1665 Scotch Line Road, Woolwich, ON

Transportation Impact Study Update

Paradigm Transportation Solutions Limited

2026-04
240259

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Project Summary

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1665 Scotch Line Road, Woolwich, ON Transportation Impact Study Update



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Executive Summary

Content

1000535725 Ontario Inc. has retained Paradigm Transportation Solutions Limited (Paradigm) to complete this Transportation Impact Study (TIS) for a proposed industrial development located at 1665 Scotch Line Road in the Township of Woolwich, Region of Waterloo, Ontario.

This TIS includes an analysis of existing traffic conditions, a description of the proposed development traffic, traffic forecasts for a five-year horizon from assumed opening year (Year 2032), and any recommendations required to support future traffic conditions.

Development Concept

The subject site is located at 1665 Scotch Line Road in Township of Woolwich. The property owner is proposing to develop the 59.927 ha property to include an Industrial Park containing ten separate blocks dedicated to future industrial uses. The total gross floor area based on 50% lot coverage is approximately 2,121,244 sq.ft.

Vehicle access is proposed via two new municipal road connections to South Field Drive.

Conclusions

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

- **Existing Traffic Conditions:** The study area intersections are currently operating within acceptable levels of service with no critical movements during the AM and PM peak hours.
- **Development Trip Generation:** The development is forecast to generate approximately 680 and 680 trips during the AM and PM peak hours, respectively.
- **Background Traffic Conditions:** The study area intersections are forecast to operate within acceptable levels of service during the AM and PM peak hours with critical movements noted at the following intersections:
  - Arthur Street and Whippoorwill Drive/South Field Drive;
  - Arthur Street and Scotch Line Road; and
  - Arthur Street and Listowel Road/Union Street.

- **Total Traffic Conditions:** With the addition of the site generated traffic, the study area intersections are forecast to operate within acceptable levels of service during the AM and PM peak hours with critical movements noted at the following intersections:
  - Arthur Street and Whippoorwill Drive/South Field Drive;
  - Arthur Street and Scotch Line Road;
  - South Field Drive and Union Street;
  - Arthur Street and Listowel Road/Union Street; and
  - South Field Drive and Street A (West).
- The two proposed municipal street connections to South Field Drive are forecast to operate with acceptable levels of service with the exception of the Street A (West) which is forecast to operate at LOS F during the PM peak hour. There is excess capacity at Street A (East) which is forecast to operate at LOS C and v/c ratio of 0.58 during the PM peak hour, to handle any traffic from the west access road.
- The westbound approach at the rail crossing of South Field Drive is forecast to operate at LOS E during the PM peak hour under future total traffic conditions
- **Remedial Measures:** Sight distance analysis on South Field Drive at the two proposed municipal intersections shows that the west intersection meets 50 km/h requirements while the east intersection meets a 70 km/h requirement.
- left-turn lanes on South Field Drive at the two new roadway connections are not warranted.
- Right-turn lanes on South Field Drive at Street A (West) and Street A (East) are warranted based on turning volumes.
- Eastbound left-turn lane on South Field Drive at Union Street is warranted for 15-metres of storage under future total traffic conditions.
- Westbound left-turn lane on South Field Drive at Union Street is warranted for 40-metres of storage under future total traffic conditions.
- Traffic control signals are justified at the intersection of South Field Drive and Union Street under future total traffic conditions.

Recommendations

Based on the findings of this study, it is recommended that the development be approved with the following provisions:

- Extend the 50 km/h posted speed limit on South Field Drive eastwards past the proposed Street A (East) intersection to support appropriate sight lines;
- Construct right-turn lanes on South Field Drive at Street A (West) and Street A (East);
- Construct an eastbound left-turn lane with 15-metres of storage and westbound left-turn lane with 40-metres of storage on South Field Drive at Union Street;
- Install traffic control signals at the intersection of South Field Drive and Union Street;
- Consider replacing the stop signs on South Field Drive at the rail crossing with flashing rail-crossing signs; and
- When proposed land uses are identified for the subject site, truck generation and access requirements should be assessed during the development application for each block.

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1 Introduction

1.1 Overview

1000535725 Ontario Inc. has retained Paradigm Transportation Solutions Limited (Paradigm) to complete this Transportation Impact Study (TIS) for a proposed industrial development located at 1665 Scotch Line Road in the Township of Woolwich, Region of Waterloo, Ontario. **Figure 1.1** illustrates the subject development location.

