85%	North	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
85%	West	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
85%	South	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
85%	East	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
90%	North	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
90%	West	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
90%	South	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
90%	East	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50

Slope / Intercept / Capacity

Leg Intercept Adjustments

Intersection	Leg	Type	Reason	Direct Intercept Adjustment (PCE/hr)	Percentage Intercept Adjustment (%)
85%	North	Percentage	Region of Waterloo - Requirement		85.00
85%	West	Percentage	Region of Waterloo - Requirement		85.00
85%	South	Percentage	Region of Waterloo - Requirement		85.00
85%	East	Percentage	Region of Waterloo - Requirement		85.00
90%	North	Percentage	Region of Waterloo - Requirement		90.00

90%	West	Percentage	Region of Waterloo - Requirement		90.00
90%	South	Percentage	Region of Waterloo - Requirement		90.00
90%	East	Percentage	Region of Waterloo - Requirement		90.00

Roundabout Slope and Intercept used in model

Intersection	Leg	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
85%	North		(calculated)	(calculated)	0.593	1153.828
85%	West		(calculated)	(calculated)	0.593	1153.828
85%	South		(calculated)	(calculated)	0.593	1153.828
85%	East		(calculated)	(calculated)	0.593	1153.828
90%	North		(calculated)	(calculated)	0.593	1221.701
90%	West		(calculated)	(calculated)	0.593	1221.701
90%	South		(calculated)	(calculated)	0.593	1221.701
90%	East		(calculated)	(calculated)	0.593	1221.701

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCE Factor for a Truck (PCE)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Intersection	Leg	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
85%	North	PHF	✓	329.00	100.000
85%	West	PHF	✓	862.00	100.000
85%	South	PHF	✓	325.00	100.000
85%	East	PHF	✓	401.00	100.000
90%	North	PHF	✓	330.00	100.000
90%	West	PHF	✓	866.00	100.000
90%	South	PHF	✓	325.00	100.000
90%	East	PHF	✓	421.00	100.000

Peak Hour Factor Data

Intersection	Leg	Hourly Volume (Veh/hr)	Peak Hour Factor	Peak Time Segment
85%	North	329.00	0.92	SecondQuarter
85%	West	862.00	0.92	SecondQuarter
85%	South	325.00	0.92	SecondQuarter
85%	East	401.00	0.92	SecondQuarter
90%	North	330.00	0.92	SecondQuarter
90%	West	866.00	0.92	SecondQuarter
90%	South	325.00	0.92	SecondQuarter
90%	East	421.00	0.92	SecondQuarter

Pedestrian Flows

General Flows Data

Intersection	Leg	Profile Type	Average Pedestrian Flow (Ped/hr)

85%	North	PHF	10.00
85%	West	PHF	7.00
85%	South	PHF	4.00
85%	East	PHF	10.00
90%	North	PHF	10.00
90%	West	PHF	7.00
90%	South	PHF	4.00
90%	East	PHF	10.00

Peak Hour Factor Data

Intersection	Leg	Hourly Volume (Ped/hr)	Peak Hour Factor	Peak Time Segment
85%	North	10.00	1.00	SecondQuarter
85%	West	7.00	1.00	SecondQuarter
85%	South	4.00	1.00	SecondQuarter
85%	East	10.00	1.00	SecondQuarter
90%	North	10.00	1.00	SecondQuarter
90%	West	7.00	1.00	SecondQuarter
90%	South	4.00	1.00	SecondQuarter
90%	East	10.00	1.00	SecondQuarter

Turning Proportions

Turning Counts / Proportions (Veh/hr) - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.000	21.000	22.000	286.000
	West	34.000	0.000	96.000	732.000
	South	42.000	63.000	0.000	220.000
	East	122.000	238.000	41.000	0.000

Turning Proportions (Veh) - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.00	0.06	0.07	0.87
	West	0.04	0.00	0.11	0.85
	South	0.13	0.19	0.00	0.68
	East	0.30	0.59	0.10	0.00

Turning Counts / Proportions (Veh/hr) - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.000	23.000	22.000	285.000
	West	38.000	0.000	96.000	732.000
	South	42.000	63.000	0.000	220.000
	East	141.000	239.000	41.000	0.000

Turning Proportions (Veh) - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.00	0.07	0.07	0.86
	West	0.04	0.00	0.11	0.85
	South	0.13	0.19	0.00	0.68
	East	0.33	0.57	0.10	0.00

Vehicle Mix

Average PCE Per Vehicle - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	1.000	1.110	1.000	1.000
	West	1.000	1.000	1.000	1.030
	South	1.090	1.000	1.000	1.010
	East	1.040	1.060	1.060	1.000

Truck Percentages - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.0	11.0	0.0	0.0
	West	0.0	0.0	0.0	3.0
	South	9.0	0.0	0.0	1.0
	East	4.0	6.0	6.0	0.0

Average PCE Per Vehicle - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	1.000	1.110	1.000	1.000
	West	1.000	1.000	1.000	1.030
	South	1.090	1.000	1.000	1.010
	East	1.040	1.060	1.060	1.000

Truck Percentages - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.0	11.0	0.0	0.0
	West	0.0	0.0	0.0	3.0
	South	9.0	0.0	0.0	1.0
	East	4.0	6.0	6.0	0.0

Results

Results Summary for whole modelled period

Intersection	Leg	Max V/C Ratio	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Intersection Arrivals (Veh)	Total Queueing Delay (Veh-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (Veh-min/min)	Inclusive Total Queueing Delay (Veh-min)	Inclusive Average Queueing Delay (s)
85%	North	0.40	6.56	0.65	1.00	A	329.00	329.00	33.31	6.07	0.56	33.32	6.08
85%	West	1.04	94.98	22.50	78.00	F	862.00	862.00	816.41	56.83	13.61	818.87	57.00
85%	South	1.22	371.89	31.99	122.00	F	325.00	325.00	1111.26	205.16	18.52	1207.45	222.91
85%	East	0.43	6.20	0.74	~1	A	401.00	401.00	39.09	5.85	0.65	39.10	5.85
90%	North	0.37	5.90	0.58	1.00	A	330.00	330.00	30.30	5.51	0.51	30.31	5.51
90%	West	0.97	45.67	12.52	48.00	E	866.00	866.00	464.00	32.15	7.73	464.76	32.20
90%	South	1.15	239.47	22.04	55.00	F	325.00	325.00	733.01	135.33	12.22	743.42	137.25
90%	East	0.43	5.85	0.74	~1	A	421.00	421.00	38.76	5.52	0.65	38.78	5.53

Main Results for each time segment

Main results: (08:00-08:15)

Intersection	Leg	Total Demand (Veh/hr)	Intersection Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	V/C Ratio	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
85%	North	309.93	77.48	307.96	183.09	317.78	10.00	933.97	606.80	0.332	0.00	0.49	5.734	A
85%	West	812.03	203.01	789.79	299.06	326.69	7.00	931.85	727.39	0.871	0.00	5.56	22.672	C

85%	South	306.16	76.54	291.91	146.94	969.54	4.00	373.84	240.80	0.819	0.00	3.56	39.065	E
85%	East	377.75	94.44	375.41	1135.99	125.46	10.00	1016.70	1006.89	0.372	0.00	0.59	5.594	A
90%	North	310.87	77.72	309.07	205.39	319.60	10.00	998.06	662.56	0.311	0.00	0.45	5.211	A
90%	West	815.80	203.95	799.69	302.75	325.93	7.00	998.33	764.73	0.817	0.00	4.03	16.967	C
90%	South	306.16	76.54	295.98	147.65	977.97	4.00	412.24	227.77	0.743	0.00	2.55	28.903	D
90%	East	396.59	99.15	394.28	1143.24	130.71	10.00	1076.70	1060.18	0.368	0.00	0.58	5.257	A

Main results: (08:15-08:30)

Intersection	Leg	Total Demand (Veh/hr)	Intersection Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	V/C Ratio	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
85%	North	357.61	89.40	356.99	203.41	357.65	10.00	904.86	606.80	0.395	0.49	0.65	6.564	A
85%	West	936.95	234.24	873.20	335.94	378.71	7.00	900.77	727.39	1.040	5.56	21.50	69.928	F
85%	South	353.26	88.32	282.85	165.62	1086.29	4.00	290.26	240.80	1.217	3.56	21.17	184.140	F
85%	East	435.87	108.97	435.23	1243.32	125.82	10.00	1015.11	1006.89	0.429	0.59	0.74	6.202	A
90%	North	358.69	89.67	358.16	230.92	361.02	10.00	967.42	662.56	0.371	0.45	0.58	5.904	A
90%	West	941.30	235.33	907.33	341.48	377.70	7.00	967.19	764.73	0.973	4.03	12.52	44.394	E
90%	South	353.26	88.32	294.54	168.96	1116.06	4.00	306.03	227.77	1.154	2.55	17.23	146.070	F
90%	East	457.61	114.40	456.97	1275.63	134.97	10.00	1072.10	1060.18	0.427	0.58	0.74	5.846	A

Main results: (08:30-08:45)

Intersection	Leg	Total Demand (Veh/hr)	Intersection Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	V/C Ratio	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
85%	North	338.54	84.63	338.75	198.05	343.66	10.00	915.15	606.80	0.370	0.65	0.59	6.247	A
85%	West	886.98	221.75	882.97	323.07	359.33	7.00	912.13	727.39	0.972	21.50	22.50	94.975	F
85%	South	334.42	83.61	291.13	163.20	1079.11	4.00	293.26	240.80	1.140	21.17	31.99	344.616	F
85%	East	412.62	103.16	412.82	1241.36	128.89	10.00	1013.75	1006.89	0.407	0.74	0.69	5.994	A
90%	North	339.56	84.89	339.75	225.11	349.34	10.00	976.24	662.56	0.348	0.58	0.54	5.659	A
90%	West	891.10	222.77	894.10	330.81	358.27	7.00	978.73	764.73	0.910	12.52	11.77	45.674	E
90%	South	334.42	83.61	315.15	163.97	1088.40	4.00	320.92	227.77	1.042	17.23	22.04	239.471	F
90%	East	433.20	108.30	433.40	1262.50	141.05	10.00	1069.11	1060.18	0.405	0.74	0.69	5.666	A

Main results: (08:45-09:00)

Intersection	Leg	Total Demand (Veh/hr)	Intersection Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	V/C Ratio	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
85%	North	309.93	77.48	310.28	188.85	322.49	10.00	930.64	606.80	0.333	0.59	0.50	5.806	A
85%	West	812.03	203.01	867.08	303.64	329.14	7.00	930.01	727.39	0.873	22.50	8.74	61.981	F
85%	South	306.16	76.54	306.50	155.98	1040.25	4.00	317.42	240.80	0.965	31.99	31.90	371.894	F
85%	East	377.75	94.44	378.12	1213.52	133.22	10.00	1011.87	1006.89	0.373	0.69	0.60	5.683	A
90%	North	310.87	77.72	311.17	215.07	331.72	10.00	989.47	662.56	0.314	0.54	0.46	5.309	A
90%	West	815.80	203.95	842.85	314.75	328.14	7.00	996.79	764.73	0.818	11.77	5.00	26.269	D
90%	South	306.16	76.54	349.33	152.84	1018.16	4.00	365.17	227.77	0.838	22.04	11.25	179.214	F
90%	East	396.59	99.15	396.95	1217.65	149.84	10.00	1064.85	1060.18	0.372	0.69	0.60	5.392	A

Queueing Delay Results for each time segment

Queueing Delay results: (08:00-08:15)

Intersection	Leg	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	7.13	0.48	5.734	A	A
85%	West	67.47	4.50	22.672	C	C
85%	South	42.19	2.81	39.065	E	D
85%	East	8.48	0.57	5.594	A	A
90%	North	6.52	0.43	5.211	A	A
90%	West	51.72	3.45	16.967	C	B
90%	South	32.05	2.14	28.903	D	C
90%	East	8.38	0.56	5.257	A	A

Queueing Delay results: (08:15-08:30)

Intersection	Leg	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service

85%	North	9.44	0.63	6.564	A	A
85%	West	215.30	14.35	69.928	F	E
85%	South	190.80	12.72	184.140	F	F
85%	East	10.88	0.73	6.202	A	A
90%	North	8.55	0.57	5.904	A	A
90%	West	138.99	9.27	44.394	E	D
90%	South	156.13	10.41	146.070	F	F
90%	East	10.79	0.72	5.846	A	A

Queueing Delay results: (08:30-08:45)

Intersection	Leg	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	9.03	0.60	6.247	A	A
85%	West	330.19	22.01	94.975	F	F
85%	South	399.09	26.61	344.616	F	F
85%	East	10.54	0.70	5.994	A	A
90%	North	8.18	0.55	5.659	A	A
90%	West	181.41	12.09	45.674	E	D
90%	South	295.09	19.67	239.471	F	F
90%	East	10.45	0.70	5.666	A	A

Queueing Delay results: (08:45-09:00)

Intersection	Leg	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	7.71	0.51	5.806	A	A
85%	West	203.44	13.56	61.981	F	E
85%	South	479.17	31.94	371.894	F	F
85%	East	9.19	0.61	5.683	A	A
90%	North	7.05	0.47	5.309	A	A
90%	West	91.87	6.12	26.269	D	C
90%	South	249.73	16.65	179.214	F	F
90%	East	9.15	0.61	5.392	A	A

Queue Variation Results for each time segment

Queue Variation results: (08:00-08:15)

Intersection	Leg	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.49	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	5.56	0.00	1.00	14.00	20.00			N/A	N/A
85%	South	3.56	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	0.59	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.45	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	4.03	0.00	1.00	10.00	14.00			N/A	N/A
90%	South	2.55	0.00	0.00	5.00	9.00			N/A	N/A
90%	East	0.58	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:15-08:30)

Intersection	Leg	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.65	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	21.50	1.00	15.00	45.00	57.00			N/A	N/A
85%	South	21.17	0.00	2.00	55.00	88.00			N/A	N/A

85%	**East**	0.74	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	**North**	0.58	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	**West**	12.52	0.00	5.00	32.00	45.00			N/A	N/A
90%	**South**	17.23	3.00	14.00	31.00	38.00			N/A	N/A
90%	**East**	0.74	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:30-08:45)

Intersection	Leg	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	**North**	0.59	0.00	0.00	0.00	1.00			N/A	N/A
85%	**West**	22.50	0.00	11.00	57.00	78.00			N/A	N/A
85%	**South**	31.99	0.00	13.00	85.00	120.00			N/A	N/A
85%	**East**	0.69	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	**North**	0.54	0.00	0.00	0.00	1.00			N/A	N/A
90%	**West**	11.77	0.00	0.00	28.00	48.00			N/A	N/A
90%	**South**	22.04	2.00	17.00	44.00	55.00			N/A	N/A
90%	**East**	0.69	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:45-09:00)

Intersection	Leg	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	**North**	0.50	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	**West**	8.74	0.00	0.00	14.00	33.00			N/A	N/A
85%	**South**	31.90	0.00	12.00	85.00	122.00			N/A	N/A
85%	**East**	0.60	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	**North**	0.46	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	**West**	5.00	0.00	0.00	6.00	18.00			N/A	N/A
90%	**South**	11.25	0.00	2.00	29.00	44.00			N/A	N/A
90%	**East**	0.60	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]
© Copyright TRL Limited, 2020

For sales and distribution information, program advice and maintenance, contact TRL:
Tel: +44 (0)1344 770758 email: software@trl.co.uk Web: http://www.trlsoftware.co.uk

The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: Laurelwood & Beaver Creek.arc8
Path: C:\Users\AdamMorrison\Paradigm\Projects - 170278 Beaver Creek Area TES\C5 - Analysis and Evaluation\Arcady
Report generation date: 2020-07-07 3:04:28 PM

Summary of intersection performance

There are warnings associated with this model run - see the 'Data Errors and Warnings' tables.

	PM					
	Queue (Veh)	**Delay (s)**	**V/C Ratio**	**LOS**	**Intersection Delay (s)**	**Intersection LOS**
	All - Total 2032					
Intersection 85% - Leg North	0.97	12.35	0.50	B	346.59	F
Intersection 85% - Leg West	1.11	8.49	0.53	A		
Intersection 85% - Leg South	0.31	6.88	0.24	A		
Intersection 85% - Leg East	184.34	577.79	1.27	F		
Intersection 90% - Leg North	0.89	11.33	0.48	B	244.78	F
Intersection 90% - Leg West	0.99	7.47	0.50	A		
Intersection 90% - Leg South	0.28	6.19	0.22	A		
Intersection 90% - Leg East	132.83	406.63	1.21	F		

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Intersection LOS and Intersection Delay are demand-weighted averages.

"D1 - Existing, AM" model duration: 8:00 AM - 9:00 AM
"D2 - Existing, PM" model duration: 4:00 PM - 5:00 PM
"D3 - Background 2022, AM" model duration: 8:00 AM - 9:00 AM
"D4 - Background 2022, PM" model duration: 4:00 PM - 5:00 PM
"D5 - Total 2022, AM" model duration: 8:00 AM - 9:00 AM
"D6 - Total 2022, PM" model duration: 4:00 PM - 5:00 PM
"D7 - Background 2025, AM" model duration: 8:00 AM - 9:00 AM
"D8 - Background 2025, PM" model duration: 4:00 PM - 5:00 PM
"D9 - Total 2025, AM" model duration: 8:00 AM - 9:00 AM
"D10 - Total 2025, PM" model duration: 4:00 PM - 5:00 PM
"D11 - Background 2027, AM" model duration: 8:00 AM - 9:00 AM
"D12 - Background 2027, PM" model duration: 4:00 PM - 5:00 PM
"D13 - Total 2027, AM" model duration: 8:00 AM - 9:00 AM
"D14 - Total 2027, PM" model duration: 4:00 PM - 5:00 PM
"D15 - Background 2032, AM" model duration: 8:00 AM - 9:00 AM
"D16 - Background 2032, PM" model duration: 4:00 PM - 5:00 PM
"D17 - Total 2032, AM" model duration: 8:00 AM - 9:00 AM
"D18 - Total 2032, PM " model duration: 4:00 PM - 5:00 PM

Run using Junctions 8.0.6.541 at 2020-07-07 3:04:27 PM

File summary

Title	Laurelwood & Beaver Creek
Location	Waterloo
Site Number	
Date	2017-12-05
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	170278
Analyst	Matt
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)
7.50	✓		N/A	0.90	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	Veh	Veh	perHour	s	-Min	perMin

All - Total 2032, PM

Data Errors and Warnings

Severity	Area	Item	Description
Last Run	Last Run	Intersection 85% - Leg West - Capacity	Pedestrian Crossing causes blocking on previous leg due to traffic queing to leave the intersection in 4 timesegment(s).
Last Run	Last Run	Intersection 90% - Leg West - Capacity	Pedestrian Crossing causes blocking on previous leg due to traffic queing to leave the intersection in 4 timesegment(s).

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
All	ARCADY		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
Total 2032, PM	Total 2032	PM		PHF	16:00	17:00	60	15				✓		

Intersection Network

Intersections

Junction	Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Do Geometric Delay	Intersection Delay (s)	Intersection LOS
85%	85%	Existing	Roundabout	North,West,South,East				346.59	F
90%	90%	Future	Roundabout	North,West,South,East				244.78	F

Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

Legs

Legs

Intersection	Leg	Leg	Name	Description
85%	**North**	North	Beaver Creek SB	
85%	**West**	West	Laurelwood EB	
85%	**South**	South	Beaver Creek NB	
85%	**East**	East	Laurelwood WB	
90%	**North**	North	Beaver Creek SB	
90%	**West**	West	Laurelwood EB	
90%	**South**	South	Beaver Creek NB	
90%	**East**	East	Laurelwood WB	

Capacity Options

Intersection	Leg	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)	Assume Flat Start Profile	Initial Queue (PCE)
85%	**North**	0.00	99999.00		0.00
85%	**West**	0.00	99999.00		0.00
85%	**South**	0.00	99999.00		0.00
85%	**East**	0.00	99999.00		0.00
90%	**North**	0.00	99999.00		0.00
90%	**West**	0.00	99999.00		0.00
90%	**South**	0.00	99999.00		0.00
90%	**East**	0.00	99999.00		0.00

Roundabout Geometry

Intersection	Leg	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
85%	**North**	3.50	4.50	30.00	20.00	30.00	25.00	
85%	**West**	3.50	4.50	30.00	20.00	30.00	25.00	
85%	**South**	3.50	4.50	30.00	20.00	30.00	25.00	
85%	**East**	3.50	4.50	30.00	20.00	30.00	25.00	
90%	**North**	3.50	4.50	30.00	20.00	30.00	25.00	
90%	**West**	3.50	4.50	30.00	20.00	30.00	25.00	
90%	**South**	3.50	4.50	30.00	20.00	30.00	25.00	
90%	**East**	3.50	4.50	30.00	20.00	30.00	25.00	

Pedestrian Crossings

Intersection	Leg	Crossing Type
85%	**North**	Unsignalled Pedestrian Crossing
85%	**West**	Unsignalled Pedestrian Crossing
85%	**South**	Unsignalled Pedestrian Crossing
85%	**East**	Unsignalled Pedestrian Crossing
90%	**North**	Unsignalled Pedestrian Crossing
90%	**West**	Unsignalled Pedestrian Crossing
90%	**South**	Unsignalled Pedestrian Crossing
90%	**East**	Unsignalled Pedestrian Crossing

Unsignalled Pedestrian Crossing Crossings

Intersection	Leg	Space between crossing and intersection entry (PCE)	Vehicles queueing on exit (PCE)	Central Refuge	Crossing Data Type	Crossing length (m)	Crossing time (s)	Crossing length (entry side) (m)	Crossing time (entry side) (s)	Crossing length (exit side) (m)	Crossing time (exit side) (s)
85%	**North**	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
85%	**West**	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
85%	**South**	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
85%	**East**	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
90%	**North**	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
90%	**West**	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
90%	**South**	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
90%	**East**	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50

Slope / Intercept / Capacity

Leg Intercept Adjustments

Intersection	Leg	Type	Reason	Direct Intercept Adjustment (PCE/hr)	Percentage Intercept Adjustment (%)
85%	**North**	Percentage	Region of Waterloo - Requirement		85.00
85%	**West**	Percentage	Region of Waterloo - Requirement		85.00
85%	**South**	Percentage	Region of Waterloo - Requirement		85.00
85%	**East**	Percentage	Region of Waterloo - Requirement		85.00
90%	**North**	Percentage	Region of Waterloo - Requirement		90.00

90%	West	Percentage	Region of Waterloo - Requirement		90.00
90%	South	Percentage	Region of Waterloo - Requirement		90.00
90%	East	Percentage	Region of Waterloo - Requirement		90.00

Roundabout Slope and Intercept used in model

Intersection	Leg	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
85%	North		(calculated)	(calculated)	0.593	1153.828
85%	West		(calculated)	(calculated)	0.593	1153.828
85%	South		(calculated)	(calculated)	0.593	1153.828
85%	East		(calculated)	(calculated)	0.593	1153.828
90%	North		(calculated)	(calculated)	0.593	1221.701
90%	West		(calculated)	(calculated)	0.593	1221.701
90%	South		(calculated)	(calculated)	0.593	1221.701
90%	East		(calculated)	(calculated)	0.593	1221.701

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCE Factor for a Truck (PCE)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Intersection	Leg	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
85%	North	PHF	✓	265.00	100.000
85%	West	PHF	✓	440.00	100.000
85%	South	PHF	✓	151.00	100.000
85%	East	PHF	✓	1254.00	100.000
90%	North	PHF	✓	265.00	100.000
90%	West	PHF	✓	443.00	100.000
90%	South	PHF	✓	151.00	100.000
90%	East	PHF	✓	1260.00	100.000

Peak Hour Factor Data

Intersection	Leg	Hourly Volume (Veh/hr)	Peak Hour Factor	Peak Time Segment
85%	North	265.00	0.92	SecondQuarter
85%	West	440.00	0.92	SecondQuarter
85%	South	151.00	0.92	SecondQuarter
85%	East	1254.00	0.92	SecondQuarter
90%	North	265.00	0.92	SecondQuarter
90%	West	443.00	0.92	SecondQuarter
90%	South	151.00	0.92	SecondQuarter
90%	East	1260.00	0.92	SecondQuarter

Pedestrian Flows

General Flows Data

Intersection	Leg	Profile Type	Average Pedestrian Flow (Ped/hr)

85%	North	PHF	9.00
85%	West	PHF	6.00
85%	South	PHF	4.00
85%	East	PHF	8.00
90%	North	PHF	9.00
90%	West	PHF	6.00
90%	South	PHF	4.00
90%	East	PHF	8.00

Peak Hour Factor Data

Intersection	Leg	Hourly Volume (Ped/hr)	Peak Hour Factor	Peak Time Segment
85%	North	9.00	1.00	SecondQuarter
85%	West	6.00	1.00	SecondQuarter
85%	South	4.00	1.00	SecondQuarter
85%	East	8.00	1.00	SecondQuarter
90%	North	9.00	1.00	SecondQuarter
90%	West	6.00	1.00	SecondQuarter
90%	South	4.00	1.00	SecondQuarter
90%	East	8.00	1.00	SecondQuarter

Turning Proportions

Turning Counts / Proportions (Veh/hr) - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.000	33.000	48.000	184.000
	West	20.000	1.000	37.000	382.000
	South	27.000	34.000	0.000	90.000
	East	326.000	769.000	159.000	0.000

Turning Proportions (Veh) - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.00	0.12	0.18	0.69
	West	0.05	0.00	0.08	0.87
	South	0.18	0.23	0.00	0.60
	East	0.26	0.61	0.13	0.00

Turning Counts / Proportions (Veh/hr) - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.000	33.000	48.000	184.000
	West	22.000	1.000	37.000	383.000
	South	27.000	34.000	0.000	90.000
	East	328.000	773.000	159.000	0.000

Turning Proportions (Veh) - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.00	0.12	0.18	0.69
	West	0.05	0.00	0.08	0.86
	South	0.18	0.23	0.00	0.60
	East	0.26	0.61	0.13	0.00

Vehicle Mix

Average PCE Per Vehicle - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	1.000	1.000	1.030	1.000
	West	1.000	1.000	1.000	1.020
	South	1.000	1.000	1.000	1.000
	East	1.000	1.010	1.000	1.000

Truck Percentages - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.0	0.0	3.0	0.0
	West	0.0	0.0	0.0	2.0
	South	0.0	0.0	0.0	0.0
	East	0.0	1.0	0.0	0.0

Average PCE Per Vehicle - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	1.000	1.000	1.030	1.000
	West	1.000	1.000	1.000	1.020
	South	1.000	1.000	1.000	1.000
	East	1.000	1.010	1.000	1.000

Truck Percentages - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.0	0.0	3.0	0.0
	West	0.0	0.0	0.0	2.0
	South	0.0	0.0	0.0	0.0
	East	0.0	1.0	0.0	0.0

Results

Results Summary for whole modelled period

Intersection	Leg	Max V/C Ratio	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Intersection Arrivals (Veh)	Total Queueing Delay (Veh-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (Veh-min/min)	Inclusive Total Queueing Delay (Veh-min)	Inclusive Average Queueing Delay (s)
85%	North	0.50	12.35	0.97	1.00	B	265.00	265.00	49.91	11.30	0.83	49.95	11.31
85%	West	0.53	8.49	1.11	1.00	A	440.00	440.00	55.92	7.62	0.93	55.94	7.63
85%	South	0.24	6.88	0.31	~1	A	151.00	151.00	15.73	6.25	0.26	15.73	6.25
85%	East	1.27	577.79	184.34	?	F	1254.00	1254.00	5877.18	281.20	97.95	6820.47	326.34
90%	North	0.48	11.33	0.89	~1	B	265.00	265.00	45.89	10.39	0.76	45.92	10.40
90%	West	0.50	7.47	0.99	?	A	443.00	443.00	50.05	6.78	0.83	50.07	6.78
90%	South	0.22	6.19	0.28	~1	A	151.00	151.00	14.25	5.66	0.24	14.25	5.66
90%	East	1.21	406.63	132.83	?	F	1260.01	1260.01	4424.15	210.67	73.74	4887.20	232.72

Main Results for each time segment

Main results: (16:00-16:15)

Intersection	Leg	Total Demand (Veh/hr)	Intersection Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	V/C Ratio	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
85%	North	249.64	62.41	246.80	316.98	809.94	9.00	594.11	567.20	0.420	0.00	0.71	10.284	B
85%	West	414.49	103.62	411.28	707.52	349.22	6.00	923.07	755.19	0.449	0.00	0.80	6.992	A
85%	South	142.25	35.56	141.33	212.45	548.05	4.00	759.93	307.50	0.187	0.00	0.23	5.811	A
85%	East	1181.31	295.33	1050.20	612.66	76.72	8.00	1082.25	1028.32	1.092	0.00	32.78	66.945	F
90%	North	249.64	62.41	247.05	331.35	843.97	9.00	628.93	592.36	0.397	0.00	0.65	9.366	A
90%	West	417.32	104.33	414.42	736.34	354.67	6.00	985.81	802.80	0.423	0.00	0.73	6.269	A
90%	South	142.25	35.56	141.41	217.75	551.34	4.00	820.29	304.76	0.173	0.00	0.21	5.296	A
90%	East	1186.96	296.74	1096.68	614.11	78.64	8.00	1145.27	1088.15	1.036	0.00	22.57	48.643	E

Main results: (16:15-16:30)

Intersection	Leg	Total Demand (Veh/hr)	Intersection Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	V/C Ratio	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
85%	North	288.04	72.01	287.00	329.71	831.42	9.00	577.26	567.20	0.499	0.71	0.97	12.353	B
85%	West	478.26	119.57	477.02	731.21	387.21	6.00	899.84	755.19	0.532	0.80	1.11	8.488	A
85%	South	164.13	41.03	163.80	228.05	636.19	4.00	686.72	307.50	0.239	0.23	0.31	6.879	A
85%	East	1363.05	340.76	1072.19	711.05	88.94	8.00	1073.42	1028.32	1.270	32.78	105.49	240.809	F
90%	North	288.04	72.01	287.06	348.03	875.86	9.00	603.80	592.37	0.477	0.65	0.89	11.329	B
90%	West	481.52	120.38	480.47	768.66	394.26	6.00	961.42	802.80	0.501	0.73	0.99	7.468	A
90%	South	164.13	41.03	163.84	235.07	639.66	4.00	744.89	304.76	0.220	0.21	0.28	6.193	A
90%	East	1369.57	342.39	1132.76	712.37	91.13	8.00	1135.45	1088.15	1.206	22.57	81.77	175.552	F

Main results: (16:30-16:45)

Intersection	Leg	Total Demand (Veh/hr)	Intersection Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	V/C Ratio	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
85%	North	272.68	68.17	272.91	328.10	832.23	9.00	577.15	567.20	0.472	0.97	0.91	11.848	B
85%	West	452.76	113.19	453.16	729.80	375.34	6.00	907.05	755.19	0.499	1.11	1.01	7.939	A
85%	South	155.38	38.84	155.50	223.96	604.54	4.00	713.21	307.50	0.218	0.31	0.28	6.458	A
85%	East	1290.35	322.59	1075.89	675.60	84.44	8.00	1076.24	1028.32	1.199	105.49	159.11	448.525	F
90%	North	272.68	68.17	272.89	346.58	877.47	9.00	603.15	592.37	0.452	0.89	0.84	10.912	B
90%	West	455.84	113.96	456.19	767.90	382.46	6.00	968.61	802.80	0.471	0.99	0.90	7.030	A
90%	South	155.38	38.84	155.48	231.08	607.57	4.00	772.54	304.76	0.201	0.28	0.25	5.836	A
90%	East	1296.53	324.13	1137.56	676.55	86.50	8.00	1138.36	1088.15	1.139	81.77	121.52	328.315	F

Main results: (16:45-17:00)

Intersection	Leg	Total Demand (Veh/hr)	Intersection Arrivals (Veh)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	V/C Ratio	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
85%	North	249.64	62.41	250.19	325.20	832.52	9.00	577.70	567.20	0.432	0.91	0.78	11.014	B
85%	West	414.49	103.62	415.21	726.69	356.01	6.00	918.79	755.19	0.451	1.01	0.83	7.161	A
85%	South	142.25	35.56	142.43	217.22	554.01	4.00	755.09	307.50	0.188	0.28	0.23	5.879	A
85%	East	1181.31	295.33	1080.37	619.08	77.36	8.00	1080.75	1028.32	1.093	159.11	184.34	577.786	F
90%	North	249.64	62.41	250.13	343.43	877.52	9.00	603.99	592.37	0.413	0.84	0.72	10.188	B
90%	West	417.32	104.33	417.92	764.59	363.05	6.00	980.45	802.80	0.426	0.90	0.75	6.408	A
90%	South	142.25	35.56	142.41	224.28	556.69	4.00	815.84	304.76	0.174	0.25	0.21	5.348	A
90%	East	1186.96	296.74	1141.72	619.87	79.23	8.00	1143.06	1088.15	1.038	121.52	132.83	406.626	F

Queueing Delay Results for each time segment

Queueing Delay results: (16:00-16:15)

Intersection	Leg	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	10.06	0.67	10.284	B	B
85%	West	11.52	0.77	6.992	A	A
85%	South	3.32	0.22	5.811	A	A
85%	East	278.92	18.59	66.945	F	E
90%	North	9.20	0.61	9.366	A	A
90%	West	10.45	0.70	6.269	A	A
90%	South	3.04	0.20	5.296	A	A
90%	East	207.23	13.82	48.643	E	D

Queueing Delay results: (16:15-16:30)

Intersection	Leg	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service

85%	North	13.94	0.93	12.353	B	B
85%	West	16.08	1.07	8.488	A	A
85%	South	4.55	0.30	6.879	A	A
85%	East	1037.80	69.19	240.809	F	F
90%	North	12.84	0.86	11.329	B	B
90%	West	14.33	0.96	7.468	A	A
90%	South	4.11	0.27	6.193	A	A
90%	East	784.42	52.29	175.552	F	F

Queueing Delay results: (16:30-16:45)

Intersection	Leg	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	13.93	0.93	11.848	B	B
85%	West	15.48	1.03	7.939	A	A
85%	South	4.28	0.29	6.458	A	A
85%	East	1984.57	132.30	448.525	F	F
90%	North	12.80	0.85	10.912	B	B
90%	West	13.76	0.92	7.030	A	A
90%	South	3.86	0.26	5.836	A	A
90%	East	1524.86	101.66	328.315	F	F

Queueing Delay results: (16:45-17:00)

Intersection	Leg	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	11.98	0.80	11.014	B	B
85%	West	12.83	0.86	7.161	A	A
85%	South	3.57	0.24	5.879	A	A
85%	East	2575.90	171.73	577.786	F	F
90%	North	11.05	0.74	10.188	B	B
90%	West	11.52	0.77	6.408	A	A
90%	South	3.24	0.22	5.348	A	A
90%	East	1907.64	127.18	406.626	F	F

Queue Variation Results for each time segment

Queue Variation results: (16:00-16:15)

Intersection	Leg	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.71	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	0.80	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.23	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	32.78	?	?	?	?	No excess capacity in final time segment - unable to calculate queue statistics		N/A	N/A
90%	North	0.65	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	0.73	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.21	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	22.57	?	?	?	?	No excess capacity in final time segment - unable to calculate queue statistics		N/A	N/A

Queue Variation results: (16:15-16:30)

Intersection	Leg	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.97	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

85%	West	1.11	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.31	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	105.49	?	?	?	?	No excess capacity in final time segment - unable to calculate queue statistics		N/A	N/A
90%	North	0.89	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	0.99	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.28	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	81.77	?	?	?	?	No excess capacity in final time segment - unable to calculate queue statistics		N/A	N/A

Queue Variation results: (16:30-16:45)

Intersection	Leg	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.91	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	1.01	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.28	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	159.11	?	?	?	?	No excess capacity in final time segment - unable to calculate queue statistics		N/A	N/A
90%	North	0.84	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	0.90	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.25	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	121.52	?	?	?	?	No excess capacity in final time segment - unable to calculate queue statistics		N/A	N/A

Queue Variation results: (16:45-17:00)

Intersection	Leg	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.78	0.00	0.00	0.00	1.00			N/A	N/A
85%	West	0.83	0.00	0.00	0.00	1.00			N/A	N/A
85%	South	0.23	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	184.34	?	?	?	?	No excess capacity in final time segment - unable to calculate queue statistics		N/A	N/A
90%	North	0.72	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	0.75	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.21	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	132.83	?	?	?	?	No excess capacity in final time segment - unable to calculate queue statistics		N/A	N/A

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]
© Copyright TRL Limited, 2020

For sales and distribution information, program advice and maintenance, contact TRL:
Tel: +44 (0)1344 770758 email: software@trl.co.uk Web: http://www.trlsoftware.co.uk

The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: Conservation & Beaver Creek.arc8
Path: C:\Users\AdamMorrison\Paradigm\Projects - 170278 Beaver Creek Area TES\C5 - Analysis and Evaluation\Arcady
Report generation date: 2020-07-07 2:09:54 PM

Summary of intersection performance

	AM					
	Queue (PCE)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS
	All - Total 2032					
Intersection 85% - Leg North	0.50	7.22	0.33	A	309.91	F
Intersection 85% - Leg West	170.40	596.56	1.29	F		
Intersection 85% - Leg South	1.46	14.68	0.59	B		
Intersection 85% - Leg East	1.45	8.84	0.58	A		
Intersection 90% - Leg North	0.45	6.62	0.30	A	217.47	F
Intersection 90% - Leg West	129.32	424.32	1.22	F		
Intersection 90% - Leg South	1.45	13.82	0.59	B		
Intersection 90% - Leg East	1.47	8.43	0.58	A		

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Intersection LOS and Intersection Delay are demand-weighted averages.

"D1 - Existing, AM" model duration: 8:00 AM - 9:30 AM
"D2 - Existing, PM" model duration: 5:00 PM - 6:30 PM
"D3 - Background 2022, AM" model duration: 8:00 AM - 9:30 AM
"D4 - Background 2022, PM" model duration: 5:00 PM - 6:30 PM
"D5 - Total 2022, AM" model duration: 8:00 AM - 9:30 AM
"D6 - Total 2022, PM" model duration: 5:00 PM - 6:30 PM
"D7 - Background 2025, AM" model duration: 8:00 AM - 9:30 AM
"D8 - Background 2025, PM" model duration: 5:00 PM - 6:30 PM
"D9 - Total 2025, AM" model duration: 8:00 AM - 9:30 AM
"D10 - Total 2025, PM" model duration: 5:00 PM - 6:30 PM
"D11 - Background 2027, AM" model duration: 8:00 AM - 9:30 AM
"D12 - Background 2027, PM" model duration: 5:00 PM - 6:30 PM
"D13 - Total 2027, AM" model duration: 8:00 AM - 9:30 AM
"D14 - Total 2027, PM" model duration: 5:00 PM - 6:30 PM
"D15 - Background 2032, AM" model duration: 8:00 AM - 9:30 AM
"D16 - Background 2032, PM" model duration: 5:00 PM - 6:30 PM
"D17 - Total 2032, AM " model duration: 8:00 AM - 9:30 AM
"D18 - Total 2032, PM" model duration: 5:00 PM - 6:30 PM

Run using Junctions 8.0.6.541 at 2020-07-07 2:09:52 PM

File summary

Title	(untitled)
Location	
Site Number	
Date	2018-09-11
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	170278
Analyst	AdamMorrison
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)
7.50	✓		N/A	0.85	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	PCE	PCE	perHour	s	-Min	perMin

All - Total 2032, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
All	ARCADY		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
Total 2032, AM	Total 2032	AM		ONE HOUR	08:00	09:30	90	15				✓		

Intersection Network

Intersections

Junction	Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Do Geometric Delay	Intersection Delay (s)	Intersection LOS
85%	85%	Conservation Drive & Beaver Creek Road	Roundabout	North,West,South,East				309.91	F
90%	90%	Conservation Drive & Beaver Creek Road	Roundabout	North,West,South,East				217.47	F

Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

Legs

Legs

Intersection	Leg	Leg	Name	Description
85%	**North**	North	Beaver Creek Road	
85%	**West**	West	Conservation Drive	
85%	**South**	South	Beaver Creek Road	
85%	**East**	East	Conservation Drive	
90%	**North**	North	Beaver Creek Road	
90%	**West**	West	Conservation Drive	
90%	**South**	South	Beaver Creek Road	
90%	**East**	East	Conservation Drive	

Capacity Options

Intersection	Leg	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)	Assume Flat Start Profile	Initial Queue (PCE)
85%	North	0.00	99999.00		0.00
85%	West	0.00	99999.00		0.00
85%	South	0.00	99999.00		0.00
85%	East	0.00	99999.00		0.00
90%	North	0.00	99999.00		0.00
90%	West	0.00	99999.00		0.00
90%	South	0.00	99999.00		0.00
90%	East	0.00	99999.00		0.00

Roundabout Geometry

Intersection	Leg	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
85%	North	3.50	4.50	30.00	20.00	40.00	25.00	
85%	West	3.50	4.50	30.00	20.00	40.00	25.00	
85%	South	3.50	4.50	30.00	20.00	40.00	25.00	
85%	East	3.50	4.50	30.00	20.00	40.00	25.00	
90%	North	3.50	4.50	30.00	20.00	40.00	25.00	
90%	West	3.50	4.50	30.00	20.00	40.00	25.00	
90%	South	3.50	4.50	30.00	20.00	40.00	25.00	
90%	East	3.50	4.50	30.00	20.00	40.00	25.00	

Slope / Intercept / Capacity

Leg Intercept Adjustments

Intersection	Leg	Type	Reason	Direct Intercept Adjustment (PCE/hr)	Percentage Intercept Adjustment (%)
85%	North	Percentage	Region of Waterloo		85.00
85%	West	Percentage	Region of Waterloo		85.00
85%	South	Percentage	Region of Waterloo		85.00
85%	East	Percentage	Region of Waterloo		85.00
90%	North	Percentage	Region of Waterloo		90.00
90%	West	Percentage	Region of Waterloo		90.00
90%	South	Percentage	Region of Waterloo		90.00
90%	East	Percentage	Region of Waterloo		90.00

Roundabout Slope and Intercept used in model

Intersection	Leg	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
85%	North		(calculated)	(calculated)	0.579	1153.828
85%	West		(calculated)	(calculated)	0.579	1153.828
85%	South		(calculated)	(calculated)	0.579	1153.828
85%	East		(calculated)	(calculated)	0.579	1153.828
90%	North		(calculated)	(calculated)	0.579	1221.701
90%	West		(calculated)	(calculated)	0.579	1221.701
90%	South		(calculated)	(calculated)	0.579	1221.701
90%	East		(calculated)	(calculated)	0.579	1221.701

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCE Factor for a Truck (PCE)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Intersection	Leg	Profile Type	Use Turning Counts	Average Demand Flow (PCE/hr)	Flow Scaling Factor (%)
85%	North	ONE HOUR	✓	230.00	100.000
85%	West	ONE HOUR	✓	1152.00	100.000
85%	South	ONE HOUR	✓	331.00	100.000
85%	East	ONE HOUR	✓	541.00	100.000
90%	North	ONE HOUR	✓	223.00	100.000
90%	West	ONE HOUR	✓	1155.00	100.000
90%	South	ONE HOUR	✓	350.00	100.000
90%	East	ONE HOUR	✓	577.00	100.000

Turning Proportions

Turning Counts / Proportions (PCE/hr) - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.000	120.000	50.000	60.000
	West	126.000	0.000	132.000	894.000
	South	37.000	65.000	0.000	229.000
	East	18.000	361.000	162.000	0.000

Turning Proportions (PCE) - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.00	0.52	0.22	0.26
	West	0.11	0.00	0.11	0.78
	South	0.11	0.20	0.00	0.69
	East	0.03	0.67	0.30	0.00

Turning Counts / Proportions (PCE/hr) - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.000	109.000	54.000	60.000
	West	117.000	0.000	130.000	908.000
	South	39.000	76.000	0.000	235.000
	East	18.000	388.000	171.000	0.000

Turning Proportions (PCE) - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.00	0.49	0.24	0.27
	West	0.10	0.00	0.11	0.79
	South	0.11	0.22	0.00	0.67
	East	0.03	0.67	0.30	0.00

Vehicle Mix

Average PCE Per Vehicle - Intersection 85% (for whole period)

		To			
		North	West	South	East

From	North	1.000	1.110	1.000	1.000
	West	1.000	1.000	1.000	1.030
	South	1.090	1.000	1.000	1.010
	East	1.040	1.060	1.060	1.000

Truck Percentages - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.0	11.0	0.0	0.0
	West	0.0	0.0	0.0	3.0
	South	9.0	0.0	0.0	1.0
	East	4.0	6.0	6.0	0.0

Average PCE Per Vehicle - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	1.000	1.110	1.000	1.000
	West	1.000	1.000	1.000	1.030
	South	1.090	1.000	1.000	1.010
	East	1.040	1.060	1.060	1.000

Truck Percentages - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.0	11.0	0.0	0.0
	West	0.0	0.0	0.0	3.0
	South	9.0	0.0	0.0	1.0
	East	4.0	6.0	6.0	0.0

Results

Results Summary for whole modelled period

Intersection	Leg	Max V/C Ratio	Max Delay (s)	Max Queue (PCE)	Max 95th percentile Queue (PCE)	Max LOS	Average Demand (PCE/hr)	Total Intersection Arrivals (PCE)	Total Queueing Delay (PCE-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCE-min/min)	Inclusive Total Queueing Delay (PCE-min)	Inclusive Average Queueing Delay (s)
85%	North	0.33	7.22	0.50	1.05	A	211.05	316.58	32.61	6.18	0.36	32.61	6.18
85%	West	1.29	596.56	170.40	204.63	F	1057.10	1585.64	7784.53	294.56	86.49	8274.45	313.10
85%	South	0.59	14.68	1.46	2.03	B	303.73	455.60	90.32	11.90	1.00	90.35	11.90
85%	East	0.58	8.84	1.45	1.06	A	496.43	744.65	90.32	7.28	1.00	90.33	7.28
90%	North	0.30	6.62	0.45	~1	A	204.63	306.94	29.18	5.70	0.32	29.19	5.71
90%	West	1.22	424.32	129.32	194.45	F	1059.85	1589.77	5644.17	213.02	62.71	5771.06	217.81
90%	South	0.59	13.82	1.45	2.03	B	321.17	481.75	88.88	11.07	0.99	88.90	11.07
90%	East	0.58	8.43	1.47	1.06	A	529.47	794.20	91.50	6.91	1.02	91.52	6.91

Main Results for each time segment

Main results: (08:00-08:15)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	173.16	43.29	172.16	133.90	439.69	0.00	899.35	528.94	0.193	0.00	0.25	5.214	A
85%	West	867.29	216.82	848.74	408.34	203.51	0.00	1036.04	836.58	0.837	0.00	4.64	18.193	C
85%	South	249.19	62.30	246.94	255.85	796.40	0.00	692.90	645.27	0.360	0.00	0.56	8.165	A
85%	East	407.29	101.82	404.66	874.42	168.93	0.00	1056.06	985.79	0.386	0.00	0.66	5.831	A
90%	North	167.89	41.97	166.99	129.22	475.03	0.00	946.77	552.58	0.177	0.00	0.23	4.847	A

90%	West	869.54	217.39	855.14	428.70	213.32	0.00	1098.24	879.81	0.792	0.00	3.60	14.410	B
90%	South	263.50	65.87	261.35	264.64	803.82	0.00	756.48	683.77	0.348	0.00	0.54	7.358	A
90%	East	434.40	108.60	431.74	892.68	172.50	0.00	1121.87	1040.09	0.387	0.00	0.66	5.505	A

Main results: (08:15-08:30)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	206.77	51.69	206.42	155.88	527.32	0.00	848.64	528.94	0.244	0.25	0.34	5.909	A
85%	West	1035.62	258.91	974.88	489.69	244.04	0.00	1012.59	836.58	1.023	4.64	19.82	58.495	F
85%	South	297.56	74.39	296.18	301.90	917.03	0.00	623.09	645.27	0.478	0.56	0.91	11.144	B
85%	East	486.35	121.59	485.30	1015.31	197.90	0.00	1039.29	985.79	0.468	0.66	0.92	6.871	A
90%	North	200.47	50.12	200.16	152.67	569.54	0.00	892.08	552.58	0.225	0.23	0.30	5.465	A
90%	West	1038.32	259.58	1003.05	513.96	255.74	0.00	1073.69	879.81	0.967	3.60	12.42	39.637	E
90%	South	314.64	78.66	313.31	314.78	944.00	0.00	675.35	683.77	0.466	0.54	0.87	10.067	B
90%	East	518.71	129.68	517.65	1052.76	204.55	0.00	1103.31	1040.09	0.470	0.66	0.93	6.499	A

Main results: (08:30-08:45)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	253.23	63.31	252.58	167.34	645.01	0.00	780.52	528.94	0.324	0.34	0.50	7.181	A
85%	West	1268.38	317.09	979.10	599.04	298.55	0.00	981.04	836.58	1.293	19.82	92.14	216.137	F
85%	South	364.44	91.11	362.35	344.85	932.80	0.00	613.96	645.27	0.594	0.91	1.43	14.416	B
85%	East	595.65	148.91	593.61	1076.40	218.75	0.00	1027.23	985.79	0.580	0.92	1.43	8.753	A
90%	North	245.53	61.38	244.95	167.41	696.62	0.00	818.52	552.58	0.300	0.30	0.45	6.588	A
90%	West	1271.68	317.92	1036.22	628.71	312.87	0.00	1040.62	879.81	1.222	12.42	71.28	156.609	F
90%	South	385.36	96.34	383.14	363.60	985.50	0.00	651.34	683.77	0.592	0.87	1.42	13.523	B
90%	East	635.29	158.82	633.18	1137.78	230.86	0.00	1088.09	1040.09	0.584	0.93	1.45	8.344	A

Main results: (08:45-09:00)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	253.23	63.31	253.22	167.76	647.31	0.00	779.19	528.94	0.325	0.50	0.50	7.216	A
85%	West	1268.38	317.09	980.24	601.08	299.45	0.00	980.52	836.58	1.294	92.14	164.17	472.775	F
85%	South	364.44	91.11	364.32	345.71	933.98	0.00	613.28	645.27	0.594	1.43	1.46	14.679	B
85%	East	595.65	148.91	595.59	1078.82	219.48	0.00	1026.80	985.79	0.580	1.43	1.45	8.839	A
90%	North	245.53	61.38	245.52	168.05	699.06	0.00	817.11	552.58	0.300	0.45	0.45	6.618	A
90%	West	1271.68	317.92	1039.53	630.81	313.76	0.00	1040.11	879.81	1.223	71.28	129.32	352.075	F
90%	South	385.36	96.34	385.23	364.71	988.58	0.00	649.55	683.77	0.593	1.42	1.45	13.823	B
90%	East	635.29	158.82	635.22	1141.94	231.88	0.00	1087.50	1040.09	0.584	1.45	1.47	8.429	A

Main results: (09:00-09:15)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	206.77	51.69	207.41	160.26	530.87	0.00	846.58	528.94	0.244	0.50	0.34	5.944	A
85%	West	1035.62	258.91	1010.71	492.86	245.43	0.00	1011.79	836.58	1.024	164.17	170.40	596.556	F
85%	South	297.56	74.39	299.36	307.13	949.01	0.00	604.58	645.27	0.492	1.46	1.01	12.058	B
85%	East	486.35	121.59	488.34	1045.57	202.80	0.00	1036.46	985.79	0.469	1.45	0.95	6.984	A
90%	North	200.47	50.12	201.04	159.34	573.24	0.00	889.94	552.58	0.225	0.45	0.31	5.495	A
90%	West	1038.32	259.58	1064.47	517.17	257.10	0.00	1072.90	879.81	0.968	129.32	122.78	424.317	F
90%	South	314.64	78.66	316.48	322.82	998.75	0.00	643.66	683.77	0.489	1.45	0.99	11.244	B
90%	East	518.71	129.68	520.76	1103.42	211.82	0.00	1099.11	1040.09	0.472	1.47	0.96	6.619	A

Main results: (09:15-09:30)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	173.16	43.29	173.51	154.10	443.92	0.00	896.91	528.94	0.193	0.34	0.25	5.252	A
85%	West	867.29	216.82	1028.85	412.17	205.26	0.00	1035.03	836.58	0.838	170.40	130.01	526.357	F
85%	South	249.19	62.30	250.29	277.89	956.23	0.00	600.40	645.27	0.415	1.01	0.73	10.485	B
85%	East	407.29	101.82	408.35	1016.86	189.66	0.00	1044.06	985.79	0.390	0.95	0.68	6.008	A

90%	North	167.89	41.97	168.20	153.29	479.33	0.00	944.28	552.58	0.178	0.31	0.23	4.878	A
90%	West	869.54	217.39	1088.17	432.49	215.04	0.00	1097.24	879.81	0.792	122.78	68.13	317.577	F
90%	South	263.50	65.87	264.55	292.27	1010.95	0.00	636.60	683.77	0.414	0.99	0.73	9.860	A
90%	East	434.40	108.60	435.47	1078.35	197.15	0.00	1107.60	1040.09	0.392	0.96	0.69	5.682	A

Queueing Delay Results for each time segment

Queueing Delay results: (08:00-08:15)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	3.64	0.24	5.214	A	A
85%	West	58.65	3.91	18.193	C	B
85%	South	8.06	0.54	8.165	A	A
85%	East	9.51	0.63	5.831	A	A
90%	North	3.29	0.22	4.847	A	A
90%	West	47.34	3.16	14.410	B	B
90%	South	7.71	0.51	7.358	A	A
90%	East	9.59	0.64	5.505	A	A

Queueing Delay results: (08:15-08:30)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	4.94	0.33	5.909	A	A
85%	West	199.69	13.31	58.495	F	E
85%	South	12.99	0.87	11.144	B	B
85%	East	13.36	0.89	6.871	A	A
90%	North	4.44	0.30	5.465	A	A
90%	West	137.91	9.19	39.637	E	D
90%	South	12.47	0.83	10.067	B	B
90%	East	13.50	0.90	6.499	A	A

Queueing Delay results: (08:30-08:45)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	7.29	0.49	7.181	A	A
85%	West	841.30	56.09	216.137	F	F
85%	South	20.18	1.35	14.416	B	B
85%	East	20.50	1.37	8.753	A	A
90%	North	6.51	0.43	6.588	A	A
90%	West	631.57	42.10	156.609	F	F
90%	South	20.07	1.34	13.523	B	B
90%	East	20.87	1.39	8.344	A	A

Queueing Delay results: (08:45-09:00)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	7.55	0.50	7.216	A	A
85%	West	1922.46	128.16	472.775	F	F
85%	South	21.72	1.45	14.679	B	B
85%	East	21.60	1.44	8.839	A	A
90%	North	6.72	0.45	6.618	A	A
90%	West	1504.74	100.32	352.075	F	F
90%	South	21.62	1.44	13.823	B	B
90%	East	21.98	1.47	8.429	A	A

Queueing Delay results: (09:00-09:15)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	5.29	0.35	5.944	A	A
85%	West	2509.34	167.29	596.556	F	F
85%	South	15.90	1.06	12.058	B	B
85%	East	14.78	0.99	6.984	A	A

90%	North	4.73	0.32	5.495	A	A
90%	West	1890.78	126.05	424.317	F	F
90%	South	15.64	1.04	11.244	B	B
90%	East	14.92	0.99	6.619	A	A

Queueing Delay results: (09:15-09:30)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	3.89	0.26	5.252	A	A
85%	West	2253.09	150.21	526.357	F	F
85%	South	11.46	0.76	10.485	B	B
85%	East	10.56	0.70	6.008	A	A
90%	North	3.50	0.23	4.878	A	A
90%	West	1431.82	95.45	317.577	F	F
90%	South	11.37	0.76	9.860	A	A
90%	East	10.64	0.71	5.682	A	A

Queue Variation Results for each time segment

Queue Variation results: (08:00-08:15)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.25	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	4.64	0.00	0.00	7.16	17.39			N/A	N/A
85%	South	0.56	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	0.66	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.23	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	3.60	0.00	0.00	8.19	13.30			N/A	N/A
90%	South	0.54	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.66	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:15-08:30)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.34	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	19.82	0.00	11.25	47.06	63.43			N/A	N/A
85%	South	0.91	0.00	0.00	0.00	1.02			N/A	N/A
85%	East	0.92	0.00	0.00	0.00	1.06			N/A	N/A
90%	North	0.30	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	12.42	0.00	6.14	29.68	40.94			N/A	N/A
90%	South	0.87	0.00	0.00	0.00	1.02			N/A	N/A
90%	East	0.93	0.00	0.00	1.06	1.06			N/A	N/A

Queue Variation results: (08:30-08:45)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.50	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	92.14	46.04	87.99	133.01	147.33			N/A	N/A
85%	South	1.43	0.00	0.00	0.00	2.03			N/A	N/A

85%	East	1.43	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.45	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	71.28	34.80	67.55	104.39	116.67			N/A	N/A
90%	South	1.42	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	1.45	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:45-09:00)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.50	0.00	0.00	0.00	1.05			N/A	N/A
85%	West	164.17	104.36	159.61	>199	>199			N/A	N/A
85%	South	1.46	0.00	0.00	0.00	2.03			N/A	N/A
85%	East	1.45	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.45	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	129.32	75.73	124.86	175.01	191.38			N/A	N/A
90%	South	1.45	0.00	0.00	0.00	2.03			N/A	N/A
90%	East	1.47	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (09:00-09:15)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.34	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	170.40	102.31	165.75	>199	>199			N/A	N/A
85%	South	1.01	0.00	0.00	1.02	2.03			N/A	N/A
85%	East	0.95	0.00	0.00	1.06	1.06			N/A	N/A
90%	North	0.31	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	122.78	64.48	117.69	175.01	194.45			N/A	N/A
90%	South	0.99	0.00	0.00	1.02	1.02			N/A	N/A
90%	East	0.96	0.00	0.00	1.06	1.06			N/A	N/A

Queue Variation results: (09:15-09:30)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.25	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	130.01	61.39	122.78	193.37	>199			N/A	N/A
85%	South	0.73	0.00	0.00	1.02	1.02			N/A	N/A
85%	East	0.68	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.23	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	68.13	25.59	62.43	108.48	124.86			N/A	N/A
90%	South	0.73	0.00	0.00	1.02	1.02			N/A	N/A
90%	East	0.69	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]
© Copyright TRL Limited, 2020

For sales and distribution information, program advice and maintenance, contact TRL:
Tel: +44 (0)1344 770758 email: software@trl.co.uk Web: http://www.trlsoftware.co.uk

The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: Conservation & Beaver Creek.arc8
Path: C:\Users\AdamMorrison\Paradigm\Projects - 170278 Beaver Creek Area TES\C5 - Analysis and Evaluation\Arcady
Report generation date: 2020-07-07 1:53:54 PM

Summary of intersection performance

	PM					
	Queue (PCE)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS
	All - Total 2032					
Intersection 85% - Leg North	0.27	9.22	0.21	A	386.07	F
Intersection 85% - Leg West	3.56	17.03	0.78	C		
Intersection 85% - Leg South	1.56	12.67	0.61	B		
Intersection 85% - Leg East	225.31	750.58	1.35	F		
Intersection 90% - Leg North	0.25	8.54	0.20	A	290.96	F
Intersection 90% - Leg West	2.98	13.97	0.75	B		
Intersection 90% - Leg South	1.29	10.43	0.57	B		
Intersection 90% - Leg East	174.61	563.98	1.28	F		

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Intersection LOS and Intersection Delay are demand-weighted averages.