1.2 Purpose and Scope

The purpose of this report is to identify and assess the potential traffic impacts resulting from the proposed development. The scope of this study, developed in consultation with the Region of Waterloo and Township of Woolwich in June 2024, includes:

- Assessment of current traffic and site conditions within the study area;
- Estimates of background traffic growth for assumed five years from opening year (Year 2032);
- Estimates of additional traffic generated by the development;
- Analyses of the impact of the future traffic on the surrounding road network; and
- Recommendations necessary to mitigate the site generated traffic in a satisfactory manner.

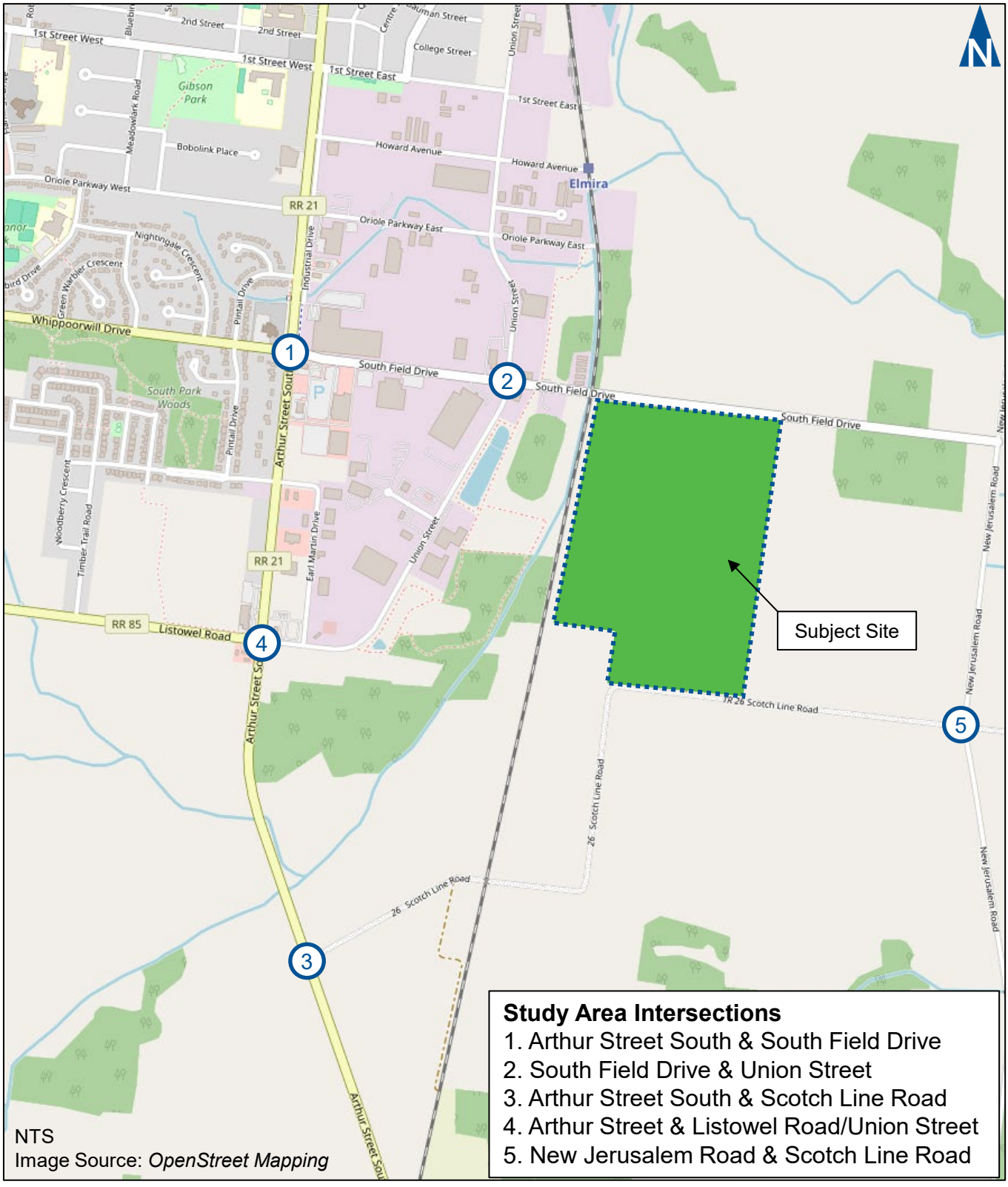
Pre-study consultation confirmed the following study area intersections:

- Arthur Street South and South Field Drive/Whippoorwill Drive;
- South Field Drive and Union Street;
- Arthur Street South and Scotch Line Road;
- Arthur Street and Listowel Road/Union Street;
- New Jerusalem Road and Scotch Line Road; and
- Two new municipal connections to South Field Drive.