"D1 - Existing, AM" model duration: 8:00 AM - 9:30 AM
"D2 - Existing, PM" model duration: 5:00 PM - 6:30 PM
"D3 - Background 2022, AM" model duration: 8:00 AM - 9:30 AM
"D4 - Background 2022, PM" model duration: 5:00 PM - 6:30 PM
"D5 - Total 2022, AM" model duration: 8:00 AM - 9:30 AM
"D6 - Total 2022, PM" model duration: 5:00 PM - 6:30 PM
"D7 - Background 2025, AM" model duration: 8:00 AM - 9:30 AM
"D8 - Background 2025, PM" model duration: 5:00 PM - 6:30 PM
"D9 - Total 2025, AM" model duration: 8:00 AM - 9:30 AM
"D10 - Total 2025, PM" model duration: 5:00 PM - 6:30 PM
"D11 - Background 2027, AM" model duration: 8:00 AM - 9:30 AM
"D12 - Background 2027, PM" model duration: 5:00 PM - 6:30 PM
"D13 - Total 2027, AM" model duration: 8:00 AM - 9:30 AM
"D14 - Total 2027, PM" model duration: 5:00 PM - 6:30 PM
"D15 - Background 2032, AM" model duration: 8:00 AM - 9:30 AM
"D16 - Background 2032, PM" model duration: 5:00 PM - 6:30 PM
"D17 - Total 2032, AM" model duration: 8:00 AM - 9:30 AM
"D18 - Total 2032, PM " model duration: 5:00 PM - 6:30 PM

Run using Junctions 8.0.6.541 at 2020-07-07 1:53:52 PM

File summary

Title	(untitled)
Location	
Site Number	
Date	2018-09-11
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	170278
Analyst	AdamMorrison
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)
7.50	✓		N/A	0.85	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	PCE	PCE	perHour	s	-Min	perMin

All - Total 2032, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
All	ARCADY		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
Total 2032, PM	Total 2032	PM		ONE HOUR	17:00	18:30	90	15				✓		

Intersection Network

Intersections

Junction	Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Do Geometric Delay	Intersection Delay (s)	Intersection LOS
85%	85%	Conservation Drive & Beaver Creek Road	Roundabout	North,West,South,East				386.07	F
90%	90%	Conservation Drive & Beaver Creek Road	Roundabout	North,West,South,East				290.96	F

Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

Legs

Legs

Intersection	Leg	Leg	Name	Description
85%	**North**	North	Beaver Creek Road	
85%	**West**	West	Conservation Drive	
85%	**South**	South	Beaver Creek Road	
85%	**East**	East	Conservation Drive	
90%	**North**	North	Beaver Creek Road	
90%	**West**	West	Conservation Drive	
90%	**South**	South	Beaver Creek Road	
90%	**East**	East	Conservation Drive	

Capacity Options

Intersection	Leg	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)	Assume Flat Start Profile	Initial Queue (PCE)
85%	**North**	0.00	99999.00		0.00
85%	**West**	0.00	99999.00		0.00
85%	**South**	0.00	99999.00		0.00
85%	**East**	0.00	99999.00		0.00
90%	**North**	0.00	99999.00		0.00
90%	**West**	0.00	99999.00		0.00
90%	**South**	0.00	99999.00		0.00
90%	**East**	0.00	99999.00		0.00

Roundabout Geometry

Intersection	Leg	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
85%	**North**	3.50	4.50	30.00	20.00	40.00	25.00	
85%	**West**	3.50	4.50	30.00	20.00	40.00	25.00	
85%	**South**	3.50	4.50	30.00	20.00	40.00	25.00	
85%	**East**	3.50	4.50	30.00	20.00	40.00	25.00	
90%	**North**	3.50	4.50	30.00	20.00	40.00	25.00	
90%	**West**	3.50	4.50	30.00	20.00	40.00	25.00	
90%	**South**	3.50	4.50	30.00	20.00	40.00	25.00	
90%	**East**	3.50	4.50	30.00	20.00	40.00	25.00	

Slope / Intercept / Capacity

Leg Intercept Adjustments

Intersection	Leg	Type	Reason	Direct Intercept Adjustment (PCE/hr)	Percentage Intercept Adjustment (%)
85%	**North**	Percentage	Region of Waterloo		85.00
85%	**West**	Percentage	Region of Waterloo		85.00
85%	**South**	Percentage	Region of Waterloo		85.00
85%	**East**	Percentage	Region of Waterloo		85.00
90%	**North**	Percentage	Region of Waterloo		90.00
90%	**West**	Percentage	Region of Waterloo		90.00
90%	**South**	Percentage	Region of Waterloo		90.00
90%	**East**	Percentage	Region of Waterloo		90.00

Roundabout Slope and Intercept used in model

Intersection	Leg	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
85%	**North**		(calculated)	(calculated)	0.579	1153.828
85%	**West**		(calculated)	(calculated)	0.579	1153.828
85%	**South**		(calculated)	(calculated)	0.579	1153.828
85%	**East**		(calculated)	(calculated)	0.579	1153.828
90%	**North**		(calculated)	(calculated)	0.579	1221.701
90%	**West**		(calculated)	(calculated)	0.579	1221.701
90%	**South**		(calculated)	(calculated)	0.579	1221.701
90%	**East**		(calculated)	(calculated)	0.579	1221.701

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCE Factor for a Truck (PCE)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Intersection	Leg	Profile Type	Use Turning Counts	Average Demand Flow (PCE/hr)	Flow Scaling Factor (%)
85%	North	ONE HOUR	✓	96.00	100.000
85%	West	ONE HOUR	✓	706.00	100.000
85%	South	ONE HOUR	✓	411.00	100.000
85%	East	ONE HOUR	✓	1235.00	100.000
90%	North	ONE HOUR	✓	96.00	100.000
90%	West	ONE HOUR	✓	716.00	100.000
90%	South	ONE HOUR	✓	411.00	100.000
90%	East	ONE HOUR	✓	1248.00	100.000

Turning Proportions

Turning Counts / Proportions (PCE/hr) - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.000	38.000	23.000	35.000
	West	34.000	0.000	85.000	587.000
	South	40.000	155.000	0.000	216.000
	East	57.000	910.000	268.000	0.000

Turning Proportions (PCE) - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.00	0.40	0.24	0.36
	West	0.05	0.00	0.12	0.83
	South	0.10	0.38	0.00	0.53
	East	0.05	0.74	0.22	0.00

Turning Counts / Proportions (PCE/hr) - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.000	38.000	23.000	35.000
	West	36.000	0.000	85.000	595.000
	South	40.000	153.000	0.000	218.000
	East	57.000	919.000	272.000	0.000

Turning Proportions (PCE) - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.00	0.40	0.24	0.36
	West	0.05	0.00	0.12	0.83
	South	0.10	0.37	0.00	0.53
	East	0.05	0.74	0.22	0.00

Vehicle Mix

Average PCE Per Vehicle - Intersection 85% (for whole period)

		To			
		North	West	South	East

From	North	1.000	1.000	1.030	1.000
	West	1.000	1.000	1.000	1.020
	South	1.000	1.000	1.000	1.000
	East	1.000	1.010	1.000	1.000

Truck Percentages - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.0	0.0	3.0	0.0
	West	0.0	0.0	0.0	2.0
	South	0.0	0.0	0.0	0.0
	East	0.0	1.0	0.0	0.0

Average PCE Per Vehicle - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	1.000	1.000	1.030	1.000
	West	1.000	1.000	1.000	1.020
	South	1.000	1.000	1.000	1.000
	East	1.000	1.010	1.000	1.000

Truck Percentages - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.0	0.0	3.0	0.0
	West	0.0	0.0	0.0	2.0
	South	0.0	0.0	0.0	0.0
	East	0.0	1.0	0.0	0.0

Results

Results Summary for whole modelled period

Intersection	Leg	Max V/C Ratio	Max Delay (s)	Max Queue (PCE)	Max 95th percentile Queue (PCE)	Max LOS	Average Demand (PCE/hr)	Total Intersection Arrivals (PCE)	Total Queueing Delay (PCE-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCE-min/min)	Inclusive Total Queueing Delay (PCE-min)	Inclusive Average Queueing Delay (s)
85%	North	0.21	9.22	0.27	~1	A	88.09	132.14	18.74	8.51	0.21	18.74	8.51
85%	West	0.78	17.03	3.56	11.18	C	647.84	971.76	187.53	11.58	2.08	187.57	11.58
85%	South	0.61	12.67	1.56	2.00	B	377.14	565.71	86.52	9.18	0.96	86.53	9.18
85%	East	1.35	750.58	225.31	201.47	F	1133.26	1699.89	10294.52	363.36	114.38	11382.85	401.77
90%	North	0.20	8.54	0.25	~1	A	88.09	132.14	17.28	7.85	0.19	17.28	7.85
90%	West	0.75	13.97	2.98	8.13	B	657.01	985.52	163.44	9.95	1.82	163.47	9.95
90%	South	0.57	10.43	1.29	?	B	377.14	565.71	74.27	7.88	0.83	74.27	7.88
90%	East	1.28	563.98	174.61	201.47	F	1145.19	1717.78	7965.98	278.24	88.51	8422.98	294.20

Main Results for each time segment

Main results: (17:00-17:15)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	72.27	18.07	71.71	97.07	979.44	0.00	586.97	489.33	0.123	0.00	0.14	7.028	A
85%	West	531.51	132.88	527.12	811.36	239.79	0.00	1015.05	861.93	0.524	0.00	1.10	7.437	A
85%	South	309.42	77.36	307.24	277.11	489.80	0.00	870.35	611.79	0.356	0.00	0.55	6.369	A
85%	East	929.77	232.44	905.36	625.89	171.16	0.00	1054.77	961.81	0.881	0.00	6.10	21.633	C
90%	North	72.27	18.07	71.77	98.90	993.52	0.00	646.69	519.28	0.112	0.00	0.13	6.300	A

90%	West	539.04	134.76	535.05	821.17	244.12	0.00	1080.41	911.55	0.499	0.00	1.00	6.664	A
90%	South	309.42	77.36	307.46	281.47	497.70	0.00	933.65	647.19	0.331	0.00	0.49	5.732	A
90%	East	939.56	234.89	921.13	633.88	171.28	0.00	1122.57	1019.28	0.837	0.00	4.61	16.736	C

Main results: (17:15-17:30)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	86.30	21.58	86.06	113.10	1106.17	0.00	513.62	489.33	0.168	0.14	0.20	8.476	A
85%	West	634.68	158.67	632.14	920.19	272.05	0.00	996.38	861.93	0.637	1.10	1.73	9.975	A
85%	South	369.48	92.37	368.39	316.78	587.41	0.00	813.86	611.79	0.454	0.55	0.82	8.061	A
85%	East	1110.24	277.56	1014.05	750.57	205.23	0.00	1035.05	961.81	1.073	6.10	30.15	77.889	F
90%	North	86.30	21.58	86.07	116.61	1150.22	0.00	556.00	519.29	0.155	0.13	0.18	7.710	A
90%	West	643.67	160.92	641.49	952.94	283.35	0.00	1057.71	911.55	0.609	1.00	1.54	8.745	A
90%	South	369.48	92.37	368.57	328.13	596.71	0.00	876.35	647.19	0.422	0.49	0.72	7.076	A
90%	East	1121.93	280.48	1061.50	759.95	205.33	0.00	1102.87	1019.28	1.017	4.61	19.71	53.738	F

Main results: (17:30-17:45)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	105.70	26.42	105.43	127.39	1130.99	0.00	499.26	489.33	0.212	0.20	0.27	9.198	A
85%	West	777.32	194.33	770.52	954.00	282.42	0.00	990.37	861.93	0.785	1.73	3.43	16.150	C
85%	South	452.52	113.13	449.69	336.75	716.19	0.00	739.33	611.79	0.612	0.82	1.53	12.308	B
85%	East	1359.76	339.94	1007.91	915.41	250.46	0.00	1008.87	961.81	1.348	30.15	118.11	273.682	F
90%	North	105.70	26.42	105.44	132.26	1193.00	0.00	531.24	519.29	0.199	0.18	0.25	8.508	A
90%	West	788.33	197.08	782.89	1000.56	297.88	0.00	1049.30	911.55	0.751	1.54	2.90	13.460	B
90%	South	452.52	113.13	450.32	352.37	728.39	0.00	800.14	647.19	0.566	0.72	1.27	10.226	B
90%	East	1374.07	343.52	1074.43	927.89	250.83	0.00	1076.53	1019.28	1.276	19.71	94.62	201.230	F

Main results: (17:45-18:00)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	105.70	26.42	105.69	127.95	1131.89	0.00	498.73	489.33	0.212	0.27	0.27	9.223	A
85%	West	777.32	194.33	776.82	955.03	282.55	0.00	990.30	861.93	0.785	3.43	3.56	17.033	C
85%	South	452.52	113.13	452.37	337.55	721.82	0.00	736.07	611.79	0.615	1.53	1.56	12.673	B
85%	East	1359.76	339.94	1007.81	922.15	252.04	0.00	1007.96	961.81	1.349	118.11	206.10	579.635	F
90%	North	105.70	26.42	105.69	132.77	1194.82	0.00	530.19	519.29	0.199	0.25	0.25	8.540	A
90%	West	788.33	197.08	788.01	1002.25	298.26	0.00	1049.08	911.55	0.751	2.90	2.98	13.971	B
90%	South	452.52	113.13	452.43	353.28	733.00	0.00	797.47	647.19	0.567	1.27	1.29	10.427	B
90%	East	1374.07	343.52	1075.52	933.35	252.07	0.00	1075.81	1019.28	1.277	94.62	169.26	444.792	F

Main results: (18:00-18:15)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	86.30	21.58	86.53	114.83	1126.14	0.00	502.06	489.33	0.172	0.27	0.21	8.730	A
85%	West	634.68	158.67	641.52	936.13	276.54	0.00	993.78	861.93	0.639	3.56	1.85	10.583	B
85%	South	369.48	92.37	372.32	322.23	595.83	0.00	808.99	611.79	0.457	1.56	0.85	8.298	A
85%	East	1110.24	277.56	1033.42	760.61	207.54	0.00	1033.71	961.81	1.074	206.10	225.31	750.583	F
90%	North	86.30	21.58	86.51	119.07	1188.62	0.00	533.77	519.29	0.162	0.25	0.20	8.110	A
90%	West	643.67	160.92	649.04	983.01	292.13	0.00	1052.63	911.55	0.611	2.98	1.64	9.184	A
90%	South	369.48	92.37	371.67	337.64	603.53	0.00	872.40	647.19	0.424	1.29	0.74	7.219	A
90%	East	1121.93	280.48	1100.53	768.04	207.17	0.00	1101.80	1019.28	1.018	169.26	174.61	563.981	F

Main results: (18:15-18:30)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	72.27	18.07	72.44	104.37	1117.68	0.00	506.96	489.33	0.143	0.21	0.17	8.346	A
85%	West	531.51	132.88	534.19	918.73	271.40	0.00	996.76	861.93	0.533	1.85	1.18	7.958	A
85%	South	309.42	77.36	310.59	309.30	496.28	0.00	866.60	611.79	0.357	0.85	0.56	6.490	A
85%	East	929.77	232.44	1048.96	633.79	173.09	0.00	1053.65	961.81	0.882	225.31	195.51	722.483	F

90%	North	72.27	18.07	72.43	108.36	1179.77	0.00	538.90	519.28	0.134	0.20	0.16	7.774	A
90%	West	539.04	134.76	541.29	965.39	286.81	0.00	1055.71	911.55	0.511	1.64	1.08	7.147	A
90%	South	309.42	77.36	310.39	324.66	503.44	0.00	930.33	647.19	0.333	0.74	0.50	5.817	A
90%	East	939.56	234.89	1115.16	640.86	172.97	0.00	1121.59	1019.28	0.838	174.61	130.71	493.601	F

Queueing Delay Results for each time segment

Queueing Delay results: (17:00-17:15)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	2.03	0.14	7.028	A	A
85%	West	15.64	1.04	7.437	A	A
85%	South	7.88	0.53	6.369	A	A
85%	East	73.88	4.93	21.633	C	C
90%	North	1.83	0.12	6.300	A	A
90%	West	14.28	0.95	6.664	A	A
90%	South	7.12	0.47	5.732	A	A
90%	East	58.71	3.91	16.736	C	B

Queueing Delay results: (17:15-17:30)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	2.94	0.20	8.476	A	A
85%	West	24.64	1.64	9.975	A	A
85%	South	11.84	0.79	8.061	A	A
85%	East	284.51	18.97	77.889	F	E
90%	North	2.68	0.18	7.710	A	A
90%	West	22.09	1.47	8.745	A	A
90%	South	10.46	0.70	7.076	A	A
90%	East	199.76	13.32	53.738	F	D

Queueing Delay results: (17:30-17:45)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	3.90	0.26	9.198	A	A
85%	West	46.43	3.10	16.150	C	B
85%	South	21.45	1.43	12.308	B	B
85%	East	1112.73	74.18	273.682	F	F
90%	North	3.61	0.24	8.508	A	A
90%	West	39.95	2.66	13.460	B	B
90%	South	18.06	1.20	10.226	B	B
90%	East	859.26	57.28	201.230	F	F

Queueing Delay results: (17:45-18:00)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	4.02	0.27	9.223	A	A
85%	West	52.65	3.51	17.033	C	B
85%	South	23.25	1.55	12.673	B	B
85%	East	2431.68	162.11	579.635	F	F
90%	North	3.73	0.25	8.540	A	A
90%	West	44.27	2.95	13.971	B	B
90%	South	19.26	1.28	10.427	B	B
90%	East	1979.24	131.95	444.792	F	F

Queueing Delay results: (18:00-18:15)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	3.25	0.22	8.730	A	A
85%	West	29.64	1.98	10.583	B	B
85%	South	13.41	0.89	8.298	A	A
85%	East	3235.59	215.71	750.583	F	F

90%	North	3.02	0.20	8.110	A	A
90%	West	26.05	1.74	9.184	A	A
90%	South	11.61	0.77	7.219	A	A
90%	East	2579.07	171.94	563.981	F	F

Queueing Delay results: (18:15-18:30)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	2.60	0.17	8.346	A	A
85%	West	18.53	1.24	7.958	A	A
85%	South	8.69	0.58	6.490	A	A
85%	East	3156.13	210.41	722.483	F	F
90%	North	2.42	0.16	7.774	A	A
90%	West	16.80	1.12	7.147	A	A
90%	South	7.76	0.52	5.817	A	A
90%	East	2289.93	152.66	493.601	F	F

Queue Variation Results for each time segment

Queue Variation results: (17:00-17:15)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.14	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	1.10	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.55	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	6.10	0.00	0.00	4.03	18.13			N/A	N/A
90%	North	0.13	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	1.00	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.49	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	4.61	0.00	0.00	8.06	17.12			N/A	N/A

Queue Variation results: (17:15-17:30)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.20	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	1.73	0.00	0.00	3.05	5.08			N/A	N/A
85%	South	0.82	0.00	0.00	0.00	1.00			N/A	N/A
85%	East	30.15	0.00	17.12	74.54	100.74			N/A	N/A
90%	North	0.18	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	1.54	0.00	0.00	3.05	4.07			N/A	N/A
90%	South	0.72	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	19.71	0.00	11.08	47.34	63.46			N/A	N/A

Queue Variation results: (17:30-17:45)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.27	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

85%	West	3.43	0.00	0.00	3.05	11.18			N/A	N/A
85%	South	1.53	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	118.11	56.41	111.82	174.27	195.43			N/A	N/A
90%	North	0.25	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	2.90	0.00	0.00	1.02	8.13			N/A	N/A
90%	South	1.27	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	94.62	48.35	90.66	135.99	151.10			N/A	N/A

Queue Variation results: (17:45-18:00)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.27	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	3.56	0.00	0.00	0.00	7.12			N/A	N/A
85%	South	1.56	0.00	0.00	0.00	2.00			N/A	N/A
85%	East	206.10	131.96	>199	>199	>199			N/A	N/A
90%	North	0.25	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	2.98	0.00	0.00	0.00	4.07			N/A	N/A
90%	South	1.29	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	169.26	107.79	165.20	>199	>199			N/A	N/A

Queue Variation results: (18:00-18:15)

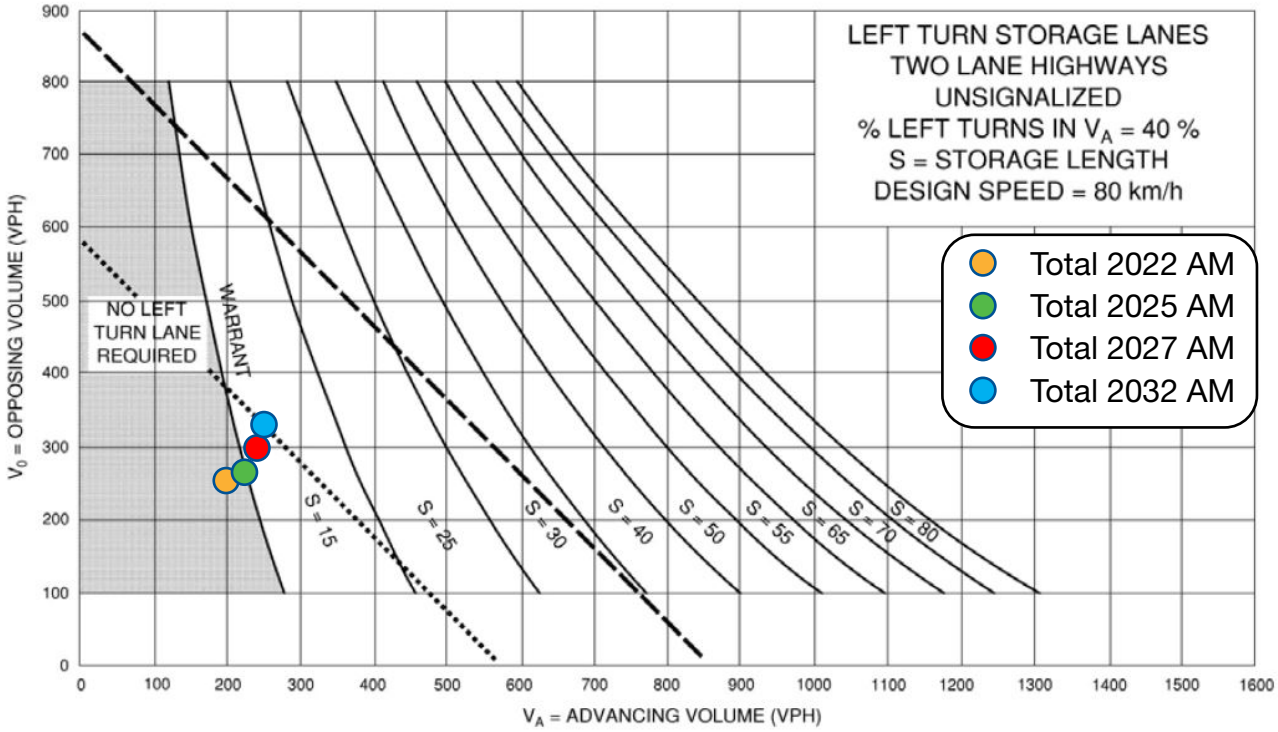
Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.21	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	1.85	0.00	0.00	4.07	6.10			N/A	N/A
85%	South	0.85	0.00	0.00	1.00	1.00			N/A	N/A
85%	East	225.31	143.04	>199	>199	>199			N/A	N/A
90%	North	0.20	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	1.64	0.00	0.00	3.05	5.08			N/A	N/A
90%	South	0.74	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	174.61	104.76	169.23	>199	>199			N/A	N/A

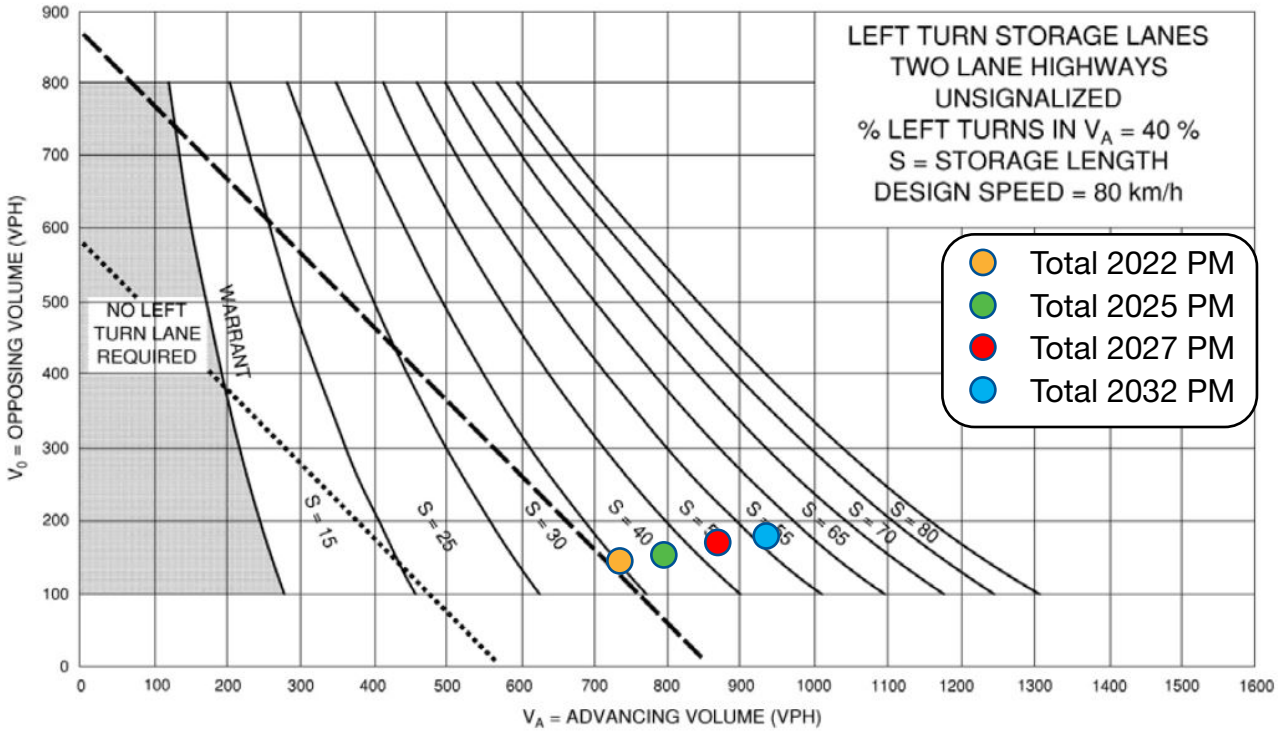
Queue Variation results: (18:15-18:30)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.17	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	1.18	0.00	0.00	2.03	3.05			N/A	N/A
85%	South	0.56	0.00	0.00	0.00	1.00			N/A	N/A
85%	East	195.51	108.79	188.37	>199	>199			N/A	N/A
90%	North	0.16	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	1.08	0.00	0.00	2.03	3.05			N/A	N/A
90%	South	0.50	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	130.71	60.44	123.90	195.42	>199			N/A	N/A

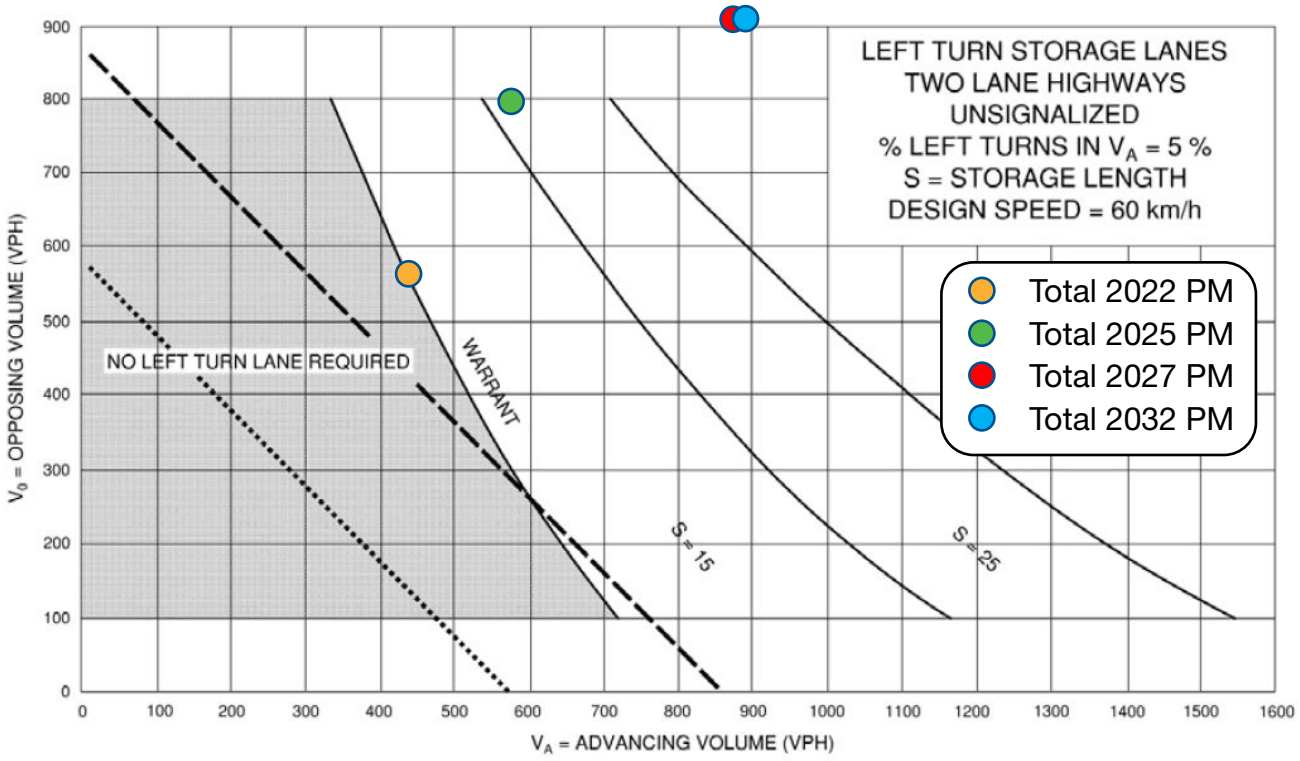
Appendix K

Auxiliary Left-Turn Lane Warrant Figures

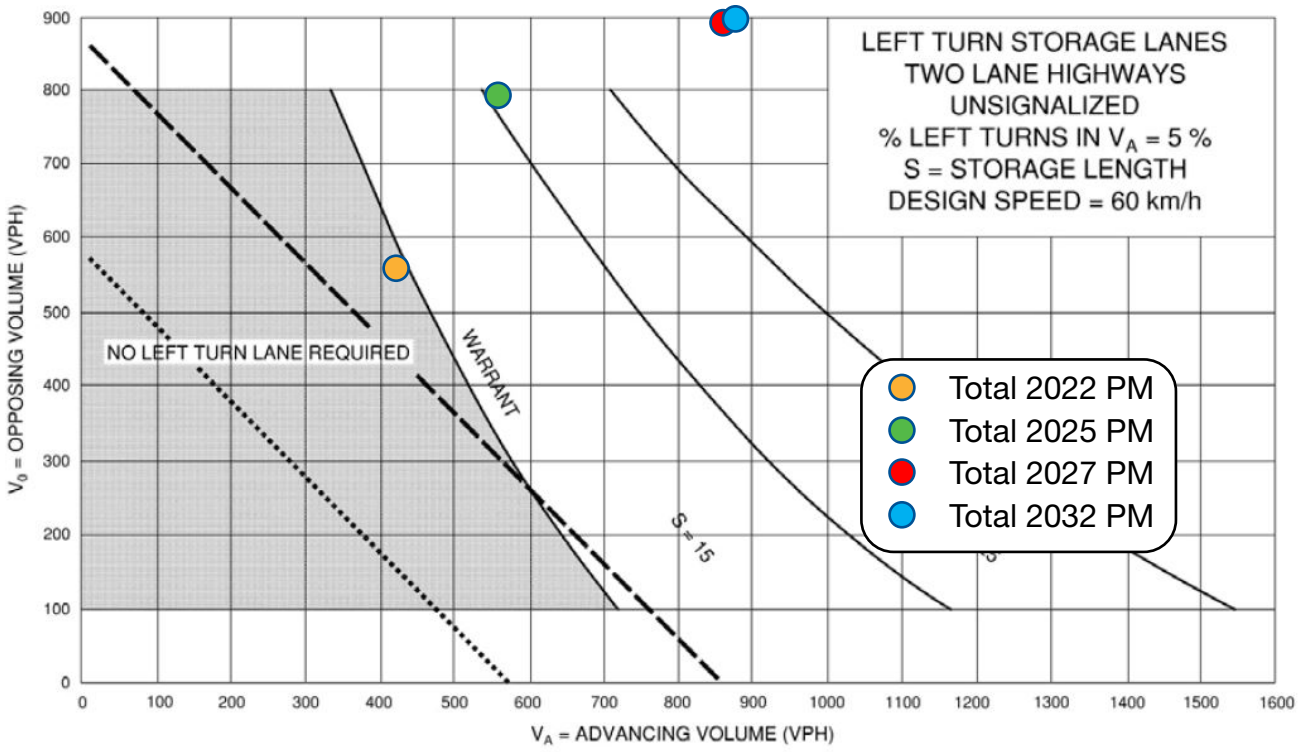




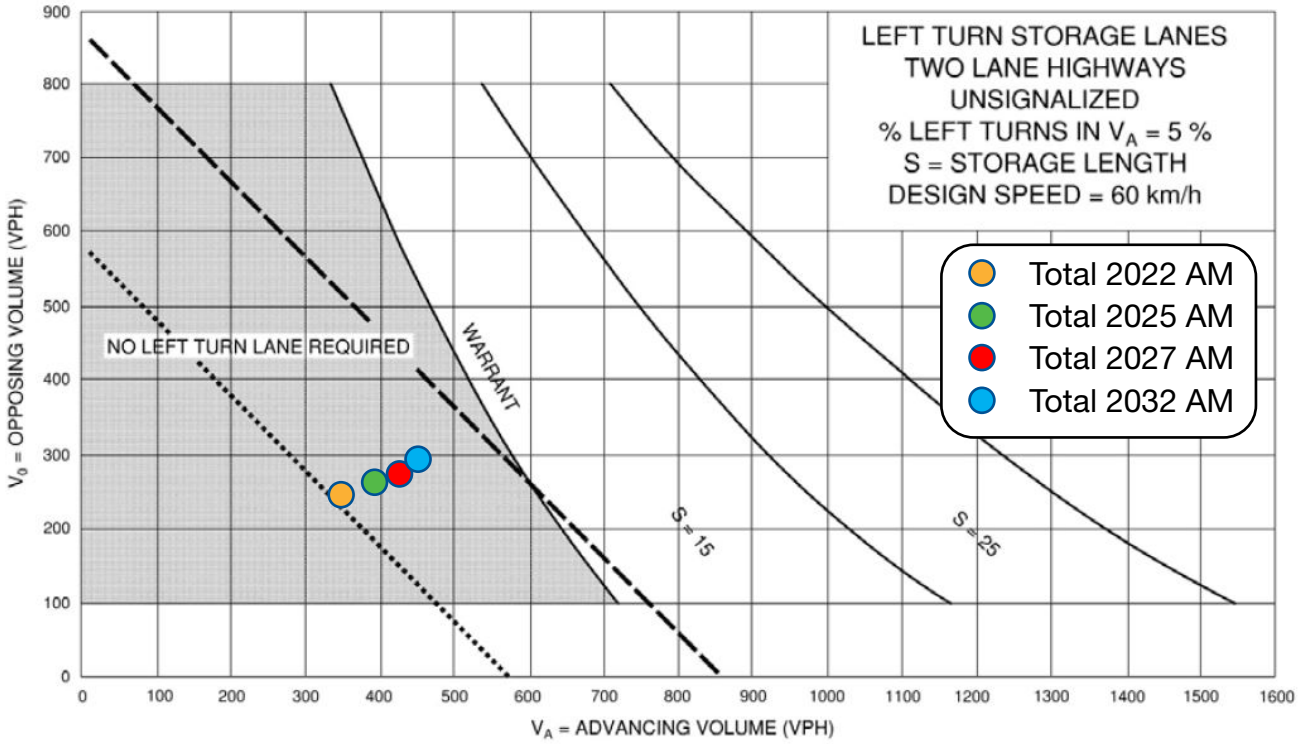
Westbound Left-Turn Lane Warrants, Benjamin Road & Westmount Road

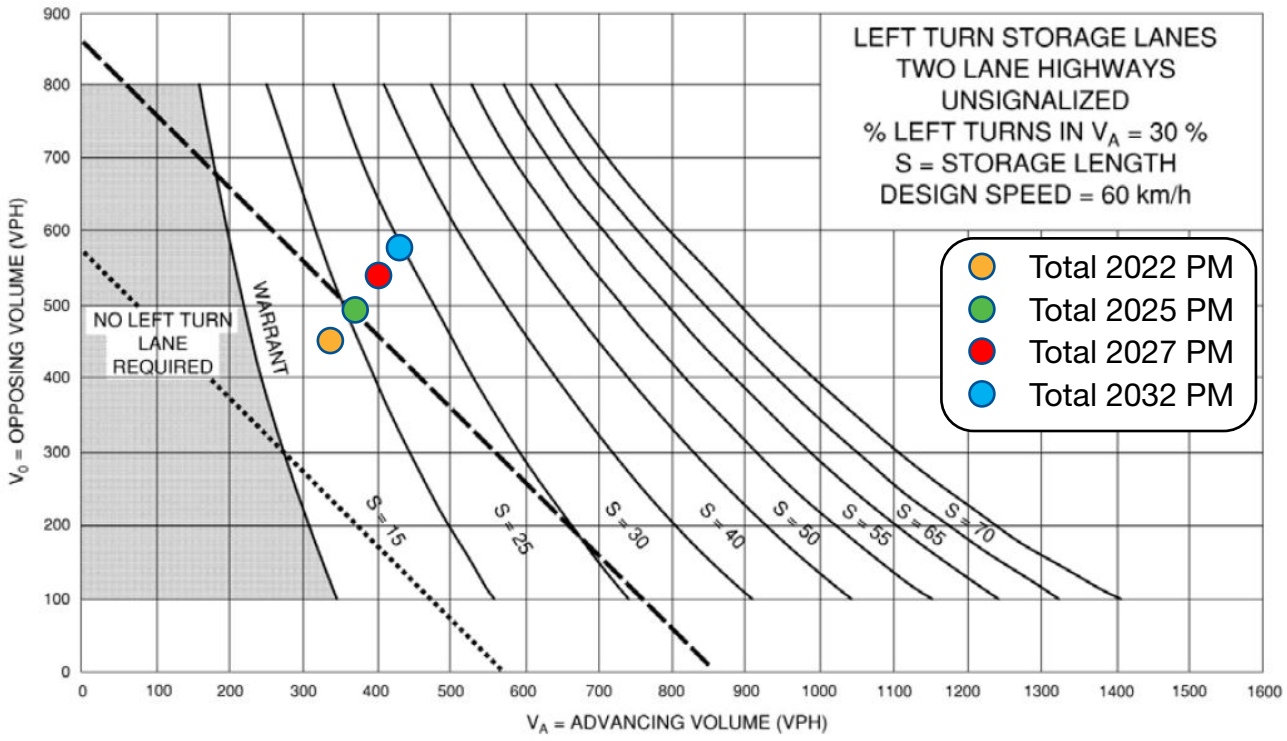


Eastbound Left-Turn Lane Warrants, Conservation Drive & Rideau River Street

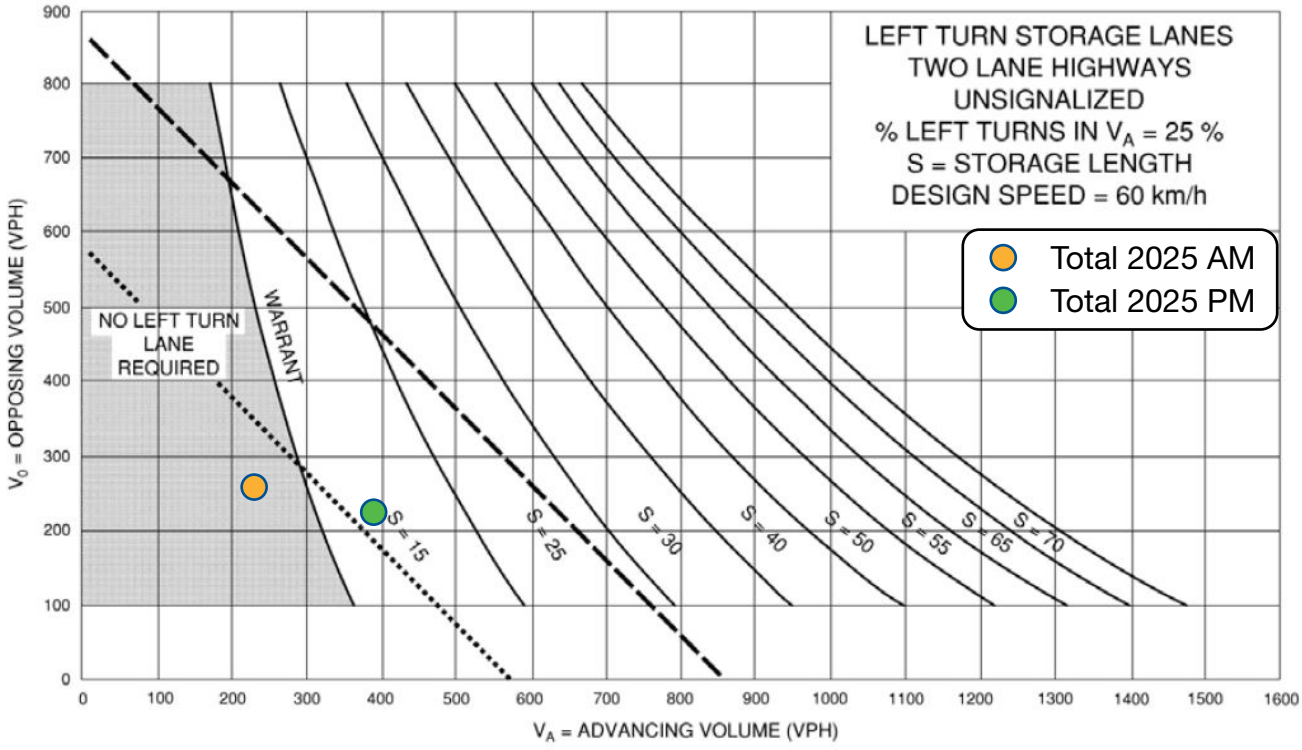


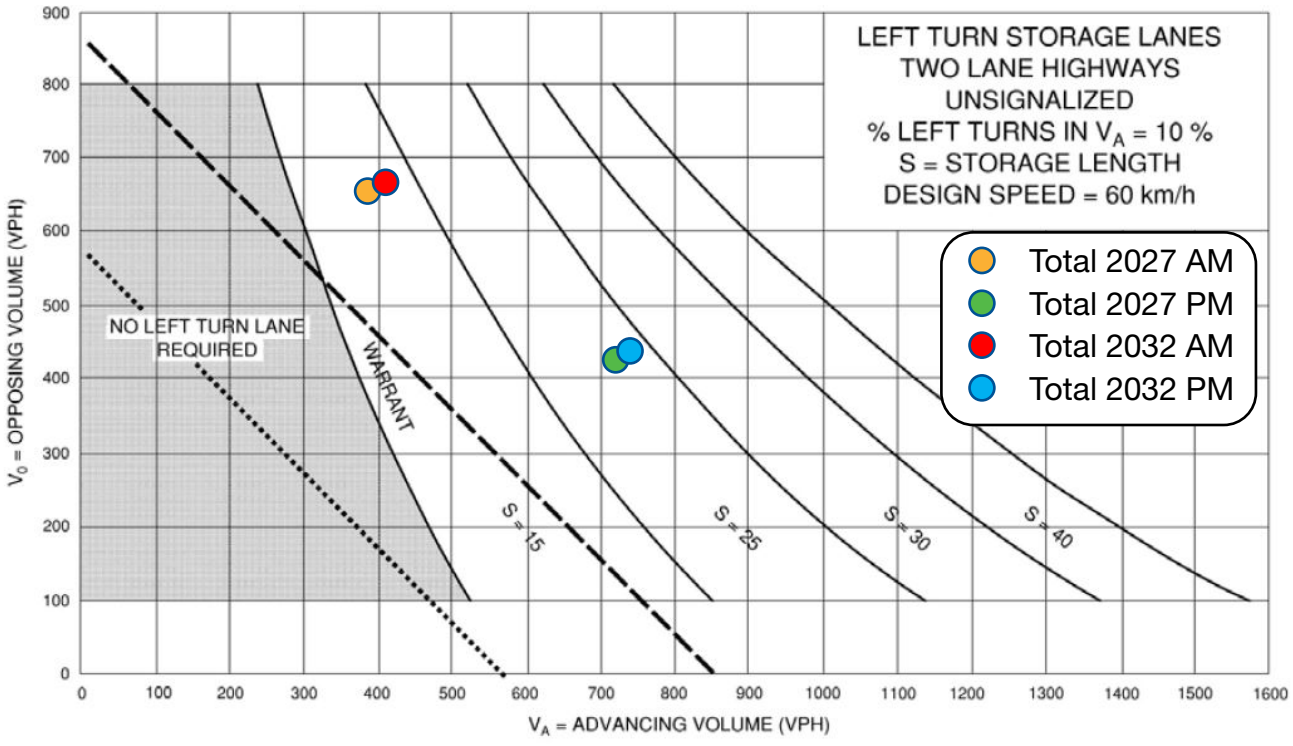
Eastbound Left-Turn Lane Warrants, Conservation Drive & Lake Louise Boulevard





Northbound Left-Turn Lane Warrants, Westmount Road & Lake Louise Boulevard/Osprey Drive