Appendix A contains the pre-study consultation material and responses from the Township. This study has been completed in accordance with the Township of Woolwich Transportation Impact

Study Guidelines[1], and Region of Waterloo Transportation Impact Study Guidelines[2].

[1] Township of Woolwich, *Engineering Development and Infrastructure Manual (EDIM),* (Region of Waterloo, Woolwich, March 2022), Section 12 Transportation Impact Study Guidelines
[2] Region of Waterloo, *Transportation Impact Study Guidelines,* (Waterloo, September 2013).



Location of Subject Site

1665 Scotch Line Road, Woolwich
240259

Figure 1.1

2 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.

2.1 Road Network

The main roadways under the jurisdiction[3] of the Region of Waterloo near the subject site include:

- **Arthur Street South** is a north-south Regional Road with a three-lane cross-section (one travel lane per direction and a centre two-way left-turn lane) between South Field Drive and Union Street. It has a posted speed limit of 60 km/h.

The main roadways under the jurisdiction[4] of the Township of Woolwich near the subject site include:

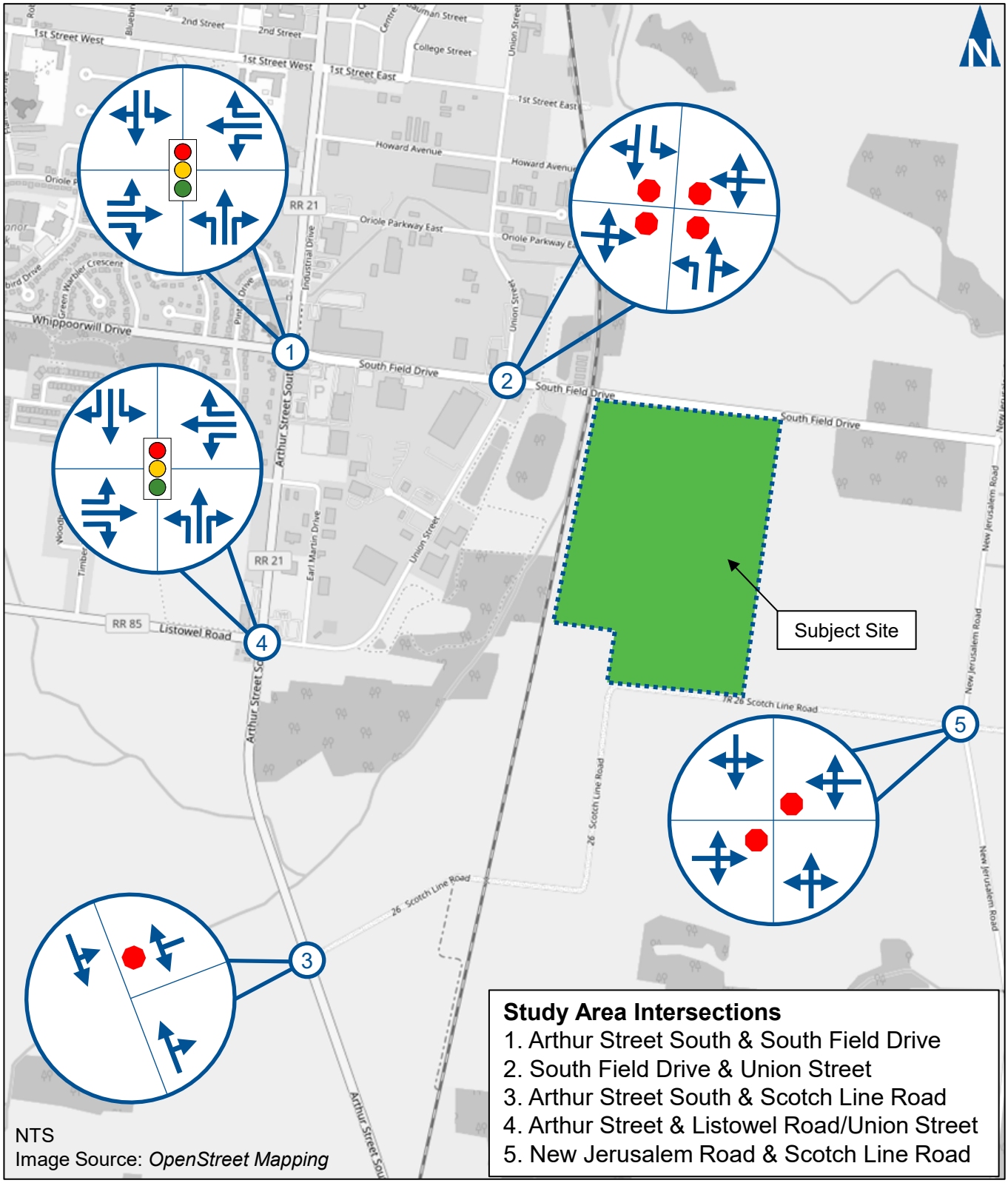
- **Union Street** is a north-south Collector Road with a two-lane cross-section and posted speed limit of 50 km/h.
- **South Field Drive** is an east-west Collector Road with a two-lane cross-section and posted speed limit of 50 km/h. It transitions to an 80 km/h posted speed limit along the subject site's frontage. South Field Drive then transitions into **New Jerusalem Road** which runs north-south connecting to Sawmill Road.