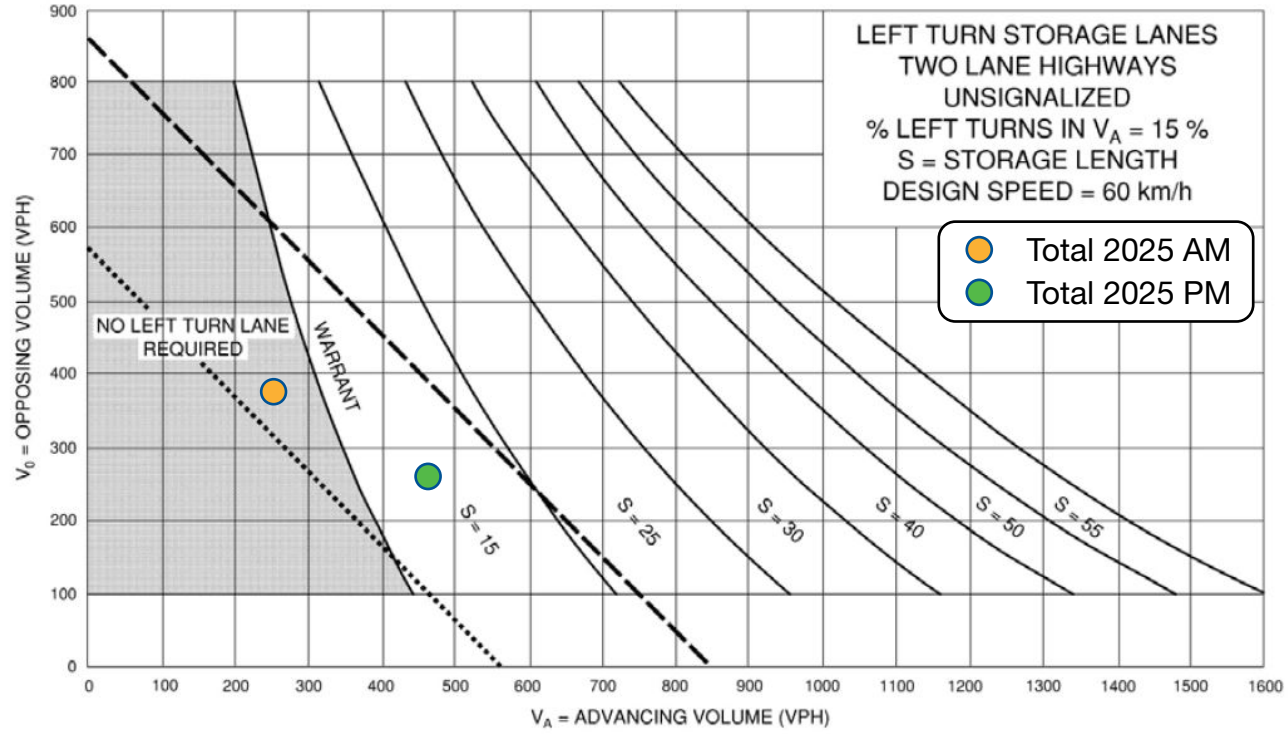


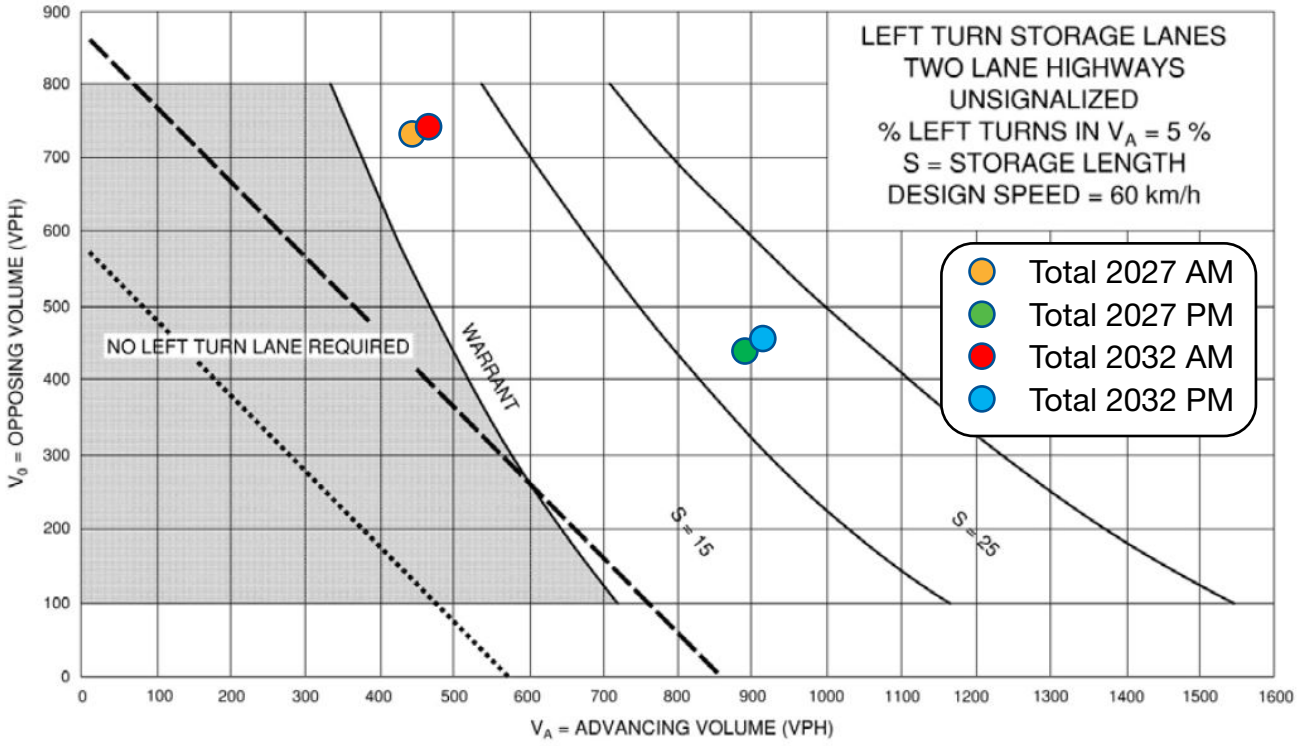


Westbound Left-Turn Lane Warrants, Conservation Drive & Street Three

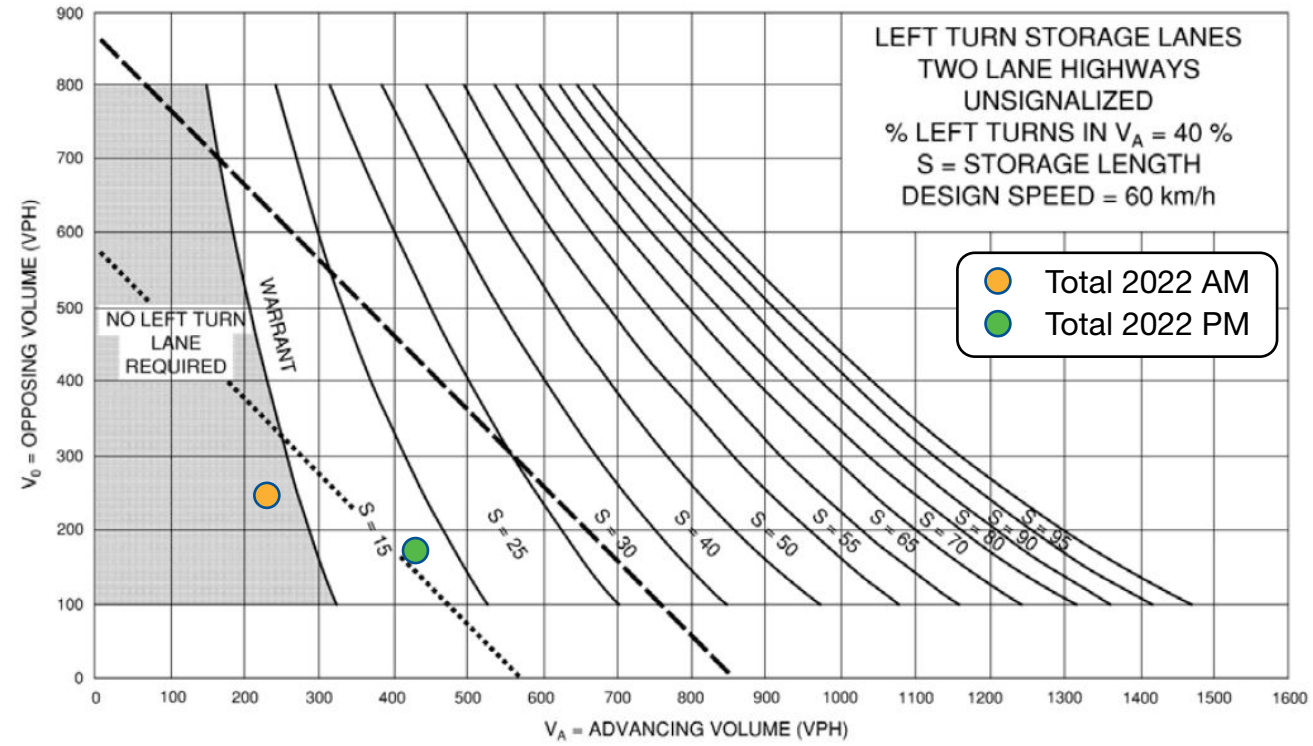
Beaver Creek Area TNS
170278

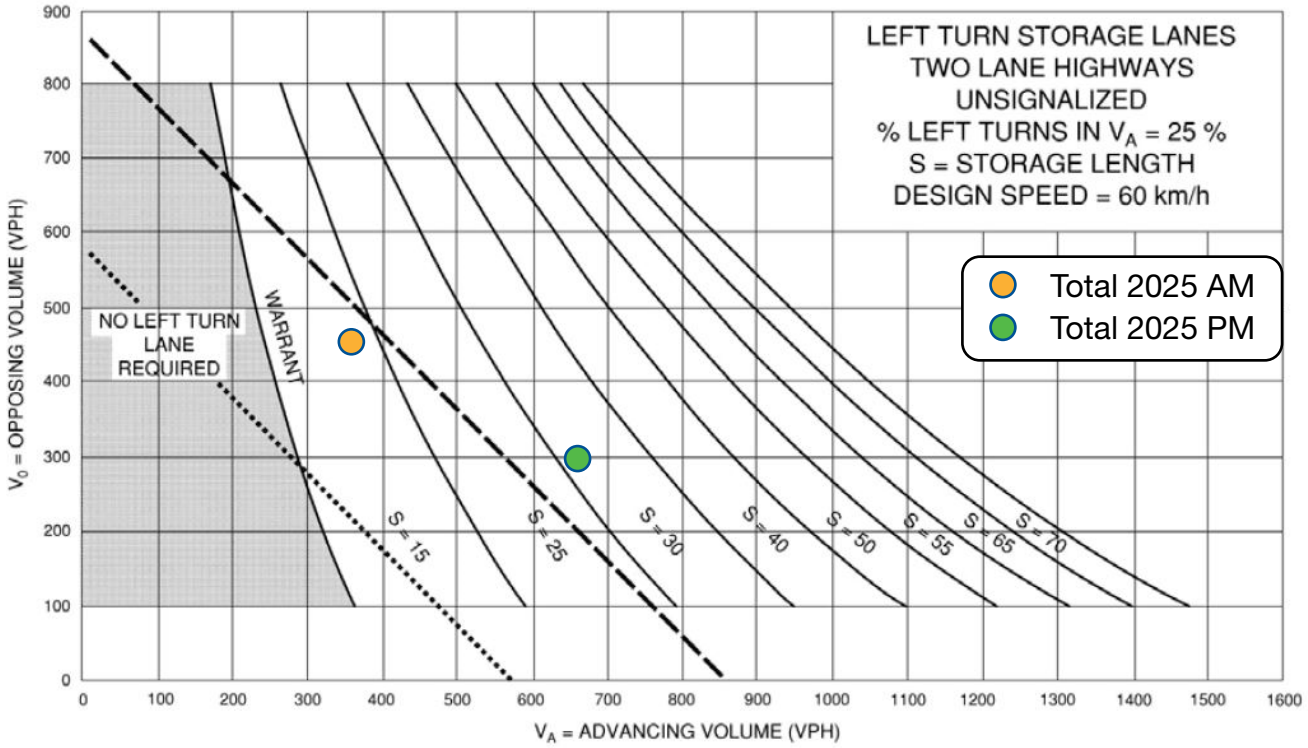
Figure K.5



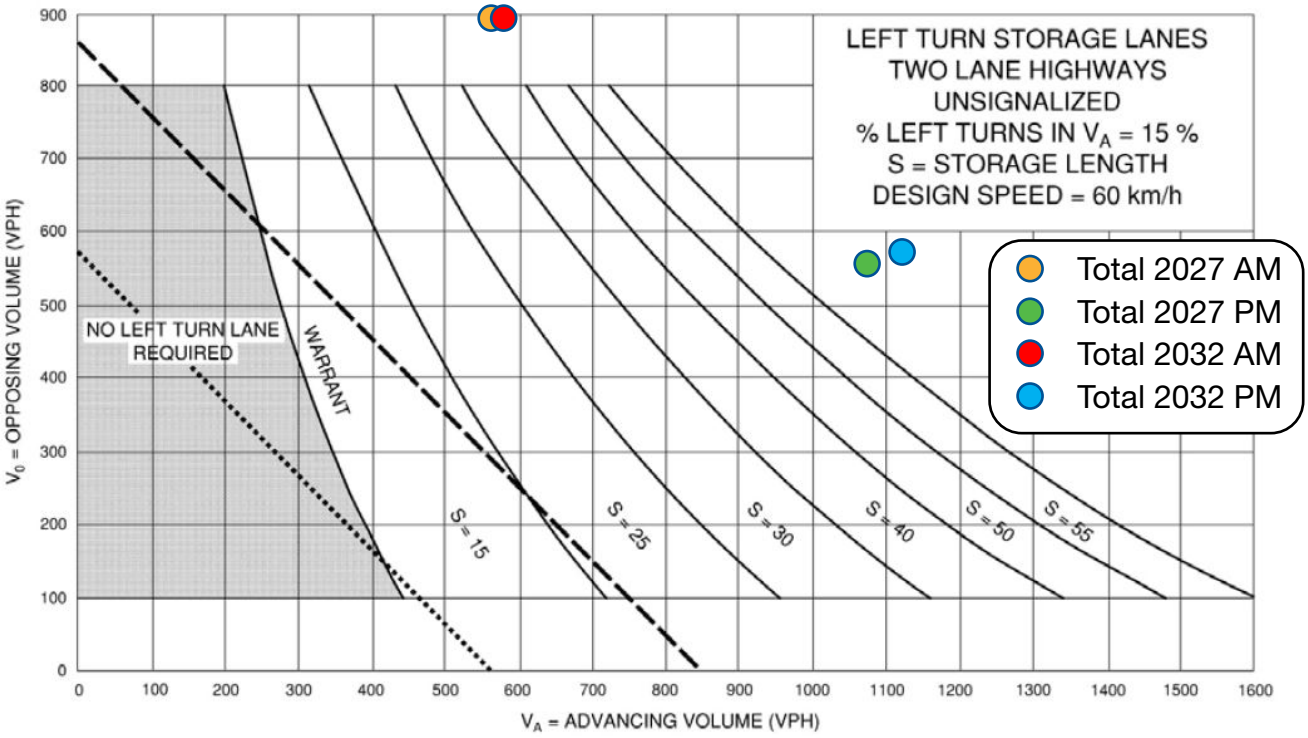


Westbound Left-Turn Lane Warrants, Conservation Drive & Creekside Church Road/Street Seven

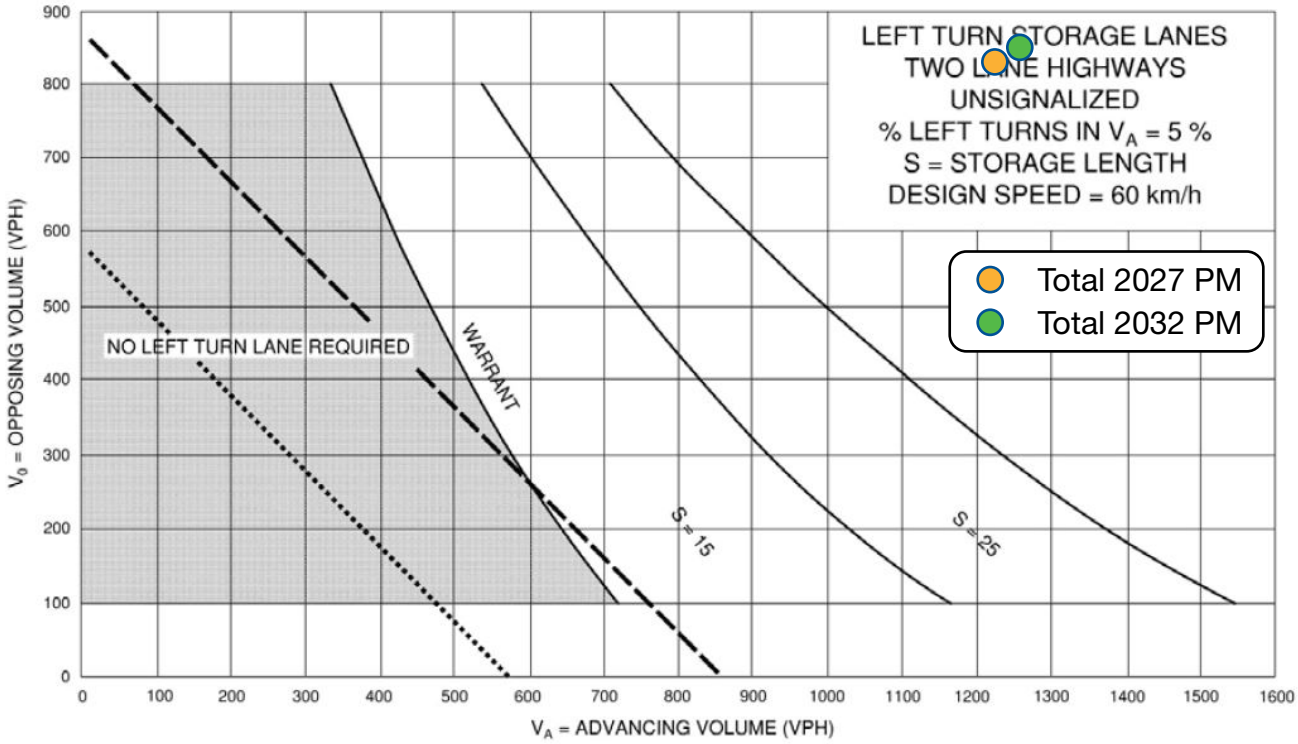




Westbound Left-Turn Lane Warrants, Conservation Drive & Street H/Street One



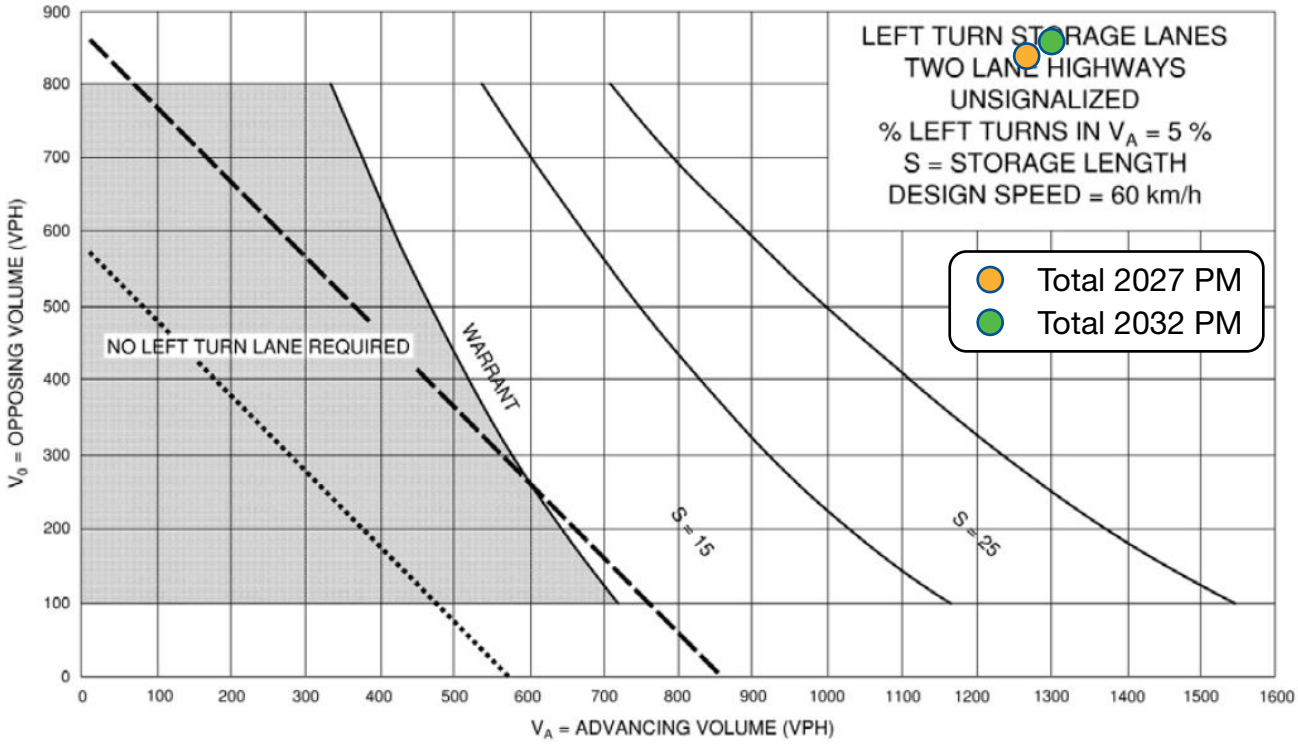
Westbound Left-Turn Lane Warrants, Conservation Drive & Street H/Street One



Westbound Left-Turn Lane Warrants, Conservation Drive & Kawartha Street

Beaver Creek Area TNS
170278

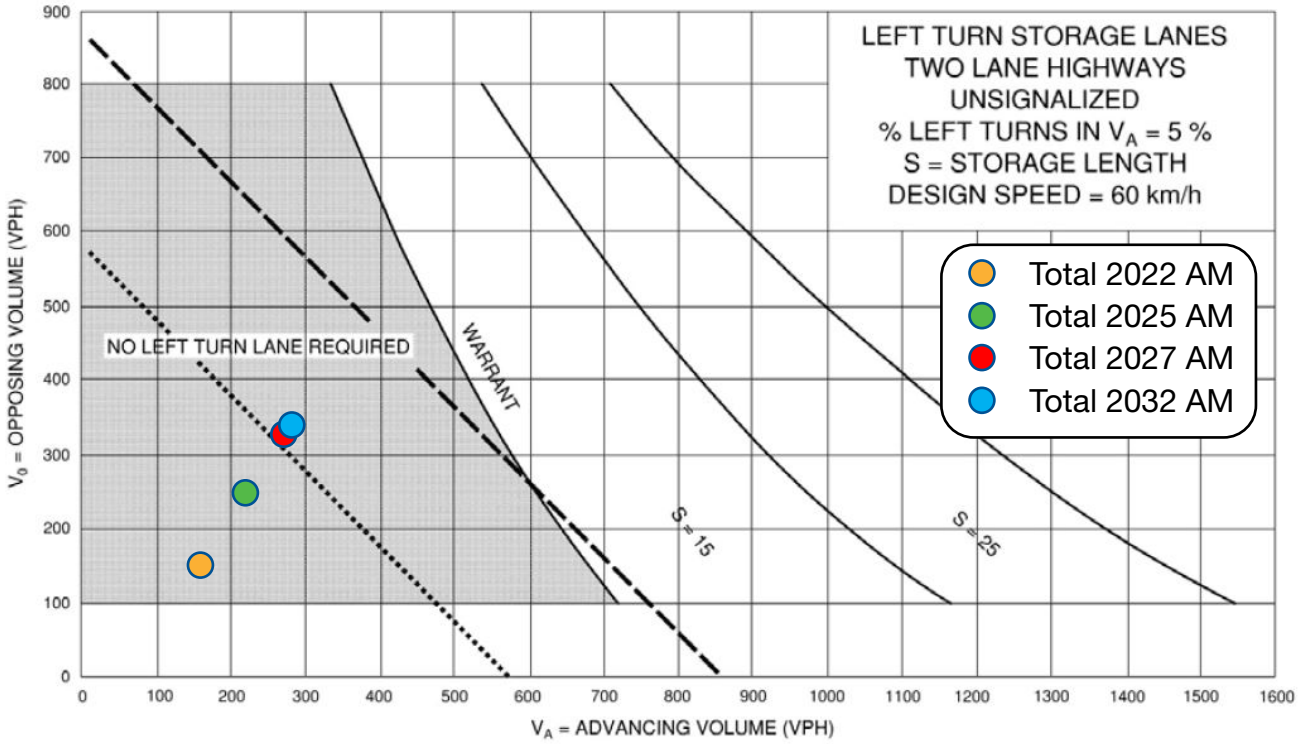
Figure K.9

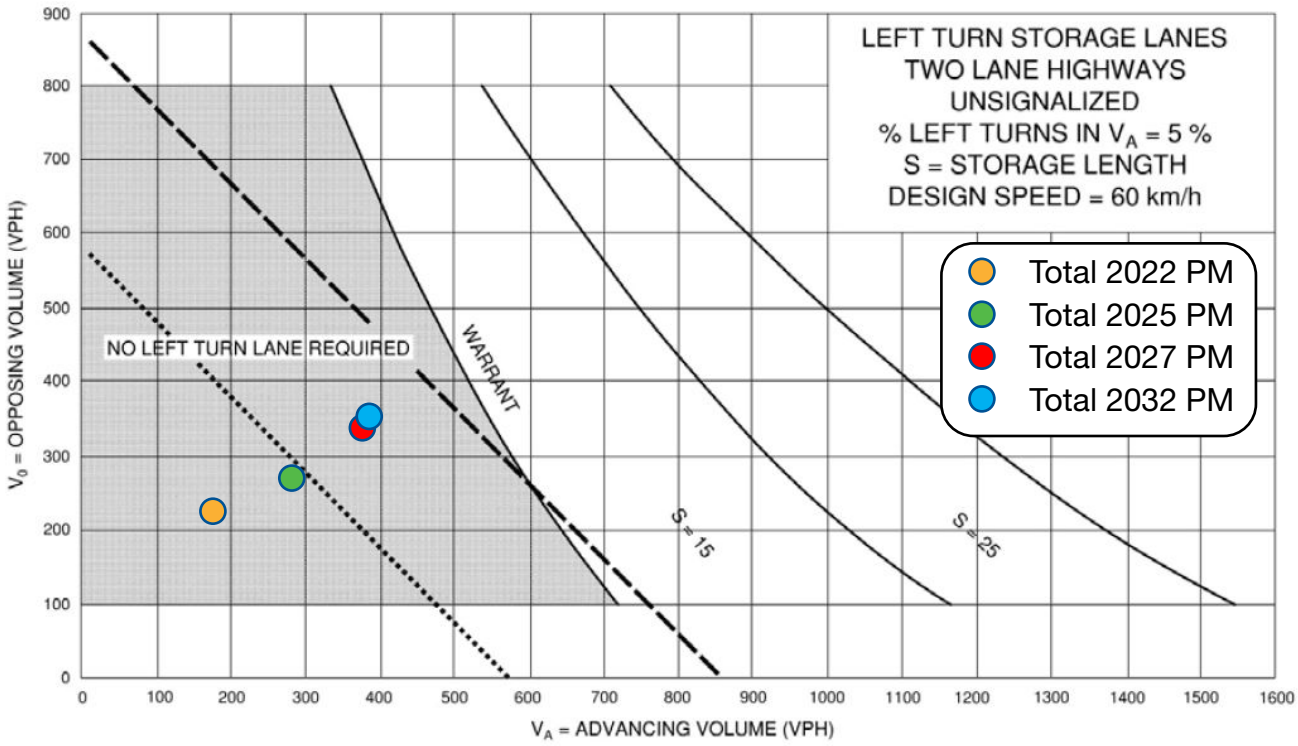


Westbound Left-Turn Lane Warrants, Conservation Drive & Cranberry Street

Beaver Creek Area TNS
170278

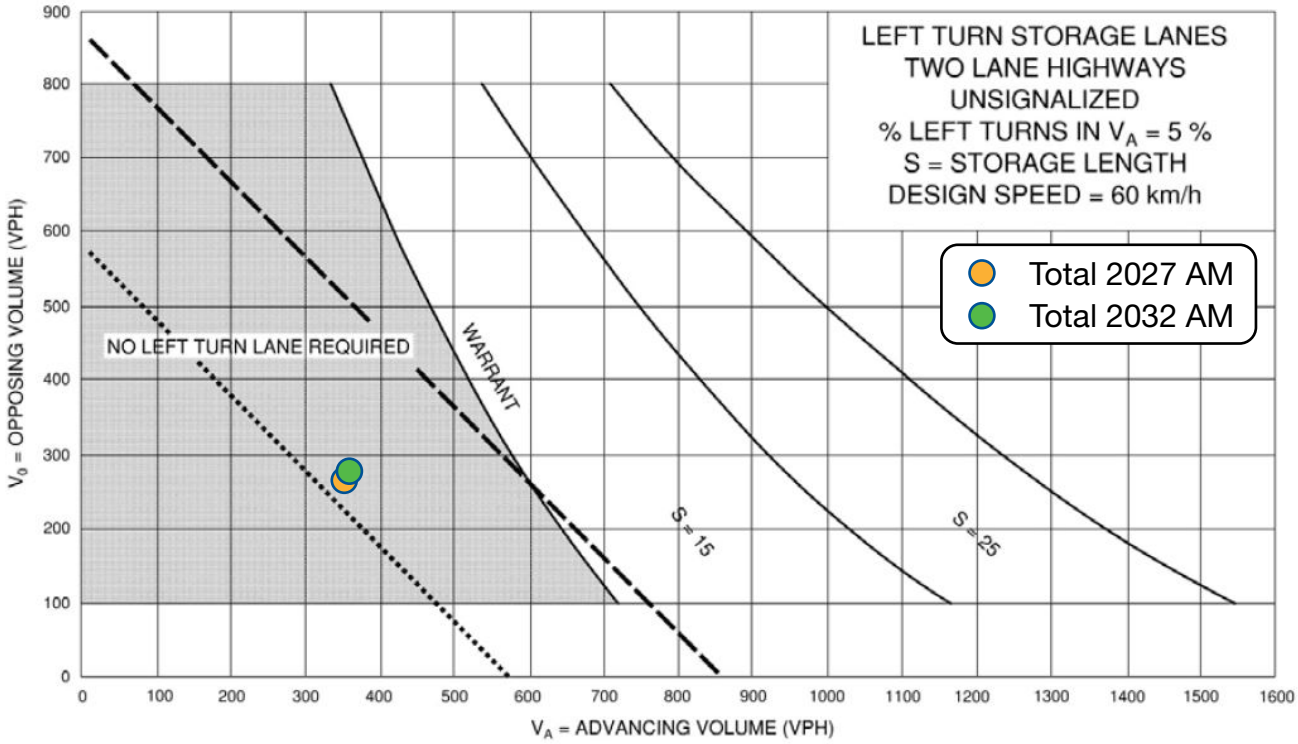
Figure K.10

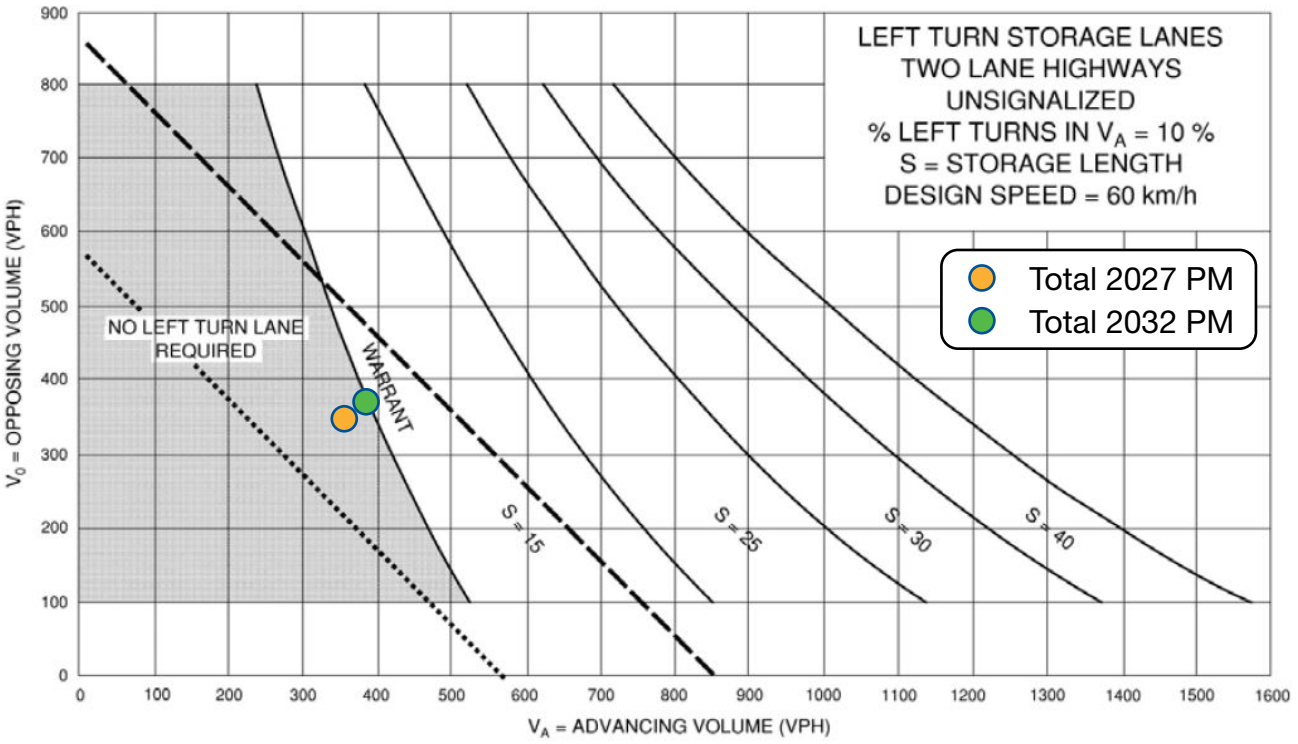




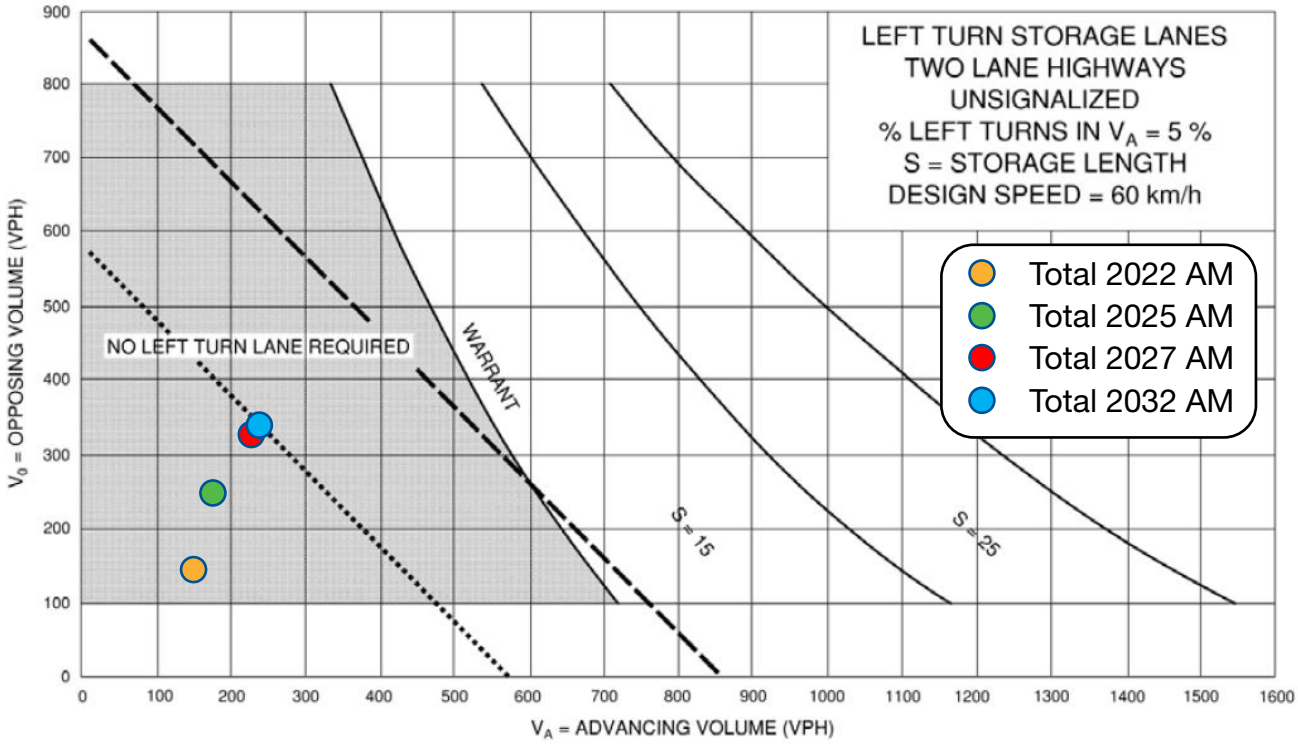
paradigm TRANSPORTATION SOLUTIONS LIMITED

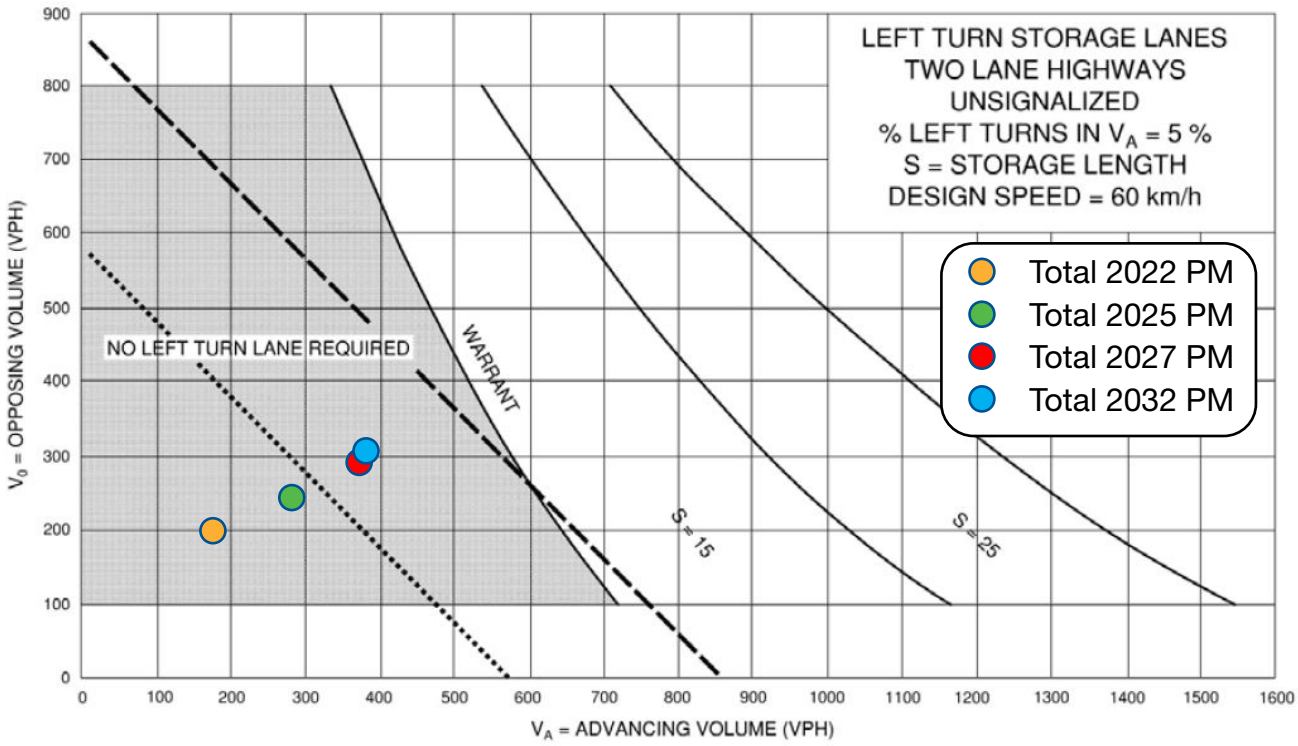
Northbound Left-Turn Lane Warrants, Beaver Creek Road & Street One/Martin Road 1



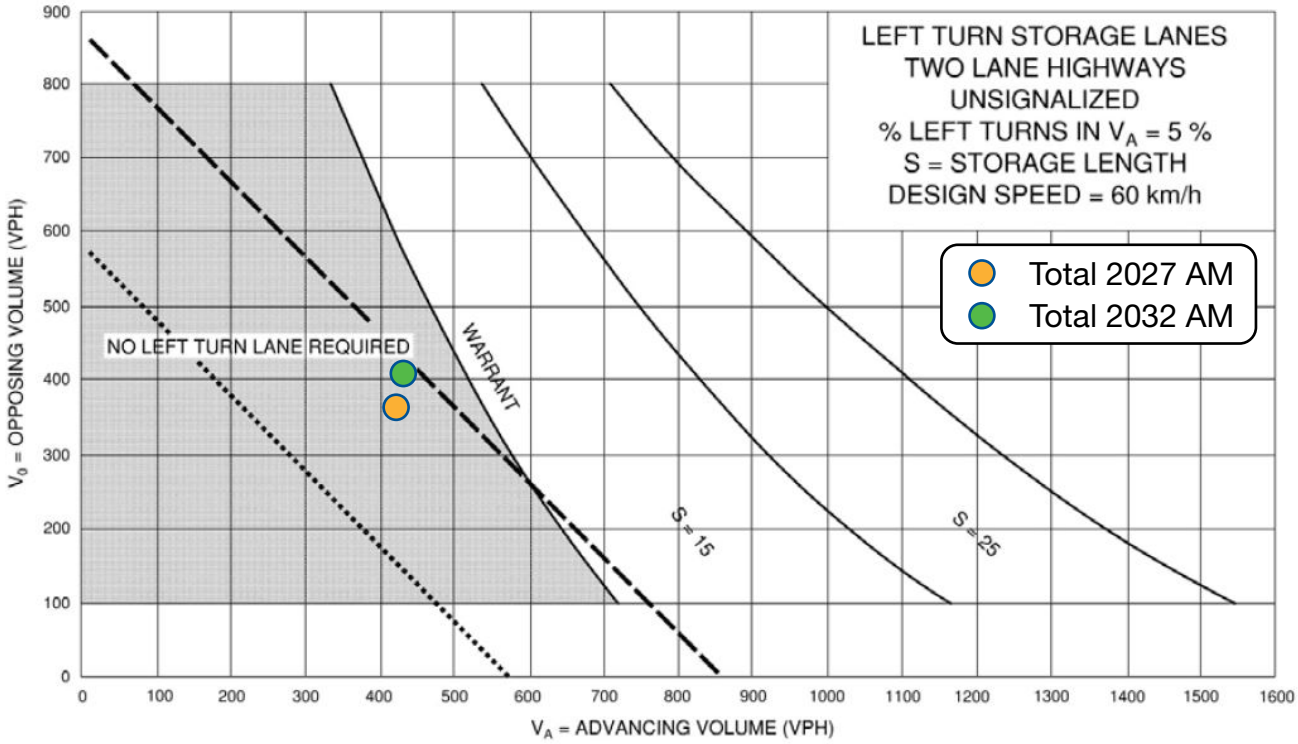


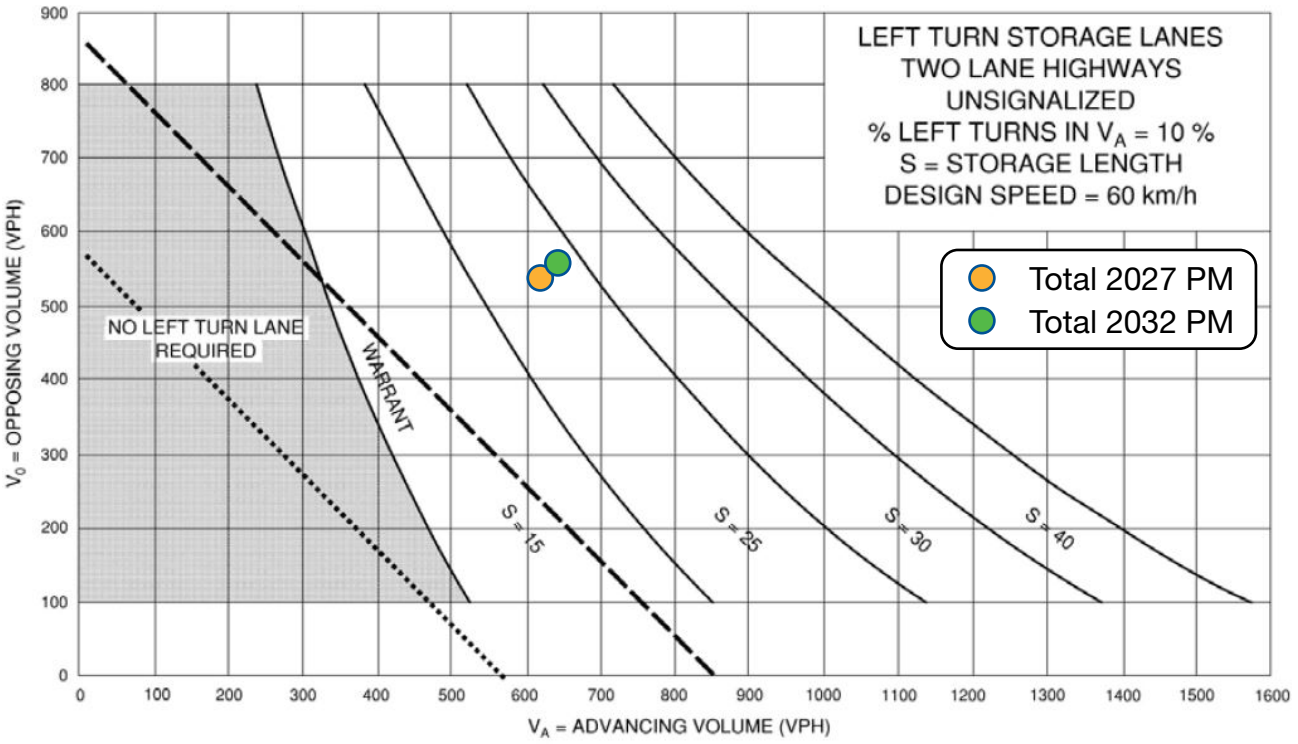
Southbound Left-Turn Lane Warrants, Beaver Creek Road & Street One/Martin Road 1





Northbound Left-Turn Lane Warrants, Beaver Creek Road & Street Two/Martin Road 2





Southbound Left-Turn Lane Warrants, Erbsville Road & Regal Place/Street B

Appendix L

OTM Book 5 All-Way Stop Warrants

All-Way Stop Control Warrant Analysis

Based on OTM Book 5: Regulatory Signs

Intersection	All-Way Stop Minimum Volume Warrant						
	Arterial and Major Roads				Minor Roads		
	Total Approach Vehicle Volume Exceeds 500 vph?	Total Minor Street Approach Vehicle and Pedestrian Volume Exceed 200?	Volume Split Does Not Exceed 70/30?	Warrant is Met?	Total Approach Vehicle Volume Exceeds 350 vph?	Volume Split Does Not Exceed 65/35?	Warrant is Met?
Erbsville Road & Conservation Drive	-	-	-	-	1634	58 / 42	Yes

Appendix M

OTM Book 7 Signal Warrants



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

Horizon Year: 2022 Background
Region/City/Township: Waterloo

Major Street: Westmount Road
Minor Street: Conservation 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						
	Westmount Road						Conservation 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	71	162	22	11	279	19	124	36	347	46	30	12	0
PM Peak Hour	332	281	40	8	311	152	44	33	125	19	31	13	0
Average Hourly Volume	101	111	16	5	148	43	42	17	118	16	15	6	0

Warrant	AHV
1A - All	637
1B - Minor	215
2A - Major	422
2B - Cross	76

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	637
					% Fulfilled	88.5%

	Approach Lanes	1		2 or more		Average Hourly Volume
1B	Flow Conditions	Free	Restricted	Free	Restricted	
			X			
	Minor Street Approaches	120	170	120	170	215
					% Fulfilled	126.5%

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	422
					% Fulfilled	58.6%

	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	76
					% Fulfilled	100.7%

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

Horizon Year: 2025 Background
Region/City/Township: Waterloo

Major Street: Westmount Road
Minor Street: Conservation 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						
	Westmount Road						Conservation 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	74	170	23	11	292	20	130	38	363	48	31	12	0
PM Peak Hour	347	294	42	9	325	159	46	34	131	20	32	13	0
Average Hourly Volume	105	116	16	5	154	45	44	18	124	17	16	6	0

Warrant	AHV
1A - All	666
1B - Minor	225
2A - Major	442
2B - Cross	79

Warrant 1 - Minimum Vehicular Volume

1A	Approach Lanes	1		2 or more		Average Hourly Volume
	Flow Conditions	Free	Restricted	Free	Restricted	
			X			
	All Approaches	480	720	600	900	666
					% Fulfilled	92.5%

1B	Approach Lanes	1		2 or more		Average Hourly Volume
	Flow Conditions	Free	Restricted	Free	Restricted	
			X			
	Minor Street Approaches	120	170	120	170	225
					% Fulfilled	132.1%

Warrant 2 - Delay To Cross Traffic

2A	Approach Lanes	1		2 or more		Average Hourly Volume
	Flow Conditions	Free	Restricted	Free	Restricted	
			X			
	Major Street Approaches	480	720	600	900	442
					% Fulfilled	61.3%

2B	Approach Lanes	1		2 or more		Average Hourly Volume
	Flow Conditions	Free	Restricted	Free	Restricted	
			X			
	Traffic Crossing Major Street	50	75	50	75	79
					% Fulfilled	105.3%

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

Horizon Year: 2027 Background
Region/City/Township: Waterloo

Major Street: Westmount Road
Minor Street: Conservation 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						
	Westmount Road						Conservation 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	77	175	24	11	301	21	134	39	374	49	32	13	0
PM Peak Hour	358	303	43	9	335	164	47	35	135	21	33	14	0
Average Hourly Volume	109	120	17	5	159	46	45	19	127	18	16	7	0

Warrant	AHV
1A - All	687
1B - Minor	232
2A - Major	455
2B - Cross	81

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	687
					% Fulfilled	95.4%

	Approach Lanes	1		2 or more		Average Hourly Volume
1B	Flow Conditions	Free	Restricted	Free	Restricted	
			X			
	Minor Street Approaches	120	170	120	170	232
					% Fulfilled	136.2%

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	455
					% Fulfilled	63.2%

	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	81
					% Fulfilled	108.3%

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

Horizon Year: 2032 Background
Region/City/Township: Waterloo

Major Street: Westmount Road
Minor Street: Conservation 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						
	Westmount Road						Conservation 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	83	188	26	12	324	22	144	42	403	53	34	14	0
PM Peak Hour	386	326	47	10	361	176	51	38	145	22	36	15	0
Average Hourly Volume	117	129	18	6	171	50	49	20	137	19	18	7	0

Warrant	AHV
1A - All	740
1B - Minor	249
2A - Major	490
2B - Cross	88

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	740
					% Fulfilled	102.7%

	Approach Lanes	1		2 or more		Average Hourly Volume
1B	Flow Conditions	Free	Restricted	Free	Restricted	
			X			
	Minor Street Approaches	120	170	120	170	249
					% Fulfilled	146.6%

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	490
					% Fulfilled	68.1%

	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	88
					% Fulfilled	116.7%

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

Horizon Year: 2022 Total
Region/City/Township: Waterloo

Major Street: Westmount Road
Minor Street: Conservation 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						
	Westmount Road						Conservation 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	142	162	22	11	279	27	143	36	549	46	30	12	0
PM Peak Hour	531	281	40	8	311	176	62	33	279	19	31	13	0
Average Hourly Volume	168	111	16	5	148	51	51	17	207	16	15	6	0

Warrant	AHV
1A - All	811
1B - Minor	313
2A - Major	498
2B - Cross	85

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	811
					% Fulfilled	112.6%

	Approach Lanes	1		2 or more		Average Hourly Volume
1B	Flow Conditions	Free	Restricted	Free	Restricted	
			X			
	Minor Street Approaches	120	170	120	170	313
					% Fulfilled	184.3%

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	498
					% Fulfilled	69.1%

	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	85
					% Fulfilled	113.0%

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

Horizon Year: 2025 Total
Region/City/Township: Waterloo

Major Street: Westmount Road
Minor Street: Conservation 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	Yes	Justification for existing intersections with forecast traffic

	Major Street						Minor Street						
	Westmount Road						Conservation 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	205	176	23	11	312	32	161	38	758	48	31	12	0
PM Peak Hour	732	313	42	9	337	198	72	34	399	20	32	13	0
Average Hourly Volume	234	122	16	5	162	58	58	18	289	17	16	6	0

Warrant	AHV
1A - All	1002
1B - Minor	405
2A - Major	598
2B - Cross	93

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	1002
					% Fulfilled	139.2%

	Approach Lanes	1		2 or more		Average Hourly Volume
1B	Flow Conditions	Free	Restricted	Free	Restricted	
			X			
	Minor Street Approaches	120	170	120	170	405
					% Fulfilled	237.9%

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	598
					% Fulfilled	83.0%

	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	93
					% Fulfilled	124.3%

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

Horizon Year: 2027 Total
Region/City/Township: Waterloo

Major Street: Westmount Road
Minor Street: Conservation Drive
North/South?: Y

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

PM Forecast Only? N

Warrant Results		
150% Satisfied	Yes	Justification for new intersections with forecast traffic
120% Satisfied	Yes	Justification for existing intersections with forecast traffic

	Major Street						Minor Street						
	Westmount Road						Conservation 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	380	181	24	11	321	41	188	39	1313	49	32	13	0
PM Peak Hour	1253	322	43	9	347	225	83	35	709	21	33	14	0
Average Hourly Volume	408	126	17	5	167	67	68	19	506	18	16	7	0

Warrant	AHV
1A - All	1422
1B - Minor	632
2A - Major	789
2B - Cross	104

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	1422
					% Fulfilled	197.4%

	Approach Lanes	1		2 or more		Average Hourly Volume
1B	Flow Conditions	Free	Restricted	Free	Restricted	
			X			
	Minor Street Approaches	120	170	120	170	632
					% Fulfilled	371.9%

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	789
					% Fulfilled	109.6%

	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	104
					% Fulfilled	138.3%

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

Horizon Year: 2032 Total
Region/City/Township: Waterloo

Major Street: Westmount Road
Minor Street: Conservation Drive

North/South?: Y

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

PM Forecast Only? N

Warrant Results		
150% Satisfied	Yes	Justification for new intersections with forecast traffic
120% Satisfied	Yes	Justification for existing intersections with forecast traffic

	Major Street						Minor Street						
	Westmount Road						Conservation 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	386	194	26	12	344	42	198	42	1342	53	34	14	0
PM Peak Hour	1281	345	47	10	373	237	87	38	719	22	36	15	0
Average Hourly Volume	417	135	18	6	179	70	71	20	515	19	18	7	0

Warrant	AHV
1A - All	1474
1B - Minor	650
2A - Major	824
2B - Cross	110

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	1474
					% Fulfilled	204.8%

	Approach Lanes	1		2 or more		Average Hourly Volume
1B	Flow Conditions	Free	Restricted	Free	Restricted	
			X			
	Minor Street Approaches	120	170	120	170	650
					% Fulfilled	382.4%

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	824
					% Fulfilled	114.5%

	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	110
					% Fulfilled	146.7%

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

Horizon Year: 2032 Background
Region/City/Township: Waterloo

Major Street: Benjamin Road
Minor Street: Westmount Road

North/South?: N

Number of Approach Lanes: 1
Tee Intersection? Y
Flow Conditions: Free

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						
	Benjamin Road						Westmount Road						
	Eastbound			Westbound			Northbound			Southbound			Peds Crossing
Time Period	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	Main Road
AM Peak Hour	0	195	102	143	70	0	34	0	352	0	0	0	0
PM Peak Hour	0	103	64	584	241	0	89	0	207	0	0	0	0
Average Hourly Volume	0	75	42	182	78	0	31	0	140	0	0	0	0

Warrant	AHV
1A - All	546
1B - Minor	171
2A - Major	376
2B - Cross	31

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	546
					% Fulfilled	113.8%

	Approach Lanes	1		2 or more		Average Hourly Volume
1B	Flow Conditions	Free	Restricted	Free	Restricted	
		X				
	Minor Street Approaches	180	255	180	255	171
					% Fulfilled	94.7%

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	376
					% Fulfilled	78.2%

	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	31
					% Fulfilled	61.5%

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

Horizon Year: 2032 Total
Region/City/Township: Waterloo

Major Street: Benjamin Road
Minor Street: Westmount Road

North/South?: N

Number of Approach Lanes: 1
Tee Intersection? Y
Flow Conditions: Free

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						
	Benjamin Road						Westmount Road						
	Eastbound			Westbound			Northbound			Southbound			Peds Crossing
Time Period	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	Main Road
AM Peak Hour	0	224	102	166	81	0	34	0	414	0	0	0	1
PM Peak Hour	0	121	64	654	274	0	89	0	247	0	0	0	1
Average Hourly Volume	0	86	42	205	89	0	31	0	165	0	0	0	1

Warrant	AHV
1A - All	618
1B - Minor	196
2A - Major	422
2B - Cross	31

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	618
					% Fulfilled	128.6%

	Approach Lanes	1		2 or more		Average Hourly Volume
1B	Flow Conditions	Free	Restricted	Free	Restricted	
		X				
	Minor Street Approaches	180	255	180	255	196
					% Fulfilled	108.9%

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	422
					% Fulfilled	87.8%

	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	31
					% Fulfilled	62.5%

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

Horizon Year: 2032 Background
Region/City/Township: Waterloo

Major Street: Erbsville Road
Minor Street: Conservation Road
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						
	Erbsville Road						Conservation Road						
	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	0	174	149	68	131	0	7	51	5	84	31	28	0
PM Peak Hour	1	145	121	34	249	17	2	28	2	159	67	74	0
Average Hourly Volume	0	80	68	26	95	4	2	20	2	61	25	26	0

Warrant	AHV
1A - All	407
1B - Minor	135
2A - Major	272
2B - Cross	88

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	407
					% Fulfilled	56.5%

	Approach Lanes	1		2 or more		Average Hourly Volume
1B	Flow Conditions	Free	Restricted	Free	Restricted	
			X			
	Minor Street Approaches	120	170	120	170	135
					% Fulfilled	79.1%

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	272
					% Fulfilled	37.8%

	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	88
					% Fulfilled	116.7%

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

Horizon Year: 2032 Total
Region/City/Township: Waterloo

Major Street: Erbsville Road
Minor Street: Conservation Road

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						
	Erbsville Road						Conservation Road						
	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	5	214	319	274	215	0	12	51	5	205	52	112	0
PM Peak Hour	3	237	244	141	313	17	6	28	2	323	73	247	0
Average Hourly Volume	2	113	141	104	132	4	5	20	2	132	31	90	0

Warrant	AHV
1A - All	775
1B - Minor	279
2A - Major	496
2B - Cross	168

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	775
					% Fulfilled	107.6%

	Approach Lanes	1		2 or more		Average Hourly Volume
1B	Flow Conditions	Free	Restricted	Free	Restricted	
			X			
	Minor Street Approaches	120	170	120	170	279
					% Fulfilled	164.1%

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	496
					% Fulfilled	68.8%

	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	168
					% Fulfilled	223.7%

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

Horizon Year: 2032 Total
Region/City/Township: Waterloo

Major Street: Conservation Road
Minor Street: Rideau River Street

North/South?: N

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						
	Conservation Road						Rideau River Street						
	Eastbound			Westbound			Northbound			Southbound			Peds Crossing
Time Period	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	Main Road
AM Peak Hour	14	1273	4	11	462	16	16	7	34	80	8	36	0
PM Peak Hour	44	826	15	32	1248	63	9	2	20	25	2	32	0
Average Hourly Volume	15	525	5	11	428	20	6	2	14	26	3	17	0

Warrant	AHV
1A - All	1070
1B - Minor	68
2A - Major	1002
2B - Cross	35

Warrant 1 - Minimum Vehicular Volume

		1		2 or more		Average Hourly Volume
1A	Approach Lanes					
	Flow Conditions	Free	Restricted	Free	Restricted	
			X			
	All Approaches	480	720	600	900	1070
					% Fulfilled	148.6%

		1		2 or more		Average Hourly Volume
1B	Approach Lanes					
	Flow Conditions	Free	Restricted	Free	Restricted	
			X			
	Minor Street Approaches	120	170	120	170	68
					% Fulfilled	39.9%

Warrant 2 - Delay To Cross Traffic

		1		2 or more		Average Hourly Volume
2A	Approach Lanes					
	Flow Conditions	Free	Restricted	Free	Restricted	
			X			
	Major Street Approaches	480	720	600	900	1002
					% Fulfilled	139.2%

		1		2 or more		Average Hourly Volume
2B	Approach Lanes					
	Flow Conditions	Free	Restricted	Free	Restricted	
			X			
	Traffic Crossing Major Street	50	75	50	75	35
					% Fulfilled	46.7%

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

Horizon Year: 2032 Total
Region/City/Township: Waterloo

Major Street: Conservation Road
Minor Street: Street H / Street One

North/South?: N

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						
	Conservation Road						Street H / Street One						
	Eastbound			Westbound			Northbound			Southbound			Peds Crossing
Time Period	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	Main Road
AM Peak Hour	1	970	2	52	477	18	9	22	126	56	12	4	0
PM Peak Hour	3	570	7	139	905	59	19	4	103	33	3	2	0
Average Hourly Volume	1	385	2	48	346	19	7	7	57	22	4	2	0

Warrant	AHV
1A - All	899
1B - Minor	98
2A - Major	801
2B - Cross	36

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	899
					% Fulfilled	124.9%

	Approach Lanes	1		2 or more		Average Hourly Volume
1B	Flow Conditions	Free	Restricted	Free	Restricted	
			X			
	Minor Street Approaches	120	170	120	170	98
					% Fulfilled	57.8%

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	801
					% Fulfilled	111.2%

	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	36
					% Fulfilled	47.7%

Appendix N

Roundabout Screening Tool

INTERSECTION CONTROL STUDIES
SAFETY ASSESSMENT METHODOLOGY (HSM)

Region of Waterloo

Last Rev Nov 2018

Scenario: 170278 - Northgate Development

Major Road: Erbsville Road

Minor Road: Conservation Drive

Major Road Direction:	East / West
Urban or Rural:	Urban
Proposed Control:	Signalized
Proposed Config.	4-Leg Intersection

LT Lanes Proposed (non roundabout):		RT Lanes Proposed (non roundabout):	
Major	No LT Lanes	**Major**	1 Approach
Minor	1 Approach	**Minor**	No RT Lanes

Is there going to be any fully protected left-turn phasing? NO

Number of approaches with FPLTP: N/A

Is the proposed intersection "new" or is it existing: EXISTING

Does control and number of approaches remain the same: NO

Will the proposed intersection have illumination: NO

NOTE: No collision history required

5-Year Total Collisions: N/A

5-Year PDO Collisions: N/A

Proposed Multi-Lane or Single Lane RA? SINGLE LANE ROUNDABOUT

Major Road (mid-block) 10-Year Horizon AADT: 10,560

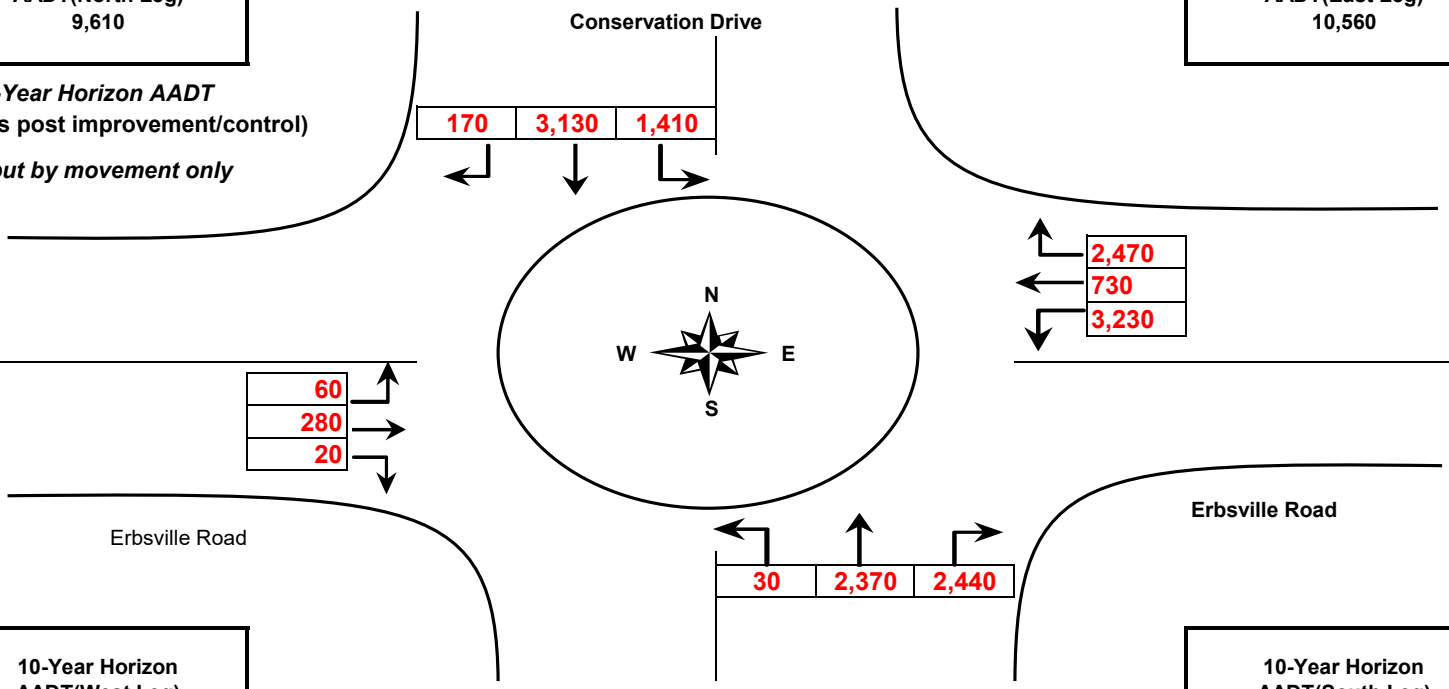
Minor Road (mid-block) 10-Year Horizon AADT: 11,220

10-Year Horizon AADT(North Leg) 9,610

10-Year Horizon AADT(East Leg) 10,560

***10-Year Horizon AADT (10ys post improvement/control)**

***Input by movement only**



10-Year Horizon AADT(West Leg) 1,290

10-Year Horizon AADT(South Leg) 11,220

Direct Capital Costs

Fatal = $1,656,500

Injury = $60,500

PDO = $5,000

Discount Rate = 0.06

20-Year Present Value Collision Costs (DIRECT CAPITAL COSTS)

Collisions by Severity	Total	PDO	Injury	Fatal
Signalized	$1,338,075.27	$184,665.73	$1,096,409.77	$56,999.77
Roundabout	$1,017,678.24	$434,080.77	$583,597.47	$0.00

INTERSECTION CONTROL STUDIES
SAFETY ASSESSMENT METHODOLOGY (HSM)

Region of Waterloo

Last Rev Nov 2018

Scenario: **170278 - Northgate Development**

Major Road: **Erbsville Road**
Minor Road: **Conservation Drive**

Major Road Direction: East / West

Urban or Rural: Urban

Proposed Control: Signalized

Proposed Config. 4-Leg Intersection

Roundabout Conflicts: **15980**

5-Year Total Collisions: **N/A**

5-Year PDO Collisions: **N/A**

Estimated **ANNUAL (1-YEAR ONLY)** Collisions				
Future Expected Collisions by Severity	**Total**	**PDO**	**Injury**	**Fatal**
Signalized	**4.81**	**3.22**	**1.58**	**0.00**
Roundabout	**8.41**	**7.57**	**0.84**	**0.00**

TOTAL CRASH COEFFICIENTS USED IN CALCULATION						Fatal/Inj. Ratio	Collision Factor
Control	Intersection Config	Intercept	AADTmaj	AADTmin	Overdispersion		
Signalized	4-Leg Intersection	**-10.99**	**1.07**	**0.23**	**N/A**	**0.002**	**n/a**

PDO CRASH COEFFICIENTS USED IN CALCULATION						Fatal/Inj. Ratio	Collision Factor
Control	Intersection Config	Intercept	AADTmaj	AADTmin	Overdispersion		
Signalized	4-Leg Intersection	**-11.02**	**1.02**	**0.24**	**N/A**	**0.002**	**n/a**

Collision Modification Factors (cmf's)	Left Turn Lane	Right Turn Lane	Calibration Factor	Empirical Bays Weighting	
	0.9	**0.96**	**2.1**	Total	PDO
				N/A	**N/A**
	Illumination	Protected LT Phasing			
	0.91	**1.00**			

Comments:

Region of Waterloo
Roundabout Feasibility Initial Screening Tool

July 2020

File
170278

Project
Beaver Creek Area (Northgate)

Based On
Region of Waterloo
Roundabout Feasibility
Initial Screening Tool 1.0
23 May 2012

The intent of this screening tool is to provide a relatively quick assessment of the feasibility of a modern roundabout at a particular intersection in comparison to other appropriate forms of traffic control or road improvements including auxiliary lanes, traffic control signals, four-way stops, etc. The intended outcome of this tool is to proved enough information to assist staff in deciding whether or not to proceed to an Intersection Control Study to further investigate in more detail the feasibility of a roundabout.

1) Project Name / File Number

- Beaver Creek Area (Northgate) Transportation Network Study / 170278

2) Intersection Locations

(Street/Road Names, distance from major intersection, etc.)

- Erbsville Road and Conservation Drive; and
- Nearest major intersection: Conservation Drive and Beaver Creek Road, approximately 1.3 kilometres to the east.

3) Brief Description of Intersection

(Number of legs, lanes on each leg, total AADT, AADT on each road, etc. Attach or sketch diagram showing existing and horizon-year turning movements)

- Four legs
- 2032 forecast AADT approximately 16,340 based on 2032 total PM peak hour forecasts

4) What operation problems are being experienced at this location?

- Critical movements in the northbound, westbound and southbound directions under the Total 2032 horizon.

5) Is it a new intersection or is it a retrofit of an existing intersection?

If existing, what is the existing traffic control?

- Existing two-way stop control.

6) Is the intersection in the vicinity of a railroad crossing or another intersection?

If so, how close and what type of traffic control exists at the adjacent intersection? Will queues be a problem?

- This is not within the vicinity of an existing railroad.

7) Would the intersection be located within a coordinated signal system?

- No.

8) Would the intersection be located on a Preferred Roundabout Corridor?

- Potentially yes, as the Ira Needle Boulevard corridor is located 5 kilometres south.

9) Is the intersection located within a corridor that is scheduled for improvements in the 10 Year Transportation Capital Program?

What is the ultimate cross-section of the approach roads?

- No improvements planned.

10) What is the collision history of the intersection over the past five years?

Is there a collision problem that needs to be addressed?

- N/A

11) Are person with disabilities or horse and buggies frequent users of this intersection?

- It is possible for horse and buggies to use this intersection given its location and proximity to the St. Jacobs area.

12) What traditional road improvements are proposed for this intersection?

(eg. Traffic signals, all-way stop, auxiliary lanes, etc.) Please attach a sketch of the traditional road improvements.

- Traffic signals.

13) If traffic control signals are being considered, are the traffic signal warrants met for the horizon year?

- Signal are nearly warranted at 107% of warrant 1.

14) What size of roundabout is being considered for this intersection?

- 40 m ICD single-lane

15) 20-Year Life Cycle Cost Estimate

10-Year AADT: 16,340

Non-injury Social Collision Cost: $5000

Injury Social Collision Cost: $82,000

Fatal Social Collision Cost: $13,600,000

Discount Rate (i): 6%

20 Year Life-Cycle Cost Comparison		
Cost Item	**Other Traffic Control**	**Roundabout**
Implementation Cost	$600,000 (traffic signals w/ main street LT lanes)	$700,000
Injury Collision Cost (Present Value)	$1,338,075.27	$1,017,678.24
Total Life Cycle Cost	**$1,938,075.27**	**$1,717,678.24**

Conclusions and Recommendations

- Roundabout cost is less than signalization
- Proceed to Intersection Control Study

INTERSECTION CONTROL STUDIES
SAFETY ASSESSMENT METHODOLOGY

Region of Waterloo

Last Rev Nov 2018

Scenario: 2030 Total Traffic Horizon

Major Road: Speedsville Road

Minor Road: Equestrian Way

Major Road Direction:	North / South
Urban or Rural:	Rural
Proposed Control:	Signalized
Proposed Config.	3-Leg Intersection

LT Lanes Proposed (non roundabout):		RT Lanes Proposed (non roundabout):	
Major	1 Approach	Major	No RT Lanes
Minor	1 Approach	Minor	No RT Lanes

Is there going to be any fully protected left-turn phasing?	NO
Number of approaches with FPLTP:	N/A

Is the proposed intersection "new" or is it existing:	EXISTING
Does control and number of approaches remain the same:	NO
Will the proposed intersection have illumination:	YES

NOTE: No collision history required

5-Year Total Collisions: N/A

5-Year PDO Collisions: N/A

Proposed Multi-Lane or Single Lane RA? SINGLE LANE ROUNDABOUT

Major Road (mid-block) 10-Year Horizon AADT: 16,100

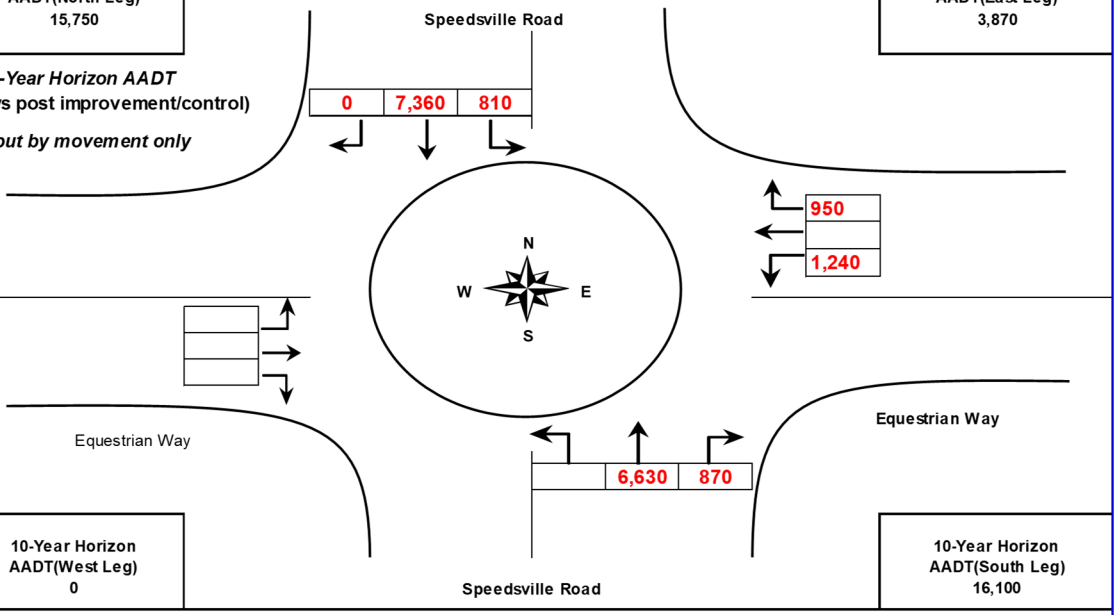
Minor Road (mid-block) 10-Year Horizon AADT: 3,870

10-Year Horizon AADT(North Leg) 15,750

10-Year Horizon AADT(East Leg) 3,870

** 10-Year Horizon AADT (10ys post improvement/control)*

** Input by movement only*



10-Year Horizon AADT(West Leg) 0

10-Year Horizon AADT(South Leg) 16,100

Direct Capital Costs

Fatal = $1,656,500

Injury = $60,500

PDO = $5,000

Discount Rate = 0.06

20-Year Present Value Collision Costs (DIRECT CAPITAL COSTS)

Collisions by Severity	Total	PDO	Injury	Fatal
Signalized	$1,885,609.17	$224,810.46	$1,394,799.77	$265,998.94
Roundabout	$559,586.71	$238,686.28	$320,900.44	$0.00

Region of Waterloo

INTERSECTION CONTROL STUDIES
SAFETY ASSESSMENT METHODOLOGY (HSM)

Last Rev Nov 2018

Scenario:	**2030 Total Traffic Horizon**	**Major Road:** Speedsville Road **Minor Road:** Equestrian Way	
Major Road Direction:	North / South	**Roundabout Conflicts:**	**7670**
Urban or Rural:	Rural		
Proposed Control:	Signalized	**5-Year Total Collisions:**	**N/A**
Proposed Config.	3-Leg Intersection	**5-Year PDO Collisions:**	**N/A**

Estimated **ANNUAL (1-YEAR ONLY)** Collisions				
Future Expected Collisions by Severity	**Total**	**PDO**	**Injury**	**Fatal**
Signalized	**5.94**	**3.92**	**2.01**	**0.01**
Roundabout	**4.62**	**4.16**	**0.46**	**0.00**

TOTAL CRASH COEFFICIENTS USED IN CALCULATION						Fatal/Inj. Ratio	Collision Factor
Control	Intersection Config	Intercept	AADTmaj	AADTmin	Overdispersion		
Signalized	3-Leg Intersection	**-5.13**	**0.6**	**0.2**	**N/A**	**0.007**	**n/a**

PDO CRASH COEFFICIENTS USED IN CALCULATION						Fatal/Inj. Ratio	Collision Factor
Control	Intersection Config	Intercept	AADTmaj	AADTmin	Overdispersion		
Signalized	3-Leg Intersection	**-5.13**	**0.6**	**0.2**	**N/A**	**0.007**	**0.66**

Collision Modification Factors (cmf's)	Left Turn Lane	Right Turn Lane	Calibration Factor	Empirical Bays Weighting	
			0.64	Total	PDO
				N/A	**N/A**
	Illumination	Protected LT Phasing			
	0.90	**1.00**			

Comments:

INTERSECTION CONTROL STUDIES
SAFETY ASSESSMENT METHODOLOGY (HSM)

Region of Waterloo

Last Rev Nov 2018

Scenario: 170278 - Northgate Development

Major Road: Benjamin Road

Minor Road: Westmount Drive

Major Road Direction:	East / West
Urban or Rural:	Urban
Proposed Control:	Signalized
Proposed Config.	3-Leg Intersection

LT Lanes Proposed (non roundabout):		RT Lanes Proposed (non roundabout):	
Major	No LT Lanes	**Major**	No RT Lanes
Minor	No LT Lanes	**Minor**	No RT Lanes

Is there going to be any fully protected left-turn phasing?	NO
Number of approaches with FPLTP:	N/A
Is the proposed intersection "new" or is it existing:	EXISTING
Does control and number of approaches remain the same:	NO
Will the proposed intersection have illumination:	YES

NOTE: No collision history required

5-Year Total Collisions: N/A

5-Year PDO Collisions: N/A

Proposed Multi-Lane or Single Lane RA? SINGLE LANE ROUNDABOUT

Major Road (mid-block) 10-Year Horizon AADT: 12,960

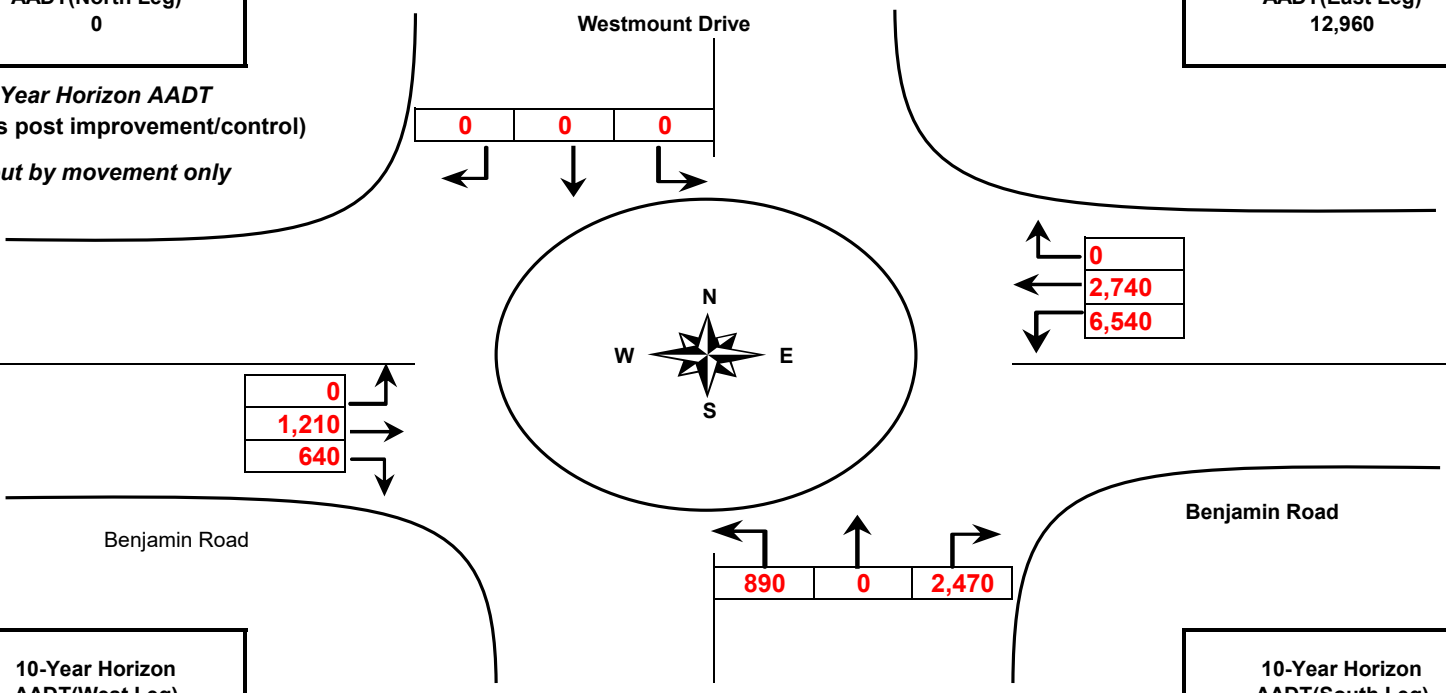
Minor Road (mid-block) 10-Year Horizon AADT: 10,540

10-Year Horizon AADT(North Leg)
0

10-Year Horizon AADT(East Leg)
12,960

10-Year Horizon AADT
(10ys post improvement/control)

Input by movement only



10-Year Horizon AADT(West Leg)
5,480

10-Year Horizon AADT(South Leg)
10,540

Direct Capital Costs

Fatal = $1,656,500

Injury = $60,500

PDO = $5,000

Discount Rate = 0.06

20-Year Present Value Collision Costs (DIRECT CAPITAL COSTS)

Collisions by Severity	Total	PDO	Injury	Fatal
Signalized	$958,805.12	$115,846.20	$804,959.07	$37,999.85
Roundabout	$461,222.42	$196,729.94	$264,492.48	$0.00

INTERSECTION CONTROL STUDIES
SAFETY ASSESSMENT METHODOLOGY (HSM)

Region of Waterloo

Last Rev Nov 2018

Scenario: **170278 - Northgate Development**

Major Road: **Benjamin Road**
Minor Road: **Westmount Drive**

Major Road Direction: East / West

Urban or Rural: Urban

Proposed Control: Signalized

Proposed Config. 3-Leg Intersection

Roundabout Conflicts: **6050**

5-Year Total Collisions: **N/A**

5-Year PDO Collisions: **N/A**

Estimated **ANNUAL (1-YEAR ONLY)** Collisions				
Future Expected Collisions by Severity	**Total**	**PDO**	**Injury**	**Fatal**
Signalized	**3.19**	**2.02**	**1.16**	**0.00**
Roundabout	**3.81**	**3.43**	**0.38**	**0.00**

TOTAL CRASH COEFFICIENTS USED IN CALCULATION						Fatal/Inj. Ratio	Collision Factor
Control	Intersection Config	Intercept	AADTmaj	AADTmin	Overdispersion		
Signalized	3-Leg Intersection	**-12.13**	**1.11**	**0.26**	**N/A**	**0.002**	**n/a**

PDO CRASH COEFFICIENTS USED IN CALCULATION						Fatal/Inj. Ratio	Collision Factor
Control	Intersection Config	Intercept	AADTmaj	AADTmin	Overdispersion		
Signalized	3-Leg Intersection	**-13.24**	**1.14**	**0.3**	**N/A**	**0.002**	**n/a**

Collision Modification Factors (cmf's)	Left Turn Lane	Right Turn Lane	Calibration Factor	Empirical Bays Weighting	
			1.59	Total	PDO
				N/A	**N/A**
	Illumination	Protected LT Phasing			
	0.91	**1.00**			

Comments:

Region of Waterloo
Roundabout Feasibility Initial Screening Tool

July 2020

File
170278

Project
Beaver Creek Area (Northgate)

Based On
Region of Waterloo
Roundabout Feasibility
Initial Screening Tool 1.0
23 May 2012

The intent of this screening tool is to provide a relatively quick assessment of the feasibility of a modern roundabout at a particular intersection in comparison to other appropriate forms of traffic control or road improvements including auxiliary lanes, traffic control signals, four-way stops, etc. The intended outcome of this tool is to proved enough information to assist staff in deciding whether or not to proceed to an Intersection Control Study to further investigate in more detail the feasibility of a roundabout.

1) Project Name / File Number

- Beaver Creek Area (Northgate) Transportation Network Study / 170278

2) Intersection Locations

(Street/Road Names, distance from major intersection, etc.)

- Westmount Road and Benjamin Road; and
- Nearest major intersection: Conservation Drive and Westmount Road, approximately 550 metres to the south.

3) Brief Description of Intersection

(Number of legs, lanes on each leg, total AADT, AADT on each road, etc. Attach or sketch diagram showing existing and horizon-year turning movements)

- Three legs
- 2032 forecast AADT approximately 14,490 based on 2032 total PM peak hour forecasts

4) What operation problems are being experienced at this location?

- Critical movements in the northbound directions and overall operations under the Total 2032 horizon.

5) Is it a new intersection or is it a retrofit of an existing intersection?

If existing, what is the existing traffic control?

- Existing two-way stop control.

6) Is the intersection in the vicinity of a railroad crossing or another intersection?

If so, how close and what type of traffic control exists at the adjacent intersection? Will queues be a problem?

- This is not within the vicinity of an existing railroad.

7) Would the intersection be located within a coordinated signal system?

- No.

8) Would the intersection be located on a Preferred Roundabout Corridor?

- No.

9) Is the intersection located within a corridor that is scheduled for improvements in the 10 Year Transportation Capital Program?

What is the ultimate cross-section of the approach roads?

- No improvements planned.

10) What is the collision history of the intersection over the past five years?

Is there a collision problem that needs to be addressed?

- N/A

11) Are person with disabilities or horse and buggies frequent users of this intersection?

- It is possible for horse and buggies to use this intersection given its location and proximity to the St. Jacobs area.

12) What traditional road improvements are proposed for this intersection?

(eg. Traffic signals, all-way stop, auxiliary lanes, etc.) Please attach a sketch of the traditional road improvements.

- Traffic signals.

13) If traffic control signals are being considered, are the traffic signal warrants met for the horizon year?

- Signal are warranted.

14) What size of roundabout is being considered for this intersection?

- 40 m ICD single-lane

15) 20-Year Life Cycle Cost Estimate

10-Year AADT: 14,490

Non-injury Social Collision Cost: $5000

Injury Social Collision Cost: $82,000

Fatal Social Collision Cost: $13,600,000

Discount Rate (i): 6%

20 Year Life-Cycle Cost Comparison		
Cost Item	**Other Traffic Control**	**Roundabout**
Implementation Cost	$600,000 (traffic signals w/ main street LT lanes)	$700,000
Injury Collision Cost (Present Value)	$958,805.12	$461,222.42
Total Life Cycle Cost	**$1,558,805.12**	**$1,161,222.42**

Conclusions and Recommendations

- Roundabout cost is less than signalization
- Proceed to Intersection Control Study

INTERSECTION CONTROL STUDIES
SAFETY ASSESSMENT METHODOLOGY

Region of Waterloo

Last Rev Nov 2018

Scenario: 2030 Total Traffic Horizon

Major Road: Speedsville Road

Minor Road: Equestrian Way

Major Road Direction:	North / South
Urban or Rural:	Rural
Proposed Control:	Signalized
Proposed Config.	3-Leg Intersection

LT Lanes Proposed (non roundabout):		RT Lanes Proposed (non roundabout):	
Major	1 Approach	Major	No RT Lanes
Minor	1 Approach	Minor	No RT Lanes

Is there going to be any fully protected left-turn phasing?	NO
Number of approaches with FPLTP:	N/A

Is the proposed intersection "new" or is it existing:	EXISTING
Does control and number of approaches remain the same:	NO
Will the proposed intersection have illumination:	YES

NOTE: No collision history required

5-Year Total Collisions: N/A

5-Year PDO Collisions: N/A

Proposed Multi-Lane or Single Lane RA? SINGLE LANE ROUNDABOUT

Major Road (mid-block) 10-Year Horizon AADT: 16,100

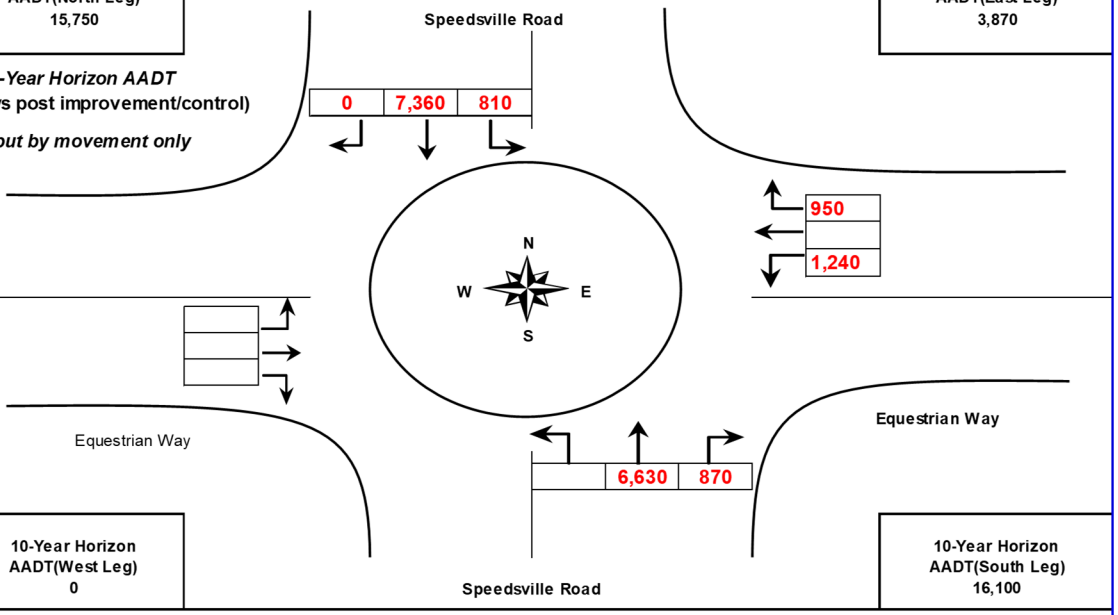
Minor Road (mid-block) 10-Year Horizon AADT: 3,870

10-Year Horizon AADT(North Leg) 15,750

10-Year Horizon AADT(East Leg) 3,870

** 10-Year Horizon AADT (10ys post improvement/control)*

** Input by movement only*



10-Year Horizon AADT(West Leg) 0

10-Year Horizon AADT(South Leg) 16,100

Direct Capital Costs

Fatal = $1,656,500

Injury = $60,500

PDO = $5,000

Discount Rate = 0.06

20-Year Present Value Collision Costs (DIRECT CAPITAL COSTS)

Collisions by Severity	Total	PDO	Injury	Fatal
Signalized	$1,885,609.17	$224,810.46	$1,394,799.77	$265,998.94
Roundabout	$559,586.71	$238,686.28	$320,900.44	$0.00

Region of Waterloo

INTERSECTION CONTROL STUDIES
SAFETY ASSESSMENT METHODOLOGY (HSM)

Last Rev Nov 2018

Scenario:	**2030 Total Traffic Horizon**	**Major Road:** Speedsville Road **Minor Road:** Equestrian Way	
Major Road Direction:	North / South	**Roundabout Conflicts:**	**7670**
Urban or Rural:	Rural		
Proposed Control:	Signalized	**5-Year Total Collisions:**	**N/A**
Proposed Config.	3-Leg Intersection	**5-Year PDO Collisions:**	**N/A**

Estimated **ANNUAL (1-YEAR ONLY)** Collisions				
Future Expected Collisions by Severity	**Total**	**PDO**	**Injury**	**Fatal**
Signalized	**5.94**	**3.92**	**2.01**	**0.01**
Roundabout	**4.62**	**4.16**	**0.46**	**0.00**

TOTAL CRASH COEFFICIENTS USED IN CALCULATION						Fatal/Inj. Ratio	Collision Factor
Control	Intersection Config	Intercept	AADTmaj	AADTmin	Overdispersion		
Signalized	3-Leg Intersection	**-5.13**	**0.6**	**0.2**	**N/A**	**0.007**	**n/a**

PDO CRASH COEFFICIENTS USED IN CALCULATION						Fatal/Inj. Ratio	Collision Factor
Control	Intersection Config	Intercept	AADTmaj	AADTmin	Overdispersion		
Signalized	3-Leg Intersection	**-5.13**	**0.6**	**0.2**	**N/A**	**0.007**	**0.66**

Collision Modification Factors (cmf's)	Left Turn Lane	Right Turn Lane	Calibration Factor	Empirical Bays Weighting	
			0.64	Total	PDO
				N/A	**N/A**
	Illumination	Protected LT Phasing			
	0.90	**1.00**			

Comments:

INTERSECTION CONTROL STUDIES
SAFETY ASSESSMENT METHODOLOGY (HSM)

Region of Waterloo

Last Rev Nov 2018

Scenario: 170278 - Northgate Development

Major Road: Conservation Drive

Minor Road: Westmount Drive

Major Road Direction:	East / West
Urban or Rural:	Urban
Proposed Control:	Signalized
Proposed Config.	4-Leg Intersection

LT Lanes Proposed (non roundabout):		RT Lanes Proposed (non roundabout):	
Major	1 Approach	**Major**	1 Approach
Minor	1 Approach	**Minor**	No RT Lanes

Is there going to be any fully protected left-turn phasing? YES

Number of approaches with FPLTP: 1

Is the proposed intersection "new" or is it existing: EXISTING

Does control and number of approaches remain the same: NO

Will the proposed intersection have illumination: YES

NOTE: No collision history required

5-Year Total Collisions: N/A

5-Year PDO Collisions: N/A

Proposed Multi-Lane or Single Lane RA? MULTI-LANE ROUNDABOUT

Major Road (mid-block) 10-Year Horizon AADT: 23,980

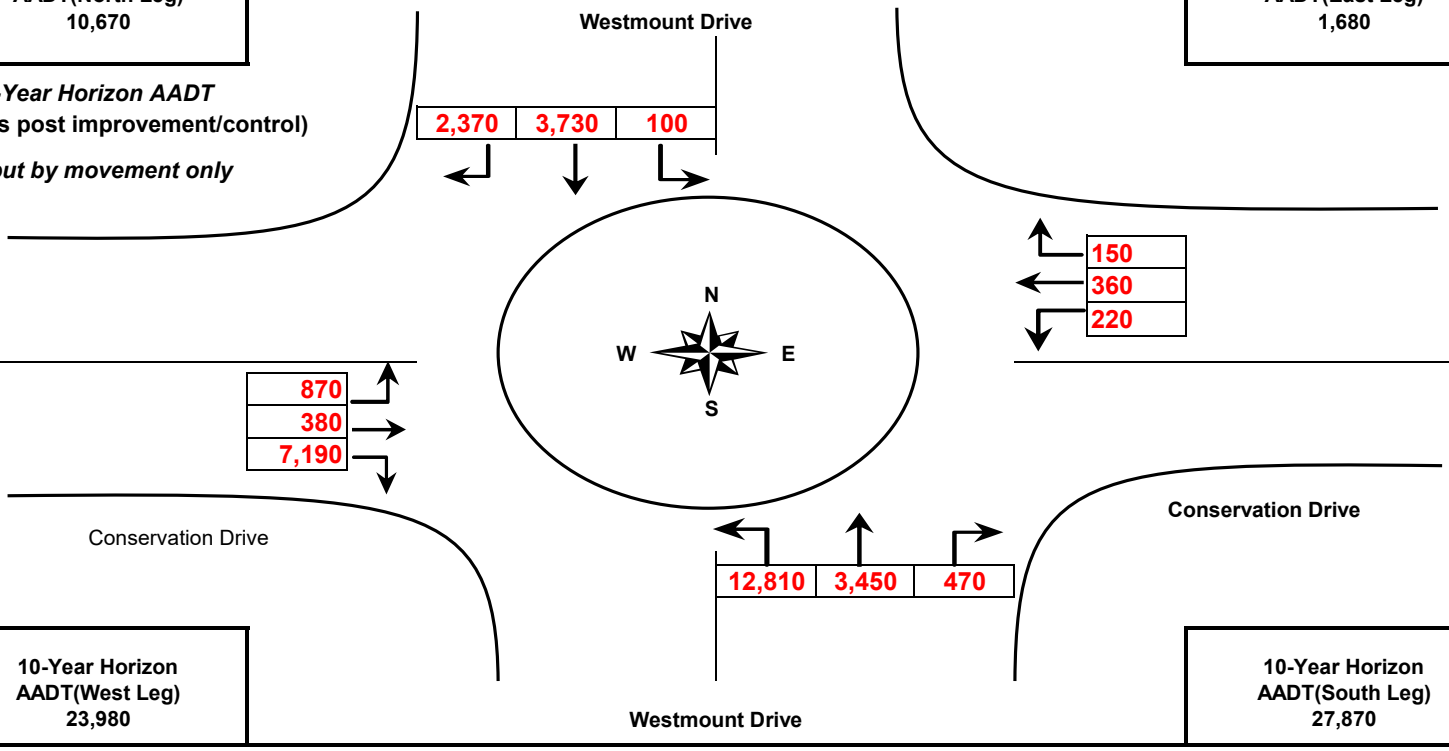
Minor Road (mid-block) 10-Year Horizon AADT: 27,870

10-Year Horizon AADT(North Leg) 10,670

10-Year Horizon AADT(East Leg) 1,680

***10-Year Horizon AADT (10ys post improvement/control)**

***Input by movement only**



10-Year Horizon AADT(West Leg) 23,980

10-Year Horizon AADT(South Leg) 27,870

Direct Capital Costs

Fatal = $1,656,500

Injury = $60,500

PDO = $5,000

Discount Rate = 0.06

20-Year Present Value Collision Costs (DIRECT CAPITAL COSTS)

Collisions by Severity	Total	PDO	Injury	Fatal
Signalized	$3,522,493.10	$449,047.42	$2,921,446.28	$151,999.40
Roundabout	$1,516,379.29	$646,796.85	$869,582.44	$0.00

INTERSECTION CONTROL STUDIES
SAFETY ASSESSMENT METHODOLOGY (HSM)

Region of Waterloo

Last Rev Nov 2018

Scenario: **170278 - Northgate Development**

Major Road: **Conservation Drive**
Minor Road: **Westmount Drive**

Major Road Direction: East / West

Urban or Rural: Urban

Proposed Control: Signalized

Proposed Config. 4-Leg Intersection

Roundabout Conflicts: **26070**

5-Year Total Collisions: **N/A**

5-Year PDO Collisions: **N/A**

Estimated **ANNUAL (1-YEAR ONLY)** Collisions				
Future Expected Collisions by Severity	**Total**	**PDO**	**Injury**	**Fatal**
Signalized	**12.05**	**7.83**	**4.21**	**0.01**
Roundabout	**12.53**	**11.28**	**1.25**	**0.00**

TOTAL CRASH COEFFICIENTS USED IN CALCULATION						Fatal/Inj. Ratio	Collision Factor
Control	Intersection Config	Intercept	AADTmaj	AADTmin	Overdispersion		
Signalized	4-Leg Intersection	**-10.99**	**1.07**	**0.23**	**N/A**	**0.002**	**n/a**

PDO CRASH COEFFICIENTS USED IN CALCULATION						Fatal/Inj. Ratio	Collision Factor
Control	Intersection Config	Intercept	AADTmaj	AADTmin	Overdispersion		
Signalized	4-Leg Intersection	**-11.02**	**1.02**	**0.24**	**N/A**	**0.002**	**n/a**

Collision Modification Factors (cmf's)	Left Turn Lane	Right Turn Lane	Calibration Factor	Empirical Bays Weighting	
	0.81	**0.96**	**2.1**	Total	PDO
				N/A	**N/A**
	Illumination	Protected LT Phasing			
	0.91	**0.94**			

Comments:

Region of Waterloo
Roundabout Feasibility Initial Screening Tool

July 2020

File
170278

Project
Beaver Creek Area (Northgate)

Based On
Region of Waterloo
Roundabout Feasibility
Initial Screening Tool 1.0
23 May 2012

The intent of this screening tool is to provide a relatively quick assessment of the feasibility of a modern roundabout at a particular intersection in comparison to other appropriate forms of traffic control or road improvements including auxiliary lanes, traffic control signals, four-way stops, etc. The intended outcome of this tool is to proved enough information to assist staff in deciding whether or not to proceed to an Intersection Control Study to further investigate in more detail the feasibility of a roundabout.

1) Project Name / File Number

- Beaver Creek Area (Northgate) Transportation Network Study / 170278

2) Intersection Locations

(Street/Road Names, distance from major intersection, etc.)

- Westmount Road and Conservation Road; and
- Nearest major intersection: Northfield Drive and Westmount Road, approximately 550 metres to the south.

3) Brief Description of Intersection

(Number of legs, lanes on each leg, total AADT, AADT on each road, etc. Attach or sketch diagram showing existing and horizon-year turning movements)

- Four legs
- 2032 forecast AADT approximately 32,100 based on 2032 total PM peak hour forecasts

4) What operation problems are being experienced at this location?

- Critical movements in the northbound directions and overall operations under the Total 2032 horizon.

5) Is it a new intersection or is it a retrofit of an existing intersection?

If existing, what is the existing traffic control?

- Existing all-way stop control.

6) Is the intersection in the vicinity of a railroad crossing or another intersection?

If so, how close and what type of traffic control exists at the adjacent intersection? Will queues be a problem?

- This is not within the vicinity of an existing railroad.

7) Would the intersection be located within a coordinated signal system?

- No.

8) Would the intersection be located on a Preferred Roundabout Corridor?

- No.

9) Is the intersection located within a corridor that is scheduled for improvements in the 10 Year Transportation Capital Program?

What is the ultimate cross-section of the approach roads?

- No improvements planned.

10) What is the collision history of the intersection over the past five years?

Is there a collision problem that needs to be addressed?

- N/A

11) Are person with disabilities or horse and buggies frequent users of this intersection?

- It is possible for horse and buggies to use this intersection given its location and proximity to the St. Jacobs area.

12) What traditional road improvements are proposed for this intersection?

(eg. Traffic signals, all-way stop, auxiliary lanes, etc.) Please attach a sketch of the traditional road improvements.

- Traffic signals.

13) If traffic control signals are being considered, are the traffic signal warrants met for the horizon year?

- Signal are warranted.

14) What size of roundabout is being considered for this intersection?

- 55 m ICD two-lane

15) 20-Year Life Cycle Cost Estimate

10-Year AADT: 32,100

Non-injury Social Collision Cost: $5000

Injury Social Collision Cost: $82,000

Fatal Social Collision Cost: $13,600,000

Discount Rate (i): 6%

20 Year Life-Cycle Cost Comparison		
Cost Item	**Other Traffic Control**	**Roundabout**
Implementation Cost	$800,000 (traffic signals w/ major improvements)	$1,200,000
Injury Collision Cost (Present Value)	$3,522,493.10	$1,516,379.29
Total Life Cycle Cost	**$4,322,493.10**	**$2,716,379.29**

Conclusions and Recommendations

- Roundabout cost is less than signalization
- Proceed to Intersection Control Study

INTERSECTION CONTROL STUDIES
SAFETY ASSESSMENT METHODOLOGY

Region of Waterloo

Last Rev Nov 2018

Scenario: 2030 Total Traffic Horizon

Major Road: Speedsville Road

Minor Road: Equestrian Way

Major Road Direction:	North / South
Urban or Rural:	Rural
Proposed Control:	Signalized
Proposed Config.	3-Leg Intersection

LT Lanes Proposed (non roundabout):		RT Lanes Proposed (non roundabout):	
Major	1 Approach	Major	No RT Lanes
Minor	1 Approach	Minor	No RT Lanes

Is there going to be any fully protected left-turn phasing?	NO
Number of approaches with FPLTP:	N/A

Is the proposed intersection "new" or is it existing:	EXISTING
Does control and number of approaches remain the same:	NO
Will the proposed intersection have illumination:	YES

NOTE: No collision history required

5-Year Total Collisions: N/A

5-Year PDO Collisions: N/A

Proposed Multi-Lane or Single Lane RA? SINGLE LANE ROUNDABOUT

Major Road (mid-block) 10-Year Horizon AADT: 16,100

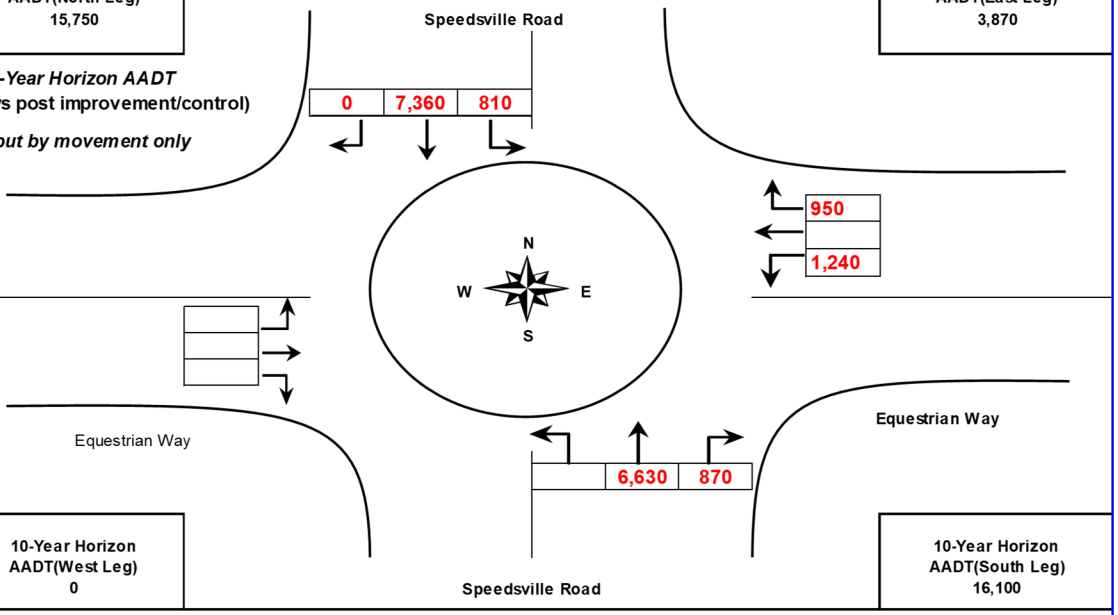
Minor Road (mid-block) 10-Year Horizon AADT: 3,870

10-Year Horizon AADT(North Leg) 15,750

10-Year Horizon AADT(East Leg) 3,870

** 10-Year Horizon AADT (10ys post improvement/control)*

** Input by movement only*



10-Year Horizon AADT(West Leg) 0

10-Year Horizon AADT(South Leg) 16,100

Direct Capital Costs

Fatal = $1,656,500

Injury = $60,500

PDO = $5,000

Discount Rate = 0.06

20-Year Present Value Collision Costs (DIRECT CAPITAL COSTS)

Collisions by Severity	Total	PDO	Injury	Fatal
Signalized	$1,885,609.17	$224,810.46	$1,394,799.77	$265,998.94
Roundabout	$559,586.71	$238,686.28	$320,900.44	$0.00

Region of Waterloo

INTERSECTION CONTROL STUDIES
SAFETY ASSESSMENT METHODOLOGY (HSM)

Last Rev Nov 2018

Scenario:	**2030 Total Traffic Horizon**	**Major Road:** Speedsville Road **Minor Road:** Equestrian Way	
Major Road Direction:	North / South	**Roundabout Conflicts:**	**7670**
Urban or Rural:	Rural		
Proposed Control:	Signalized	**5-Year Total Collisions:**	**N/A**
Proposed Config.	3-Leg Intersection	**5-Year PDO Collisions:**	**N/A**

Estimated **ANNUAL (1-YEAR ONLY)** Collisions				
Future Expected Collisions by Severity	**Total**	**PDO**	**Injury**	**Fatal**
Signalized	**5.94**	**3.92**	**2.01**	**0.01**
Roundabout	**4.62**	**4.16**	**0.46**	**0.00**

TOTAL CRASH COEFFICIENTS USED IN CALCULATION						Fatal/Inj. Ratio	Collision Factor
Control	Intersection Config	Intercept	AADTmaj	AADTmin	Overdispersion		
Signalized	3-Leg Intersection	**-5.13**	**0.6**	**0.2**	**N/A**	**0.007**	**n/a**

PDO CRASH COEFFICIENTS USED IN CALCULATION						Fatal/Inj. Ratio	Collision Factor
Control	Intersection Config	Intercept	AADTmaj	AADTmin	Overdispersion		
Signalized	3-Leg Intersection	**-5.13**	**0.6**	**0.2**	**N/A**	**0.007**	**0.66**

Collision Modification Factors (cmf's)	Left Turn Lane	Right Turn Lane	Calibration Factor	Empirical Bays Weighting	
			0.64	Total	PDO
				N/A	**N/A**
	Illumination	Protected LT Phasing			
	0.90	**1.00**			

Comments:

Appendix O

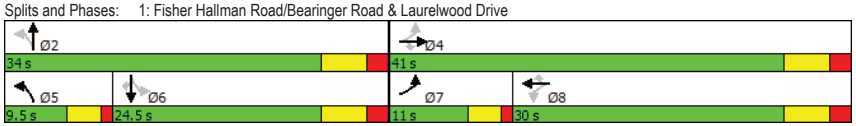
2032 Total Traffic Operations with Improvements Reports

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	384	373	514	47	77	16	184	711	108	52	283	95
Future Volume (vph)	384	373	514	47	77	16	184	711	108	52	283	95
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1650	1650	1775	1900	1750
Storage Length (m)	85.0		0.0	90.0		90.0	90.0		0.0	60.0		60.0
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (m)	35.0			7.5			45.0			70.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Ped Bike Factor	1.00		0.98	0.99		0.99	1.00	1.00		1.00		0.98
Frt			0.850			0.850		0.980				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1653	1881	1430	1188	1845	1488	1506	2973	0	1686	3574	1430
Flt Permitted	0.594			0.540			0.476			0.343		
Satd. Flow (perm)	1031	1881	1401	671	1845	1466	753	2973	0	608	3574	1396
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			464			160		27				160
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		133.2			228.2			160.2			234.1	
Travel Time (s)		9.6			16.4			11.5			16.9	
Confl. Peds. (#/hr)	2		7	7		2	2		3	3		2
Peak Hour 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
Heavy Vehicles (%)	2%	1%	4%	42%	3%	0%	12%	1%	16%	0%	1%	4%
Adj. Flow (vph)	384	373	514	47	77	16	184	711	108	52	283	95
Shared Lane Traffic (%)												
Lane Group Flow (vph)	384	373	514	47	77	16	184	819	0	52	283	95
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	pm+pt	NA		Perm	NA	Perm
Protected Phases	7	4			8		5	2			6	
Permitted Phases	4		4	8		8	2			6		6
Detector Phase	7	4	4	8	8	8	5	2		6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	9.5	24.0	24.0	30.0	30.0	30.0	9.5	24.0		24.0	24.0	24.0
Total Split (s)	11.0	41.0	41.0	30.0	30.0	30.0	9.5	34.0		24.5	24.5	24.5
Total Split (%)	14.7%	54.7%	54.7%	40.0%	40.0%	40.0%	12.7%	45.3%		32.7%	32.7%	32.7%
Maximum Green (s)	7.0	35.0	35.0	24.0	24.0	24.0	5.5	28.0		18.5	18.5	18.5
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0		4.0	4.0	4.0
All-Red Time (s)	1.0	2.0	2.0	2.0	2.0	2.0	1.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	0.0	-2.0	-2.0	-2.0	0.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	2.0	4.0	6.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lead			Lag	Lag	Lag	Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes	Yes			Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Max		Max	Max	Max
Walk Time (s)		7.0	7.0	7.0	7.0	7.0		7.0		7.0	7.0	7.0
Flash Dont Walk (s)		11.0	11.0	11.0	11.0	11.0		11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)		0	0	0	0	0		0		0	0	0
Act Effct Green (s)	23.5	21.5	19.4	11.8	11.8	11.8	30.3	30.3		20.7	20.7	20.7
Actuated g/C Ratio	0.39	0.36	0.32	0.20	0.20	0.20	0.51	0.51		0.35	0.35	0.35
v/c Ratio	0.75	0.55	0.67	0.36	0.21	0.04	0.41	0.54		0.25	0.23	0.16

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	24.8	18.4	7.4	28.8	21.5	0.2	13.2	12.4		20.1	15.8	1.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	24.8	18.4	7.4	28.8	21.5	0.2	13.2	12.4		20.1	15.8	1.5
LOS	C	B	A	C	C	A	B	B		C	B	A
Approach Delay		15.9			21.5			12.6			13.2	
Approach LOS		B			C			B			B	
Queue Length 50th (m)	33.4	33.1	3.9	4.8	7.7	0.0	11.4	31.1		4.3	12.2	0.0
Queue Length 95th (m)	#56.5	54.7	25.0	13.6	17.3	0.0	27.0	56.4		14.1	23.4	2.9
Internal Link Dist (m)		109.2			204.2			136.2			210.1	
Turn Bay Length (m)	85.0			90.0		90.0	90.0			60.0		60.0
Base Capacity (vph)	512	1174	1017	294	809	733	450	1518		210	1236	587
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.75	0.32	0.51	0.16	0.10	0.02	0.41	0.54		0.25	0.23	0.16

Intersection Summary		
Area Type:	Other	
Cycle Length: 75		
Actuated Cycle Length: 59.8		
Natural Cycle: 75		
Control Type: Semi Act-Uncoord		
Maximum v/c Ratio: 0.75		
Intersection Signal Delay: 14.6		Intersection LOS: B
Intersection Capacity Utilization 71.8%		ICU Level of Service C
Analysis Period (min) 15		
# 95th percentile volume exceeds capacity, queue may be longer.		
Queue shown is maximum after two cycles.		

Splits and Phases: 1: Fisher Hallman Road/Bearinger Road & Laurelwood Drive



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	384	373	514	47	77	16	184	711	108	52	283	95
Future Volume (vph)	384	373	514	47	77	16	184	711	108	52	283	95
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1650	1650	1775	1900	1750
Total Lost time (s)	2.0	4.0	6.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1652	1881	1403	1182	1845	1467	1504	2974		1683	3574	1397
Flt Permitted	0.59	1.00	1.00	0.54	1.00	1.00	0.48	1.00		0.34	1.00	1.00
Satd. Flow (perm)	1032	1881	1403	672	1845	1467	754	2974		608	3574	1397
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	384	373	514	47	77	16	184	711	108	52	283	95
RTOR Reduction (vph)	0	0	305	0	0	13	0	14	0	0	0	63
Lane Group Flow (vph)	384	373	209	47	77	3	184	805	0	52	283	32
Confl. Peds. (#/hr)	2		7	7		2	2		3	3		2
Heavy Vehicles (%)	2%	1%	4%	42%	3%	0%	12%	1%	16%	0%	1%	4%
Turn Type	pm+pt	NA	Perm	Perm	NA	Perm	pm+pt	NA		Perm	NA	Perm
Protected Phases	7	4			8		5	2			6	
Permitted Phases	4		4	8		8	2			6		6
Actuated Green, G (s)	20.9	20.9	20.9	8.5	8.5	8.5	28.2	28.2		18.7	18.7	18.7
Effective Green, g (s)	22.9	22.9	20.9	10.5	10.5	10.5	28.2	30.2		20.7	20.7	20.7
Actuated g/C Ratio	0.37	0.37	0.34	0.17	0.17	0.17	0.46	0.49		0.34	0.34	0.34
Clearance Time (s)	4.0	6.0	6.0	6.0	6.0	6.0	4.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	492	704	479	115	317	252	415	1469		205	1210	473
v/s Ratio Prot	c0.13	c0.20			0.04		0.04	c0.27			0.08	
v/s Ratio Perm	0.16		0.15	0.07		0.00	0.16			0.09		0.02
v/c Ratio	0.78	0.53	0.44	0.41	0.24	0.01	0.44	0.55		0.25	0.23	0.07
Uniform Delay, d1	15.8	14.9	15.5	22.5	21.9	21.0	10.3	10.7		14.6	14.5	13.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	7.9	0.7	0.6	2.4	0.4	0.0	0.8	1.5		3.0	0.5	0.3
Delay (s)	23.7	15.6	16.2	24.9	22.3	21.0	11.0	12.2		17.6	15.0	13.9
Level of Service	C	B	B	C	C	C	B	B		B	B	B
Approach Delay (s)		18.3			23.0			12.0			15.1	
Approach LOS		B			C			B			B	

Intersection Summary				
HCM 2000 Control Delay	15.8	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.66			
Actuated Cycle Length (s)	61.1	Sum of lost time (s)	14.0	
Intersection Capacity Utilization	71.8%	ICU Level of Service	C	
Analysis Period (min)	15			

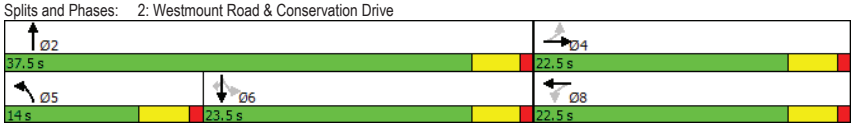
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	198	42	1342	53	34	14	386	194	26	12	344	42
Future Volume (vph)	198	42	1342	53	34	14	386	194	26	12	344	42
Ideal Flow (vphpl)	1650	1650	1750	1550	1550	1550	1775	1650	1650	1650	1650	1750
Storage Length (m)	0.0		50.0	0.0		0.0	25.0		0.0	0.0		50.0
Storage Lanes	0		1	0		0	1		0	0		1
Taper Length (m)	0.0			0.0			35.0			0.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00	0.99		1.00		1.00	1.00			1.00	0.98
Frt			0.850		0.981			0.982				0.850
Flt Protected		0.960			0.974		0.950				0.998	
Satd. Flow (prot)	0	1526	1473	0	1442	0	3116	1552	0	0	1605	1403
Flt Permitted		0.748			0.760		0.950				0.988	
Satd. Flow (perm)	0	1185	1455	0	1125	0	3106	1552	0	0	1589	1368
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			666		14			18				109
Link Speed (k/h)		60			50			50			50	
Link Distance (m)		1012.1			151.5			545.8			326.3	
Travel Time (s)		60.7			10.9			39.3			23.5	
Confl. Peds. (#/hr)	3		1	1		3	3		1	1		3
Peak Hour 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
Heavy Vehicles (%)	4%	3%	1%	0%	7%	0%	5%	4%	5%	20%	2%	6%
Adj. Flow (vph)	198	42	1342	53	34	14	386	194	26	12	344	42
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	240	1342	0	101	0	386	220	0	0	356	42
Turn Type	Perm	NA	Free	Perm	NA		Prot	NA		Perm	NA	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4		Free	8						6		6
Detector Phase	4	4		8	8		5	2		6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	22.5	22.5		22.5	22.5		9.5	22.5		22.5	22.5	22.5
Total Split (s)	22.5	22.5		22.5	22.5		14.0	37.5		23.5	23.5	23.5
Total Split (%)	37.5%	37.5%		37.5%	37.5%		23.3%	62.5%		39.2%	39.2%	39.2%
Maximum Green (s)	18.0	18.0		18.0	18.0		9.5	33.0		19.0	19.0	19.0
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)		0.0			0.0		0.0	0.0			0.0	0.0
Total Lost Time (s)		4.5			4.5		4.5	4.5			4.5	4.5
Lead/Lag							Lead			Lag	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None		None	Max		Max	Max	Max
Walk Time (s)	7.0	7.0		7.0	7.0			7.0		7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0			11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0		0	0			0		0	0	0
Act Effct Green (s)		15.3	57.4		15.3		9.4	33.1			19.2	19.2
Actuated g/C Ratio		0.27	1.00		0.27		0.16	0.58			0.33	0.33
v/c Ratio		0.76	0.92		0.33		0.76	0.24			0.67	0.08

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay		36.8	13.7		17.8		35.5	7.0			25.4	0.3
Queue Delay		0.0	0.0		0.0		0.0	0.0			0.0	0.0
Total Delay		36.8	13.7		17.8		35.5	7.0			25.4	0.3
LOS		D	B		B		D	A			C	A
Approach Delay		17.2			17.8			25.2			22.7	
Approach LOS		B			B			C			C	
Queue Length 50th (m)		24.1	0.0		7.6		22.2	10.7			35.3	0.0
Queue Length 95th (m)		#53.6	#43.1		18.6		#41.7	21.1			#70.9	0.3
Internal Link Dist (m)		988.1			127.5			521.8			302.3	
Turn Bay Length (m)			50.0				25.0					50.0
Base Capacity (vph)		372	1455		363		517	902			531	530
Starvation Cap Reductn		0	0		0		0	0			0	0
Spillback Cap Reductn		0	0		0		0	0			0	0
Storage Cap Reductn		0	0		0		0	0			0	0
Reduced v/c Ratio		0.65	0.92		0.28		0.75	0.24			0.67	0.08

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 57.4			
Natural Cycle: 60			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.92			
Intersection Signal Delay: 19.9		Intersection LOS: B	
Intersection Capacity Utilization 69.7%		ICU Level of Service C	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 2: Westmount Road & Conservation Drive



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	198	42	1342	53	34	14	386	194	26	12	344	42
Future Volume (vph)	198	42	1342	53	34	14	386	194	26	12	344	42
Ideal Flow (vphpl)	1650	1650	1750	1550	1550	1550	1775	1650	1650	1650	1650	1750
Total Lost time (s)		4.5	4.0		4.5		4.5	4.5			4.5	4.5
Lane Util. Factor		1.00	1.00		1.00		0.97	1.00			1.00	1.00
Frpb, ped/bikes		1.00	0.99		1.00		1.00	1.00			1.00	0.98
Flpb, ped/bikes		1.00	1.00		1.00		1.00	1.00			1.00	1.00
Frt		1.00	0.85		0.98		1.00	0.98			1.00	0.85
Flt Protected		0.96	1.00		0.97		0.95	1.00			1.00	1.00
Satd. Flow (prot)		1521	1455		1443		3116	1553			1605	1369
Flt Permitted		0.75	1.00		0.76		0.95	1.00			0.99	1.00
Satd. Flow (perm)		1185	1455		1126		3116	1553			1589	1369
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	198	42	1342	53	34	14	386	194	26	12	344	42
RTOR Reduction (vph)	0	0	0	0	10	0	0	8	0	0	0	28
Lane Group Flow (vph)	0	240	1342	0	91	0	386	212	0	0	356	14
Confl. Peds. (#/hr)	3		1	1		3	3		1	1		3
Heavy Vehicles (%)	4%	3%	1%	0%	7%	0%	5%	4%	5%	20%	2%	6%
Turn Type	Perm	NA	Free	Perm	NA		Prot	NA		Perm	NA	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4		Free	8						6		6
Actuated Green, G (s)		15.3	57.4		15.3		9.4	33.1			19.2	19.2
Effective Green, g (s)		15.3	57.4		15.3		9.4	33.1			19.2	19.2
Actuated g/C Ratio		0.27	1.00		0.27		0.16	0.58			0.33	0.33
Clearance Time (s)		4.5			4.5		4.5	4.5			4.5	4.5
Vehicle Extension (s)		3.0			3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)		315	1455		300		510	895			531	457
v/s Ratio Prot							0.12	0.14				
v/s Ratio Perm		0.20	c0.92		0.08						0.22	0.01
v/c Ratio		0.76	0.92		0.30		0.76	0.24			0.67	0.03
Uniform Delay, d1		19.4	0.0		16.8		22.9	6.0			16.4	12.8
Progression Factor		1.00	1.00		1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2		10.4	11.1		0.6		6.3	0.6			6.6	0.1
Delay (s)		29.8	11.1		17.4		29.2	6.6			23.0	13.0
Level of Service		C	B		B		C	A			C	B
Approach Delay (s)		14.0			17.4			21.0			21.9	
Approach LOS		B			B			C			C	

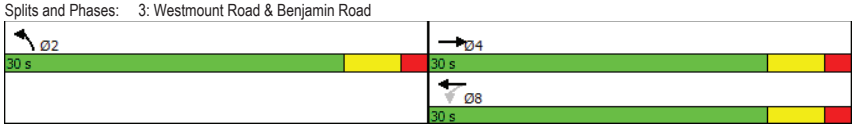
Intersection Summary					
HCM 2000 Control Delay		16.9	HCM 2000 Level of Service		B
HCM 2000 Volume to Capacity ratio		1.21			
Actuated Cycle Length (s)		57.4	Sum of lost time (s)		13.5
Intersection Capacity Utilization		69.7%	ICU Level of Service		C
Analysis Period (min)		15			
c Critical Lane Group					

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	224	102	166	81	34	414
Future Volume (vph)	224	102	166	81	34	414
Ideal Flow (vphpl)	1650	1650	1775	1900	1775	1750
Storage Length (m)		0.0	55.0		0.0	30.0
Storage Lanes		0	1		1	0
Taper Length (m)			95.0		0.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99		1.00			
Frt	0.958				0.875	
Flt Protected			0.950		0.996	
Satd. Flow (prot)	1511	0	1653	1810	1503	0
Flt Permitted			0.561		0.996	
Satd. Flow (perm)	1511	0	975	1810	1503	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	48				414	
Link Speed (k/h)	80			80	50	
Link Distance (m)	1516.2			424.2	223.3	
Travel Time (s)	68.2			19.1	16.1	
Confl. Peds. (#/hr)		1	1			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	6%	2%	5%	14%	2%
Adj. Flow (vph)	224	102	166	81	34	414
Shared Lane Traffic (%)						
Lane Group Flow (vph)	326	0	166	81	448	0
Turn Type	NA		Perm	NA	Prot	
Protected Phases	4			8	2	
Permitted Phases			8			
Detector Phase	4		8	8	2	
Switch Phase						
Minimum Initial (s)	5.0		5.0	5.0	5.0	
Minimum Split (s)	24.0		24.0	24.0	24.0	
Total Split (s)	30.0		30.0	30.0	30.0	
Total Split (%)	50.0%		50.0%	50.0%	50.0%	
Maximum Green (s)	24.0		24.0	24.0	24.0	
Yellow Time (s)	4.0		4.0	4.0	4.0	
All-Red Time (s)	2.0		2.0	2.0	2.0	
Lost Time Adjust (s)	-2.0		-2.0	0.0	-2.0	
Total Lost Time (s)	4.0		4.0	6.0	4.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Recall Mode	Max		Max	Max	None	
Walk Time (s)	7.0		7.0	7.0	7.0	
Flash Dont Walk (s)	11.0		11.0	11.0	11.0	
Pedestrian Calls (#/hr)	0		0	0	0	
Act Effct Green (s)	26.2		26.2	24.2	10.6	
Actuated g/C Ratio	0.58		0.58	0.54	0.24	
v/c Ratio	0.36		0.29	0.08	0.67	

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Control Delay	6.6		7.8	6.6	8.0	
Queue Delay	0.0		0.0	0.0	0.0	
Total Delay	6.6		7.8	6.6	8.0	
LOS	A		A	A	A	
Approach Delay	6.6			7.4	8.0	
Approach LOS	A			A	A	
Queue Length 50th (m)	8.1		4.8	2.4	2.2	
Queue Length 95th (m)	31.4		20.6	10.2	18.5	
Internal Link Dist (m)	1492.2			400.2	199.3	
Turn Bay Length (m)			55.0			
Base Capacity (vph)	902		568	975	1049	
Starvation Cap Reductn	0		0	0	0	
Spillback Cap Reductn	0		0	0	0	
Storage Cap Reductn	0		0	0	0	
Reduced v/c Ratio	0.36		0.29	0.08	0.43	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 44.9			
Natural Cycle: 50			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.67			
Intersection Signal Delay: 7.4		Intersection LOS: A	
Intersection Capacity Utilization 70.0%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 3: Westmount Road & Benjamin Road



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	224	102	166	81	34	414
Future Volume (vph)	224	102	166	81	34	414
Ideal Flow (vphpl)	1650	1650	1775	1900	1775	1750
Total Lost time (s)	4.0		4.0	6.0	4.0	
Lane Util. Factor	1.00		1.00	1.00	1.00	
Frpb, ped/bikes	0.99		1.00	1.00	1.00	
Flpb, ped/bikes	1.00		1.00	1.00	1.00	
Frt	0.96		1.00	1.00	0.88	
Flt Protected	1.00		0.95	1.00	1.00	
Satd. Flow (prot)	1510		1652	1810	1504	
Flt Permitted	1.00		0.56	1.00	1.00	
Satd. Flow (perm)	1510		976	1810	1504	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	224	102	166	81	34	414
RTOR Reduction (vph)	20	0	0	0	316	0
Lane Group Flow (vph)	306	0	166	81	132	0
Confl. Peds. (#/hr)		1	1			
Heavy Vehicles (%)	3%	6%	2%	5%	14%	2%
Turn Type	NA		Perm	NA	Prot	
Protected Phases	4			8	2	
Permitted Phases			8			
Actuated Green, G (s)	24.2		24.2	24.2	8.6	
Effective Green, g (s)	26.2		26.2	24.2	10.6	
Actuated g/C Ratio	0.58		0.58	0.54	0.24	
Clearance Time (s)	6.0		6.0	6.0	6.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	883		570	977	355	
v/s Ratio Prot	c0.20			0.04	c0.09	
v/s Ratio Perm			0.17			
v/c Ratio	0.35		0.29	0.08	0.37	
Uniform Delay, d1	4.8		4.7	5.0	14.3	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	1.1		1.3	0.2	0.7	
Delay (s)	5.9		5.9	5.1	15.0	
Level of Service	A		A	A	B	
Approach Delay (s)	5.9			5.7	15.0	
Approach LOS	A			A	B	

Intersection Summary			
HCM 2000 Control Delay	9.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	44.8	Sum of lost time (s)	10.0
Intersection Capacity Utilization	70.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	16	85	117	51	202	76
Future Volume (vph)	16	85	117	51	202	76
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.886		0.959			
Flt Protected	0.992					0.965
Satd. Flow (prot)	1393	0	1470	0	0	1526
Flt Permitted	0.992					0.965
Satd. Flow (perm)	1393	0	1470	0	0	1526
Link Speed (k/h)	80		80			80
Link Distance (m)	1200.3		1761.7			72.7
Travel Time (s)	54.0		79.3			3.3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	8%	12%	11%	0%	3%	8%
Adj. Flow (vph)	16	85	117	51	202	76
Shared Lane Traffic (%)						
Lane Group Flow (vph)	101	0	168	0	0	278
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	44.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	16	85	117	51	202	76
Future Volume (Veh/h)	16	85	117	51	202	76
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	16	85	117	51	202	76
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	622	142			168	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	622	142			168	
tC, single (s)	6.5	6.3			4.1	
tC, 2 stage (s)						
tF (s)	3.6	3.4			2.2	
p0 queue free %	96	90			86	
cM capacity (veh/h)	377	879			1404	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	101	168	278
Volume Left	16	0	202
Volume Right	85	51	0
cSH	726	1700	1404
Volume to Capacity	0.14	0.10	0.14
Queue Length 95th (m)	3.9	0.0	4.0
Control Delay (s)	10.8	0.0	6.1
Lane LOS	B		A
Approach Delay (s)	10.8	0.0	6.1
Approach LOS	B		

Intersection Summary			
Average Delay		5.1	
Intersection Capacity Utilization		44.8%	ICU Level of Service A
Analysis Period (min)		15	

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	27	86	85	84	62	34
Future Volume (vph)	27	86	85	84	62	34
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.897		0.933			
Flt Protected	0.988					0.969
Satd. Flow (prot)	1438	0	1495	0	0	1500
Flt Permitted	0.988					0.969
Satd. Flow (perm)	1438	0	1495	0	0	1500
Link Speed (k/h)	80		80			80
Link Distance (m)	605.5		233.8			1761.7
Travel Time (s)	27.2		10.5			79.3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	5%	10%	3%	3%	8%	4%
Adj. Flow (vph)	27	86	85	84	62	34
Shared Lane Traffic (%)						
Lane Group Flow (vph)	113	0	169	0	0	96
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 34.4%			ICU Level of Service A
Analysis Period (min) 15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	27	86	85	84	62	34
Future Volume (Veh/h)	27	86	85	84	62	34
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	27	86	85	84	62	34
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	285	127			169	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	285	127			169	
tC, single (s)	6.4	6.3			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.4			2.3	
p0 queue free %	96	90			95	
cM capacity (veh/h)	667	902			1373	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	113	169	96
Volume Left	27	0	62
Volume Right	86	84	0
cSH	832	1700	1373
Volume to Capacity	0.14	0.10	0.05
Queue Length 95th (m)	3.8	0.0	1.1
Control Delay (s)	10.0	0.0	5.1
Lane LOS	B		A
Approach Delay (s)	10.0	0.0	5.1
Approach LOS	B		

Intersection Summary			
Average Delay	4.3		
Intersection Capacity Utilization	34.4%	ICU Level of Service	A
Analysis Period (min)	15		

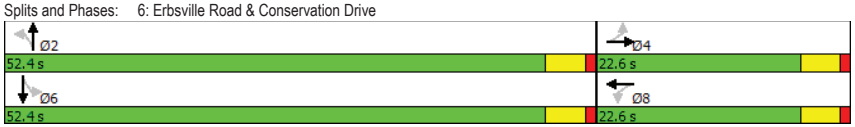


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	51	5	205	52	112	5	214	319	274	215	0
Future Volume (vph)	12	51	5	205	52	112	5	214	319	274	215	0
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Storage Length (m)	0.0		0.0	50.0		0.0	0.0		50.0	50.0		0.0
Storage Lanes	0		0	1		0	0		0	0		0
Taper Length (m)	0.0			55.0			0.0			65.0		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.990			0.909			0.920				
Flt Protected		0.991		0.950	0.994						0.973	
Satd. Flow (prot)	0	1498	0	1320	1290	0	0	1364	0	0	1426	0
Flt Permitted		0.936		0.810	0.965			0.997			0.560	
Satd. Flow (perm)	0	1415	0	1125	1253	0	0	1360	0	0	821	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			97			193				
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		187.7			400.3			488.0			394.6	
Travel Time (s)		13.5			28.8			35.1			28.4	
Peak Hour 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
Heavy Vehicles (%)	0%	2%	0%	6%	0%	4%	0%	7%	3%	4%	8%	0%
Adj. Flow (vph)	12	51	5	205	52	112	5	214	319	274	215	0
Shared Lane Traffic (%)				10%								
Lane Group Flow (vph)	0	68	0	184	185	0	0	538	0	0	489	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	22.6	22.6		22.6	22.6		52.4	52.4		52.4	52.4	
Total Split (%)	30.1%	30.1%		30.1%	30.1%		69.9%	69.9%		69.9%	69.9%	
Maximum Green (s)	18.1	18.1		18.1	18.1		47.9	47.9		47.9	47.9	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)		4.5		4.5	4.5			4.5			4.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		15.7		15.7	15.7			49.4			49.4	
Actuated g/C Ratio		0.21		0.21	0.21			0.67			0.67	
v/c Ratio		0.22		0.77	0.54			0.55			0.89	
Control Delay		23.7		49.9	18.8			6.9			34.6	
Queue Delay		0.0		0.0	0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay		23.7		49.9	18.8			6.9			34.6	
LOS		C		D	B			A			C	
Approach Delay		23.7			34.3			6.9			34.6	
Approach LOS		C			C			A			C	
Queue Length 50th (m)		7.5		26.2	11.2			22.4			56.2	
Queue Length 95th (m)		17.7		#56.3	31.1			47.3			#127.9	
Internal Link Dist (m)		163.7			376.3			464.0			370.6	
Turn Bay Length (m)				50.0								
Base Capacity (vph)		349		274	379			971			547	
Starvation Cap Reductn		0		0	0			0			0	
Spillback Cap Reductn		0		0	0			0			0	
Storage Cap Reductn		0		0	0			0			0	
Reduced v/c Ratio		0.19		0.67	0.49			0.55			0.89	

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 74.1			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.89			
Intersection Signal Delay: 23.9		Intersection LOS: C	
Intersection Capacity Utilization 101.3%		ICU Level of Service G	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 6: Erbsville Road & Conservation Drive



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	51	5	205	52	112	5	214	319	274	215	0
Future Volume (vph)	12	51	5	205	52	112	5	214	319	274	215	0
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Total Lost time (s)		4.5		4.5	4.5			4.5			4.5	
Lane Util. Factor		1.00		0.95	0.95			1.00			1.00	
Frt		0.99		1.00	0.91			0.92			1.00	
Flt Protected		0.99		0.95	0.99			1.00			0.97	
Satd. Flow (prot)		1499		1320	1291			1363			1426	
Flt Permitted		0.94		0.81	0.96			1.00			0.56	
Satd. Flow (perm)		1416		1125	1253			1359			821	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	12	51	5	205	52	112	5	214	319	274	215	0
RTOR Reduction (vph)	0	4	0	0	76	0	0	64	0	0	0	0
Lane Group Flow (vph)	0	64	0	184	109	0	0	474	0	0	489	0
Heavy Vehicles (%)	0%	2%	0%	6%	0%	4%	0%	7%	3%	4%	8%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		15.7		15.7	15.7			49.4			49.4	
Effective Green, g (s)		15.7		15.7	15.7			49.4			49.4	
Actuated g/C Ratio		0.21		0.21	0.21			0.67			0.67	
Clearance Time (s)		4.5		4.5	4.5			4.5			4.5	
Vehicle Extension (s)		3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)		300		238	265			906			547	
v/s Ratio Prot												
v/s Ratio Perm		0.05		c0.16	0.09			0.35			c0.60	
v/c Ratio		0.21		0.77	0.41			0.52			0.89	
Uniform Delay, d1		24.1		27.5	25.2			6.3			10.2	
Progression Factor		1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2		0.4		14.4	1.0			2.2			19.7	
Delay (s)		24.5		41.9	26.2			8.5			29.8	
Level of Service		C		D	C			A			C	
Approach Delay (s)		24.5			34.1			8.5			29.8	
Approach LOS		C			C			A			C	

Intersection Summary					
HCM 2000 Control Delay	22.8	HCM 2000 Level of Service	C		
HCM 2000 Volume to Capacity ratio	0.86				
Actuated Cycle Length (s)	74.1	Sum of lost time (s)	9.0		
Intersection Capacity Utilization	101.3%	ICU Level of Service	G		
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	256	219	74	118	93	192	298	129	254	340	22
Future Volume (vph)	21	256	219	74	118	93	192	298	129	254	340	22
Ideal Flow (vphpl)	1775	1900	1750	1775	1650	1650	1775	1900	1750	1775	1650	1650
Storage Length (m)	20.0		20.0	25.0		0.0	65.0		30.0	25.0		0.0
Storage Lanes	1		1	1		0	1		1	1		0
Taper Length (m)	35.0			10.0			80.0			35.0		
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	0.90		0.94	0.97	0.93		0.99		0.94	0.98	1.00	
Frt			0.850		0.934				0.850		0.991	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1591	1810	1403	1561	1332	0	1606	1776	1430	1653	1530	0
Flt Permitted	0.588			0.518			0.496			0.416		
Satd. Flow (perm)	891	1810	1323	830	1332	0	831	1776	1339	706	1530	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			219		68				129		6	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		123.5			178.3			236.9			930.8	
Travel Time (s)		8.9			12.8			17.1			67.0	
Confl. Peds. (#/hr)	79		23	23		79	9		27	27		9
Peak Hour 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
Heavy Vehicles (%)	6%	5%	6%	8%	9%	7%	5%	7%	4%	2%	6%	17%
Adj. Flow (vph)	21	256	219	74	118	93	192	298	129	254	340	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	21	256	219	74	211	0	192	298	129	254	362	0
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2		2	6		
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5		9.5	22.5	22.5	9.5	22.5	
Total Split (s)	22.5	22.5	22.5	22.5	22.5		10.0	24.5	24.5	13.0	27.5	
Total Split (%)	37.5%	37.5%	37.5%	37.5%	37.5%		16.7%	40.8%	40.8%	21.7%	45.8%	
Maximum Green (s)	18.0	18.0	18.0	18.0	18.0		5.5	20.0	20.0	8.5	23.0	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	
Walk Time (s)	7.0	7.0	7.0	7.0	7.0			7.0	7.0		7.0	
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0			11.0	11.0		11.0	
Pedestrian Calls (#/hr)	0	0	0	0	0			0	0		0	
Act Effct Green (s)	18.0	18.0	18.0	18.0	18.0		25.5	20.0	20.0	31.5	23.0	
Actuated g/C Ratio	0.30	0.30	0.30	0.30	0.30		0.42	0.33	0.33	0.52	0.38	
v/c Ratio	0.08	0.47	0.40	0.30	0.47		0.45	0.50	0.24	0.50	0.61	
Control Delay	16.1	20.6	5.3	20.2	15.6		11.7	19.6	4.6	11.1	20.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	16.1	20.6	5.3	20.2	15.6		11.7	19.6	4.6	11.1	20.1	
LOS	B	C	A	C	B		B	B	A	B	C	
Approach Delay		13.7			16.8			14.1			16.4	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		B			B			B			B	
Queue Length 50th (m)	1.7	23.9	0.0	6.5	12.8		10.2	27.1	0.0	14.0	32.1	
Queue Length 95th (m)	6.2	42.9	13.4	16.6	30.2		19.6	47.8	9.8	25.6	57.4	
Internal Link Dist (m)		99.5			154.3			212.9			906.8	
Turn Bay Length (m)	20.0		20.0	25.0			65.0		30.0	25.0		
Base Capacity (vph)	267	543	550	249	447		424	592	532	504	590	
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Reduced v/c Ratio	0.08	0.47	0.40	0.30	0.47		0.45	0.50	0.24	0.50	0.61	

Intersection Summary		
Area Type:	Other	
Cycle Length: 60		
Actuated Cycle Length: 60		
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green		
Natural Cycle: 60		
Control Type: Pretimed		
Maximum v/c Ratio: 0.61		
Intersection Signal Delay: 15.1		Intersection LOS: B
Intersection Capacity Utilization 68.8%		ICU Level of Service C
Analysis Period (min) 15		

Splits and Phases: 7: Erbsville Road & Laurelwood Drive



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	256	219	74	118	93	192	298	129	254	340	22
Future Volume (vph)	21	256	219	74	118	93	192	298	129	254	340	22
Ideal Flow (vphpl)	1775	1900	1750	1775	1650	1650	1775	1900	1750	1775	1650	1650
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.94	1.00	0.93		1.00	1.00	0.94	1.00	1.00	
Flpb, ped/bikes	0.90	1.00	1.00	0.97	1.00		1.00	1.00	1.00	0.99	1.00	
Frt	1.00	1.00	0.85	1.00	0.93		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1439	1810	1323	1522	1332		1599	1776	1339	1638	1530	
Flt Permitted	0.59	1.00	1.00	0.52	1.00		0.50	1.00	1.00	0.42	1.00	
Satd. Flow (perm)	891	1810	1323	831	1332		835	1776	1339	718	1530	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	21	256	219	74	118	93	192	298	129	254	340	22
RTOR Reduction (vph)	0	0	153	0	48	0	0	0	86	0	4	0
Lane Group Flow (vph)	21	256	66	74	163	0	192	298	43	254	358	0
Confl. Peds. (#/hr)	79		23	23		79	9		27	27		9
Heavy Vehicles (%)	6%	5%	6%	8%	9%	7%	5%	7%	4%	2%	6%	17%
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2		2	6		
Actuated Green, G (s)	18.0	18.0	18.0	18.0	18.0		25.5	20.0	20.0	31.5	23.0	
Effective Green, g (s)	18.0	18.0	18.0	18.0	18.0		25.5	20.0	20.0	31.5	23.0	
Actuated g/C Ratio	0.30	0.30	0.30	0.30	0.30		0.42	0.33	0.33	0.52	0.38	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Lane Grp Cap (vph)	267	543	396	249	399		424	592	446	507	586	
v/s Ratio Prot		c0.14			0.12		0.04	0.17		c0.07	c0.23	
v/s Ratio Perm	0.02		0.05	0.09			0.15		0.03	0.19		
v/c Ratio	0.08	0.47	0.17	0.30	0.41		0.45	0.50	0.10	0.50	0.61	
Uniform Delay, d1	15.1	17.1	15.5	16.1	16.8		11.3	16.0	13.8	8.5	14.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.6	2.9	0.9	3.0	3.1		3.5	3.0	0.4	3.5	4.7	
Delay (s)	15.6	20.0	16.4	19.2	19.9		14.8	19.1	14.2	12.0	19.6	
Level of Service	B	C	B	B	B		B	B	B	B	B	
Approach Delay (s)		18.2			19.7			16.7			16.5	
Approach LOS		B			B			B			B	

Intersection Summary				
HCM 2000 Control Delay	17.4	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.57			
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	13.5	
Intersection Capacity Utilization	68.8%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	732	96	41	238	122	63	42	220	286	22	21
Future Volume (vph)	34	732	96	41	238	122	63	42	220	286	22	21
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
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		0.985			0.959			0.909			0.991	
Flt Protected		0.998			0.995			0.990			0.958	
Satd. Flow (prot)	0	1486	0	0	1403	0	0	1370	0	0	1461	0
Flt Permitted		0.998			0.995			0.990			0.958	
Satd. Flow (perm)	0	1486	0	0	1403	0	0	1370	0	0	1461	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		213.7			555.1			104.8			136.8	
Travel Time (s)		15.4			40.0			7.5			9.8	
Confl. Peds. (#/hr)	10		4	4		10	7		10	10		7
Peak Hour 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
Heavy Vehicles (%)	0%	3%	0%	6%	6%	4%	0%	9%	1%	0%	0%	11%
Adj. Flow (vph)	34	732	96	41	238	122	63	42	220	286	22	21
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	862	0	0	401	0	0	325	0	0	329	0
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Roundabout			
Intersection Capacity Utilization	119.9%	ICU Level of Service	H
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Traffic Volume (veh/h)	34	732	96	41	238	122	63	42	220	286	22	21
Future Volume (veh/h)	34	732	96	41	238	122	63	42	220	286	22	21
Peak Hour 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
Hourly flow rate (vph)	34	732	96	41	238	122	63	42	220	286	22	21
Approach Volume (veh/h)		862			401			325			329	
Crossing Volume (veh/h)		349			139			1052			342	
High Capacity (veh/h)		1053			1242			596			1059	
High v/c (veh/h)		0.82			0.32			0.54			0.31	
Low Capacity (veh/h)		861			1032			460			866	
Low v/c (veh/h)		1.00			0.39			0.71			0.38	

Intersection Summary				
Maximum v/c High		0.82		
Maximum v/c Low		1.00		
Intersection Capacity Utilization		119.9%	ICU Level of Service	H

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	225	23	34	81	20	115
Future Volume (vph)	225	23	34	81	20	115
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.987				0.885	
Flt Protected				0.985	0.993	
Satd. Flow (prot)	1585	0	0	1478	1499	0
Flt Permitted				0.985	0.993	
Satd. Flow (perm)	1585	0	0	1478	1499	0
Link Speed (k/h)	80			80	50	
Link Distance (m)	1200.3			667.7	811.2	
Travel Time (s)	54.0			30.0	58.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	0%	5%	12%	6%	3%
Adj. Flow (vph)	225	23	34	81	20	115
Shared Lane Traffic (%)						
Lane Group Flow (vph)	248	0	0	115	135	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	41.2%	ICU Level of Service	A
Analysis Period (min)	15		

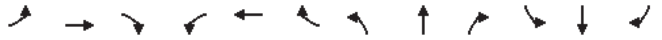
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	225	23	34	81	20	115
Future Volume (Veh/h)	225	23	34	81	20	115
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	225	23	34	81	20	115
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			248		386	236
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			248		386	236
tC, single (s)			4.1		6.5	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			97		97	86
cM capacity (veh/h)			1300		594	800

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	248	115	135
Volume Left	0	34	20
Volume Right	23	0	115
cSH	1700	1300	761
Volume to Capacity	0.15	0.03	0.18
Queue Length 95th (m)	0.0	0.6	5.1
Control Delay (s)	0.0	2.5	10.7
Lane LOS		A	B
Approach Delay (s)	0.0	2.5	10.7
Approach LOS			B

Intersection Summary			
Average Delay		3.5	
Intersection Capacity Utilization		41.2%	ICU Level of Service A
Analysis Period (min)		15	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	12	233	90	5	0	93	108	98	6	139	0
Future Volume (vph)	0	12	233	90	5	0	93	108	98	6	139	0
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Storage Length (m)	0.0		0.0	50.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (m)	0.0			50.0			0.0			0.0		
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
Frt		0.872						0.956				
Flt Protected					0.955			0.985			0.998	
Satd. Flow (prot)	0	1352	0	0	1426	0	0	1444	0	0	1466	0
Flt Permitted					0.955			0.985			0.998	
Satd. Flow (perm)	0	1352	0	0	1426	0	0	1444	0	0	1466	0
Link Speed (k/h)		50			70			50			50	
Link Distance (m)		114.7			143.4			394.6			123.0	
Travel Time (s)		8.3			7.4			28.4			8.9	
Peak Hour 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
Heavy Vehicles (%)	0%	0%	0%	4%	0%	0%	0%	3%	0%	40%	4%	0%
Adj. Flow (vph)	0	12	233	90	5	0	93	108	98	6	139	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	245	0	0	95	0	0	299	0	0	145	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	68.2%	ICU Level of Service C	
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	12	233	90	5	0	93	108	98	6	139	0
Future Volume (Veh/h)	0	12	233	90	5	0	93	108	98	6	139	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	0	12	233	90	5	0	93	108	98	6	139	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)								395				
pX, platoon unblocked												
vC, conflicting volume	496	543	139	733	494	157	139			206		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	496	543	139	733	494	157	139			206		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.5		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.6		
p0 queue free %	100	97	75	61	99	100	94			99		
cM capacity (veh/h)	458	419	915	231	446	894	1457			1169		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	245	95	299	145
Volume Left	0	90	93	6
Volume Right	233	0	98	0
cSH	864	237	1457	1169
Volume to Capacity	0.28	0.40	0.06	0.01
Queue Length 95th (m)	9.4	14.6	1.6	0.1
Control Delay (s)	10.8	30.1	2.8	0.4
Lane LOS	B	D	A	A
Approach Delay (s)	10.8	30.1	2.8	0.4
Approach LOS	B	D		

Intersection Summary				
Average Delay			8.1	
Intersection Capacity Utilization			68.2%	ICU Level of Service
Analysis Period (min)			15	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	126	894	132	162	361	18	65	37	229	60	50	120
Future Volume (vph)	126	894	132	162	361	18	65	37	229	60	50	120
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Storage Length (m)	0.0		50.0	0.0		50.0	0.0		0.0	0.0		0.0
Storage Lanes	0		1	0		1	0		0	0		0
Taper Length (m)	0.0			0.0			0.0			0.0		
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
Frt			0.850			0.850		0.907			0.930	
Flt Protected		0.994			0.985			0.990			0.987	
Satd. Flow (prot)	0	1501	1318	0	1478	1318	0	1336	0	0	1423	0
Flt Permitted		0.994			0.985			0.990			0.987	
Satd. Flow (perm)	0	1501	1318	0	1478	1318	0	1336	0	0	1423	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		166.4			228.8			212.1			132.6	
Travel Time (s)		12.0			16.5			15.3			9.5	
Peak Hour 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
Heavy Vehicles (%)	0%	3%	0%	4%	3%	0%	7%	0%	4%	0%	0%	0%
Adj. Flow (vph)	126	894	132	162	361	18	65	37	229	60	50	120
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1020	132	0	523	18	0	331	0	0	230	0
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Roundabout			
Intersection Capacity Utilization	140.0%	ICU Level of Service H	
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Traffic Volume (veh/h)	126	894	132	162	361	18	65	37	229	60	50	120
Future Volume (veh/h)	126	894	132	162	361	18	65	37	229	60	50	120
Peak Hour 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
Hourly flow rate (vph)	126	894	132	162	361	18	65	37	229	60	50	120
Approach Volume (veh/h)		1152			541			331			230	
Crossing Volume (veh/h)		272			228			1080			588	
High Capacity (veh/h)		1119			1158			583			870	
High v/c (veh/h)		1.03			0.47			0.57			0.26	
Low Capacity (veh/h)		920			956			449			698	
Low v/c (veh/h)		1.25			0.57			0.74			0.33	

Intersection Summary					
Maximum v/c High		1.03			
Maximum v/c Low		1.25			
Intersection Capacity Utilization		140.0%	ICU Level of Service		H



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	1273	4	11	462	16	16	7	34	80	8	36
Future Volume (vph)	14	1273	4	11	462	16	16	7	34	80	8	36
Ideal Flow (vphpl)	1650	1650	1900	1900	1650	1650	1900	1900	1900	1765	1900	1765
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					0.996			0.919			0.877	
Flt Protected		0.999			0.999			0.986		0.950		
Satd. Flow (prot)	0	1586	0	0	1606	0	0	1688	0	1677	1660	0
Flt Permitted		0.999			0.999			0.986		0.950		
Satd. Flow (perm)	0	1586	0	0	1606	0	0	1688	0	1677	1660	0
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		96.4			374.2			130.3			178.3	
Travel Time (s)		5.8			22.5			9.4			12.8	
Confl. Peds. (#/hr)	10					10						
Peak Hour 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
Heavy Vehicles (%)	0%	4%	2%	2%	2%	8%	2%	2%	2%	0%	2%	0%
Adj. Flow (vph)	14	1273	4	11	462	16	16	7	34	80	8	36
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1291	0	0	489	0	0	57	0	80	44	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary					
Area Type:	Other				
Control Type: Unsignalized					
Intersection Capacity Utilization 103.3%			ICU Level of Service G		
Analysis Period (min) 15					



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	1273	4	11	462	16	16	7	34	80	8	36
Future Volume (Veh/h)	14	1273	4	11	462	16	16	7	34	80	8	36
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	14	1273	4	11	462	16	16	7	34	80	8	36
Pedestrians											10	
Lane Width (m)											3.6	
Walking Speed (m/s)											1.2	
Percent Blockage											1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	488			1277			1835	1813	1275	1842	1807	480
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	488			1277			1835	1813	1275	1842	1807	480
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			98			67	91	83	0	89	94
cM capacity (veh/h)	1077			544			49	75	204	43	76	585

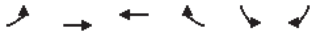
Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2
Volume Total	1291	489	57	80	44
Volume Left	14	11	16	80	0
Volume Right	4	16	34	0	36
cSH	1077	544	97	43	263
Volume to Capacity	0.01	0.02	0.59	1.84	0.17
Queue Length 95th (m)	0.3	0.5	22.0	65.8	4.7
Control Delay (s)	0.5	0.6	85.1	600.7	21.4
Lane LOS	A	A	F	F	C
Approach Delay (s)	0.5	0.6	85.1	395.1	
Approach LOS			F	F	

Intersection Summary					
Average Delay			27.9		
Intersection Capacity Utilization			103.3%	ICU Level of Service	G
Analysis Period (min)			15		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	17	1371	456	30	73	33
Future Volume (vph)	17	1371	456	30	73	33
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.992			0.850
Flt Protected		0.999			0.950	
Satd. Flow (prot)	0	1601	1580	0	1644	1500
Flt Permitted		0.999			0.950	
Satd. Flow (perm)	0	1601	1580	0	1644	1500
Link Speed (k/h)		60	60		50	
Link Distance (m)		374.2	1012.1		87.7	
Travel Time (s)		22.5	60.7		6.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	3%	3%	13%	2%	0%
Adj. Flow (vph)	17	1371	456	30	73	33
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1388	486	0	73	33
Sign Control		Free	Free		Stop	

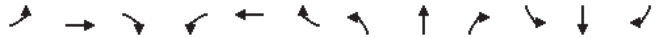
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	109.7%	ICU Level of Service	H
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	17	1371	456	30	73	33
Future Volume (Veh/h)	17	1371	456	30	73	33
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	17	1371	456	30	73	33
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	486				1876	471
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	486				1876	471
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				6	94
cM capacity (veh/h)	1087				77	597

Direction, Lane #	EB 1	WB 1	SB 1	SB 2
Volume Total	1388	486	73	33
Volume Left	17	0	73	0
Volume Right	0	30	0	33
cSH	1087	1700	77	597
Volume to Capacity	0.02	0.29	0.94	0.06
Queue Length 95th (m)	0.4	0.0	39.7	1.4
Control Delay (s)	0.8	0.0	179.5	11.4
Lane LOS	A		F	B
Approach Delay (s)	0.8	0.0	127.2	
Approach LOS			F	

Intersection Summary			
Average Delay	7.3		
Intersection Capacity Utilization	109.7%	ICU Level of Service	H
Analysis Period (min)	15		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	104	6	99	34	2	9	31	422	5	6	273	26
Future Volume (vph)	104	6	99	34	2	9	31	422	5	6	273	26
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Storage Length (m)	0.0		0.0	0.0		0.0	25.0		0.0	0.0		0.0
Storage Lanes	0		0	0		0	1		0	0		0
Taper Length (m)	0.0			0.0			53.0			0.0		
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		0.936			0.973			0.998			0.988	
Flt Protected		0.976			0.964		0.950				0.999	
Satd. Flow (prot)	0	1396	0	0	1454	0	1402	1517	0	0	1476	0
Flt Permitted		0.976			0.964		0.950				0.999	
Satd. Flow (perm)	0	1396	0	0	1454	0	1402	1517	0	0	1476	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		77.1			66.0			326.3			223.3	
Travel Time (s)		5.6			4.8			23.5			16.1	
Confl. Peds. (#/hr)	7		1	1		7			5	5		
Peak Hour 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
Heavy Vehicles (%)	0%	0%	3%	0%	0%	0%	5%	2%	0%	0%	3%	11%
Adj. Flow (vph)	104	6	99	34	2	9	31	422	5	6	273	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	209	0	0	45	0	31	427	0	0	305	0
Sign Control		Stop			Stop			Free			Free	

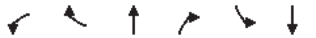
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	49.4%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	104	6	99	34	2	9	31	422	5	6	273	26
Future Volume (Veh/h)	104	6	99	34	2	9	31	422	5	6	273	26
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	104	6	99	34	2	9	31	422	5	6	273	26
Pedestrians					5			1			7	
Lane Width (m)					3.6			3.6			3.6	
Walking Speed (m/s)					1.2			1.2			1.2	
Percent Blockage					0			0			1	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)								326			223	
pX, platoon unblocked												
vC, conflicting volume	799	792	287	892	802	436	299			432		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	799	792	287	892	802	436	299			432		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	64	98	87	84	99	99	98			99		
cM capacity (veh/h)	291	313	749	219	308	618	1245			1134		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total	209	45	31	427	305
Volume Left	104	34	31	0	6
Volume Right	99	9	0	5	26
cSH	410	256	1245	1700	1134
Volume to Capacity	0.51	0.18	0.02	0.25	0.01
Queue Length 95th (m)	22.4	5.0	0.6	0.0	0.1
Control Delay (s)	22.5	22.1	8.0	0.0	0.2
Lane LOS	C	C	A		A
Approach Delay (s)	22.5	22.1	0.5		0.2
Approach LOS	C	C			

Intersection Summary					
Average Delay			5.9		
Intersection Capacity Utilization			49.4%	ICU Level of Service	A
Analysis Period (min)			15		



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	57	4	133	18	1	57
Future Volume (vph)	57	4	133	18	1	57
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.991		0.984			
Flt Protected	0.955					0.999
Satd. Flow (prot)	1638	0	1592	0	0	1616
Flt Permitted	0.955					0.999
Satd. Flow (perm)	1638	0	1592	0	0	1616
Link Speed (k/h)	50		50			50
Link Distance (m)	135.9		143.4			554.5
Travel Time (s)	9.8		10.3			39.9
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	57	4	133	18	1	57
Shared Lane Traffic (%)						
Lane Group Flow (vph)	61	0	151	0	0	58
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 19.6%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	57	4	133	18	1	57
Future Volume (Veh/h)	57	4	133	18	1	57
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	57	4	133	18	1	57
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	201	142			151	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	201	142			151	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	93	100			100	
cM capacity (veh/h)	787	906			1430	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	61	151	58
Volume Left	57	0	1
Volume Right	4	18	0
cSH	794	1700	1430
Volume to Capacity	0.08	0.09	0.00
Queue Length 95th (m)	2.0	0.0	0.0
Control Delay (s)	9.9	0.0	0.1
Lane LOS	A		A
Approach Delay (s)	9.9	0.0	0.1
Approach LOS	A		

Intersection Summary			
Average Delay		2.3	
Intersection Capacity Utilization		19.6%	ICU Level of Service A
Analysis Period (min)		15	



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	652	1	39	367	7	89
Future Volume (vph)	652	1	39	367	7	89
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.875	
Flt Protected				0.995	0.996	
Satd. Flow (prot)	1618	0	0	1610	1508	0
Flt Permitted				0.995	0.996	
Satd. Flow (perm)	1618	0	0	1610	1508	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	400.3			181.6	225.5	
Travel Time (s)	28.8			13.1	16.2	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	652	1	39	367	7	89
Shared Lane Traffic (%)						
Lane Group Flow (vph)	653	0	0	406	96	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	72.7%		ICU Level of Service C
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	652	1	39	367	7	89
Future Volume (Veh/h)	652	1	39	367	7	89
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	652	1	39	367	7	89
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	400					
pX, platoon unblocked						
vC, conflicting volume			653		1098	652
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			653		1098	652
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			96		97	81
cM capacity (veh/h)			934		226	468

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	653	406	96
Volume Left	0	39	7
Volume Right	1	0	89
cSH	1700	934	434
Volume to Capacity	0.38	0.04	0.22
Queue Length 95th (m)	0.0	1.0	6.7
Control Delay (s)	0.0	1.3	15.6
Lane LOS		A	C
Approach Delay (s)	0.0	1.3	15.6
Approach LOS			C

Intersection Summary			
Average Delay		1.8	
Intersection Capacity Utilization		72.7%	ICU Level of Service C
Analysis Period (min)		15	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	737	1	28	388	72	5	0	72	164	0	11
Future Volume (vph)	3	737	1	28	388	72	5	0	72	164	0	11
Ideal Flow (vphpl)	1650	1650	1900	1900	1650	1650	1900	1900	1900	1765	1900	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.980			0.874			0.850	
Flt Protected					0.997			0.997		0.950		
Satd. Flow (prot)	0	1618	0	0	1581	0	0	1623	0	1644	1583	0
Flt Permitted					0.997			0.997		0.950		
Satd. Flow (perm)	0	1618	0	0	1581	0	0	1623	0	1644	1583	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		181.6			170.9			152.2			161.8	
Travel Time (s)		13.1			12.3			11.0			11.6	
Peak Hour 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
Adj. Flow (vph)	3	737	1	28	388	72	5	0	72	164	0	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	741	0	0	488	0	0	77	0	164	11	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary				
Area Type:	Other			
Control Type: Unsignalized				
Intersection Capacity Utilization	75.8%		ICU Level of Service D	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	737	1	28	388	72	5	0	72	164	0	11
Future Volume (Veh/h)	3	737	1	28	388	72	5	0	72	164	0	11
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	3	737	1	28	388	72	5	0	72	164	0	11
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	460			738			1234	1260	738	1296	1224	424
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	460			738			1234	1260	738	1296	1224	424
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			97			97	100	83	0	100	98
cM capacity (veh/h)	1101			868			147	165	418	112	173	630

Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2
Volume Total	741	488	77	164	11
Volume Left	3	28	5	164	0
Volume Right	1	72	72	0	11
cSH	1101	868	373	112	630
Volume to Capacity	0.00	0.03	0.21	1.46	0.02
Queue Length 95th (m)	0.1	0.8	6.1	93.8	0.4
Control Delay (s)	0.1	0.9	17.1	320.0	10.8
Lane LOS	A	A	C	F	B
Approach Delay (s)	0.1	0.9	17.1	300.5	
Approach LOS			C	F	

Intersection Summary					
Average Delay			36.7		
Intersection Capacity Utilization			75.8%	ICU Level of Service	D
Analysis Period (min)			15		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	970	2	52	477	18	9	22	126	56	12	4
Future Volume (vph)	1	970	2	52	477	18	9	22	126	56	12	4
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Storage Length (m)	0.0		0.0	60.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	1		0	0		0	1		0
Taper Length (m)	0.0			50.0			0.0			0.0		
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
Frt					0.995			0.892			0.962	
Flt Protected				0.950				0.997		0.950		
Satd. Flow (prot)	0	1520	0	1444	1512	0	0	1351	0	1444	1462	0
Flt Permitted				0.950				0.997		0.950		
Satd. Flow (perm)	0	1520	0	1444	1512	0	0	1351	0	1444	1462	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		377.6			166.4			109.1			148.1	
Travel Time (s)		27.2			12.0			7.9			10.7	
Peak Hour 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
Adj. Flow (vph)	1	970	2	52	477	18	9	22	126	56	12	4
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	973	0	52	495	0	0	157	0	56	16	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary					
Area Type:	Other				
Control Type: Unsignalized					
Intersection Capacity Utilization 89.1%				ICU Level of Service E	
Analysis Period (min) 15					



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	970	2	52	477	18	9	22	126	56	12	4
Future Volume (Veh/h)	1	970	2	52	477	18	9	22	126	56	12	4
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	1	970	2	52	477	18	9	22	126	56	12	4
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	495			972			1564	1572	971	1700	1564	486
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	495			972			1564	1572	971	1700	1564	486
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			93			88	78	59	0	88	99
cM capacity (veh/h)	1069			709			77	102	307	34	103	581

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1	SB 2
Volume Total	973	52	495	157	56	16
Volume Left	1	52	0	9	56	0
Volume Right	2	0	18	126	0	4
cSH	1069	709	1700	211	34	130
Volume to Capacity	0.00	0.07	0.29	0.74	1.66	0.12
Queue Length 95th (m)	0.0	1.9	0.0	39.9	49.4	3.3
Control Delay (s)	0.0	10.5	0.0	59.2	577.7	36.5
Lane LOS	A	B		F	F	E
Approach Delay (s)	0.0	1.0		59.2	457.5	
Approach LOS				F	F	

Intersection Summary						
Average Delay			24.5			
Intersection Capacity Utilization			89.1%	ICU Level of Service		E
Analysis Period (min)			15			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	1173	4	11	502	13	16	7	34	39	8	20
Future Volume (vph)	6	1173	4	11	502	13	16	7	34	39	8	20
Ideal Flow (vphpl)	1650	1650	1900	1900	1650	1650	1900	1900	1900	1765	1900	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.997			0.919			0.960	
Flt Protected					0.999			0.986			0.972	
Satd. Flow (prot)	0	1618	0	0	1611	0	0	1688	0	0	1738	0
Flt Permitted					0.999			0.986			0.972	
Satd. Flow (perm)	0	1618	0	0	1611	0	0	1688	0	0	1738	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		228.8			210.5			133.9			114.8	
Travel Time (s)		16.5			15.2			9.6			8.3	
Peak Hour 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
Adj. Flow (vph)	6	1173	4	11	502	13	16	7	34	39	8	20
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1183	0	0	526	0	0	57	0	0	67	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary						
Area Type:	Other					
Control Type: Unsignalized						
Intersection Capacity Utilization	88.7%			ICU Level of Service E		
Analysis Period (min)	15					

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	1173	4	11	502	13	16	7	34	39	8	20
Future Volume (Veh/h)	6	1173	4	11	502	13	16	7	34	39	8	20
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	6	1173	4	11	502	13	16	7	34	39	8	20
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	515			1177			1742	1724	1175	1755	1720	508
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	515			1177			1742	1724	1175	1755	1720	508
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			98			73	92	85	26	91	96
cM capacity (veh/h)	1051			593			60	87	233	52	87	565

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	1183	526	57	67
Volume Left	6	11	16	39
Volume Right	4	13	34	20
cSH	1051	593	115	77
Volume to Capacity	0.01	0.02	0.49	0.87
Queue Length 95th (m)	0.1	0.5	17.9	35.5
Control Delay (s)	0.2	0.5	63.3	161.6
Lane LOS	A	A	F	F
Approach Delay (s)	0.2	0.5	63.3	161.6
Approach LOS			F	F

Intersection Summary				
Average Delay			8.2	
Intersection Capacity Utilization			88.7%	ICU Level of Service E
Analysis Period (min)			15	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	1236	4	11	489	13	16	7	34	39	8	20
Future Volume (vph)	6	1236	4	11	489	13	16	7	34	39	8	20
Ideal Flow (vphpl)	1650	1650	1900	1900	1650	1650	1900	1900	1900	1765	1900	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.997			0.919			0.960	
Flt Protected					0.999			0.986			0.972	
Satd. Flow (prot)	0	1618	0	0	1611	0	0	1688	0	0	1738	0
Flt Permitted					0.999			0.986			0.972	
Satd. Flow (perm)	0	1618	0	0	1611	0	0	1688	0	0	1738	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		210.5			96.4			108.7			129.5	
Travel Time (s)		15.2			6.9			7.8			9.3	
Peak Hour 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
Adj. Flow (vph)	6	1236	4	11	489	13	16	7	34	39	8	20
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1246	0	0	513	0	0	57	0	0	67	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary				
Area Type:	Other			
Control Type: Unsignalized				
Intersection Capacity Utilization 92.5%				ICU Level of Service F
Analysis Period (min) 15				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	1236	4	11	489	13	16	7	34	39	8	20
Future Volume (Veh/h)	6	1236	4	11	489	13	16	7	34	39	8	20
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	6	1236	4	11	489	13	16	7	34	39	8	20
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	502			1240			1792	1774	1238	1805	1770	496
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	502			1240			1792	1774	1238	1805	1770	496
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			98			71	91	84	17	90	97
cM capacity (veh/h)	1062			562			55	81	214	47	81	574

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	1246	513	57	67
Volume Left	6	11	16	39
Volume Right	4	13	34	20
cSH	1062	562	106	70
Volume to Capacity	0.01	0.02	0.54	0.96
Queue Length 95th (m)	0.1	0.5	19.8	38.7
Control Delay (s)	0.2	0.6	72.7	196.4
Lane LOS	A	A	F	F
Approach Delay (s)	0.2	0.6	72.7	196.4
Approach LOS			F	F

Intersection Summary				
Average Delay			9.5	
Intersection Capacity Utilization			92.5%	ICU Level of Service
Analysis Period (min)			15	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	0	9	15	0	43	2	258	4	18	315	11
Future Volume (vph)	29	0	9	15	0	43	2	258	4	18	315	11
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.968			0.900			0.998			0.996	
Flt Protected		0.963			0.987						0.997	
Satd. Flow (prot)	0	1417	0	0	1350	0	0	1517	0	0	1509	0
Flt Permitted		0.963			0.987						0.997	
Satd. Flow (perm)	0	1417	0	0	1350	0	0	1517	0	0	1509	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		174.2			151.1			248.8			212.1	
Travel Time (s)		12.5			10.9			17.9			15.3	
Peak Hour 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
Adj. Flow (vph)	29	0	9	15	0	43	2	258	4	18	315	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	38	0	0	58	0	0	264	0	0	344	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary				
Area Type:	Other			
Control Type: Unsignalized				
Intersection Capacity Utilization	49.3%		ICU Level of Service A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	29	0	9	15	0	43	2	258	4	18	315	11
Future Volume (Veh/h)	29	0	9	15	0	43	2	258	4	18	315	11
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	29	0	9	15	0	43	2	258	4	18	315	11
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	664	622	320	630	626	260	326			262		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	664	622	320	630	626	260	326			262		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	92	100	99	96	100	94	100			99		
cM capacity (veh/h)	350	396	720	385	395	779	1234			1302		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	38	58	264	344
Volume Left	29	15	2	18
Volume Right	9	43	4	11
cSH	398	616	1234	1302
Volume to Capacity	0.10	0.09	0.00	0.01
Queue Length 95th (m)	2.5	2.5	0.0	0.3
Control Delay (s)	15.0	11.5	0.1	0.5
Lane LOS	B	B	A	A
Approach Delay (s)	15.0	11.5	0.1	0.5
Approach LOS	B	B		

Intersection Summary				
Average Delay			2.0	
Intersection Capacity Utilization			49.3%	ICU Level of Service
Analysis Period (min)			15	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	0	9	15	0	43	2	192	4	18	310	11
Future Volume (vph)	29	0	9	15	0	43	2	192	4	18	310	11
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.968			0.900			0.997			0.996	
Flt Protected		0.963			0.987			0.999			0.997	
Satd. Flow (prot)	0	1417	0	0	1350	0	0	1514	0	0	1509	0
Flt Permitted		0.963			0.987			0.999			0.997	
Satd. Flow (perm)	0	1417	0	0	1350	0	0	1514	0	0	1509	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		117.0			126.5			247.2			248.8	
Travel Time (s)		8.4			9.1			17.8			17.9	
Peak Hour 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
Adj. Flow (vph)	29	0	9	15	0	43	2	192	4	18	310	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	38	0	0	58	0	0	198	0	0	339	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary				
Area Type:	Other			
Control Type: Unsignalized				
Intersection Capacity Utilization	48.1%		ICU Level of Service A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	29	0	9	15	0	43	2	192	4	18	310	11
Future Volume (Veh/h)	29	0	9	15	0	43	2	192	4	18	310	11
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	29	0	9	15	0	43	2	192	4	18	310	11
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	592	552	316	558	555	194	321			196		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	592	552	316	558	555	194	321			196		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	93	100	99	97	100	95	100			99		
cM capacity (veh/h)	392	435	725	430	433	847	1239			1377		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	38	58	198	339
Volume Left	29	15	2	18
Volume Right	9	43	4	11
cSH	440	677	1239	1377
Volume to Capacity	0.09	0.09	0.00	0.01
Queue Length 95th (m)	2.3	2.2	0.0	0.3
Control Delay (s)	14.0	10.8	0.1	0.5
Lane LOS	B	B	A	A
Approach Delay (s)	14.0	10.8	0.1	0.5
Approach LOS	B	B		

Intersection Summary				
Average Delay			2.1	
Intersection Capacity Utilization			48.1%	ICU Level of Service
Analysis Period (min)			15	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	122	0	42	19	0	56	14	391	7	24	350	50
Future Volume (vph)	122	0	42	19	0	56	14	391	7	24	350	50
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.965			0.899			0.998			0.984	
Flt Protected		0.964			0.987			0.998			0.997	
Satd. Flow (prot)	0	1414	0	0	1348	0	0	1514	0	0	1491	0
Flt Permitted		0.964			0.987			0.998			0.997	
Satd. Flow (perm)	0	1414	0	0	1348	0	0	1514	0	0	1491	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		128.4			112.6			130.6			488.0	
Travel Time (s)		9.2			8.1			9.4			35.1	
Peak Hour 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
Adj. Flow (vph)	122	0	42	19	0	56	14	391	7	24	350	50
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	164	0	0	75	0	0	412	0	0	424	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary				
Area Type:	Other			
Control Type: Unsignalized				
Intersection Capacity Utilization	63.5%		ICU Level of Service B	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	122	0	42	19	0	56	14	391	7	24	350	50
Future Volume (Veh/h)	122	0	42	19	0	56	14	391	7	24	350	50
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	122	0	42	19	0	56	14	391	7	24	350	50
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	902	849	375	888	870	394	400			398		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	902	849	375	888	870	394	400			398		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	47	100	94	92	100	91	99			98		
cM capacity (veh/h)	231	288	671	242	280	655	1159			1161		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	164	75	412	424
Volume Left	122	19	14	24
Volume Right	42	56	7	50
cSH	277	457	1159	1161
Volume to Capacity	0.59	0.16	0.01	0.02
Queue Length 95th (m)	27.9	4.7	0.3	0.5
Control Delay (s)	35.1	14.4	0.4	0.7
Lane LOS	E	B	A	A
Approach Delay (s)	35.1	14.4	0.4	0.7
Approach LOS	E	B		

Intersection Summary					
Average Delay			6.8		
Intersection Capacity Utilization			63.5%	ICU Level of Service	B
Analysis Period (min)			15		



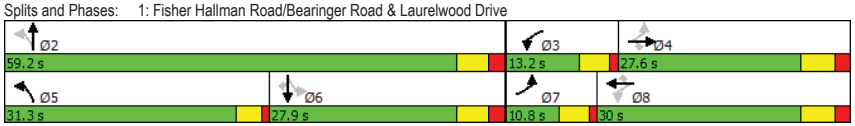
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	156	222	302	116	384	33	492	408	96	32	818	420
Future Volume (vph)	156	222	302	116	384	33	492	408	96	32	818	420
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1650	1650	1775	1900	1750
Storage Length (m)	85.0		0.0	90.0		90.0	90.0		0.0	60.0		60.0
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (m)	35.0			7.5			45.0			70.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Ped Bike Factor	1.00		0.98	0.99		0.98		0.99		1.00		0.97
Frt			0.850			0.850		0.971				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1653	1881	1430	1188	1845	1488	1506	2915	0	1686	3574	1430
Flt Permitted	0.196			0.377			0.154			0.467		
Satd. Flow (perm)	341	1881	1397	468	1845	1465	244	2915	0	825	3574	1394
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			302			125		46				255
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		133.2			228.2			160.2			234.1	
Travel Time (s)		9.6			16.4			11.5			16.9	
Confl. Peds. (#/hr)	2		7	7		2	2		3	3		2
Peak Hour 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
Heavy Vehicles (%)	2%	1%	4%	42%	3%	0%	12%	1%	16%	0%	1%	4%
Adj. Flow (vph)	156	222	302	116	384	33	492	408	96	32	818	420
Shared Lane Traffic (%)												
Lane Group Flow (vph)	156	222	302	116	384	33	492	504	0	32	818	420
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		Perm	NA	Perm
Protected Phases	7	4		3	8		5	2			6	
Permitted Phases	4		4	8		8	2			6		6
Detector Phase	7	4	4	3	8	8	5	2		6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	9.5	24.0	24.0	9.5	30.0	30.0	9.5	24.0		24.0	24.0	24.0
Total Split (s)	10.8	27.6	27.6	13.2	30.0	30.0	31.3	59.2		27.9	27.9	27.9
Total Split (%)	10.8%	27.6%	27.6%	13.2%	30.0%	30.0%	31.3%	59.2%		27.9%	27.9%	27.9%
Maximum Green (s)	6.3	21.6	21.6	8.7	24.0	24.0	27.3	53.2		21.9	21.9	21.9
Yellow Time (s)	3.5	4.0	4.0	3.5	4.0	4.0	3.0	4.0		4.0	4.0	4.0
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	-2.0	-2.0	0.0	-2.0	-2.0	0.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	4.5	4.0	4.0	4.5	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes								
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	Max		Max	Max	Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0		7.0	7.0	7.0
Flash Dont Walk (s)		11.0	11.0		11.0	11.0		11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)		0	0		0	0		0		0	0	0
Act Effct Green (s)	28.2	22.4	22.4	32.4	24.5	24.5	55.2	55.2		23.9	23.9	23.9
Actuated g/C Ratio	0.29	0.23	0.23	0.33	0.25	0.25	0.56	0.56		0.24	0.24	0.24
v/c Ratio	0.86	0.52	0.55	0.54	0.84	0.07	1.01	0.30		0.16	0.94	0.79

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	66.9	38.3	8.0	33.4	52.6	0.3	71.2	11.2		32.7	57.4	26.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	66.9	38.3	8.0	33.4	52.6	0.3	71.2	11.2		32.7	57.4	26.0
LOS	E	D	A	C	D	A	E	B		C	E	C
Approach Delay		31.4			45.2			40.8			46.4	
Approach LOS		C			D			D			D	
Queue Length 50th (m)	22.1	39.4	0.0	16.5	73.3	0.0	~92.7	24.7		5.2	86.9	32.0
Queue Length 95th (m)	#50.4	63.1	22.4	30.9	#119.2	0.0	#157.2	35.1		13.6	#126.4	#83.7
Internal Link Dist (m)		109.2			204.2			136.2			210.1	
Turn Bay Length (m)	85.0			90.0		90.0	90.0			60.0		60.0
Base Capacity (vph)	181	450	564	218	486	478	486	1654		200	867	531
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.86	0.49	0.54	0.53	0.79	0.07	1.01	0.30		0.16	0.94	0.79

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 98.5			
Natural Cycle: 100			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.01			
Intersection Signal Delay: 41.7		Intersection LOS: D	
Intersection Capacity Utilization 95.0%		ICU Level of Service F	
Analysis Period (min) 15			

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

Splits and Phases: 1: Fisher Hallman Road/Bearinger Road & Laurelwood Drive



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	156	222	302	116	384	33	492	408	96	32	818	420
Future Volume (vph)	156	222	302	116	384	33	492	408	96	32	818	420
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1650	1650	1775	1900	1750
Total Lost time (s)	4.5	4.0	4.0	4.5	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	0.99		1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1653	1881	1397	1185	1845	1465	1506	2917		1679	3574	1394
Flt Permitted	0.20	1.00	1.00	0.38	1.00	1.00	0.15	1.00		0.47	1.00	1.00
Satd. Flow (perm)	341	1881	1397	470	1845	1465	245	2917		825	3574	1394
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	156	222	302	116	384	33	492	408	96	32	818	420
RTOR Reduction (vph)	0	0	233	0	0	25	0	20	0	0	0	193
Lane Group Flow (vph)	156	222	69	116	384	8	492	484	0	32	818	227
Confl. Peds. (#/hr)	2		7	7		2	2		3	3		2
Heavy Vehicles (%)	2%	1%	4%	42%	3%	0%	12%	1%	16%	0%	1%	4%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA		Perm	NA	Perm
Protected Phases	7	4		3	8		5	2			6	
Permitted Phases	4		4	8		8	2			6		6
Actuated Green, G (s)	26.7	20.4	20.4	30.9	22.5	22.5	53.2	53.2		21.9	21.9	21.9
Effective Green, g (s)	26.7	22.4	22.4	30.9	24.5	24.5	53.2	55.2		23.9	23.9	23.9
Actuated g/C Ratio	0.27	0.23	0.23	0.31	0.25	0.25	0.54	0.56		0.24	0.24	0.24
Clearance Time (s)	4.5	6.0	6.0	4.5	6.0	6.0	4.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	176	427	317	208	458	364	481	1634		200	867	338
v/s Ratio Prot	c0.06	0.12		c0.05	c0.21		c0.28	0.17			0.23	
v/s Ratio Perm	0.18		0.05	0.13		0.01	c0.27			0.04		0.16
v/c Ratio	0.89	0.52	0.22	0.56	0.84	0.02	1.02	0.30		0.16	0.94	0.67
Uniform Delay, d1	32.0	33.3	30.9	26.2	35.1	28.0	27.4	11.4		29.4	36.6	33.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	37.3	1.1	0.3	3.2	12.6	0.0	47.0	0.5		1.7	19.6	10.2
Delay (s)	69.3	34.4	31.3	29.4	47.8	28.0	74.4	11.9		31.1	56.2	43.9
Level of Service	E	C	C	C	D	C	E	B		C	E	D
Approach Delay (s)		41.0			42.5			42.8			51.5	
Approach LOS		D			D			D			D	

Intersection Summary					
HCM 2000 Control Delay	45.6	HCM 2000 Level of Service		D	
HCM 2000 Volume to Capacity ratio	0.97				
Actuated Cycle Length (s)	98.5	Sum of lost time (s)		16.5	
Intersection Capacity Utilization	95.0%	ICU Level of Service		F	
Analysis Period (min)	15				

c Critical Lane Group

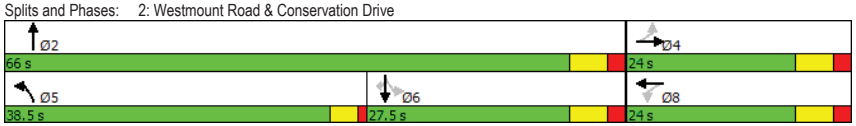
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	87	38	719	22	36	15	1281	345	47	10	373	237
Future Volume (vph)	87	38	719	22	36	15	1281	345	47	10	373	237
Ideal Flow (vphpl)	1650	1650	1750	1550	1550	1550	1775	1650	1650	1550	1550	1550
Storage Length (m)	0.0		50.0	0.0		0.0	25.0		0.0	0.0		50.0
Storage Lanes	0		1	0		0	1		0	0		1
Taper Length (m)	0.0			0.0			35.0			0.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.97	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00	0.99		0.99		1.00	1.00			1.00	0.97
Frt			0.850		0.972			0.982				0.850
Flt Protected		0.966			0.985		0.950				0.999	
Satd. Flow (prot)	0	1537	1473	0	1426	0	3116	1552	0	0	1511	1243
Flt Permitted		0.780			0.880		0.950				0.986	
Satd. Flow (perm)	0	1236	1455	0	1274	0	3102	1552	0	0	1491	1209
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			719		13			18				237
Link Speed (k/h)		60			50			50			50	
Link Distance (m)		1012.1			151.5			545.8			326.3	
Travel Time (s)		60.7			10.9			39.3			23.5	
Confl. Peds. (#/hr)	3		1	1		3	3		1	1		3
Peak Hour 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
Heavy Vehicles (%)	4%	3%	1%	0%	7%	0%	5%	4%	5%	20%	2%	6%
Adj. Flow (vph)	87	38	719	22	36	15	1281	345	47	10	373	237
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	125	719	0	73	0	1281	392	0	0	383	237
Turn Type	Perm	NA	Free	Perm	NA		Prot	NA		Perm	NA	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4		Free	8						6		6
Detector Phase	4	4		8	8		5	2		6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	24.0	24.0		24.0	24.0		9.5	24.0		24.0	24.0	24.0
Total Split (s)	24.0	24.0		24.0	24.0		38.5	66.0		27.5	27.5	27.5
Total Split (%)	26.7%	26.7%		26.7%	26.7%		42.8%	73.3%		30.6%	30.6%	30.6%
Maximum Green (s)	18.0	18.0		18.0	18.0		34.5	60.0		21.5	21.5	21.5
Yellow Time (s)	4.0	4.0		4.0	4.0		3.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		1.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)		-2.0			-2.0		0.0	-2.0			-2.0	-2.0
Total Lost Time (s)		4.0			4.0		4.0	4.0			4.0	4.0
Lead/Lag							Lead			Lag	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None		None	Max		Max	Max	Max
Walk Time (s)	7.0	7.0		7.0	7.0			7.0		7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0			11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0		0	0			0		0	0	0
Act Effct Green (s)		15.1	82.7		14.7		34.9	63.8			23.8	23.8
Actuated g/C Ratio		0.18	1.00		0.18		0.42	0.77			0.29	0.29
v/c Ratio		0.56	0.49		0.31		0.97	0.33			0.89	0.46

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay		41.5	1.2		29.1		46.0	5.2			56.2	7.1
Queue Delay		0.0	0.0		0.0		0.0	0.0			0.0	0.0
Total Delay		41.5	1.2		29.1		46.0	5.2			56.2	7.1
LOS		D	A		C		D	A			E	A
Approach Delay		7.2			29.1			36.4			37.4	
Approach LOS		A			C			D			D	
Queue Length 50th (m)		19.8	0.0		9.0		~117.1	19.5			64.6	0.0
Queue Length 95th (m)		37.5	0.0		21.2		#175.6	38.7			#127.5	18.4
Internal Link Dist (m)		988.1			127.5			521.8			302.3	
Turn Bay Length (m)			50.0				25.0					50.0
Base Capacity (vph)		302	1455		321		1316	1201			429	516
Starvation Cap Reductn		0	0		0		0	0			0	0
Spillback Cap Reductn		0	0		0		0	0			0	0
Storage Cap Reductn		0	0		0		0	0			0	0
Reduced v/c Ratio		0.41	0.49		0.23		0.97	0.33			0.89	0.46

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 82.7			
Natural Cycle: 100			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.97			
Intersection Signal Delay: 28.8		Intersection LOS: C	
Intersection Capacity Utilization 88.4%		ICU Level of Service E	
Analysis Period (min) 15			

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

Splits and Phases: 2: Westmount Road & Conservation Drive



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	87	38	719	22	36	15	1281	345	47	10	373	237
Future Volume (vph)	87	38	719	22	36	15	1281	345	47	10	373	237
Ideal Flow (vphpl)	1650	1650	1750	1550	1550	1550	1775	1650	1650	1550	1550	1550
Total Lost time (s)		4.0	2.0		4.0		4.0	4.0			4.0	4.0
Lane Util. Factor		1.00	1.00		1.00		0.97	1.00			1.00	1.00
Frpb, ped/bikes		1.00	0.99		0.99		1.00	1.00			1.00	0.97
Flpb, ped/bikes		1.00	1.00		1.00		1.00	1.00			1.00	1.00
Frt		1.00	0.85		0.97		1.00	0.98			1.00	0.85
Flt Protected		0.97	1.00		0.99		0.95	1.00			1.00	1.00
Satd. Flow (prot)		1531	1455		1427		3116	1552			1511	1210
Flt Permitted		0.78	1.00		0.88		0.95	1.00			0.99	1.00
Satd. Flow (perm)		1237	1455		1274		3116	1552			1491	1210
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	87	38	719	22	36	15	1281	345	47	10	373	237
RTOR Reduction (vph)	0	0	0	0	11	0	0	5	0	0	0	170
Lane Group Flow (vph)	0	125	719	0	62	0	1281	387	0	0	383	67
Confl. Peds. (#/hr)	3		1	1		3	3		1	1		3
Heavy Vehicles (%)	4%	3%	1%	0%	7%	0%	5%	4%	5%	20%	2%	6%
Turn Type	Perm	NA	Free	Perm	NA		Prot	NA		Perm	NA	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4		Free	8						6		6
Actuated Green, G (s)		11.3	84.1		11.3		34.9	60.8			21.9	21.9
Effective Green, g (s)		13.3	84.1		13.3		34.9	62.8			23.9	23.9
Actuated g/C Ratio		0.16	1.00		0.16		0.41	0.75			0.28	0.28
Clearance Time (s)		6.0			6.0		4.0	6.0			6.0	6.0
Vehicle Extension (s)		3.0			3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)		195	1455		201		1293	1158			423	343
v/s Ratio Prot							c0.41	0.25				
v/s Ratio Perm		0.10	c0.49		0.05						c0.26	0.06
v/c Ratio		0.64	0.49		0.31		0.99	0.33			0.91	0.20
Uniform Delay, d1		33.2	0.0		31.3		24.4	3.6			29.0	22.8
Progression Factor		1.00	1.00		1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2		7.0	1.2		0.9		22.7	0.8			25.5	1.3
Delay (s)		40.2	1.2		32.2		47.2	4.4			54.5	24.1
Level of Service		D	A		C		D	A			D	C
Approach Delay (s)		7.0			32.2			37.1			42.9	
Approach LOS		A			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	30.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	84.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	88.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	121	64	654	274	89	247
Future Volume (vph)	121	64	654	274	89	247
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Storage Length (m)		0.0	55.0		30.0	0.0
Storage Lanes		0	1		0	0
Taper Length (m)			95.0		55.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99		1.00			
Frt	0.953				0.901	
Flt Protected			0.950		0.987	
Satd. Flow (prot)	1500	0	1537	1571	1492	0
Flt Permitted			0.501		0.987	
Satd. Flow (perm)	1500	0	809	1571	1492	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	32				167	
Link Speed (k/h)	80			80	50	
Link Distance (m)	1516.2			424.2	223.3	
Travel Time (s)	68.2			19.1	16.1	
Confl. Peds. (#/hr)		1	1			
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	6%	2%	5%	14%	2%
Adj. Flow (vph)	121	64	654	274	89	247
Shared Lane Traffic (%)						
Lane Group Flow (vph)	185	0	654	274	336	0
Turn Type	NA		pm+pt	NA	Perm	
Protected Phases	4		3	8		
Permitted Phases			8		2	
Detector Phase	4		3	8	2	
Switch Phase						
Minimum Initial (s)	5.0		5.0	5.0	5.0	
Minimum Split (s)	24.0		9.5	24.0	24.0	
Total Split (s)	24.0		32.0	56.0	24.0	
Total Split (%)	30.0%		40.0%	70.0%	30.0%	
Maximum Green (s)	18.0		28.0	50.0	18.0	
Yellow Time (s)	4.0		3.0	4.0	4.0	
All-Red Time (s)	2.0		1.0	2.0	2.0	
Lost Time Adjust (s)	-2.0		0.0	-2.0	-2.0	
Total Lost Time (s)	4.0		4.0	4.0	4.0	
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Recall Mode	Max		None	Max	None	
Walk Time (s)	7.0			7.0	7.0	
Flash Dont Walk (s)	11.0			11.0	11.0	
Pedestrian Calls (#/hr)	0			0	0	
Act Effct Green (s)	24.7		52.2	52.2	15.3	
Actuated g/C Ratio	0.33		0.69	0.69	0.20	
v/c Ratio	0.36		0.83	0.25	0.77	

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Control Delay	21.7		19.0	5.8	26.5	
Queue Delay	0.0		0.0	0.0	0.0	
Total Delay	21.7		19.0	5.8	26.5	
LOS	C		B	A	C	
Approach Delay	21.7			15.1	26.5	
Approach LOS	C			B	C	
Queue Length 50th (m)	19.1		47.9	14.0	23.3	
Queue Length 95th (m)	40.1		#110.1	27.3	53.1	
Internal Link Dist (m)	1492.2			400.2	199.3	
Turn Bay Length (m)			55.0		30.0	
Base Capacity (vph)	511		829	1085	519	
Starvation Cap Reductn	0		0	0	0	
Spillback Cap Reductn	0		0	0	0	
Storage Cap Reductn	0		0	0	0	
Reduced v/c Ratio	0.36		0.79	0.25	0.65	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 75.6			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay: 18.6		Intersection LOS: B	
Intersection Capacity Utilization 88.4%		ICU Level of Service E	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 3: Westmount Road & Benjamin Road



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	121	64	654	274	89	247
Future Volume (vph)	121	64	654	274	89	247
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Total Lost time (s)	4.0		4.0	4.0	4.0	
Lane Util. Factor	1.00		1.00	1.00	1.00	
Frpb, ped/bikes	0.99		1.00	1.00	1.00	
Flpb, ped/bikes	1.00		1.00	1.00	1.00	
Frt	0.95		1.00	1.00	0.90	
Flt Protected	1.00		0.95	1.00	0.99	
Satd. Flow (prot)	1500		1536	1571	1492	
Flt Permitted	1.00		0.50	1.00	0.99	
Satd. Flow (perm)	1500		810	1571	1492	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	121	64	654	274	89	247
RTOR Reduction (vph)	22	0	0	0	133	0
Lane Group Flow (vph)	163	0	654	274	203	0
Confl. Peds. (#/hr)		1	1			
Heavy Vehicles (%)	3%	6%	2%	5%	14%	2%
Turn Type	NA		pm+pt	NA	Perm	
Protected Phases	4		3	8		
Permitted Phases			8		2	
Actuated Green, G (s)	22.7		50.2	50.2	13.3	
Effective Green, g (s)	24.7		50.2	52.2	15.3	
Actuated g/C Ratio	0.33		0.66	0.69	0.20	
Clearance Time (s)	6.0		4.0	6.0	6.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	490		764	1086	302	
v/s Ratio Prot	0.11		c0.27	0.17		
v/s Ratio Perm			c0.30		c0.14	
v/c Ratio	0.33		0.86	0.25	0.67	
Uniform Delay, d1	19.2		8.0	4.4	27.8	
Progression Factor	1.00		1.00	1.00	1.00	
Incremental Delay, d2	1.8		9.3	0.6	5.8	
Delay (s)	21.0		17.3	4.9	33.6	
Level of Service	C		B	A	C	
Approach Delay (s)	21.0			13.6	33.6	
Approach LOS	C			B	C	

Intersection Summary			
HCM 2000 Control Delay	19.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	75.5	Sum of lost time (s)	14.0
Intersection Capacity Utilization	88.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	65	191	116	17	119	188
Future Volume (vph)	65	191	116	17	119	188
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.899		0.983			
Flt Protected	0.987					0.981
Satd. Flow (prot)	1411	0	1480	0	0	1526
Flt Permitted	0.987					0.981
Satd. Flow (perm)	1411	0	1480	0	0	1526
Link Speed (k/h)	80		80			80
Link Distance (m)	1200.3		1761.7			72.7
Travel Time (s)	54.0		79.3			3.3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	8%	12%	11%	0%	3%	8%
Adj. Flow (vph)	65	191	116	17	119	188
Shared Lane Traffic (%)						
Lane Group Flow (vph)	256	0	133	0	0	307
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	53.7%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	65	191	116	17	119	188
Future Volume (Veh/h)	65	191	116	17	119	188
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	65	191	116	17	119	188
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	550	124			133	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	550	124			133	
tC, single (s)	6.5	6.3			4.1	
tC, 2 stage (s)						
tF (s)	3.6	3.4			2.2	
p0 queue free %	85	79			92	
cM capacity (veh/h)	446	900			1446	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	256	133	307
Volume Left	65	0	119
Volume Right	191	17	0
cSH	715	1700	1446
Volume to Capacity	0.36	0.08	0.08
Queue Length 95th (m)	13.0	0.0	2.1
Control Delay (s)	12.8	0.0	3.4
Lane LOS	B		A
Approach Delay (s)	12.8	0.0	3.4
Approach LOS	B		

Intersection Summary			
Average Delay	6.2		
Intersection Capacity Utilization	53.7%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	89	79	48	39	137	121
Future Volume (vph)	89	79	48	39	137	121
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.937		0.939			
Flt Protected	0.974					0.974
Satd. Flow (prot)	1501	0	1504	0	0	1514
Flt Permitted	0.974					0.974
Satd. Flow (perm)	1501	0	1504	0	0	1514
Link Speed (k/h)	80		80			80
Link Distance (m)	605.5		233.8			1761.7
Travel Time (s)	27.2		10.5			79.3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	5%	10%	3%	3%	8%	4%
Adj. Flow (vph)	89	79	48	39	137	121
Shared Lane Traffic (%)						
Lane Group Flow (vph)	168	0	87	0	0	258
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 39.9%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	89	79	48	39	137	121
Future Volume (Veh/h)	89	79	48	39	137	121
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	89	79	48	39	137	121
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	462	68			87	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	462	68			87	
tC, single (s)	6.4	6.3			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.4			2.3	
p0 queue free %	82	92			91	
cM capacity (veh/h)	501	974			1472	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	168	87	258
Volume Left	89	0	137
Volume Right	79	39	0
cSH	649	1700	1472
Volume to Capacity	0.26	0.05	0.09
Queue Length 95th (m)	8.2	0.0	2.5
Control Delay (s)	12.5	0.0	4.4
Lane LOS	B		A
Approach Delay (s)	12.5	0.0	4.4
Approach LOS	B		

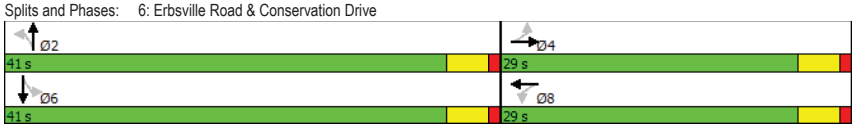
Intersection Summary			
Average Delay	6.3		
Intersection Capacity Utilization	39.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	28	2	323	73	247	3	237	244	141	313	17
Future Volume (vph)	6	28	2	323	73	247	3	237	244	141	313	17
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Storage Length (m)	0.0		0.0	50.0		0.0	0.0		50.0	50.0		0.0
Storage Lanes	0		0	1		0	0		0	0		0
Taper Length (m)	0.0			55.0			0.0			55.0		
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
Frt		0.992			0.884			0.932			0.995	
Flt Protected		0.992		0.950							0.985	
Satd. Flow (prot)	0	1502	0	1389	1329	0	0	1377	0	0	1426	0
Flt Permitted		0.948		0.734				0.998			0.748	
Satd. Flow (perm)	0	1435	0	1073	1329	0	0	1374	0	0	1083	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			247			109			4	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		187.7			400.3			488.0			394.6	
Travel Time (s)		13.5			28.8			35.1			28.4	
Peak Hour 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
Heavy Vehicles (%)	0%	2%	0%	6%	0%	4%	0%	7%	3%	4%	8%	0%
Adj. Flow (vph)	6	28	2	323	73	247	3	237	244	141	313	17
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	36	0	323	320	0	0	484	0	0	471	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	22.5	22.5		22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	29.0	29.0		29.0	29.0		41.0	41.0		41.0	41.0	
Total Split (%)	41.4%	41.4%		41.4%	41.4%		58.6%	58.6%		58.6%	58.6%	
Maximum Green (s)	24.5	24.5		24.5	24.5		36.5	36.5		36.5	36.5	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)		4.5		4.5	4.5			4.5			4.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		22.8		22.8	22.8			36.6			36.6	
Actuated g/C Ratio		0.33		0.33	0.33			0.54			0.54	
v/c Ratio		0.07		0.90	0.53			0.62			0.81	
Control Delay		15.2		53.1	8.3			13.0			27.9	
Queue Delay		0.0		0.0	0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay		15.2		53.1	8.3			13.0			27.9	
LOS		B		D	A			B			C	
Approach Delay		15.2			30.8			13.0			27.9	
Approach LOS		B			C			B			C	
Queue Length 50th (m)		3.1		40.5	6.8			33.3			50.4	
Queue Length 95th (m)		8.8		#86.4	26.6			64.0			#109.3	
Internal Link Dist (m)		163.7			376.3			464.0			370.6	
Turn Bay Length (m)				50.0								
Base Capacity (vph)		516		384	635			785			580	
Starvation Cap Reductn		0		0	0			0			0	
Spillback Cap Reductn		0		0	0			0			0	
Storage Cap Reductn		0		0	0			0			0	
Reduced v/c Ratio		0.07		0.84	0.50			0.62			0.81	

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 68.4			
Natural Cycle: 65			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.90			
Intersection Signal Delay: 24.3		Intersection LOS: C	
Intersection Capacity Utilization 104.7%		ICU Level of Service G	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 6: Erbsville Road & Conservation Drive



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	28	2	323	73	247	3	237	244	141	313	17
Future Volume (vph)	6	28	2	323	73	247	3	237	244	141	313	17
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Total Lost time (s)		4.5		4.5	4.5			4.5			4.5	
Lane Util. Factor		1.00		1.00	1.00			1.00			1.00	
Frt		0.99		1.00	0.88			0.93			1.00	
Flt Protected		0.99		0.95	1.00			1.00			0.99	
Satd. Flow (prot)		1502		1389	1329			1376			1427	
Flt Permitted		0.95		0.73	1.00			1.00			0.75	
Satd. Flow (perm)		1435		1073	1329			1374			1083	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	6	28	2	323	73	247	3	237	244	141	313	17
RTOR Reduction (vph)	0	1	0	0	165	0	0	51	0	0	2	0
Lane Group Flow (vph)	0	35	0	323	155	0	0	433	0	0	469	0
Heavy Vehicles (%)	0%	2%	0%	6%	0%	4%	0%	7%	3%	4%	8%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		22.8		22.8	22.8			36.6			36.6	
Effective Green, g (s)		22.8		22.8	22.8			36.6			36.6	
Actuated g/C Ratio		0.33		0.33	0.33			0.54			0.54	
Clearance Time (s)		4.5		4.5	4.5			4.5			4.5	
Vehicle Extension (s)		3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)		478		357	443			735			579	
v/s Ratio Prot					0.12							
v/s Ratio Perm		0.02		c0.30				0.32			c0.43	
v/c Ratio		0.07		0.90	0.35			0.59			0.81	
Uniform Delay, d1		15.6		21.8	17.2			10.8			13.1	
Progression Factor		1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2		0.1		25.3	0.5			3.5			11.7	
Delay (s)		15.6		47.1	17.7			14.3			24.7	
Level of Service		B		D	B			B			C	
Approach Delay (s)		15.6			32.4			14.3			24.7	
Approach LOS		B			C			B			C	

Intersection Summary			
HCM 2000 Control Delay	24.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	68.4	Sum of lost time (s)	9.0
Intersection Capacity Utilization	104.7%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	111	134	174	207	249	150	338	180	114	329	27
Future Volume (vph)	16	111	134	174	207	249	150	338	180	114	329	27
Ideal Flow (vphpl)	1775	1900	1750	1775	1650	1650	1775	1900	1750	1775	1650	1650
Storage Length (m)	20.0		20.0	25.0		0.0	65.0		30.0	25.0		0.0
Storage Lanes	1		1	1		0	1		1	1		0
Taper Length (m)	35.0			10.0			80.0			35.0		
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	0.95		0.94	0.97	0.92		0.99		0.94	0.98	1.00	
Frt			0.850		0.918				0.850		0.989	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1591	1810	1403	1561	1289	0	1606	1776	1430	1653	1523	0
Flt Permitted	0.229			0.685			0.504			0.370		
Satd. Flow (perm)	364	1810	1323	1089	1289	0	845	1776	1339	630	1523	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			134		103				180		8	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		123.5			178.3			236.9			930.8	
Travel Time (s)		8.9			12.8			17.1			67.0	
Confl. Peds. (#/hr)	79		23	23		79	9		27	27		9
Peak Hour 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
Heavy Vehicles (%)	6%	5%	6%	8%	9%	7%	5%	7%	4%	2%	6%	17%
Adj. Flow (vph)	16	111	134	174	207	249	150	338	180	114	329	27
Shared Lane Traffic (%)												
Lane Group Flow (vph)	16	111	134	174	456	0	150	338	180	114	356	0
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2		2	6		
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5		9.5	22.5	22.5	9.5	22.5	
Total Split (s)	22.5	22.5	22.5	22.5	22.5		10.0	24.5	24.5	13.0	27.5	
Total Split (%)	37.5%	37.5%	37.5%	37.5%	37.5%		16.7%	40.8%	40.8%	21.7%	45.8%	
Maximum Green (s)	18.0	18.0	18.0	18.0	18.0		5.5	20.0	20.0	8.5	23.0	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	
Walk Time (s)	7.0	7.0	7.0	7.0	7.0			7.0	7.0		7.0	
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0			11.0	11.0		11.0	
Pedestrian Calls (#/hr)	0	0	0	0	0			0	0		0	
Act Effct Green (s)	18.0	18.0	18.0	18.0	18.0		25.5	20.0	20.0	31.5	23.0	
Actuated g/C Ratio	0.30	0.30	0.30	0.30	0.30		0.42	0.33	0.33	0.52	0.38	
v/c Ratio	0.15	0.20	0.27	0.53	1.00		0.35	0.57	0.32	0.24	0.61	
Control Delay	19.5	17.0	5.2	24.7	61.8		9.8	21.1	4.5	7.9	19.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	19.5	17.0	5.2	24.7	61.8		9.8	21.1	4.5	7.9	19.8	
LOS	B	B	A	C	E		A	C	A	A	B	
Approach Delay		11.1			51.5			14.1			16.9	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		B			D			B			B	
Queue Length 50th (m)	1.4	9.5	0.0	16.6	41.6		7.7	31.6	0.0	5.7	31.2	
Queue Length 95th (m)	5.8	20.2	10.6	34.4	#98.1		15.6	54.9	11.5	12.2	56.0	
Internal Link Dist (m)		99.5			154.3			212.9			906.8	
Turn Bay Length (m)	20.0		20.0	25.0			65.0		30.0	25.0		
Base Capacity (vph)	109	543	490	326	458		428	592	566	475	588	
Starvation Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0		0	0	0	0	0	
Reduced v/c Ratio	0.15	0.20	0.27	0.53	1.00		0.35	0.57	0.32	0.24	0.61	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 60			
Control Type: Pretimed			
Maximum v/c Ratio: 1.00			
Intersection Signal Delay: 26.0		Intersection LOS: C	
Intersection Capacity Utilization 75.0%		ICU Level of Service D	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 7: Erbsville Road & Laurelwood Drive



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	111	134	174	207	249	150	338	180	114	329	27
Future Volume (vph)	16	111	134	174	207	249	150	338	180	114	329	27
Ideal Flow (vphpl)	1775	1900	1750	1775	1650	1650	1775	1900	1750	1775	1650	1650
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.94	1.00	0.92		1.00	1.00	0.94	1.00	1.00	
Flpb, ped/bikes	0.95	1.00	1.00	0.97	1.00		1.00	1.00	1.00	0.99	1.00	
Frt	1.00	1.00	0.85	1.00	0.92		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1510	1810	1323	1510	1290		1599	1776	1339	1641	1523	
Flt Permitted	0.23	1.00	1.00	0.69	1.00		0.50	1.00	1.00	0.37	1.00	
Satd. Flow (perm)	364	1810	1323	1090	1290		848	1776	1339	638	1523	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	16	111	134	174	207	249	150	338	180	114	329	27
RTOR Reduction (vph)	0	0	94	0	72	0	0	0	120	0	5	0
Lane Group Flow (vph)	16	111	40	174	384	0	150	338	60	114	351	0
Confl. Peds. (#/hr)	79		23	23		79	9		27	27		9
Heavy Vehicles (%)	6%	5%	6%	8%	9%	7%	5%	7%	4%	2%	6%	17%
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2		2	6		
Actuated Green, G (s)	18.0	18.0	18.0	18.0	18.0		25.5	20.0	20.0	31.5	23.0	
Effective Green, g (s)	18.0	18.0	18.0	18.0	18.0		25.5	20.0	20.0	31.5	23.0	
Actuated g/C Ratio	0.30	0.30	0.30	0.30	0.30		0.42	0.33	0.33	0.52	0.38	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5	
Lane Grp Cap (vph)	109	543	396	327	387		429	592	446	477	583	
v/s Ratio Prot		0.06			c0.30		c0.03	0.19		0.03	c0.23	
v/s Ratio Perm	0.04		0.03	0.16			0.12		0.04	0.09		
v/c Ratio	0.15	0.20	0.10	0.53	0.99		0.35	0.57	0.13	0.24	0.60	
Uniform Delay, d1	15.4	15.7	15.2	17.5	20.9		11.0	16.5	14.0	7.8	14.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	2.8	0.8	0.5	6.1	43.8		2.2	4.0	0.6	1.2	4.6	
Delay (s)	18.2	16.5	15.7	23.6	64.7		13.2	20.4	14.6	9.0	19.4	
Level of Service	B	B	B	C	E		B	C	B	A	B	
Approach Delay (s)		16.2			53.4			17.2			16.9	
Approach LOS		B			D			B			B	

Intersection Summary					
HCM 2000 Control Delay	28.2	HCM 2000 Level of Service	C		
HCM 2000 Volume to Capacity ratio	0.72				
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	13.5		
Intersection Capacity Utilization	75.0%	ICU Level of Service	D		
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	382	37	159	769	326	34	27	90	184	48	33
Future Volume (vph)	20	382	37	159	769	326	34	27	90	184	48	33
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
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		0.989			0.965			0.920			0.983	
Flt Protected		0.998			0.994			0.989			0.966	
Satd. Flow (prot)	0	1491	0	0	1410	0	0	1380	0	0	1452	0
Flt Permitted		0.998			0.994			0.989			0.966	
Satd. Flow (perm)	0	1491	0	0	1410	0	0	1380	0	0	1452	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		213.7			555.1			104.8			136.8	
Travel Time (s)		15.4			40.0			7.5			9.8	
Confl. Peds. (#/hr)	10		4	4		10	7		10	10		7
Peak Hour 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
Heavy Vehicles (%)	0%	3%	0%	6%	6%	4%	0%	9%	1%	0%	0%	11%
Adj. Flow (vph)	20	382	37	159	769	326	34	27	90	184	48	33
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	439	0	0	1254	0	0	151	0	0	265	0
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Roundabout			
Intersection Capacity Utilization	148.6%	ICU Level of Service	H
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Traffic Volume (veh/h)	20	382	37	159	769	326	34	27	90	184	48	33
Future Volume (veh/h)	20	382	37	159	769	326	34	27	90	184	48	33
Peak Hour 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
Hourly flow rate (vph)	20	382	37	159	769	326	34	27	90	184	48	33
Approach Volume (veh/h)		439			1254			151			265	
Crossing Volume (veh/h)		391			81			586			962	
High Capacity (veh/h)		1018			1300			871			642	
High v/c (veh/h)		0.43			0.96			0.17			0.41	
Low Capacity (veh/h)		830			1084			699			500	
Low v/c (veh/h)		0.53			1.16			0.22			0.53	

Intersection Summary					
Maximum v/c High		0.96			
Maximum v/c Low		1.16			
Intersection Capacity Utilization	148.6%	ICU Level of Service		H	

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	113	25	129	225	21	46
Future Volume (vph)	113	25	129	225	21	46
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.976				0.907	
Flt Protected				0.982	0.985	
Satd. Flow (prot)	1572	0	0	1480	1517	0
Flt Permitted				0.982	0.985	
Satd. Flow (perm)	1572	0	0	1480	1517	0
Link Speed (k/h)	80			80	50	
Link Distance (m)	1200.3			667.7	811.2	
Travel Time (s)	54.0			30.0	58.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	0%	5%	12%	6%	3%
Adj. Flow (vph)	113	25	129	225	21	46
Shared Lane Traffic (%)						
Lane Group Flow (vph)	138	0	0	354	67	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	44.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	113	25	129	225	21	46
Future Volume (Veh/h)	113	25	129	225	21	46
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	113	25	129	225	21	46
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			138		608	126
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			138		608	126
tC, single (s)			4.1		6.5	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			91		95	95
cM capacity (veh/h)			1427		411	922

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	138	354	67
Volume Left	0	129	21
Volume Right	25	0	46
cSH	1700	1427	664
Volume to Capacity	0.08	0.09	0.10
Queue Length 95th (m)	0.0	2.4	2.7
Control Delay (s)	0.0	3.3	11.0
Lane LOS		A	B
Approach Delay (s)	0.0	3.3	11.0
Approach LOS			B

Intersection Summary			
Average Delay	3.4		
Intersection Capacity Utilization	44.7%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	8	125	142	14	6	202	175	128	1	144	0
Future Volume (vph)	0	8	125	142	14	6	202	175	128	1	144	0
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Storage Length (m)	0.0		0.0	50.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (m)	0.0			50.0			0.0			0.0		
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
Frt		0.873			0.995			0.966				
Flt Protected					0.958			0.980				
Satd. Flow (prot)	0	1353	0	0	1427	0	0	1452	0	0	1487	0
Flt Permitted					0.958			0.980				
Satd. Flow (perm)	0	1353	0	0	1427	0	0	1452	0	0	1487	0
Link Speed (k/h)		50			70			50			50	
Link Distance (m)		114.7			143.4			394.6			123.0	
Travel Time (s)		8.3			7.4			28.4			8.9	
Peak Hour 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
Heavy Vehicles (%)	0%	0%	0%	4%	0%	0%	0%	3%	0%	40%	4%	0%
Adj. Flow (vph)	0	8	125	142	14	6	202	175	128	1	144	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	133	0	0	162	0	0	505	0	0	145	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 78.2%		ICU Level of Service D	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	8	125	142	14	6	202	175	128	1	144	0
Future Volume (Veh/h)	0	8	125	142	14	6	202	175	128	1	144	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	0	8	125	142	14	6	202	175	128	1	144	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)								395				
pX, platoon unblocked												
vC, conflicting volume	802	853	144	918	789	239	144			303		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	802	853	144	918	789	239	144			303		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.5		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.6		
p0 queue free %	100	97	86	25	95	99	86			100		
cM capacity (veh/h)	260	257	909	188	280	805	1451			1070		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	133	162	505	145
Volume Left	0	142	202	1
Volume Right	125	6	128	0
cSH	788	199	1451	1070
Volume to Capacity	0.17	0.81	0.14	0.00
Queue Length 95th (m)	4.8	46.4	3.9	0.0
Control Delay (s)	10.5	72.4	4.0	0.1
Lane LOS	B	F	A	A
Approach Delay (s)	10.5	72.4	4.0	0.1
Approach LOS	B	F		

Intersection Summary				
Average Delay		16.0		
Intersection Capacity Utilization		78.2%	ICU Level of Service	D
Analysis Period (min)		15		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	587	85	268	910	57	155	40	216	35	23	38
Future Volume (vph)	34	587	85	268	910	57	155	40	216	35	23	38
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850		0.929			0.947	
Flt Protected		0.997			0.989			0.981			0.982	
Satd. Flow (prot)	0	1503	1318	0	1485	1318	0	1349	0	0	1441	0
Flt Permitted		0.997			0.989			0.981			0.982	
Satd. Flow (perm)	0	1503	1318	0	1485	1318	0	1349	0	0	1441	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		166.4			228.8			212.1			132.6	
Travel Time (s)		12.0			16.5			15.3			9.5	
Peak Hour 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
Heavy Vehicles (%)	0%	3%	0%	4%	3%	0%	7%	0%	4%	0%	0%	0%
Adj. Flow (vph)	34	587	85	268	910	57	155	40	216	35	23	38
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	621	85	0	1178	57	0	411	0	0	96	0
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary			
Area Type:	Other		
Control Type: Roundabout			
Intersection Capacity Utilization	163.1%	ICU Level of Service	H
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized												
Traffic Volume (veh/h)	34	587	85	268	910	57	155	40	216	35	23	38
Future Volume (veh/h)	34	587	85	268	910	57	155	40	216	35	23	38
Peak Hour 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
Hourly flow rate (vph)	34	587	85	268	910	57	155	40	216	35	23	38
Approach Volume (veh/h)		706			1235			411			96	
Crossing Volume (veh/h)		326			229			656			1333#	
High Capacity (veh/h)		1072			1157			824			473	
High v/c (veh/h)		0.66			1.07			0.50			0.20	
Low Capacity (veh/h)		878			955			657			356	
Low v/c (veh/h)		0.80			1.29			0.63			0.27	

Intersection Summary					
Maximum v/c High		1.07			
Maximum v/c Low		1.29			
Intersection Capacity Utilization		163.1%	ICU Level of Service	H	
# Crossing flow exceeds 1200, method is not applicable					

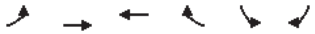
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	826	15	32	1248	63	9	2	20	25	2	32
Future Volume (vph)	44	826	15	32	1248	63	9	2	20	25	2	32
Ideal Flow (vphpl)	1650	1650	1900	1900	1650	1650	1900	1900	1900	1765	1900	1765
Lane Util. Factor	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		0.998			0.994			0.913			0.859	
Flt Protected		0.998			0.999			0.986		0.950		
Satd. Flow (prot)	0	1584	0	0	1602	0	0	1677	0	1677	1630	0
Flt Permitted		0.998			0.999			0.986		0.950		
Satd. Flow (perm)	0	1584	0	0	1602	0	0	1677	0	1677	1630	0
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		96.4			374.2			130.3			178.3	
Travel Time (s)		5.8			22.5			9.4			12.8	
Confl. Peds. (#/hr)	10					10						
Peak Hour 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
Heavy Vehicles (%)	0%	4%	2%	2%	2%	8%	2%	2%	2%	0%	2%	0%
Adj. Flow (vph)	44	826	15	32	1248	63	9	2	20	25	2	32
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	885	0	0	1343	0	0	31	0	25	34	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 107.4%		ICU Level of Service G	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	44	826	15	32	1248	63	9	2	20	25	2	32
Future Volume (Veh/h)	44	826	15	32	1248	63	9	2	20	25	2	32
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	44	826	15	32	1248	63	9	2	20	25	2	32
Pedestrians											10	
Lane Width (m)											3.6	
Walking Speed (m/s)											1.2	
Percent Blockage											1	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1321			841			2298	2306	834	2296	2282	1290
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1321			841			2298	2306	834	2296	2282	1290
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	92			96			55	94	95	0	94	84
cM capacity (veh/h)	525			794			20	33	368	22	35	200

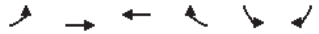
Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2
Volume Total	885	1343	31	25	34
Volume Left	44	32	9	25	0
Volume Right	15	63	20	0	32
cSH	525	794	54	22	156
Volume to Capacity	0.08	0.04	0.57	1.11	0.22
Queue Length 95th (m)	2.2	1.0	18.0	25.8	6.3
Control Delay (s)	2.6	1.9	136.4	475.8	34.4
Lane LOS	A	A	F	F	D
Approach Delay (s)	2.6	1.9	136.4	221.4	
Approach LOS			F	F	

Intersection Summary				
Average Delay	9.5			
Intersection Capacity Utilization	107.4%	ICU Level of Service	G	
Analysis Period (min)	15			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	28	849	1323	58	28	28
Future Volume (vph)	28	849	1323	58	28	28
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.994			0.850
Flt Protected		0.998			0.950	
Satd. Flow (prot)	0	1600	1586	0	1644	1500
Flt Permitted		0.998			0.950	
Satd. Flow (perm)	0	1600	1586	0	1644	1500
Link Speed (k/h)		60	60		50	
Link Distance (m)		374.2	1012.1		87.7	
Travel Time (s)		22.5	60.7		6.3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	3%	3%	13%	2%	0%
Adj. Flow (vph)	28	849	1323	58	28	28
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	877	1381	0	28	28
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 94.2%		ICU Level of Service F	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	28	849	1323	58	28	28
Future Volume (Veh/h)	28	849	1323	58	28	28
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	28	849	1323	58	28	28
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1381				2257	1352
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1381				2257	1352
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	94				35	85
cM capacity (veh/h)	503				43	185

Direction, Lane #	EB 1	WB 1	SB 1	SB 2
Volume Total	877	1381	28	28
Volume Left	28	0	28	0
Volume Right	0	58	0	28
cSH	503	1700	43	185
Volume to Capacity	0.06	0.81	0.65	0.15
Queue Length 95th (m)	1.4	0.0	19.6	4.2
Control Delay (s)	1.8	0.0	186.9	27.8
Lane LOS	A		F	D
Approach Delay (s)	1.8	0.0	107.4	
Approach LOS			F	

Intersection Summary				
Average Delay		3.3		
Intersection Capacity Utilization		94.2%	ICU Level of Service	F
Analysis Period (min)		15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	11	85	14	6	9	124	263	38	7	445	130
Future Volume (vph)	29	11	85	14	6	9	124	263	38	7	445	130
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Storage Length (m)	0.0		0.0	0.0		0.0	25.0		0.0	0.0		0.0
Storage Lanes	0		0	0		0	1		0	0		0
Taper Length (m)	0.0			0.0			53.0			0.0		
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		0.908			0.958			0.981			0.970	
Flt Protected		0.989			0.976		0.950				0.999	
Satd. Flow (prot)	0	1364	0	0	1449	0	1402	1494	0	0	1434	0
Flt Permitted		0.989			0.976		0.950				0.999	
Satd. Flow (perm)	0	1364	0	0	1449	0	1402	1494	0	0	1434	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		77.1			66.0			326.3			223.3	
Travel Time (s)		5.6			4.8			23.5			16.1	
Confl. Peds. (#/hr)	7		1	1		7			5	5		
Peak Hour 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
Heavy Vehicles (%)	0%	0%	3%	0%	0%	0%	5%	2%	0%	0%	3%	11%
Adj. Flow (vph)	29	11	85	14	6	9	124	263	38	7	445	130
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	125	0	0	29	0	124	301	0	0	582	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 78.6%		ICU Level of Service D	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	29	11	85	14	6	9	124	263	38	7	445	130
Future Volume (Veh/h)	29	11	85	14	6	9	124	263	38	7	445	130
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	29	11	85	14	6	9	124	263	38	7	445	130
Pedestrians					5			1			7	
Lane Width (m)					3.6			3.6			3.6	
Walking Speed (m/s)					1.2			1.2			1.2	
Percent Blockage					0			0			1	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)								326			223	
pX, platoon unblocked												
vC, conflicting volume	1054	1078	511	1150	1124	294	575			306		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1054	1078	511	1150	1124	294	575			306		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	84	94	85	89	97	99	87			99		
cM capacity (veh/h)	177	191	560	128	179	743	983			1261		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total	125	29	124	301	582
Volume Left	29	14	124	0	7
Volume Right	85	9	0	38	130
cSH	335	187	983	1700	1261
Volume to Capacity	0.37	0.15	0.13	0.18	0.01
Queue Length 95th (m)	13.4	4.3	3.4	0.0	0.1
Control Delay (s)	22.0	27.7	9.2	0.0	0.2
Lane LOS	C	D	A		A
Approach Delay (s)	22.0	27.7	2.7		0.2
Approach LOS	C	D			

Intersection Summary				
Average Delay	4.1			
Intersection Capacity Utilization	78.6%	ICU Level of Service	D	
Analysis Period (min)	15			



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	35	3	196	56	4	150
Future Volume (vph)	35	3	196	56	4	150
Ideal Flow (vphpl)	1765	1765	1650	1650	1650	1650
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.989		0.970			
Flt Protected	0.956					0.999
Satd. Flow (prot)	1636	0	1569	0	0	1616
Flt Permitted	0.956					0.999
Satd. Flow (perm)	1636	0	1569	0	0	1616
Link Speed (k/h)	50		50			50
Link Distance (m)	135.9		143.4			554.5
Travel Time (s)	9.8		10.3			39.9
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	35	3	196	56	4	150
Shared Lane Traffic (%)						
Lane Group Flow (vph)	38	0	252	0	0	154
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	25.8%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	35	3	196	56	4	150
Future Volume (Veh/h)	35	3	196	56	4	150
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	35	3	196	56	4	150
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	382	224			252	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	382	224			252	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	94	100			100	
cM capacity (veh/h)	619	815			1313	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	38	252	154
Volume Left	35	0	4
Volume Right	3	56	0
cSH	631	1700	1313
Volume to Capacity	0.06	0.15	0.00
Queue Length 95th (m)	1.5	0.0	0.1
Control Delay (s)	11.1	0.0	0.2
Lane LOS	B		A
Approach Delay (s)	11.1	0.0	0.2
Approach LOS	B		

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	25.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	419	4	81	642	4	48
Future Volume (vph)	419	4	81	642	4	48
Ideal Flow (vphpl)	1650	1650	1650	1650	1765	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.999				0.875	
Flt Protected				0.994	0.996	
Satd. Flow (prot)	1616	0	0	1608	1508	0
Flt Permitted				0.994	0.996	
Satd. Flow (perm)	1616	0	0	1608	1508	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	400.3			181.6	225.5	
Travel Time (s)	28.8			13.1	16.2	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	419	4	81	642	4	48
Shared Lane Traffic (%)						
Lane Group Flow (vph)	423	0	0	723	52	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	83.2%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	419	4	81	642	4	48
Future Volume (Veh/h)	419	4	81	642	4	48
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	419	4	81	642	4	48
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	400					
pX, platoon unblocked						
vC, conflicting volume			423		1225	421
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			423		1225	421
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			93		98	92
cM capacity (veh/h)			1136		183	632

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	423	723	52
Volume Left	0	81	4
Volume Right	4	0	48
cSH	1700	1136	532
Volume to Capacity	0.25	0.07	0.10
Queue Length 95th (m)	0.0	1.8	2.6
Control Delay (s)	0.0	1.8	12.5
Lane LOS		A	B
Approach Delay (s)	0.0	1.8	12.5
Approach LOS			B

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	83.2%	ICU Level of Service	E
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	455	4	67	713	146	4	0	40	85	0	6
Future Volume (vph)	8	455	4	67	713	146	4	0	40	85	0	6
Ideal Flow (vphpl)	1650	1650	1900	1900	1650	1650	1900	1900	1900	1765	1900	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.999			0.979			0.877			0.850	
Flt Protected		0.999			0.996			0.995		0.950		
Satd. Flow (prot)	0	1614	0	0	1577	0	0	1625	0	1644	1583	0
Flt Permitted		0.999			0.996			0.995		0.950		
Satd. Flow (perm)	0	1614	0	0	1577	0	0	1625	0	1644	1583	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		181.6			170.9			152.2			161.8	
Travel Time (s)		13.1			12.3			11.0			11.6	
Peak Hour 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
Adj. Flow (vph)	8	455	4	67	713	146	4	0	40	85	0	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	467	0	0	926	0	0	44	0	85	6	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	107.8%	ICU Level of Service	G
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	455	4	67	713	146	4	0	40	85	0	6
Future Volume (Veh/h)	8	455	4	67	713	146	4	0	40	85	0	6
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	8	455	4	67	713	146	4	0	40	85	0	6
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	859			459			1399	1466	457	1433	1395	786
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	859			459			1399	1466	457	1433	1395	786
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			94			96	100	93	14	100	98
cM capacity (veh/h)	782			1102			110	119	604	99	131	392

Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2
Volume Total	467	926	44	85	6
Volume Left	8	67	4	85	0
Volume Right	4	146	40	0	6
cSH	782	1102	429	99	392
Volume to Capacity	0.01	0.06	0.10	0.86	0.02
Queue Length 95th (m)	0.2	1.6	2.7	38.8	0.4
Control Delay (s)	0.3	1.6	14.4	133.0	14.3
Lane LOS	A	A	B	F	B
Approach Delay (s)	0.3	1.6	14.4	125.2	
Approach LOS			B	F	

Intersection Summary				
Average Delay	8.9			
Intersection Capacity Utilization	107.8%	ICU Level of Service		G
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	570	7	139	905	59	19	4	103	33	3	2
Future Volume (vph)	3	570	7	139	905	59	19	4	103	33	3	2
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998			0.993			0.890			0.940	
Flt Protected					0.994			0.993		0.950		
Satd. Flow (prot)	0	1517	0	0	1500	0	0	1343	0	1444	1428	0
Flt Permitted					0.994			0.993		0.950		
Satd. Flow (perm)	0	1517	0	0	1500	0	0	1343	0	1444	1428	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		377.6			166.4			109.1			148.1	
Travel Time (s)		27.2			12.0			7.9			10.7	
Peak Hour 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
Adj. Flow (vph)	3	570	7	139	905	59	19	4	103	33	3	2
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	580	0	0	1103	0	0	126	0	33	5	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	135.7%	ICU Level of Service	H
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	570	7	139	905	59	19	4	103	33	3	2
Future Volume (Veh/h)	3	570	7	139	905	59	19	4	103	33	3	2
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	3	570	7	139	905	59	19	4	103	33	3	2
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	964			577			1796	1822	574	1897	1796	934
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	964			577			1796	1822	574	1897	1796	934
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			86			64	94	80	8	96	99
cM capacity (veh/h)	714			996			53	66	519	36	69	322

Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2
Volume Total	580	1103	126	33	5
Volume Left	3	139	19	33	0
Volume Right	7	59	103	0	2
cSH	714	996	205	36	100
Volume to Capacity	0.00	0.14	0.62	0.92	0.05
Queue Length 95th (m)	0.1	3.9	28.3	26.7	1.2
Control Delay (s)	0.1	3.7	47.2	290.6	42.7
Lane LOS	A	A	E	F	E
Approach Delay (s)	0.1	3.7	47.2	257.9	
Approach LOS			E	F	

Intersection Summary				
Average Delay	10.8			
Intersection Capacity Utilization	135.7%	ICU Level of Service		H
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	807	15	32	1171	36	9	2	20	22	2	9
Future Volume (vph)	17	807	15	32	1171	36	9	2	20	22	2	9
Ideal Flow (vphpl)	1650	1650	1900	1900	1650	1650	1900	1900	1900	1765	1900	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998			0.996			0.913			0.963	
Flt Protected		0.999			0.999			0.986			0.968	
Satd. Flow (prot)	0	1613	0	0	1610	0	0	1677	0	0	1736	0
Flt Permitted		0.999			0.999			0.986			0.968	
Satd. Flow (perm)	0	1613	0	0	1610	0	0	1677	0	0	1736	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		228.8			210.5			133.9			114.8	
Travel Time (s)		16.5			15.2			9.6			8.3	
Peak Hour 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
Adj. Flow (vph)	17	807	15	32	1171	36	9	2	20	22	2	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	839	0	0	1239	0	0	31	0	0	33	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	102.7%	ICU Level of Service	G
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	17	807	15	32	1171	36	9	2	20	22	2	9
Future Volume (Veh/h)	17	807	15	32	1171	36	9	2	20	22	2	9
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	17	807	15	32	1171	36	9	2	20	22	2	9
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1207			822			2112	2120	814	2122	2109	1189
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1207			822			2112	2120	814	2122	2109	1189
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			96			73	96	95	31	96	96
cM capacity (veh/h)	578			807			33	47	378	32	48	229

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	839	1239	31	33
Volume Left	17	32	9	22
Volume Right	15	36	20	9
cSH	578	807	84	43
Volume to Capacity	0.03	0.04	0.37	0.78
Queue Length 95th (m)	0.7	1.0	11.6	23.8
Control Delay (s)	0.9	1.5	71.4	218.1
Lane LOS	A	A	F	F
Approach Delay (s)	0.9	1.5	71.4	218.1
Approach LOS			F	F

Intersection Summary				
Average Delay	5.6			
Intersection Capacity Utilization	102.7%	ICU Level of Service		G
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	815	15	32	1221	36	9	2	20	22	2	9
Future Volume (vph)	17	815	15	32	1221	36	9	2	20	22	2	9
Ideal Flow (vphpl)	1650	1650	1900	1900	1650	1650	1900	1900	1900	1765	1900	1765
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998			0.996			0.913			0.963	
Flt Protected		0.999			0.999			0.986			0.968	
Satd. Flow (prot)	0	1613	0	0	1610	0	0	1677	0	0	1736	0
Flt Permitted		0.999			0.999			0.986			0.968	
Satd. Flow (perm)	0	1613	0	0	1610	0	0	1677	0	0	1736	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		210.5			96.4			108.7			129.5	
Travel Time (s)		15.2			6.9			7.8			9.3	
Peak Hour 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
Adj. Flow (vph)	17	815	15	32	1221	36	9	2	20	22	2	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	847	0	0	1289	0	0	31	0	0	33	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	105.8%	ICU Level of Service	G
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	17	815	15	32	1221	36	9	2	20	22	2	9
Future Volume (Veh/h)	17	815	15	32	1221	36	9	2	20	22	2	9
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	17	815	15	32	1221	36	9	2	20	22	2	9
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1257			830			2170	2178	822	2180	2167	1239
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1257			830			2170	2178	822	2180	2167	1239
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			96			70	95	95	23	95	96
cM capacity (veh/h)	553			802			30	43	374	29	44	214

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	847	1289	31	33
Volume Left	17	32	9	22
Volume Right	15	36	20	9
cSH	553	802	77	39
Volume to Capacity	0.03	0.04	0.40	0.86
Queue Length 95th (m)	0.8	1.0	12.7	25.5
Control Delay (s)	0.9	1.7	80.7	257.9
Lane LOS	A	A	F	F
Approach Delay (s)	0.9	1.7	80.7	257.9
Approach LOS			F	F

Intersection Summary				
Average Delay	6.3			
Intersection Capacity Utilization	105.8%	ICU Level of Service		G
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	0	9	9	0	22	11	363	15	34	315	27
Future Volume (vph)	20	0	9	9	0	22	11	363	15	34	315	27
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.958			0.904			0.995			0.990	
Flt Protected		0.967			0.986			0.999			0.995	
Satd. Flow (prot)	0	1408	0	0	1354	0	0	1510	0	0	1497	0
Flt Permitted		0.967			0.986			0.999			0.995	
Satd. Flow (perm)	0	1408	0	0	1354	0	0	1510	0	0	1497	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		174.2			151.1			248.8			212.1	
Travel Time (s)		12.5			10.9			17.9			15.3	
Peak Hour 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
Adj. Flow (vph)	20	0	9	9	0	22	11	363	15	34	315	27
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	29	0	0	31	0	0	389	0	0	376	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	53.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	0	9	9	0	22	11	363	15	34	315	27
Future Volume (Veh/h)	20	0	9	9	0	22	11	363	15	34	315	27
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	20	0	9	9	0	22	11	363	15	34	315	27
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	811	796	328	798	802	370	342			378		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	811	796	328	798	802	370	342			378		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	93	100	99	97	100	97	99			97		
cM capacity (veh/h)	280	308	713	292	305	675	1217			1180		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	29	31	389	376
Volume Left	20	9	11	34
Volume Right	9	22	15	27
cSH	345	489	1217	1180
Volume to Capacity	0.08	0.06	0.01	0.03
Queue Length 95th (m)	2.2	1.6	0.2	0.7
Control Delay (s)	16.4	12.9	0.3	1.0
Lane LOS	C	B	A	A
Approach Delay (s)	16.4	12.9	0.3	1.0
Approach LOS	C	B		

Intersection Summary					
Average Delay		1.7			
Intersection Capacity Utilization	53.0%	ICU Level of Service		A	
Analysis Period (min)	15				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	0	9	9	0	22	11	347	15	34	272	27
Future Volume (vph)	20	0	9	9	0	22	11	347	15	34	272	27
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.958			0.904			0.995			0.989	
Flt Protected		0.967			0.986			0.999			0.995	
Satd. Flow (prot)	0	1408	0	0	1354	0	0	1510	0	0	1495	0
Flt Permitted		0.967			0.986			0.999			0.995	
Satd. Flow (perm)	0	1408	0	0	1354	0	0	1510	0	0	1495	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		117.0			126.5			247.2			248.8	
Travel Time (s)		8.4			9.1			17.8			17.9	
Peak Hour 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
Adj. Flow (vph)	20	0	9	9	0	22	11	347	15	34	272	27
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	29	0	0	31	0	0	373	0	0	333	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	50.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	0	9	9	0	22	11	347	15	34	272	27
Future Volume (Veh/h)	20	0	9	9	0	22	11	347	15	34	272	27
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	20	0	9	9	0	22	11	347	15	34	272	27
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	752	738	286	739	744	354	299			362		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	752	738	286	739	744	354	299			362		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	93	100	99	97	100	97	99			97		
cM capacity (veh/h)	307	333	754	320	330	689	1262			1197		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	29	31	373	333
Volume Left	20	9	11	34
Volume Right	9	22	15	27
cSH	376	516	1262	1197
Volume to Capacity	0.08	0.06	0.01	0.03
Queue Length 95th (m)	2.0	1.5	0.2	0.7
Control Delay (s)	15.4	12.4	0.3	1.1
Lane LOS	C	B	A	A
Approach Delay (s)	15.4	12.4	0.3	1.1
Approach LOS	C	B		

Intersection Summary				
Average Delay	1.7			
Intersection Capacity Utilization	50.1%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	63	0	24	10	0	28	44	539	21	46	493	99
Future Volume (vph)	63	0	24	10	0	28	44	539	21	46	493	99
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550	1550
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.963			0.901			0.995			0.979	
Flt Protected		0.965			0.987			0.996			0.996	
Satd. Flow (prot)	0	1412	0	0	1351	0	0	1506	0	0	1482	0
Flt Permitted		0.965			0.987			0.996			0.996	
Satd. Flow (perm)	0	1412	0	0	1351	0	0	1506	0	0	1482	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		128.4			112.6			130.6			488.0	
Travel Time (s)		9.2			8.1			9.4			35.1	
Peak Hour 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
Adj. Flow (vph)	63	0	24	10	0	28	44	539	21	46	493	99
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	87	0	0	38	0	0	604	0	0	638	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	74.3%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	63	0	24	10	0	28	44	539	21	46	493	99
Future Volume (Veh/h)	63	0	24	10	0	28	44	539	21	46	493	99
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour 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
Hourly flow rate (vph)	63	0	24	10	0	28	44	539	21	46	493	99
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1300	1282	542	1296	1322	550	592			560		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1300	1282	542	1296	1322	550	592			560		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	48	100	96	92	100	95	96			95		
cM capacity (veh/h)	122	151	540	124	143	535	984			1011		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	87	38	604	638
Volume Left	63	10	44	46
Volume Right	24	28	21	99
cSH	155	286	984	1011
Volume to Capacity	0.56	0.13	0.04	0.05
Queue Length 95th (m)	22.9	3.6	1.1	1.1
Control Delay (s)	54.3	19.5	1.2	1.2
Lane LOS	F	C	A	A
Approach Delay (s)	54.3	19.5	1.2	1.2
Approach LOS	F	C		

Intersection Summary				
Average Delay		5.1		
Intersection Capacity Utilization	74.3%	ICU Level of Service		D
Analysis Period (min)	15			

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]
© Copyright TRL Limited, 2020

For sales and distribution information, program advice and maintenance, contact TRL:
Tel: +44 (0)1344 770758 email: software@trl.co.uk Web: http://www.trlsoftware.co.uk

The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: Conservation & Beaver Creek - w improve.arc8
Path: C:\Users\AdamMorrison\Paradigm\Projects - 170278 Beaver Creek Area TES\C5 - Analysis and Evaluation\Arcady
Report generation date: 2020-07-07 1:09:36 PM

Summary of intersection performance

	AM					
	Queue (PCE)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS
	All - Total 2032					
Intersection 85% - Leg North	0.50	7.22	0.32	A	14.78	B
Intersection 85% - Leg West	5.29	15.60	0.85	C		
Intersection 85% - Leg South	3.32	34.71	0.78	D		
Intersection 85% - Leg East	0.67	4.06	0.39	A		
Intersection 90% - Leg North	0.45	6.62	0.30	A	11.11	B
Intersection 90% - Leg West	3.95	11.45	0.80	B		
Intersection 90% - Leg South	2.56	24.87	0.73	C		
Intersection 90% - Leg East	0.67	3.82	0.39	A		

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Intersection LOS and Intersection Delay are demand-weighted averages.

"D1 - Existing, AM" model duration: 8:00 AM - 9:30 AM
"D2 - Existing, PM" model duration: 5:00 PM - 6:30 PM
"D3 - Background 2022, AM" model duration: 8:00 AM - 9:30 AM
"D4 - Background 2022, PM" model duration: 5:00 PM - 6:30 PM
"D5 - Total 2022, AM" model duration: 8:00 AM - 9:30 AM
"D6 - Total 2022, PM" model duration: 5:00 PM - 6:30 PM
"D7 - Background 2025, AM" model duration: 8:00 AM - 9:30 AM
"D8 - Background 2025, PM" model duration: 5:00 PM - 6:30 PM
"D9 - Total 2025, AM" model duration: 8:00 AM - 9:30 AM
"D10 - Total 2025, PM" model duration: 5:00 PM - 6:30 PM
"D11 - Background 2027, AM" model duration: 8:00 AM - 9:30 AM
"D12 - Background 2027, PM" model duration: 5:00 PM - 6:30 PM
"D13 - Total 2027, AM" model duration: 8:00 AM - 9:30 AM
"D14 - Total 2027, PM" model duration: 5:00 PM - 6:30 PM
"D15 - Background 2032, AM" model duration: 8:00 AM - 9:30 AM
"D16 - Background 2032, PM" model duration: 5:00 PM - 6:30 PM
"D17 - Total 2032, AM " model duration: 8:00 AM - 9:30 AM
"D18 - Total 2032, PM" model duration: 5:00 PM - 6:30 PM

Run using Junctions 8.0.6.541 at 2020-07-07 1:09:34 PM

File summary

Title	(untitled)
Location	
Site Number	
Date	2018-09-11
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	170278
Analyst	AdamMorrison
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)
7.50	✓		N/A	0.85	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	PCE	PCE	perHour	s	-Min	perMin

All - Total 2032, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
All	ARCADY		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
Total 2032, AM	Total 2032	AM		ONE HOUR	08:00	09:30	90	15				✓		

Intersection Network

Intersections

Junction	Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Do Geometric Delay	Intersection Delay (s)	Intersection LOS
85%	85%	Conservation Drive & Beaver Creek Road	Roundabout	North,West,South,East				14.78	B
90%	90%	Conservation Drive & Beaver Creek Road	Roundabout	North,West,South,East				11.11	B

Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

Legs

Legs

Intersection	Leg	Leg	Name	Description
85%	**North**	North	Beaver Creek Road	
85%	**West**	West	Conservation Drive	
85%	**South**	South	Beaver Creek Road	
85%	**East**	East	Conservation Drive	
90%	**North**	North	Beaver Creek Road	
90%	**West**	West	Conservation Drive	
90%	**South**	South	Beaver Creek Road	
90%	**East**	East	Conservation Drive	

Capacity Options

Intersection	Leg	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)	Assume Flat Start Profile	Initial Queue (PCE)
85%	North	0.00	99999.00		0.00
85%	West	0.00	99999.00		0.00
85%	South	0.00	99999.00		0.00
85%	East	0.00	99999.00		0.00
90%	North	0.00	99999.00		0.00
90%	West	0.00	99999.00		0.00
90%	South	0.00	99999.00		0.00
90%	East	0.00	99999.00		0.00

Roundabout Geometry

Intersection	Leg	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
85%	North	3.50	4.50	30.00	20.00	40.00	25.00	
85%	West	3.50	8.00	30.00	20.00	40.00	25.00	
85%	South	3.50	4.50	30.00	20.00	40.00	25.00	
85%	East	3.50	8.00	30.00	20.00	40.00	25.00	
90%	North	3.50	4.50	30.00	20.00	40.00	25.00	
90%	West	3.50	8.00	30.00	20.00	40.00	25.00	
90%	South	3.50	4.50	30.00	20.00	40.00	25.00	
90%	East	3.50	8.00	30.00	20.00	40.00	25.00	

Slope / Intercept / Capacity

Leg Intercept Adjustments

Intersection	Leg	Type	Reason	Direct Intercept Adjustment (PCE/hr)	Percentage Intercept Adjustment (%)
85%	North	Percentage	Region of Waterloo		85.00
85%	West	Percentage	Region of Waterloo		85.00
85%	South	Percentage	Region of Waterloo		85.00
85%	East	Percentage	Region of Waterloo		85.00
90%	North	Percentage	Region of Waterloo		90.00
90%	West	Percentage	Region of Waterloo		90.00
90%	South	Percentage	Region of Waterloo		90.00
90%	East	Percentage	Region of Waterloo		90.00

Roundabout Slope and Intercept used in model

Intersection	Leg	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
85%	North		(calculated)	(calculated)	0.579	1153.828
85%	West		(calculated)	(calculated)	0.710	1713.743
85%	South		(calculated)	(calculated)	0.579	1153.828
85%	East		(calculated)	(calculated)	0.710	1713.743
90%	North		(calculated)	(calculated)	0.579	1221.701
90%	West		(calculated)	(calculated)	0.710	1814.551
90%	South		(calculated)	(calculated)	0.579	1221.701
90%	East		(calculated)	(calculated)	0.710	1814.551

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCE Factor for a Truck (PCE)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Intersection	Leg	Profile Type	Use Turning Counts	Average Demand Flow (PCE/hr)	Flow Scaling Factor (%)
85%	North	ONE HOUR	✓	230.00	100.000
85%	West	ONE HOUR	✓	1152.00	100.000
85%	South	ONE HOUR	✓	331.00	100.000
85%	East	ONE HOUR	✓	541.00	100.000
90%	North	ONE HOUR	✓	223.00	100.000
90%	West	ONE HOUR	✓	1155.00	100.000
90%	South	ONE HOUR	✓	350.00	100.000
90%	East	ONE HOUR	✓	577.00	100.000

Turning Proportions

Turning Counts / Proportions (PCE/hr) - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.000	120.000	50.000	60.000
	West	126.000	0.000	132.000	894.000
	South	37.000	65.000	0.000	229.000
	East	18.000	361.000	162.000	0.000

Turning Proportions (PCE) - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.00	0.52	0.22	0.26
	West	0.11	0.00	0.11	0.78
	South	0.11	0.20	0.00	0.69
	East	0.03	0.67	0.30	0.00

Turning Counts / Proportions (PCE/hr) - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.000	109.000	54.000	60.000
	West	117.000	0.000	130.000	908.000
	South	39.000	76.000	0.000	235.000
	East	18.000	388.000	171.000	0.000

Turning Proportions (PCE) - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.00	0.49	0.24	0.27
	West	0.10	0.00	0.11	0.79
	South	0.11	0.22	0.00	0.67
	East	0.03	0.67	0.30	0.00

Vehicle Mix

Average PCE Per Vehicle - Intersection 85% (for whole period)

		To			
		North	West	South	East

From	North	1.000	1.110	1.000	1.000
	West	1.000	1.000	1.000	1.030
	South	1.090	1.000	1.000	1.010
	East	1.040	1.060	1.060	1.000

Truck Percentages - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.0	11.0	0.0	0.0
	West	0.0	0.0	0.0	3.0
	South	9.0	0.0	0.0	1.0
	East	4.0	6.0	6.0	0.0

Average PCE Per Vehicle - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	1.000	1.110	1.000	1.000
	West	1.000	1.000	1.000	1.030
	South	1.090	1.000	1.000	1.010
	East	1.040	1.060	1.060	1.000

Truck Percentages - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.0	11.0	0.0	0.0
	West	0.0	0.0	0.0	3.0
	South	9.0	0.0	0.0	1.0
	East	4.0	6.0	6.0	0.0

Results

Results Summary for whole modelled period

Intersection	Leg	Max V/C Ratio	Max Delay (s)	Max Queue (PCE)	Max 95th percentile Queue (PCE)	Max LOS	Average Demand (PCE/hr)	Total Intersection Arrivals (PCE)	Total Queueing Delay (PCE-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCE-min/min)	Inclusive Total Queueing Delay (PCE-min)	Inclusive Average Queueing Delay (s)
85%	North	0.32	7.22	0.50	1.05	A	211.05	316.58	32.61	6.18	0.36	32.61	6.18
85%	West	0.85	15.60	5.29	18.42	C	1057.10	1585.64	246.92	9.34	2.74	246.95	9.34
85%	South	0.78	34.71	3.32	11.18	D	303.73	455.60	136.21	17.94	1.51	136.23	17.94
85%	East	0.39	4.06	0.67	1.06	A	496.43	744.65	45.00	3.63	0.50	45.00	3.63
90%	North	0.30	6.62	0.45	~1	A	204.63	306.94	29.19	5.71	0.32	29.19	5.71
90%	West	0.80	11.45	3.95	10.23	B	1059.85	1589.77	198.77	7.50	2.21	198.79	7.50
90%	South	0.73	24.87	2.56	8.13	C	321.17	481.75	114.67	14.28	1.27	114.68	14.28
90%	East	0.39	3.82	0.67	1.06	A	529.47	794.20	45.25	3.42	0.50	45.25	3.42

Main Results for each time segment

Main results: (08:00-08:15)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	173.16	43.29	172.16	135.42	440.83	0.00	898.70	255.63	0.193	0.00	0.25	5.219	A
85%	West	867.29	216.82	862.29	409.12	203.86	0.00	1568.94	1304.76	0.553	0.00	1.25	5.177	A
85%	South	249.19	62.30	246.91	257.76	808.40	0.00	685.96	446.62	0.363	0.00	0.57	8.291	A
85%	East	407.29	101.82	405.84	884.91	170.40	0.00	1592.71	1514.63	0.256	0.00	0.36	3.208	A
90%	North	167.89	41.97	166.99	130.26	476.18	0.00	946.11	262.44	0.177	0.00	0.23	4.851	A

90%	West	869.54	217.39	865.10	429.49	213.67	0.00	1662.79	1381.37	0.523	0.00	1.11	4.593	A
90%	South	263.50	65.87	261.33	266.11	812.66	0.00	751.36	471.33	0.351	0.00	0.54	7.432	A
90%	East	434.40	108.60	432.94	900.49	173.50	0.00	1691.32	1605.16	0.257	0.00	0.36	3.028	A

Main results: (08:15-08:30)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	206.77	51.69	206.42	162.16	527.84	0.00	848.34	255.63	0.244	0.25	0.34	5.911	A
85%	West	1035.62	258.91	1032.41	490.03	244.22	0.00	1540.28	1304.76	0.672	1.25	2.05	7.206	A
85%	South	297.56	74.39	295.87	308.67	967.96	0.00	593.61	446.62	0.501	0.57	1.00	12.218	B
85%	East	486.35	121.59	485.90	1059.74	204.09	0.00	1568.78	1514.63	0.310	0.36	0.47	3.519	A
90%	North	200.47	50.12	200.16	155.98	570.10	0.00	891.75	262.44	0.225	0.23	0.30	5.468	A
90%	West	1038.32	259.58	1035.74	514.34	255.92	0.00	1632.78	1381.37	0.636	1.11	1.76	6.143	A
90%	South	314.64	78.66	313.17	318.64	973.02	0.00	658.56	471.33	0.478	0.54	0.91	10.546	B
90%	East	518.71	129.68	518.26	1078.37	207.82	0.00	1666.94	1605.16	0.311	0.36	0.48	3.317	A

Main results: (08:30-08:45)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	253.23	63.31	252.58	197.04	645.08	0.00	780.48	255.63	0.324	0.34	0.50	7.182	A
85%	West	1268.38	317.09	1256.35	598.72	298.94	0.00	1501.41	1304.76	0.845	2.05	5.06	14.366	B
85%	South	364.44	91.11	356.38	377.00	1178.29	0.00	471.88	446.62	0.772	1.00	3.01	29.834	D
85%	East	595.65	148.91	594.89	1287.43	247.23	0.00	1538.14	1514.63	0.387	0.47	0.66	4.039	A
90%	North	245.53	61.38	244.95	190.04	697.10	0.00	818.25	262.44	0.300	0.30	0.45	6.592	A
90%	West	1271.68	317.92	1263.36	628.79	313.27	0.00	1592.04	1381.37	0.799	1.76	3.84	10.938	B
90%	South	385.36	96.34	379.37	389.56	1187.07	0.00	534.67	471.33	0.721	0.91	2.41	22.731	C
90%	East	635.29	158.82	634.52	1313.81	252.63	0.00	1635.12	1605.16	0.389	0.48	0.67	3.811	A

Main results: (08:45-09:00)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	253.23	63.31	253.22	199.04	647.14	0.00	779.29	255.63	0.325	0.50	0.50	7.215	A
85%	West	1268.38	317.09	1267.43	600.90	299.47	0.00	1501.04	1304.76	0.845	5.06	5.29	15.603	C
85%	South	364.44	91.11	363.20	378.64	1188.26	0.00	466.11	446.62	0.782	3.01	3.32	34.709	D
85%	East	595.65	148.91	595.64	1300.91	250.55	0.00	1535.78	1514.63	0.388	0.66	0.67	4.056	A
90%	North	245.53	61.38	245.52	191.47	699.01	0.00	817.14	262.44	0.300	0.45	0.45	6.617	A
90%	West	1271.68	317.92	1271.24	630.74	313.78	0.00	1591.68	1381.37	0.799	3.84	3.95	11.454	B
90%	South	385.36	96.34	384.76	390.81	1194.22	0.00	530.54	471.33	0.726	2.41	2.56	24.865	C
90%	East	635.29	158.82	635.28	1323.78	255.20	0.00	1633.29	1605.16	0.389	0.67	0.67	3.820	A

Main results: (09:00-09:15)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	206.77	51.69	207.41	165.12	531.09	0.00	846.46	255.63	0.244	0.50	0.34	5.948	A
85%	West	1035.62	258.91	1048.18	493.44	245.06	0.00	1539.68	1304.76	0.673	5.29	2.15	7.678	A
85%	South	297.56	74.39	306.52	311.05	982.18	0.00	585.38	446.62	0.508	3.32	1.08	13.517	B
85%	East	486.35	121.59	487.10	1079.60	209.10	0.00	1565.22	1514.63	0.311	0.67	0.48	3.541	A
90%	North	200.47	50.12	201.04	158.01	572.97	0.00	890.09	262.44	0.225	0.45	0.31	5.496	A
90%	West	1038.32	259.58	1046.81	517.28	256.72	0.00	1632.21	1381.37	0.636	3.95	1.82	6.383	A
90%	South	314.64	78.66	321.00	320.45	983.08	0.00	652.73	471.33	0.482	2.56	0.97	11.229	B
90%	East	518.71	129.68	519.47	1092.57	211.51	0.00	1664.32	1605.16	0.312	0.67	0.48	3.335	A

Main results: (09:15-09:30)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	173.16	43.29	173.52	136.88	443.50	0.00	897.15	255.63	0.193	0.34	0.25	5.250	A
85%	West	867.29	216.82	870.77	411.93	205.08	0.00	1568.08	1304.76	0.553	2.15	1.28	5.309	A
85%	South	249.19	62.30	251.14	259.59	816.26	0.00	681.41	446.62	0.366	1.08	0.59	8.542	A
85%	East	407.29	101.82	407.75	894.77	172.63	0.00	1591.13	1514.63	0.256	0.48	0.37	3.223	A

90%	North	167.89	41.97	168.20	131.47	478.86	0.00	944.56	262.44	0.178	0.31	0.23	4.876	A
90%	West	869.54	217.39	872.29	432.20	214.86	0.00	1661.94	1381.37	0.523	1.82	1.14	4.683	A
90%	South	263.50	65.87	265.13	267.78	819.37	0.00	747.48	471.33	0.353	0.97	0.56	7.610	A
90%	East	434.40	108.60	434.85	909.02	175.48	0.00	1689.91	1605.16	0.257	0.48	0.37	3.041	A

Queueing Delay Results for each time segment

Queueing Delay results: (08:00-08:15)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	3.64	0.24	5.219	A	A
85%	West	17.96	1.20	5.177	A	A
85%	South	8.18	0.55	8.291	A	A
85%	East	5.32	0.35	3.208	A	A
90%	North	3.29	0.22	4.851	A	A
90%	West	16.05	1.07	4.593	A	A
90%	South	7.79	0.52	7.432	A	A
90%	East	5.36	0.36	3.028	A	A

Queueing Delay results: (08:15-08:30)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	4.95	0.33	5.911	A	A
85%	West	29.31	1.95	7.206	A	A
85%	South	14.15	0.94	12.218	B	B
85%	East	6.99	0.47	3.519	A	A
90%	North	4.45	0.30	5.468	A	A
90%	West	25.29	1.69	6.143	A	A
90%	South	13.02	0.87	10.546	B	B
90%	East	7.03	0.47	3.317	A	A

Queueing Delay results: (08:30-08:45)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	7.30	0.49	7.182	A	A
85%	West	66.87	4.46	14.366	B	B
85%	South	38.53	2.57	29.834	D	C
85%	East	9.77	0.65	4.039	A	A
90%	North	6.51	0.43	6.592	A	A
90%	West	52.45	3.50	10.938	B	B
90%	South	31.96	2.13	22.731	C	C
90%	East	9.83	0.66	3.811	A	A

Queueing Delay results: (08:45-09:00)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	7.55	0.50	7.215	A	A
85%	West	77.97	5.20	15.603	C	B
85%	South	47.99	3.20	34.709	D	C
85%	East	10.01	0.67	4.056	A	A
90%	North	6.72	0.45	6.617	A	A
90%	West	58.53	3.90	11.454	B	B
90%	South	37.49	2.50	24.865	C	C
90%	East	10.06	0.67	3.820	A	A

Queueing Delay results: (09:00-09:15)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	5.29	0.35	5.948	A	A
85%	West	34.86	2.32	7.678	A	A
85%	South	18.06	1.20	13.517	B	B
85%	East	7.34	0.49	3.541	A	A

90%	North	4.73	0.32	5.496	A	A
90%	West	28.88	1.93	6.383	A	A
90%	South	15.68	1.05	11.229	B	B
90%	East	7.36	0.49	3.335	A	A

Queueing Delay results: (09:15-09:30)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	3.89	0.26	5.250	A	A
85%	West	19.95	1.33	5.309	A	A
85%	South	9.30	0.62	8.542	A	A
85%	East	5.58	0.37	3.223	A	A
90%	North	3.50	0.23	4.876	A	A
90%	West	17.57	1.17	4.683	A	A
90%	South	8.73	0.58	7.610	A	A
90%	East	5.60	0.37	3.041	A	A

Queue Variation Results for each time segment

Queue Variation results: (08:00-08:15)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.25	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	1.25	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.57	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	0.36	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.23	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	1.11	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.54	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	0.36	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:15-08:30)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.34	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	2.05	0.00	0.00	4.09	6.14			N/A	N/A
85%	South	1.00	0.00	0.00	1.02	2.03			N/A	N/A
85%	East	0.47	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.30	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	1.76	0.00	0.00	3.07	5.12			N/A	N/A
90%	South	0.91	0.00	0.00	1.02	1.02			N/A	N/A
90%	East	0.48	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:30-08:45)

		Mean	Q05	Q50	Q90	Q95		Marker	Probability Of	Probability Of

Intersection	Leg	(PCE)	(PCE)	(PCE)	(PCE)	(PCE)	Percentile Message	Message	Reaching Or Exceeding Marker	Exactly Reaching Marker
85%	North	0.50	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	5.06	0.00	0.00	6.14	18.42			N/A	N/A
85%	South	3.01	0.00	0.00	5.08	10.16			N/A	N/A
85%	East	0.66	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.45	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	3.84	0.00	0.00	2.05	10.23			N/A	N/A
90%	South	2.41	0.00	0.00	2.03	8.13			N/A	N/A
90%	East	0.67	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:45-09:00)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.50	0.00	0.00	0.00	1.05			N/A	N/A
85%	West	5.29	0.00	0.00	1.02	12.28			N/A	N/A
85%	South	3.32	0.00	0.00	4.07	11.18			N/A	N/A
85%	East	0.67	0.00	0.00	0.00	1.06			N/A	N/A
90%	North	0.45	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	3.95	0.00	0.00	0.00	4.09			N/A	N/A
90%	South	2.56	0.00	0.00	1.02	7.11			N/A	N/A
90%	East	0.67	0.00	0.00	0.00	1.06			N/A	N/A

Queue Variation results: (09:00-09:15)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.34	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	2.15	0.00	0.00	4.09	7.16			N/A	N/A
85%	South	1.08	0.00	0.00	2.03	3.05			N/A	N/A
85%	East	0.48	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.31	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	1.82	0.00	0.00	4.09	5.12			N/A	N/A
90%	South	0.97	0.00	0.00	1.02	2.03			N/A	N/A
90%	East	0.48	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (09:15-09:30)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.25	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	1.28	0.00	0.00	2.05	4.09			N/A	N/A
85%	South	0.59	0.00	0.00	0.00	1.02			N/A	N/A
85%	East	0.37	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.23	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	1.14	0.00	0.00	2.05	3.07			N/A	N/A
90%	South	0.56	0.00	0.00	0.00	1.02			N/A	N/A
							Percentiles could not be calculated.			

90%	East	0.37	~1	~1	~1	~1	This may be because the mean queue is very small or very big.		N/A	N/A

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]
© Copyright TRL Limited, 2020

For sales and distribution information, program advice and maintenance, contact TRL:
Tel: +44 (0)1344 770758 email: software@trl.co.uk Web: http://www.trlsoftware.co.uk

The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: Conservation & Beaver Creek - w improve.arc8
Path: C:\Users\AdamMorrison\Paradigm\Projects - 170278 Beaver Creek Area TES\C5 - Analysis and Evaluation\Arcady
Report generation date: 2020-07-07 1:08:57 PM

Summary of intersection performance

	PM					
	Queue (PCE)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS
	All - Total 2032					
Intersection 85% - Leg North	0.52	18.12	0.35	C	14.46	B
Intersection 85% - Leg West	1.15	5.37	0.53	A		
Intersection 85% - Leg South	1.57	12.69	0.61	B		
Intersection 85% - Leg East	7.16	19.96	0.89	C		
Intersection 90% - Leg North	0.40	13.93	0.29	B	10.59	B
Intersection 90% - Leg West	1.04	4.76	0.51	A		
Intersection 90% - Leg South	1.29	10.43	0.57	B		
Intersection 90% - Leg East	5.06	13.72	0.84	B		

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Intersection LOS and Intersection Delay are demand-weighted averages.

"D1 - Existing, AM" model duration: 8:00 AM - 9:30 AM
"D2 - Existing, PM" model duration: 5:00 PM - 6:30 PM
"D3 - Background 2022, AM" model duration: 8:00 AM - 9:30 AM
"D4 - Background 2022, PM" model duration: 5:00 PM - 6:30 PM
"D5 - Total 2022, AM" model duration: 8:00 AM - 9:30 AM
"D6 - Total 2022, PM" model duration: 5:00 PM - 6:30 PM
"D7 - Background 2025, AM" model duration: 8:00 AM - 9:30 AM
"D8 - Background 2025, PM" model duration: 5:00 PM - 6:30 PM
"D9 - Total 2025, AM" model duration: 8:00 AM - 9:30 AM
"D10 - Total 2025, PM" model duration: 5:00 PM - 6:30 PM
"D11 - Background 2027, AM" model duration: 8:00 AM - 9:30 AM
"D12 - Background 2027, PM" model duration: 5:00 PM - 6:30 PM
"D13 - Total 2027, AM" model duration: 8:00 AM - 9:30 AM
"D14 - Total 2027, PM" model duration: 5:00 PM - 6:30 PM
"D15 - Background 2032, AM" model duration: 8:00 AM - 9:30 AM
"D16 - Background 2032, PM" model duration: 5:00 PM - 6:30 PM
"D17 - Total 2032, AM" model duration: 8:00 AM - 9:30 AM
"D18 - Total 2032, PM " model duration: 5:00 PM - 6:30 PM

Run using Junctions 8.0.6.541 at 2020-07-07 1:08:55 PM

File summary

Title	(untitled)
Location	
Site Number	
Date	2018-09-11
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	170278
Analyst	AdamMorrison
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)
7.50	✓		N/A	0.85	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	PCE	PCE	perHour	s	-Min	perMin

All - Total 2032, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
All	ARCADY		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
Total 2032, PM	Total 2032	PM		ONE HOUR	17:00	18:30	90	15				✓		

Intersection Network

Intersections

Junction	Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Do Geometric Delay	Intersection Delay (s)	Intersection LOS
85%	85%	Conservation Drive & Beaver Creek Road	Roundabout	North,West,South,East				14.46	B
90%	90%	Conservation Drive & Beaver Creek Road	Roundabout	North,West,South,East				10.59	B

Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

Legs

Legs

Intersection	Leg	Leg	Name	Description
85%	**North**	North	Beaver Creek Road	
85%	**West**	West	Conservation Drive	
85%	**South**	South	Beaver Creek Road	
85%	**East**	East	Conservation Drive	
90%	**North**	North	Beaver Creek Road	
90%	**West**	West	Conservation Drive	
90%	**South**	South	Beaver Creek Road	
90%	**East**	East	Conservation Drive	

Capacity Options

Intersection	Leg	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)	Assume Flat Start Profile	Initial Queue (PCE)
85%	North	0.00	99999.00		0.00
85%	West	0.00	99999.00		0.00
85%	South	0.00	99999.00		0.00
85%	East	0.00	99999.00		0.00
90%	North	0.00	99999.00		0.00
90%	West	0.00	99999.00		0.00
90%	South	0.00	99999.00		0.00
90%	East	0.00	99999.00		0.00

Roundabout Geometry

Intersection	Leg	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit Only
85%	North	3.50	4.50	30.00	20.00	40.00	25.00	
85%	West	3.50	8.00	30.00	20.00	40.00	25.00	
85%	South	3.50	4.50	30.00	20.00	40.00	25.00	
85%	East	3.50	8.00	30.00	20.00	40.00	25.00	
90%	North	3.50	4.50	30.00	20.00	40.00	25.00	
90%	West	3.50	8.00	30.00	20.00	40.00	25.00	
90%	South	3.50	4.50	30.00	20.00	40.00	25.00	
90%	East	3.50	8.00	30.00	20.00	40.00	25.00	

Slope / Intercept / Capacity

Leg Intercept Adjustments

Intersection	Leg	Type	Reason	Direct Intercept Adjustment (PCE/hr)	Percentage Intercept Adjustment (%)
85%	North	Percentage	Region of Waterloo		85.00
85%	West	Percentage	Region of Waterloo		85.00
85%	South	Percentage	Region of Waterloo		85.00
85%	East	Percentage	Region of Waterloo		85.00
90%	North	Percentage	Region of Waterloo		90.00
90%	West	Percentage	Region of Waterloo		90.00
90%	South	Percentage	Region of Waterloo		90.00
90%	East	Percentage	Region of Waterloo		90.00

Roundabout Slope and Intercept used in model

Intersection	Leg	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
85%	North		(calculated)	(calculated)	0.579	1153.828
85%	West		(calculated)	(calculated)	0.710	1713.743
85%	South		(calculated)	(calculated)	0.579	1153.828
85%	East		(calculated)	(calculated)	0.710	1713.743
90%	North		(calculated)	(calculated)	0.579	1221.701
90%	West		(calculated)	(calculated)	0.710	1814.551
90%	South		(calculated)	(calculated)	0.579	1221.701
90%	East		(calculated)	(calculated)	0.710	1814.551

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCE Factor for a Truck (PCE)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Intersection	Leg	Profile Type	Use Turning Counts	Average Demand Flow (PCE/hr)	Flow Scaling Factor (%)
85%	North	ONE HOUR	✓	96.00	100.000
85%	West	ONE HOUR	✓	706.00	100.000
85%	South	ONE HOUR	✓	411.00	100.000
85%	East	ONE HOUR	✓	1235.00	100.000
90%	North	ONE HOUR	✓	96.00	100.000
90%	West	ONE HOUR	✓	716.00	100.000
90%	South	ONE HOUR	✓	411.00	100.000
90%	East	ONE HOUR	✓	1248.00	100.000

Turning Proportions

Turning Counts / Proportions (PCE/hr) - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.000	38.000	23.000	35.000
	West	34.000	0.000	85.000	587.000
	South	40.000	155.000	0.000	216.000
	East	57.000	910.000	268.000	0.000

Turning Proportions (PCE) - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.00	0.40	0.24	0.36
	West	0.05	0.00	0.12	0.83
	South	0.10	0.38	0.00	0.53
	East	0.05	0.74	0.22	0.00

Turning Counts / Proportions (PCE/hr) - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.000	38.000	23.000	35.000
	West	36.000	0.000	85.000	595.000
	South	40.000	153.000	0.000	218.000
	East	57.000	919.000	272.000	0.000

Turning Proportions (PCE) - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.00	0.40	0.24	0.36
	West	0.05	0.00	0.12	0.83
	South	0.10	0.37	0.00	0.53
	East	0.05	0.74	0.22	0.00

Vehicle Mix

Average PCE Per Vehicle - Intersection 85% (for whole period)

		To			
		North	West	South	East

From	North	1.000	1.000	1.030	1.000
	West	1.000	1.000	1.000	1.020
	South	1.000	1.000	1.000	1.000
	East	1.000	1.010	1.000	1.000

Truck Percentages - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.0	0.0	3.0	0.0
	West	0.0	0.0	0.0	2.0
	South	0.0	0.0	0.0	0.0
	East	0.0	1.0	0.0	0.0

Average PCE Per Vehicle - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	1.000	1.000	1.030	1.000
	West	1.000	1.000	1.000	1.020
	South	1.000	1.000	1.000	1.000
	East	1.000	1.010	1.000	1.000

Truck Percentages - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.0	0.0	3.0	0.0
	West	0.0	0.0	0.0	2.0
	South	0.0	0.0	0.0	0.0
	East	0.0	1.0	0.0	0.0

Results

Results Summary for whole modelled period

Intersection	Leg	Max V/C Ratio	Max Delay (s)	Max Queue (PCE)	Max 95th percentile Queue (PCE)	Max LOS	Average Demand (PCE/hr)	Total Intersection Arrivals (PCE)	Total Queueing Delay (PCE-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCE-min/min)	Inclusive Total Queueing Delay (PCE-min)	Inclusive Average Queueing Delay (s)
85%	North	0.35	18.12	0.52	1.01	C	88.09	132.14	26.16	11.88	0.29	26.16	11.88
85%	West	0.53	5.37	1.15	?	A	647.84	971.76	72.14	4.45	0.80	72.14	4.45
85%	South	0.61	12.69	1.57	2.00	B	377.14	565.71	86.72	9.20	0.96	86.73	9.20
85%	East	0.89	19.96	7.16	25.18	C	1133.26	1699.89	307.51	10.85	3.42	307.55	10.86
90%	North	0.29	13.93	0.40	~1	B	88.09	132.14	21.50	9.76	0.24	21.50	9.76
90%	West	0.51	4.76	1.04	?	A	657.01	985.52	65.97	4.02	0.73	65.97	4.02
90%	South	0.57	10.43	1.29	?	B	377.14	565.71	74.38	7.89	0.83	74.39	7.89
90%	East	0.84	13.72	5.06	16.12	B	1145.19	1717.78	240.25	8.39	2.67	240.28	8.39

Main Results for each time segment

Main results: (17:00-17:15)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	72.27	18.07	71.70	98.05	997.41	0.00	576.57	220.88	0.125	0.00	0.14	7.173	A
85%	West	531.51	132.88	529.38	825.24	243.87	0.00	1540.52	1383.04	0.345	0.00	0.53	3.611	A
85%	South	309.42	77.36	307.24	281.47	491.79	0.00	869.20	403.14	0.356	0.00	0.55	6.382	A
85%	East	929.77	232.44	924.20	627.76	171.26	0.00	1592.10	1530.58	0.584	0.00	1.39	5.387	A
90%	North	72.27	18.07	71.76	99.61	1006.36	0.00	639.26	235.03	0.113	0.00	0.13	6.383	A

90%	West	539.04	134.76	537.06	831.07	247.05	0.00	1639.08	1462.87	0.329	0.00	0.50	3.315	A
90%	South	309.42	77.36	307.46	284.64	499.47	0.00	932.63	425.97	0.332	0.00	0.49	5.742	A
90%	East	939.56	234.89	934.59	635.54	171.38	0.00	1692.82	1620.23	0.555	0.00	1.24	4.753	A

Main results: (17:15-17:30)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	86.30	21.58	85.96	117.44	1194.18	0.00	462.68	220.88	0.187	0.14	0.23	9.614	A
85%	West	634.68	158.67	633.87	988.14	292.01	0.00	1506.33	1383.04	0.421	0.53	0.73	4.191	A
85%	South	369.48	92.37	368.39	336.99	588.90	0.00	813.00	403.14	0.454	0.55	0.82	8.076	A
85%	East	1110.24	277.56	1106.31	751.97	205.31	0.00	1567.92	1530.58	0.708	1.39	2.38	7.788	A
90%	North	86.30	21.58	86.03	119.30	1204.90	0.00	524.35	235.03	0.165	0.13	0.20	8.266	A
90%	West	643.67	160.92	642.95	995.12	295.82	0.00	1604.44	1462.87	0.401	0.50	0.68	3.805	A
90%	South	369.48	92.37	368.57	340.78	597.98	0.00	875.61	425.97	0.422	0.49	0.72	7.086	A
90%	East	1121.93	280.48	1118.80	761.15	205.40	0.00	1668.66	1620.23	0.672	1.24	2.02	6.557	A

Main results: (17:30-17:45)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	105.70	26.42	104.63	143.08	1450.22	0.00	314.50	220.88	0.336	0.23	0.50	17.187	C
85%	West	777.32	194.33	775.70	1200.28	354.56	0.00	1461.90	1383.04	0.532	0.73	1.14	5.320	A
85%	South	452.52	113.13	449.65	409.81	720.45	0.00	736.86	403.14	0.614	0.82	1.54	12.410	B
85%	East	1359.76	339.94	1342.61	919.41	250.69	0.00	1535.68	1530.58	0.885	2.38	6.66	17.412	C
90%	North	105.70	26.42	104.92	145.63	1468.13	0.00	372.01	235.03	0.284	0.20	0.39	13.535	B
90%	West	788.33	197.08	786.92	1212.65	360.39	0.00	1558.57	1462.87	0.506	0.68	1.03	4.734	A
90%	South	452.52	113.13	450.30	415.56	731.75	0.00	798.19	425.97	0.567	0.72	1.28	10.281	B
90%	East	1374.07	343.52	1362.74	931.03	251.02	0.00	1636.26	1620.23	0.840	2.02	4.86	12.755	B

Main results: (17:45-18:00)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	105.70	26.42	105.60	144.13	1465.71	0.00	305.53	220.88	0.346	0.50	0.52	18.116	C
85%	West	777.32	194.33	777.28	1212.87	358.44	0.00	1459.15	1383.04	0.533	1.14	1.15	5.366	A
85%	South	452.52	113.13	452.40	413.52	722.20	0.00	735.85	403.14	0.615	1.54	1.57	12.687	B
85%	East	1359.76	339.94	1357.76	922.52	252.08	0.00	1534.70	1530.58	0.886	6.66	7.16	19.962	C
90%	North	105.70	26.42	105.65	146.39	1478.97	0.00	365.73	235.03	0.289	0.39	0.40	13.935	B
90%	West	788.33	197.08	788.30	1221.49	363.13	0.00	1556.63	1462.87	0.506	1.03	1.04	4.762	A
90%	South	452.52	113.13	452.45	418.20	733.24	0.00	797.33	425.97	0.568	1.28	1.29	10.431	B
90%	East	1374.07	343.52	1373.26	933.59	252.10	0.00	1635.49	1620.23	0.840	4.86	5.06	13.719	B

Main results: (18:00-18:15)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	86.30	21.58	87.42	118.98	1217.12	0.00	449.41	220.88	0.192	0.52	0.24	10.046	B
85%	West	634.68	158.67	636.28	1006.77	297.77	0.00	1502.25	1383.04	0.422	1.15	0.75	4.233	A
85%	South	369.48	92.37	372.35	342.50	591.55	0.00	811.46	403.14	0.455	1.57	0.85	8.250	A
85%	East	1110.24	277.56	1128.79	756.59	207.31	0.00	1566.50	1530.58	0.709	7.16	2.52	8.617	A
90%	North	86.30	21.58	87.10	120.39	1220.28	0.00	515.45	235.03	0.167	0.40	0.20	8.478	A
90%	West	643.67	160.92	645.07	1007.67	299.71	0.00	1601.67	1462.87	0.402	1.04	0.69	3.833	A
90%	South	369.48	92.37	371.69	344.53	600.24	0.00	874.31	425.97	0.423	1.29	0.74	7.195	A
90%	East	1121.93	280.48	1133.70	764.96	206.97	0.00	1667.54	1620.23	0.673	5.06	2.12	6.938	A

Main results: (18:15-18:30)

Intersection	Leg	Total Demand (PCE/hr)	Intersection Arrivals (PCE)	Entry Flow (PCE/hr)	Exit Flow (PCE/hr)	Circulating Flow (PCE/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCE/hr)	Saturation Capacity (PCE/hr)	V/C Ratio	Start Queue (PCE)	End Queue (PCE)	Delay (s)	LOS
85%	North	72.27	18.07	72.65	98.98	1008.14	0.00	570.36	220.88	0.127	0.24	0.15	7.288	A
85%	West	531.51	132.88	532.35	834.19	246.60	0.00	1538.58	1383.04	0.345	0.75	0.54	3.641	A
85%	South	309.42	77.36	310.58	284.21	494.75	0.00	867.49	403.14	0.357	0.85	0.56	6.479	A
85%	East	929.77	232.44	934.12	632.33	172.99	0.00	1590.87	1530.58	0.584	2.52	1.44	5.557	A

90%	North	72.27	18.07	72.57	100.41	1015.41	0.00	634.02	235.03	0.114	0.20	0.13	6.459	A
90%	West	539.04	134.76	539.79	838.63	249.36	0.00	1637.44	1462.87	0.329	0.69	0.50	3.335	A
90%	South	309.42	77.36	310.38	286.98	502.16	0.00	931.07	425.97	0.332	0.74	0.50	5.808	A
90%	East	939.56	234.89	942.94	639.65	172.89	0.00	1691.75	1620.23	0.555	2.12	1.27	4.864	A

Queueing Delay Results for each time segment

Queueing Delay results: (17:00-17:15)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	2.07	0.14	7.173	A	A
85%	West	7.79	0.52	3.611	A	A
85%	South	7.89	0.53	6.382	A	A
85%	East	19.98	1.33	5.387	A	A
90%	North	1.85	0.12	6.383	A	A
90%	West	7.26	0.48	3.315	A	A
90%	South	7.13	0.48	5.742	A	A
90%	East	17.90	1.19	4.753	A	A

Queueing Delay results: (17:15-17:30)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	3.31	0.22	9.614	A	A
85%	West	10.78	0.72	4.191	A	A
85%	South	11.86	0.79	8.076	A	A
85%	East	33.71	2.25	7.788	A	A
90%	North	2.86	0.19	8.266	A	A
90%	West	9.95	0.66	3.805	A	A
90%	South	10.47	0.70	7.086	A	A
90%	East	29.00	1.93	6.557	A	A

Queueing Delay results: (17:30-17:45)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	6.99	0.47	17.187	C	B
85%	West	16.58	1.11	5.320	A	A
85%	South	21.61	1.44	12.410	B	B
85%	East	84.87	5.66	17.412	C	B
90%	North	5.59	0.37	13.535	B	B
90%	West	15.02	1.00	4.734	A	A
90%	South	18.15	1.21	10.281	B	B
90%	East	64.87	4.32	12.755	B	B

Queueing Delay results: (17:45-18:00)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	7.70	0.51	18.116	C	B
85%	West	17.20	1.15	5.366	A	A
85%	South	23.34	1.56	12.687	B	B
85%	East	104.37	6.96	19.962	C	B
90%	North	5.99	0.40	13.935	B	B
90%	West	15.51	1.03	4.762	A	A
90%	South	19.31	1.29	10.431	B	B
90%	East	74.68	4.98	13.719	B	B

Queueing Delay results: (18:00-18:15)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	3.81	0.25	10.046	B	B
85%	West	11.53	0.77	4.233	A	A
85%	South	13.33	0.89	8.250	A	A
85%	East	42.13	2.81	8.617	A	A

90%	North	3.19	0.21	8.478	A	A
90%	West	10.55	0.70	3.833	A	A
90%	South	11.57	0.77	7.195	A	A
90%	East	34.03	2.27	6.938	A	A

Queueing Delay results: (18:15-18:30)

Intersection	Leg	Queueing Total Delay (PCE-min)	Queueing Rate Of Delay (PCE-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	2.28	0.15	7.288	A	A
85%	West	8.25	0.55	3.641	A	A
85%	South	8.67	0.58	6.479	A	A
85%	East	22.44	1.50	5.557	A	A
90%	North	2.01	0.13	6.459	A	A
90%	West	7.66	0.51	3.335	A	A
90%	South	7.75	0.52	5.808	A	A
90%	East	19.77	1.32	4.864	A	A

Queue Variation Results for each time segment

Queue Variation results: (17:00-17:15)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.14	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	0.53	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.55	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	1.39	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.13	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	0.50	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.49	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	1.24	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (17:15-17:30)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.23	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	0.73	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.82	0.00	0.00	0.00	1.00			N/A	N/A
85%	East	2.38	0.00	0.00	5.04	8.06			N/A	N/A
90%	North	0.20	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	0.68	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.72	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	2.02	0.00	0.00	4.03	7.05			N/A	N/A

Queue Variation results: (17:30-17:45)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.50	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	1.14	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	1.54	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	6.66	0.00	0.00	13.10	25.18			N/A	N/A
90%	North	0.39	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	1.03	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	1.28	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	4.86	0.00	0.00	5.04	16.12			N/A	N/A

Queue Variation results: (17:45-18:00)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.52	0.00	0.00	0.00	1.01			N/A	N/A
85%	West	1.15	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	1.57	0.00	0.00	0.00	2.00			N/A	N/A
85%	East	7.16	0.00	0.00	6.04	23.17			N/A	N/A
90%	North	0.40	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	1.04	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	1.29	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	5.06	0.00	0.00	0.00	10.07			N/A	N/A

Queue Variation results: (18:00-18:15)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.24	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	0.75	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.85	0.00	0.00	1.00	1.00			N/A	N/A
85%	East	2.52	0.00	0.00	5.04	9.07			N/A	N/A
90%	North	0.20	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	0.69	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.74	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	2.12	0.00	0.00	4.03	7.05			N/A	N/A

Queue Variation results: (18:15-18:30)

Intersection	Leg	Mean (PCE)	Q05 (PCE)	Q50 (PCE)	Q90 (PCE)	Q95 (PCE)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.15	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
							Percentiles could not be calculated.			

85%	West	0.54	~1	~1	~1	~1	This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.56	0.00	0.00	0.00	1.00			N/A	N/A
85%	East	1.44	0.00	0.00	2.01	4.03			N/A	N/A
90%	North	0.13	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	0.50	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.50	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	1.27	0.00	0.00	2.01	4.03			N/A	N/A

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]
© Copyright TRL Limited, 2020

For sales and distribution information, program advice and maintenance, contact TRL:
Tel: +44 (0)1344 770758 email: software@trl.co.uk Web: http://www.trlsoftware.co.uk

The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: Laurelwood & Beaver Creek - w improve.arc8
Path: C:\Users\AdamMorrison\Paradigm\Projects - 170278 Beaver Creek Area TES\C5 - Analysis and Evaluation\Arcady
Report generation date: 2020-07-07 3:13:50 PM

Summary of intersection performance

There are warnings associated with this model run - see the 'Data Errors and Warnings' tables.

	AM					
	Queue (Veh)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS
	All - Total 2032					
Intersection 85% - Leg North	0.65	6.57	0.40	A	107.35	F
Intersection 85% - Leg West	22.50	94.98	1.04	F		
Intersection 85% - Leg South	31.99	371.90	1.22	F		
Intersection 85% - Leg East	0.42	5.05	0.30	A		
Intersection 90% - Leg North	0.58	5.90	0.37	A	62.09	F
Intersection 90% - Leg West	12.52	45.68	0.97	E		
Intersection 90% - Leg South	22.04	239.47	1.15	F		
Intersection 90% - Leg East	0.39	4.67	0.28	A		

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Intersection LOS and Intersection Delay are demand-weighted averages.

"D1 - Existing, AM" model duration: 8:00 AM - 9:00 AM
"D2 - Existing, PM" model duration: 4:00 PM - 5:00 PM
"D3 - Background 2022, AM" model duration: 8:00 AM - 9:00 AM
"D4 - Background 2022, PM" model duration: 4:00 PM - 5:00 PM
"D5 - Total 2022, AM" model duration: 8:00 AM - 9:00 AM
"D6 - Total 2022, PM" model duration: 4:00 PM - 5:00 PM
"D7 - Background 2025, AM" model duration: 8:00 AM - 9:00 AM
"D8 - Background 2025, PM" model duration: 4:00 PM - 5:00 PM
"D9 - Total 2025, AM" model duration: 8:00 AM - 9:00 AM
"D10 - Total 2025, PM" model duration: 4:00 PM - 5:00 PM
"D11 - Background 2027, AM" model duration: 8:00 AM - 9:00 AM
"D12 - Background 2027, PM" model duration: 4:00 PM - 5:00 PM
"D13 - Total 2027, AM" model duration: 8:00 AM - 9:00 AM
"D14 - Total 2027, PM" model duration: 4:00 PM - 5:00 PM
"D15 - Background 2032, AM" model duration: 8:00 AM - 9:00 AM
"D16 - Background 2032, PM" model duration: 4:00 PM - 5:00 PM
"D17 - Total 2032, AM " model duration: 8:00 AM - 9:00 AM
"D18 - Total 2032, PM" model duration: 4:00 PM - 5:00 PM

Run using Junctions 8.0.6.541 at 2020-07-07 3:13:49 PM

File summary

Title	Laurelwood & Beaver Creek
Location	Waterloo
Site Number	
Date	2017-12-05
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	170278
Analyst	Matt
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)
7.50	✓		N/A	0.90	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units

m	kph	Veh	Veh	perHour	s	-Min	perMin

All - Total 2032, AM

Data Errors and Warnings

Severity	Area	Item	Description
Last Run	Last Run	Intersection 85% - Leg East - Capacity	Pedestrian Crossing causes blocking on previous leg due to traffic queing to leave the intersection in 4 timesegment(s).
Last Run	Last Run	Intersection 90% - Leg East - Capacity	Pedestrian Crossing causes blocking on previous leg due to traffic queing to leave the intersection in 4 timesegment(s).

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
All	ARCADY		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
Total 2032, AM	Total 2032	AM		PHF	08:00	09:00	60	15				✓		

Intersection Network

Intersections

Junction	Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Do Geometric Delay	Intersection Delay (s)	Intersection LOS
85%	85%	Existing	Roundabout	North,West,South,East				107.35	F
90%	90%	Future	Roundabout	North,West,South,East				62.09	F

Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

Legs

Legs

Intersection	Leg	Leg	Name	Description
85%	**North**	North	Beaver Creek SB	
85%	**West**	West	Laurelwood EB	
85%	**South**	South	Beaver Creek NB	
85%	**East**	East	Laurelwood WB	
90%	**North**	North	Beaver Creek SB	
90%	**West**	West	Laurelwood EB	
90%	**South**	South	Beaver Creek NB	
90%	**East**	East	Laurelwood WB	

Capacity Options

Intersection	Leg	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)	Assume Flat Start Profile	Initial Queue (PCE)
85%	**North**	0.00	99999.00		0.00
85%	**West**	0.00	99999.00		0.00
85%	**South**	0.00	99999.00		0.00
85%	**East**	0.00	99999.00		0.00
90%	**North**	0.00	99999.00		0.00
90%	**West**	0.00	99999.00		0.00
90%	**South**	0.00	99999.00		0.00
90%	**East**	0.00	99999.00		0.00

Roundabout Geometry

		V - Approach road half-width	E - Entry width	l' - Effective flare length	R - Entry radius	D - Inscribed circle diameter	PHI - Conflict (entry) angle	Exit

Intersection	Leg	(m)	(m)	(m)	(m)	(m)	(deg)	Only
85%	North	3.50	4.50	30.00	20.00	30.00	25.00	
85%	West	3.50	4.50	30.00	20.00	30.00	25.00	
85%	South	3.50	4.50	30.00	20.00	30.00	25.00	
85%	East	3.50	4.50	30.00	20.00	30.00	25.00	
90%	North	3.50	4.50	30.00	20.00	30.00	25.00	
90%	West	3.50	4.50	30.00	20.00	30.00	25.00	
90%	South	3.50	4.50	30.00	20.00	30.00	25.00	
90%	East	3.50	4.50	30.00	20.00	30.00	25.00	

Bypass

Intersection	Leg	Leg Has Bypass	Bypass Utilisation (%)
85%	North		
85%	West		
85%	South		
85%	East	✓	100
90%	North		
90%	West		
90%	South		
90%	East	✓	100

Pedestrian Crossings

Intersection	Leg	Crossing Type
85%	North	Unsignalled Pedestrian Crossing
85%	West	Unsignalled Pedestrian Crossing
85%	South	Unsignalled Pedestrian Crossing
85%	East	Unsignalled Pedestrian Crossing
90%	North	Unsignalled Pedestrian Crossing
90%	West	Unsignalled Pedestrian Crossing
90%	South	Unsignalled Pedestrian Crossing
90%	East	Unsignalled Pedestrian Crossing

Unsignalled Pedestrian Crossing Crossings

Intersection	Leg	Space between crossing and intersection entry (PCE)	Vehicles queueing on exit (PCE)	Central Refuge	Crossing Data Type	Crossing length (m)	Crossing time (s)	Crossing length (entry side) (m)	Crossing time (entry side) (s)	Crossing length (exit side) (m)	Crossing time (exit side) (s)
85%	North	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
85%	West	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
85%	South	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
85%	East	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
90%	North	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
90%	West	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
90%	South	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
90%	East	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50

Slope / Intercept / Capacity

Leg Intercept Adjustments

Intersection	Leg	Type	Reason	Direct Intercept Adjustment (PCE/hr)	Percentage Intercept Adjustment (%)
85%	North	Percentage	Region of Waterloo - Requirement		85.00
85%	West	Percentage	Region of Waterloo - Requirement		85.00
85%	South	Percentage	Region of Waterloo - Requirement		85.00
85%	East	Percentage	Region of Waterloo - Requirement		85.00
90%	North	Percentage	Region of Waterloo - Requirement		90.00
90%	West	Percentage	Region of Waterloo - Requirement		90.00
90%	South	Percentage	Region of Waterloo - Requirement		90.00
90%	East	Percentage	Region of Waterloo - Requirement		90.00

Roundabout Slope and Intercept used in model

Intersection	Leg	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
85%	North		(calculated)	(calculated)	0.593	1153.828
85%	West		(calculated)	(calculated)	0.593	1153.828
85%	South		(calculated)	(calculated)	0.593	1153.828
85%	East		(calculated)	(calculated)	0.593	1153.828
90%	North		(calculated)	(calculated)	0.593	1221.701
90%	West		(calculated)	(calculated)	0.593	1221.701
90%	South		(calculated)	(calculated)	0.593	1221.701
90%	East		(calculated)	(calculated)	0.593	1221.701

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCE Factor for a Truck (PCE)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Intersection	Leg	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
85%	North	PHF	✓	329.00	100.000
85%	West	PHF	✓	862.00	100.000
85%	South	PHF	✓	325.00	100.000
85%	East	PHF	✓	401.00	100.000
90%	North	PHF	✓	330.00	100.000
90%	West	PHF	✓	866.00	100.000
90%	South	PHF	✓	325.00	100.000
90%	East	PHF	✓	421.00	100.000

Peak Hour Factor Data

Intersection	Leg	Hourly Volume (Veh/hr)	Peak Hour Factor	Peak Time Segment
85%	North	329.00	0.92	SecondQuarter
85%	West	862.00	0.92	SecondQuarter
85%	South	325.00	0.92	SecondQuarter
85%	East	401.00	0.92	SecondQuarter
90%	North	330.00	0.92	SecondQuarter
90%	West	866.00	0.92	SecondQuarter
90%	South	325.00	0.92	SecondQuarter
90%	East	421.00	0.92	SecondQuarter

Pedestrian Flows

General Flows Data

Intersection	Leg	Profile Type	Average Pedestrian Flow (Ped/hr)
85%	North	PHF	10.00
85%	West	PHF	7.00
85%	South	PHF	4.00
85%	East	PHF	10.00
90%	North	PHF	10.00
90%	West	PHF	7.00
90%	South	PHF	4.00
90%	East	PHF	10.00

Peak Hour Factor Data

Intersection	Leg	Hourly Volume (Ped/hr)	Peak Hour Factor	Peak Time Segment
85%	North	10.00	1.00	SecondQuarter
85%	West	7.00	1.00	SecondQuarter
85%	South	4.00	1.00	SecondQuarter
85%	East	10.00	1.00	SecondQuarter
90%	North	10.00	1.00	SecondQuarter
90%	West	7.00	1.00	SecondQuarter
90%	South	4.00	1.00	SecondQuarter
90%	East	10.00	1.00	SecondQuarter

Turning Proportions

Turning Counts / Proportions (Veh/hr) - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.000	21.000	22.000	286.000
	West	34.000	0.000	96.000	732.000
	South	42.000	63.000	0.000	220.000
	East	122.000	238.000	41.000	0.000

Turning Proportions (Veh) - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.00	0.06	0.07	0.87
	West	0.04	0.00	0.11	0.85
	South	0.13	0.19	0.00	0.68
	East	0.30	0.59	0.10	0.00

Turning Counts / Proportions (Veh/hr) - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.000	23.000	22.000	285.000
	West	38.000	0.000	96.000	732.000
	South	42.000	63.000	0.000	220.000
	East	141.000	239.000	41.000	0.000

Turning Proportions (Veh) - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.00	0.07	0.07	0.86
	West	0.04	0.00	0.11	0.85
	South	0.13	0.19	0.00	0.68
	East	0.33	0.57	0.10	0.00

Vehicle Mix

Average PCE Per Vehicle - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	1.000	1.110	1.000	1.000
	West	1.000	1.000	1.000	1.030
	South	1.090	1.000	1.000	1.010
	East	1.040	1.060	1.060	1.000

Truck Percentages - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.0	11.0	0.0	0.0
	West	0.0	0.0	0.0	3.0
	South	9.0	0.0	0.0	1.0
	East	4.0	6.0	6.0	0.0

Average PCE Per Vehicle - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	1.000	1.110	1.000	1.000
	West	1.000	1.000	1.000	1.030
	South	1.090	1.000	1.000	1.010
	East	1.040	1.060	1.060	1.000

Truck Percentages - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.0	11.0	0.0	0.0
	West	0.0	0.0	0.0	3.0
	South	9.0	0.0	0.0	1.0
	East	4.0	6.0	6.0	0.0

Results

Results Summary for whole modelled period

Intersection	Leg	Max V/C Ratio	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Intersection Arrivals (Veh)	Total Queueing Delay (Veh-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (Veh-min/min)	Inclusive Total Queueing Delay (Veh-min)	Inclusive Average Queueing Delay (s)
85%	North	0.40	6.57	0.65	~1	A	329.00	329.00	33.31	6.07	0.56	33.32	6.08
85%	West	1.04	94.98	22.50	78.00	F	862.00	862.00	816.48	56.83	13.61	818.94	57.00
85%	South	1.22	371.90	31.99	122.00	F	325.00	325.00	1111.24	205.15	18.52	1207.43	222.91
85%	East	0.30	5.05	0.42	~1	A	398.70	279.00	22.69	4.88	0.38	22.70	4.88
90%	North	0.37	5.90	0.58	1.00	A	330.00	330.00	30.30	5.51	0.51	30.31	5.51
90%	West	0.97	45.68	12.52	48.00	E	866.00	866.00	464.03	32.15	7.73	464.78	32.20
90%	South	1.15	239.47	22.04	55.00	F	325.00	325.00	733.01	135.33	12.22	743.42	137.25
90%	East	0.28	4.67	0.39	~1	A	418.34	280.00	21.15	4.53	0.35	21.15	4.53

Main Results for each time segment

Main results: (08:00-08:15)

Intersection	Leg	Total Demand (Veh/hr)	Intersection Demand (Veh/hr)	Intersection Arrivals (Veh)	Bypass Demand (Veh/hr)	Bypass Exit Flow (Veh/hr)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	V/C Ratio	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
85%	North	309.93	309.93	77.48	0.00	114.93	307.96	68.88	318.03	10.00	933.80	368.04	0.332	0.00	0.49	5.736	A
85%	West	812.03	812.03	203.01	0.00	0.00	789.78	299.26	326.72	7.00	931.83	824.64	0.871	0.00	5.56	22.677	C
85%	South	306.16	306.16	76.54	0.00	0.00	291.91	146.97	969.54	4.00	373.85	308.11	0.819	0.00	3.56	39.070	E
85%	East	375.59	262.83	65.71	114.93	0.00	261.44	1135.99	125.46	10.00	1015.64	1011.77	0.259	0.00	0.35	4.764	A
90%	North	310.87	310.87	77.72	0.00	132.83	309.07	73.34	319.85	10.00	997.88	374.13	0.312	0.00	0.45	5.212	A
90%	West	815.80	815.80	203.95	0.00	0.00	799.69	302.96	325.97	7.00	998.31	881.72	0.817	0.00	4.03	16.969	C
90%	South	306.16	306.16	76.54	0.00	0.00	295.98	147.69	977.97	4.00	412.24	308.72	0.743	0.00	2.55	28.902	D
90%	East	394.09	263.77	65.94	132.83	0.00	262.48	1143.23	130.71	10.00	1076.54	1072.03	0.245	0.00	0.32	4.415	A

Main results: (08:15-08:30)

Intersection	Leg	Total Demand (Veh/hr)	Intersection Demand (Veh/hr)	Intersection Arrivals (Veh)	Bypass Demand (Veh/hr)	Bypass Exit Flow (Veh/hr)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	V/C Ratio	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
85%	North	357.61	357.61	89.40	0.00	132.61	356.99	70.99	357.79	10.00	904.76	368.04	0.395	0.49	0.65	6.565	A
85%	West	936.95	936.95	234.24	0.00	0.00	873.19	336.05	378.73	7.00	900.76	824.64	1.040	5.56	21.50	69.934	F
85%	South	353.26	353.26	88.32	0.00	0.00	282.85	165.64	1086.28	4.00	290.26	308.11	1.217	3.56	21.16	184.134	F
85%	East	433.37	303.26	75.82	132.61	0.00	302.96	1243.32	125.82	10.00	1015.45	1011.77	0.299	0.35	0.42	5.050	A
90%	North	358.69	358.69	89.67	0.00	153.26	358.16	77.88	361.16	10.00	967.32	374.13	0.371	0.45	0.58	5.905	A
90%	West	941.30	941.30	235.33	0.00	0.00	907.33	341.60	377.72	7.00	967.17	881.72	0.973	4.03	12.52	44.398	E
90%	South	353.26	353.26	88.32	0.00	0.00	294.54	168.98	1116.06	4.00	306.03	308.72	1.154	2.55	17.23	146.066	F
90%	East	454.72	304.35	76.09	153.26	0.00	304.07	1275.63	134.97	10.00	1074.07	1072.02	0.283	0.32	0.39	4.674	A

Main results: (08:30-08:45)

Intersection	Leg	Total Demand (Veh/hr)	Intersection Demand (Veh/hr)	Intersection Arrivals (Veh)	Bypass Demand (Veh/hr)	Bypass Exit Flow (Veh/hr)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	V/C Ratio	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
85%	North	338.54	338.54	84.63	0.00	125.54	338.75	72.45	343.62	10.00	915.18	368.04	0.370	0.65	0.59	6.247	A
85%	West	886.98	886.98	221.75	0.00	0.00	882.98	323.04	359.33	7.00	912.14	824.64	0.972	21.50	22.50	94.982	F
85%	South	334.42	334.42	83.61	0.00	0.00	291.13	163.19	1079.11	4.00	293.26	308.11	1.140	21.16	31.99	344.610	F
85%	East	410.25	287.09	71.77	125.54	0.00	287.19	1241.36	128.88	10.00	1013.66	1011.77	0.283	0.42	0.40	4.957	A
90%	North	339.56	339.56	84.89	0.00	145.09	339.75	79.96	349.29	10.00	976.27	374.13	0.348	0.58	0.54	5.656	A
90%	West	891.10	891.10	222.77	0.00	0.00	894.10	330.77	358.27	7.00	978.73	881.72	0.910	12.52	11.77	45.677	E
90%	South	334.42	334.42	83.61	0.00	0.00	315.14	163.97	1088.41	4.00	320.92	308.72	1.042	17.23	22.04	239.468	F
90%	East	430.47	288.12	72.03	145.09	0.00	288.20	1262.50	141.05	10.00	1070.49	1072.02	0.269	0.39	0.37	4.602	A

Main results: (08:45-09:00)

Intersection	Leg	Total Demand (Veh/hr)	Intersection Demand (Veh/hr)	Intersection Arrivals (Veh)	Bypass Demand (Veh/hr)	Bypass Exit Flow (Veh/hr)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	V/C Ratio	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
85%	North	309.93	309.93	77.48	0.00	114.93	310.28	73.81	322.42	10.00	930.70	368.04	0.333	0.59	0.50	5.805	A
85%	West	812.03	812.03	203.01	0.00	0.00	867.09	303.57	329.13	7.00	930.02	824.64	0.873	22.50	8.74	61.983	F
85%	South	306.16	306.16	76.54	0.00	0.00	306.50	155.96	1040.26	4.00	317.41	308.11	0.965	31.99	31.90	371.904	F

85%	East	375.59	262.83	65.71	114.93	0.00	263.00	1213.53	133.22	10.00	1011.11	1011.77	0.260	0.40	0.35	4.814	A
90%	North	310.87	310.87	77.72	0.00	132.83	311.17	82.13	331.64	10.00	989.52	374.13	0.314	0.54	0.46	5.308	A
90%	West	815.80	815.80	203.95	0.00	0.00	842.86	314.68	328.13	7.00	996.80	881.72	0.818	11.77	5.00	26.268	D
90%	South	306.16	306.16	76.54	0.00	0.00	349.33	152.83	1018.17	4.00	365.17	308.72	0.838	22.04	11.25	179.218	F
90%	East	394.09	263.77	65.94	132.83	0.00	263.93	1217.65	149.84	10.00	1065.30	1072.02	0.248	0.37	0.33	4.492	A

Queueing Delay Results for each time segment

Queueing Delay results: (08:00-08:15)

Intersection	Leg	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	7.13	0.48	5.736	A	A
85%	West	67.48	4.50	22.677	C	C
85%	South	42.19	2.81	39.070	E	D
85%	East	5.06	0.34	4.764	A	A
90%	North	6.52	0.43	5.212	A	A
90%	West	51.73	3.45	16.969	C	B
90%	South	32.05	2.14	28.902	D	C
90%	East	4.71	0.31	4.415	A	A

Queueing Delay results: (08:15-08:30)

Intersection	Leg	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	9.44	0.63	6.565	A	A
85%	West	215.32	14.35	69.934	F	E
85%	South	190.80	12.72	184.134	F	F
85%	East	6.22	0.41	5.050	A	A
90%	North	8.55	0.57	5.905	A	A
90%	West	139.01	9.27	44.398	E	D
90%	South	156.13	10.41	146.066	F	F
90%	East	5.79	0.39	4.674	A	A

Queueing Delay results: (08:30-08:45)

Intersection	Leg	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	9.03	0.60	6.247	A	A
85%	West	330.22	22.01	94.982	F	F
85%	South	399.08	26.61	344.610	F	F
85%	East	6.03	0.40	4.957	A	A
90%	North	8.18	0.55	5.656	A	A
90%	West	181.43	12.10	45.677	E	D
90%	South	295.09	19.67	239.468	F	F
90%	East	5.61	0.37	4.602	A	A

Queueing Delay results: (08:45-09:00)

Intersection	Leg	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	7.71	0.51	5.805	A	A
85%	West	203.45	13.56	61.983	F	E
85%	South	479.17	31.94	371.904	F	F
85%	East	5.38	0.36	4.814	A	A
90%	North	7.05	0.47	5.308	A	A
90%	West	91.87	6.12	26.268	D	C
90%	South	249.74	16.65	179.218	F	F
90%	East	5.03	0.34	4.492	A	A

Queue Variation Results for each time segment

Queue Variation results: (08:00-08:15)

Intersection	Leg	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.49	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	5.56	0.00	1.00	14.00	20.00			N/A	N/A
85%	South	3.56	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	0.35	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.45	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	4.03	0.00	1.00	10.00	14.00			N/A	N/A
90%	South	2.55	0.00	0.00	5.00	9.00			N/A	N/A
90%	East	0.32	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:15-08:30)

Intersection	Leg	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.65	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	21.50	1.00	15.00	45.00	57.00			N/A	N/A
85%	South	21.16	0.00	2.00	55.00	88.00			N/A	N/A
85%	East	0.42	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.58	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	12.52	0.00	5.00	32.00	45.00			N/A	N/A
90%	South	17.23	3.00	14.00	31.00	38.00			N/A	N/A
90%	East	0.39	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:30-08:45)

Intersection	Leg	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.59	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	22.50	0.00	11.00	57.00	78.00			N/A	N/A
85%	South	31.99	0.00	13.00	85.00	120.00			N/A	N/A
85%	East	0.40	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.54	0.00	0.00	0.00	1.00			N/A	N/A
90%	West	11.77	0.00	0.00	28.00	48.00			N/A	N/A
90%	South	22.04	2.00	17.00	44.00	55.00			N/A	N/A
90%	East	0.37	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Queue Variation results: (08:45-09:00)

Intersection	Leg	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.50	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	West	8.74	0.00	0.00	14.00	33.00			N/A	N/A
85%	South	31.90	0.00	12.00	85.00	122.00			N/A	N/A
85%	East	0.35	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	North	0.46	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	5.00	0.00	0.00	6.00	18.00			N/A	N/A
90%	South	11.25	0.00	2.00	29.00	44.00			N/A	N/A
90%	East	0.33	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]
© Copyright TRL Limited, 2020

For sales and distribution information, program advice and maintenance, contact TRL:
Tel: +44 (0)1344 770758 email: software@trl.co.uk Web: http://www.trlsoftware.co.uk

The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: Laurelwood & Beaver Creek - w improve.arc8
Path: C:\Users\AdamMorrison\Paradigm\Projects - 170278 Beaver Creek Area TES\C5 - Analysis and Evaluation\Arcady
Report generation date: 2020-07-07 3:13:18 PM

Summary of intersection performance

There are warnings associated with this model run - see the 'Data Errors and Warnings' tables.

	PM					
	Queue (Veh)	Delay (s)	V/C Ratio	LOS	Intersection Delay (s)	Intersection LOS
	All - Total 2032					
Intersection 85% - Leg North	1.79	22.82	0.66	C	23.12	C
Intersection 85% - Leg West	1.17	8.91	0.54	A		
Intersection 85% - Leg South	0.31	6.86	0.24	A		
Intersection 85% - Leg East	8.56	30.17	0.92	D		
Intersection 90% - Leg North	1.40	17.82	0.59	C	16.99	C
Intersection 90% - Leg West	1.02	7.75	0.51	A		
Intersection 90% - Leg South	0.28	6.18	0.22	A		
Intersection 90% - Leg East	5.95	21.39	0.88	C		

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Intersection LOS and Intersection Delay are demand-weighted averages.

"D1 - Existing, AM" model duration: 8:00 AM - 9:00 AM
"D2 - Existing, PM" model duration: 4:00 PM - 5:00 PM
"D3 - Background 2022, AM" model duration: 8:00 AM - 9:00 AM
"D4 - Background 2022, PM" model duration: 4:00 PM - 5:00 PM
"D5 - Total 2022, AM" model duration: 8:00 AM - 9:00 AM
"D6 - Total 2022, PM" model duration: 4:00 PM - 5:00 PM
"D7 - Background 2025, AM" model duration: 8:00 AM - 9:00 AM
"D8 - Background 2025, PM" model duration: 4:00 PM - 5:00 PM
"D9 - Total 2025, AM" model duration: 8:00 AM - 9:00 AM
"D10 - Total 2025, PM" model duration: 4:00 PM - 5:00 PM
"D11 - Background 2027, AM" model duration: 8:00 AM - 9:00 AM
"D12 - Background 2027, PM" model duration: 4:00 PM - 5:00 PM
"D13 - Total 2027, AM" model duration: 8:00 AM - 9:00 AM
"D14 - Total 2027, PM" model duration: 4:00 PM - 5:00 PM
"D15 - Background 2032, AM" model duration: 8:00 AM - 9:00 AM
"D16 - Background 2032, PM" model duration: 4:00 PM - 5:00 PM
"D17 - Total 2032, AM" model duration: 8:00 AM - 9:00 AM
"D18 - Total 2032, PM " model duration: 4:00 PM - 5:00 PM

Run using Junctions 8.0.6.541 at 2020-07-07 3:13:17 PM

File summary

Title	Laurelwood & Beaver Creek
Location	Waterloo
Site Number	
Date	2017-12-05
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	170278
Analyst	Matt
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	V/C Ratio Threshold	Average Delay Threshold (s)	Queue Threshold (PCE)
7.50	✓		N/A	0.90	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units

m	kph	Veh	Veh	perHour	s	-Min	perMin

All - Total 2032, PM

Data Errors and Warnings

Severity	Area	Item	Description
Last Run	Last Run	Intersection 85% - Leg West - Capacity	Pedestrian Crossing causes blocking on previous leg due to traffic queing to leave the intersection in 4 timesegment(s).
Last Run	Last Run	Intersection 90% - Leg West - Capacity	Pedestrian Crossing causes blocking on previous leg due to traffic queing to leave the intersection in 4 timesegment(s).

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
All	ARCADY		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
Total 2032, PM	Total 2032	PM		PHF	16:00	17:00	60	15				✓		

Intersection Network

Intersections

Junction	Intersection	Name	Intersection Type	Leg Order	Grade Separated	Large Roundabout	Do Geometric Delay	Intersection Delay (s)	Intersection LOS
85%	85%	Existing	Roundabout	North,West,South,East				23.12	C
90%	90%	Future	Roundabout	North,West,South,East				16.99	C

Intersection Network Options

Driving Side	Lighting
Right	Normal/unknown

Legs

Legs

Intersection	Leg	Leg	Name	Description
85%	**North**	North	Beaver Creek SB	
85%	**West**	West	Laurelwood EB	
85%	**South**	South	Beaver Creek NB	
85%	**East**	East	Laurelwood WB	
90%	**North**	North	Beaver Creek SB	
90%	**West**	West	Laurelwood EB	
90%	**South**	South	Beaver Creek NB	
90%	**East**	East	Laurelwood WB	

Capacity Options

Intersection	Leg	Minimum Capacity (PCE/hr)	Maximum Capacity (PCE/hr)	Assume Flat Start Profile	Initial Queue (PCE)
85%	**North**	0.00	99999.00		0.00
85%	**West**	0.00	99999.00		0.00
85%	**South**	0.00	99999.00		0.00
85%	**East**	0.00	99999.00		0.00
90%	**North**	0.00	99999.00		0.00
90%	**West**	0.00	99999.00		0.00
90%	**South**	0.00	99999.00		0.00
90%	**East**	0.00	99999.00		0.00

Roundabout Geometry

		V - Approach road half-width	E - Entry width	I' - Effective flare length	R - Entry radius	D - Inscribed circle diameter	PHI - Conflict (entry) angle	Exit

Intersection	Leg	(m)	(m)	(m)	(m)	(m)	(deg)	Only
85%	North	3.50	4.50	30.00	20.00	30.00	25.00	
85%	West	3.50	4.50	30.00	20.00	30.00	25.00	
85%	South	3.50	4.50	30.00	20.00	30.00	25.00	
85%	East	3.50	4.50	30.00	20.00	30.00	25.00	
90%	North	3.50	4.50	30.00	20.00	30.00	25.00	
90%	West	3.50	4.50	30.00	20.00	30.00	25.00	
90%	South	3.50	4.50	30.00	20.00	30.00	25.00	
90%	East	3.50	4.50	30.00	20.00	30.00	25.00	

Bypass

Intersection	Leg	Leg Has Bypass	Bypass Utilisation (%)
85%	North		
85%	West		
85%	South		
85%	East	✓	100
90%	North		
90%	West		
90%	South		
90%	East	✓	100

Pedestrian Crossings

Intersection	Leg	Crossing Type
85%	North	Unsignalled Pedestrian Crossing
85%	West	Unsignalled Pedestrian Crossing
85%	South	Unsignalled Pedestrian Crossing
85%	East	Unsignalled Pedestrian Crossing
90%	North	Unsignalled Pedestrian Crossing
90%	West	Unsignalled Pedestrian Crossing
90%	South	Unsignalled Pedestrian Crossing
90%	East	Unsignalled Pedestrian Crossing

Unsignalled Pedestrian Crossing Crossings

Intersection	Leg	Space between crossing and intersection entry (PCE)	Vehicles queueing on exit (PCE)	Central Refuge	Crossing Data Type	Crossing length (m)	Crossing time (s)	Crossing length (entry side) (m)	Crossing time (entry side) (s)	Crossing length (exit side) (m)	Crossing time (exit side) (s)
85%	North	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
85%	West	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
85%	South	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
85%	East	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
90%	North	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
90%	West	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
90%	South	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50
90%	East	1.00	1.00	✓	Distance			3.50	2.50	3.50	2.50

Slope / Intercept / Capacity

Leg Intercept Adjustments

Intersection	Leg	Type	Reason	Direct Intercept Adjustment (PCE/hr)	Percentage Intercept Adjustment (%)
85%	North	Percentage	Region of Waterloo - Requirement		85.00
85%	West	Percentage	Region of Waterloo - Requirement		85.00
85%	South	Percentage	Region of Waterloo - Requirement		85.00
85%	East	Percentage	Region of Waterloo - Requirement		85.00
90%	North	Percentage	Region of Waterloo - Requirement		90.00
90%	West	Percentage	Region of Waterloo - Requirement		90.00
90%	South	Percentage	Region of Waterloo - Requirement		90.00
90%	East	Percentage	Region of Waterloo - Requirement		90.00

Roundabout Slope and Intercept used in model

Intersection	Leg	Enter slope and intercept directly	Entered slope	Entered intercept (PCE/hr)	Final Slope	Final Intercept (PCE/hr)
85%	North		(calculated)	(calculated)	0.593	1153.828
85%	West		(calculated)	(calculated)	0.593	1153.828
85%	South		(calculated)	(calculated)	0.593	1153.828
85%	East		(calculated)	(calculated)	0.593	1153.828
90%	North		(calculated)	(calculated)	0.593	1221.701
90%	West		(calculated)	(calculated)	0.593	1221.701
90%	South		(calculated)	(calculated)	0.593	1221.701
90%	East		(calculated)	(calculated)	0.593	1221.701

The slope and intercept shown above include any corrections and adjustments.

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCE Factor for a Truck (PCE)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	Truck Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Intersection	Leg	Profile Type	Use Turning Counts	Average Demand Flow (Veh/hr)	Flow Scaling Factor (%)
85%	North	PHF	✓	265.00	100.000
85%	West	PHF	✓	440.00	100.000
85%	South	PHF	✓	151.00	100.000
85%	East	PHF	✓	1254.00	100.000
90%	North	PHF	✓	265.00	100.000
90%	West	PHF	✓	443.00	100.000
90%	South	PHF	✓	151.00	100.000
90%	East	PHF	✓	1260.00	100.000

Peak Hour Factor Data

Intersection	Leg	Hourly Volume (Veh/hr)	Peak Hour Factor	Peak Time Segment
85%	North	265.00	0.92	SecondQuarter
85%	West	440.00	0.92	SecondQuarter
85%	South	151.00	0.92	SecondQuarter
85%	East	1254.00	0.92	SecondQuarter
90%	North	265.00	0.92	SecondQuarter
90%	West	443.00	0.92	SecondQuarter
90%	South	151.00	0.92	SecondQuarter
90%	East	1260.00	0.92	SecondQuarter

Pedestrian Flows

General Flows Data

Intersection	Leg	Profile Type	Average Pedestrian Flow (Ped/hr)
85%	North	PHF	9.00
85%	West	PHF	6.00
85%	South	PHF	4.00
85%	East	PHF	8.00
90%	North	PHF	9.00
90%	West	PHF	6.00
90%	South	PHF	4.00
90%	East	PHF	8.00

Peak Hour Factor Data

Intersection	Leg	Hourly Volume (Ped/hr)	Peak Hour Factor	Peak Time Segment
85%	North	9.00	1.00	SecondQuarter
85%	West	6.00	1.00	SecondQuarter
85%	South	4.00	1.00	SecondQuarter
85%	East	8.00	1.00	SecondQuarter
90%	North	9.00	1.00	SecondQuarter
90%	West	6.00	1.00	SecondQuarter
90%	South	4.00	1.00	SecondQuarter
90%	East	8.00	1.00	SecondQuarter

Turning Proportions

Turning Counts / Proportions (Veh/hr) - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.000	33.000	48.000	184.000
	West	20.000	1.000	37.000	382.000
	South	27.000	34.000	0.000	90.000
	East	326.000	769.000	159.000	0.000

Turning Proportions (Veh) - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.00	0.12	0.18	0.69
	West	0.05	0.00	0.08	0.87
	South	0.18	0.23	0.00	0.60
	East	0.26	0.61	0.13	0.00

Turning Counts / Proportions (Veh/hr) - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.000	33.000	48.000	184.000
	West	22.000	1.000	37.000	383.000
	South	27.000	34.000	0.000	90.000
	East	328.000	773.000	159.000	0.000

Turning Proportions (Veh) - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.00	0.12	0.18	0.69
	West	0.05	0.00	0.08	0.86
	South	0.18	0.23	0.00	0.60
	East	0.26	0.61	0.13	0.00

Vehicle Mix

Average PCE Per Vehicle - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	1.000	1.000	1.030	1.000
	West	1.000	1.000	1.000	1.020
	South	1.000	1.000	1.000	1.000
	East	1.000	1.010	1.000	1.000

Truck Percentages - Intersection 85% (for whole period)

		To			
		North	West	South	East
From	North	0.0	0.0	3.0	0.0
	West	0.0	0.0	0.0	2.0
	South	0.0	0.0	0.0	0.0
	East	0.0	1.0	0.0	0.0

Average PCE Per Vehicle - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	1.000	1.000	1.030	1.000
	West	1.000	1.000	1.000	1.020
	South	1.000	1.000	1.000	1.000
	East	1.000	1.010	1.000	1.000

Truck Percentages - Intersection 90% (for whole period)

		To			
		North	West	South	East
From	North	0.0	0.0	3.0	0.0
	West	0.0	0.0	0.0	2.0
	South	0.0	0.0	0.0	0.0
	East	0.0	1.0	0.0	0.0

Results

Results Summary for whole modelled period

Intersection	Leg	Max V/C Ratio	Max Delay (s)	Max Queue (Veh)	Max 95th percentile Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Intersection Arrivals (Veh)	Total Queueing Delay (Veh-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (Veh-min/min)	Inclusive Total Queueing Delay (Veh-min)	Inclusive Average Queueing Delay (s)
85%	North	0.66	22.82	1.79	5.00	C	265.00	265.00	75.18	17.02	1.25	75.23	17.03
85%	West	0.54	8.91	1.17	1.00	A	440.00	440.00	57.86	7.89	0.96	57.89	7.89
85%	South	0.24	6.86	0.31	~1	A	151.00	151.00	15.72	6.25	0.26	15.72	6.25
85%	East	0.92	30.17	8.56	34.00	D	1251.32	928.00	340.78	22.03	5.68	341.26	22.06
90%	North	0.59	17.82	1.40	2.00	C	265.00	265.00	60.11	13.61	1.00	60.14	13.62
90%	West	0.51	7.75	1.02	?	A	443.00	443.00	51.19	6.93	0.85	51.21	6.94
90%	South	0.22	6.18	0.28	~1	A	151.00	151.00	14.25	5.66	0.24	14.25	5.66
90%	East	0.88	21.39	5.95	23.00	C	1257.31	932.00	249.09	16.04	4.15	249.36	16.05

Main Results for each time segment

Main results: (16:00-16:15)

Intersection	Leg	Total Demand (Veh/hr)	Intersection Demand (Veh/hr)	Intersection Arrivals (Veh)	Bypass Demand (Veh/hr)	Bypass Exit Flow (Veh/hr)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	V/C Ratio	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
85%	North	249.64	249.64	62.41	0.00	307.10	246.22	43.96	892.58	9.00	534.66	372.14	0.467	0.00	0.85	12.343	B
85%	West	414.49	414.49	103.62	0.00	0.00	411.22	775.92	362.88	6.00	914.16	825.08	0.453	0.00	0.82	7.113	A
85%	South	142.25	142.25	35.56	0.00	0.00	141.33	226.50	547.60	4.00	760.28	351.11	0.187	0.00	0.23	5.808	A
85%	East	1178.78	874.20	218.55	307.10	0.00	859.81	612.22	76.72	8.00	1098.87	1036.24	0.796	0.00	3.60	14.308	B
90%	North	249.64	249.64	62.41	0.00	308.99	246.75	45.86	899.14	9.00	588.13	379.58	0.424	0.00	0.72	10.460	B
90%	West	417.32	417.32	104.33	0.00	0.00	414.39	782.07	363.82	6.00	979.79	879.50	0.426	0.00	0.73	6.334	A
90%	South	142.25	142.25	35.56	0.00	0.00	141.41	227.11	551.10	4.00	820.48	352.65	0.173	0.00	0.21	5.294	A
90%	East	1184.42	877.97	219.49	308.99	0.00	866.37	613.88	78.64	8.00	1164.99	1099.17	0.754	0.00	2.90	11.645	B

Main results: (16:15-16:30)

Intersection	Leg	Total Demand (Veh/hr)	Intersection Demand (Veh/hr)	Intersection Arrivals (Veh)	Bypass Demand (Veh/hr)	Bypass Exit Flow (Veh/hr)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	V/C Ratio	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
85%	North	288.04	288.04	72.01	0.00	354.35	284.31	50.96	1026.82	9.00	438.42	372.14	0.657	0.85	1.79	22.817	C
85%	West	478.26	478.26	119.57	0.00	0.00	476.86	892.80	418.33	6.00	879.25	825.08	0.544	0.82	1.17	8.914	A
85%	South	164.13	164.13	41.03	0.00	0.00	163.80	261.02	634.16	4.00	688.33	351.11	0.238	0.23	0.31	6.858	A
85%	East	1360.13	1008.69	252.17	354.35	0.00	988.85	709.03	88.93	8.00	1091.59	1036.24	0.924	3.60	8.56	30.171	D
90%	North	288.04	288.04	72.01	0.00	356.52	285.34	53.15	1038.83	9.00	484.62	379.58	0.594	0.72	1.40	17.822	C
90%	West	481.52	481.52	120.38	0.00	0.00	480.36	903.62	420.55	6.00	943.85	879.50	0.510	0.73	1.02	7.746	A
90%	South	164.13	164.13	41.03	0.00	0.00	163.84	262.55	638.36	4.00	745.96	352.65	0.220	0.21	0.28	6.181	A
90%	East	1366.64	1013.05	253.26	356.52	0.00	1000.86	711.07	91.13	8.00	1157.54	1099.17	0.875	2.90	5.95	21.390	C

Main results: (16:30-16:45)

Intersection	Leg	Total Demand (Veh/hr)	Intersection Demand (Veh/hr)	Intersection Arrivals (Veh)	Bypass Demand (Veh/hr)	Bypass Exit Flow (Veh/hr)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	V/C Ratio	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
85%	North	272.68	272.68	68.17	0.00	335.45	273.81	48.40	994.56	9.00	461.34	372.14	0.591	1.79	1.51	19.337	C
85%	West	452.76	452.76	113.19	0.00	0.00	453.20	864.43	403.94	6.00	888.35	825.08	0.510	1.17	1.06	8.284	A
85%	South	155.38	155.38	38.84	0.00	0.00	155.49	251.93	605.21	4.00	712.68	351.12	0.218	0.31	0.28	6.461	A
85%	East	1287.59	954.90	238.72	335.45	0.00	958.52	676.25	84.44	8.00	1094.27	1036.24	0.873	8.56	7.65	27.655	D
90%	North	272.68	272.68	68.17	0.00	337.51	273.63	50.46	998.31	9.00	514.42	379.58	0.530	1.40	1.16	15.019	C
90%	West	455.84	455.84	113.96	0.00	0.00	456.23	868.22	403.72	6.00	954.57	879.50	0.478	1.02	0.93	7.232	A
90%	South	155.38	155.38	38.84	0.00	0.00	155.48	251.83	608.12	4.00	772.09	352.66	0.201	0.28	0.25	5.841	A
90%	East	1293.75	959.02	239.75	337.51	0.00	962.27	677.10	86.50	8.00	1160.31	1099.17	0.827	5.95	5.13	18.592	C

Main results: (16:45-17:00)

Intersection	Leg	Total Demand (Veh/hr)	Intersection Demand (Veh/hr)	Intersection Arrivals (Veh)	Bypass Demand (Veh/hr)	Bypass Exit Flow (Veh/hr)	Entry Flow (Veh/hr)	Exit Flow (Veh/hr)	Circulating Flow (Veh/hr)	Pedestrian Demand (Ped/hr)	Capacity (Veh/hr)	Saturation Capacity (Veh/hr)	V/C Ratio	Start Queue (Veh)	End Queue (Veh)	Delay (s)	LOS
85%	North	249.64	249.64	62.41	0.00	307.10	251.78	44.35	921.05	9.00	514.14	372.14	0.486	1.51	0.97	13.831	B
85%	West	414.49	414.49	103.62	0.00	0.00	415.31	800.25	372.58	6.00	908.07	825.08	0.456	1.06	0.85	7.317	A
85%	South	142.25	142.25	35.56	0.00	0.00	142.43	232.68	555.21	4.00	754.15	351.11	0.189	0.28	0.23	5.888	A

85%	East	1178.78	874.20	218.55	307.10	0.00	888.03	620.28	77.36	8.00	1098.49	1036.24	0.796	7.65	4.19	18.073	C
90%	North	249.64	249.64	62.41	0.00	308.99	251.14	46.22	918.64	9.00	573.61	379.58	0.435	1.16	0.79	11.215	B
90%	West	417.32	417.32	104.33	0.00	0.00	418.00	798.82	370.96	6.00	975.29	879.50	0.428	0.93	0.76	6.469	A
90%	South	142.25	142.25	35.56	0.00	0.00	142.41	231.49	557.46	4.00	815.22	352.65	0.174	0.25	0.21	5.351	A
90%	East	1184.42	877.97	219.49	308.99	0.00	885.63	620.64	79.23	8.00	1164.64	1099.17	0.754	5.13	3.22	13.243	B

Queueing Delay Results for each time segment

Queueing Delay results: (16:00-16:15)

Intersection	Leg	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	11.95	0.80	12.343	B	B
85%	West	11.71	0.78	7.113	A	A
85%	South	3.32	0.22	5.808	A	A
85%	East	47.25	3.15	14.308	B	B
90%	North	10.22	0.68	10.460	B	B
90%	West	10.55	0.70	6.334	A	A
90%	South	3.04	0.20	5.294	A	A
90%	East	39.16	2.61	11.645	B	B

Queueing Delay results: (16:15-16:30)

Intersection	Leg	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	24.23	1.62	22.817	C	C
85%	West	16.83	1.12	8.914	A	A
85%	South	4.54	0.30	6.858	A	A
85%	East	104.12	6.94	30.171	D	C
90%	North	19.40	1.29	17.822	C	B
90%	West	14.83	0.99	7.746	A	A
90%	South	4.10	0.27	6.181	A	A
90%	East	76.90	5.13	21.390	C	C

Queueing Delay results: (16:30-16:45)

Intersection	Leg	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	23.60	1.57	19.337	C	B
85%	West	16.18	1.08	8.284	A	A
85%	South	4.28	0.29	6.461	A	A
85%	East	119.83	7.99	27.655	D	C
90%	North	18.14	1.21	15.019	C	B
90%	West	14.17	0.94	7.232	A	A
90%	South	3.86	0.26	5.841	A	A
90%	East	80.81	5.39	18.592	C	B

Queueing Delay results: (16:45-17:00)

Intersection	Leg	Queueing Total Delay (Veh-min)	Queueing Rate Of Delay (Veh-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
85%	North	15.40	1.03	13.831	B	B
85%	West	13.14	0.88	7.317	A	A
85%	South	3.58	0.24	5.888	A	A
85%	East	69.57	4.64	18.073	C	B
90%	North	12.35	0.82	11.215	B	B
90%	West	11.64	0.78	6.469	A	A
90%	South	3.25	0.22	5.351	A	A
90%	East	52.22	3.48	13.243	B	B

Queue Variation Results for each time segment

Queue Variation results: (16:00-16:15)

Intersection	Leg	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.85	0.00	0.00	0.00	1.00			N/A	N/A
85%	West	0.82	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.23	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	3.60	0.00	0.00	8.00	12.00			N/A	N/A
90%	North	0.72	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	0.73	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.21	~1	~1	~1	~1	Percentiles could not be calculated. This may be		N/A	N/A

							because the mean queue is very small or very big.			
90%	East	2.90	0.00	0.00	7.00	10.00			N/A	N/A

Queue Variation results: (16:15-16:30)

Intersection	Leg	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	1.79	0.00	0.00	1.00	5.00			N/A	N/A
85%	West	1.17	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.31	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	8.56	0.00	0.00	21.00	34.00			N/A	N/A
90%	North	1.40	0.00	0.00	0.00	2.00			N/A	N/A
90%	West	1.02	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.28	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	5.95	0.00	0.00	12.00	23.00			N/A	N/A

Queue Variation results: (16:30-16:45)

Intersection	Leg	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	1.51	0.00	0.00	0.00	2.00			N/A	N/A
85%	West	1.06	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	South	0.28	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	7.65	0.00	0.00	11.00	28.00			N/A	N/A
90%	North	1.16	?	?	?	?	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	West	0.93	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.25	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	5.13	0.00	0.00	1.00	13.00			N/A	N/A

Queue Variation results: (16:45-17:00)

Intersection	Leg	Mean (Veh)	Q05 (Veh)	Q50 (Veh)	Q90 (Veh)	Q95 (Veh)	Percentile Message	Marker Message	Probability Of Reaching Or Exceeding Marker	Probability Of Exactly Reaching Marker
85%	North	0.97	0.00	0.00	1.00	2.00			N/A	N/A
85%	West	0.85	0.00	0.00	0.00	1.00			N/A	N/A
85%	South	0.23	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
85%	East	4.19	0.00	0.00	6.00	15.00			N/A	N/A
90%	North	0.79	0.00	0.00	1.00	1.00			N/A	N/A
90%	West	0.76	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	South	0.21	~1	~1	~1	~1	Percentiles could not be calculated. This may be because the mean queue is very small or very big.		N/A	N/A
90%	East	3.22	0.00	0.00	5.00	12.00			N/A	N/A