  There is a stop-control traffic control on South Field Drive at the CN Waterloo Spur at-grade rail crossing.

  Both South Field Drive (east of Union Street) and New Jerusalem Road have signage indicating a weight restriction of a maximum of 5 tonnes per axel from March 1st to April 30th.
- **Scotch Line Road** is a two-lane gravel Township Road that provides access to farms between Arthur Street and Northfield Drive. Truck are prohibited on Scotch Line Road by signage.

Figure 2.1 illustrates the existing lane configurations and traffic control at the study area intersections.

[3] Region of Waterloo. Official Plan Map 5b: Existing, Planned, and Proposed Roads and Corridors. 2015.
[4] Township of Woolwich, Official Plan, Planning Horizon 2016 to 2031, (August 2022).



paradigm TRANSPORTATION SOLUTIONS LIMITED

Existing Lane Configuration & Traffic Control

1665 Scotch Line Road, Woolwich
240259

Figure 2.1

2.2 Transit Network

Grand River Transit (GRT) currently operates one route into the community of Elmira along Arthur Street. **Route 21 (Elmira)** operates between Conestoga Station and the Arthur Street/Church Street intersection. It operates[5] Monday to Fridays (5:50 AM to 10:10 PM) with headways approximately every 30 minutes, Saturdays (6:39 AM to 7:41 PM) with headways approximately every 30 minutes, and Sundays (6:55 AM to 7:14 PM) with headways approximately every 30 minutes. There is no Holidays service for this route.

The closest transit stops to the subject site are located at the Arthur Street South and South Field Drive/Whippoorwill Drive intersection. They are approximately 1 km (14 minute) walk.

There is also Kiwanis Transit[6], which is a specialized transit service for eligible residents of the Townships of Woolwich, Wellesley, and Wilmot. Kiwanis Transit is an on-demand service for seniors and disabled residents to access employment, appointments, and social activities.

While not public transportation, the Waterloo Central Railway[7] runs a heritage railway offering historic passenger train from the City of Waterloo, through St. Jacobs, and ends in Elmira at Howard Avenue. It usually runs one to two times per day, typically on the weekends. The operations of the trains would not impact the daily peak hour traffic volumes on South Fields Drive.

2.3 Active Transportation

Arthur Street has an older, non-standard sidewalk on the west side between Whippoorwill Drive and Listowel Road. Arther Street has a sidewalk on the east side between South Field Drive and Earl Martin Road. Arthur Street also has paved shoulders southwards from South Field Drive. Although not signed/marked as on-street cycle lanes, these could be used by cyclists. South Field Drive has an approximately 250-metre-long sidewalk on the south side of the road from Arthur Street. Union Street has a short segment of sidewalk on the north side at Arthur Street.

The Lions Ring Trail runs north-south from the south end of Union Street to Oriole Parkway with connections at South Field Drive.

5 Current GRT schedule as of December 2025.
6 www.k-transit.com
7 waterloocentralrailway.com

Travel by bicycle to/from the subject site is not restricted by any access-controlled roadways. Cyclists are permitted to ride on all roadways in the study area.

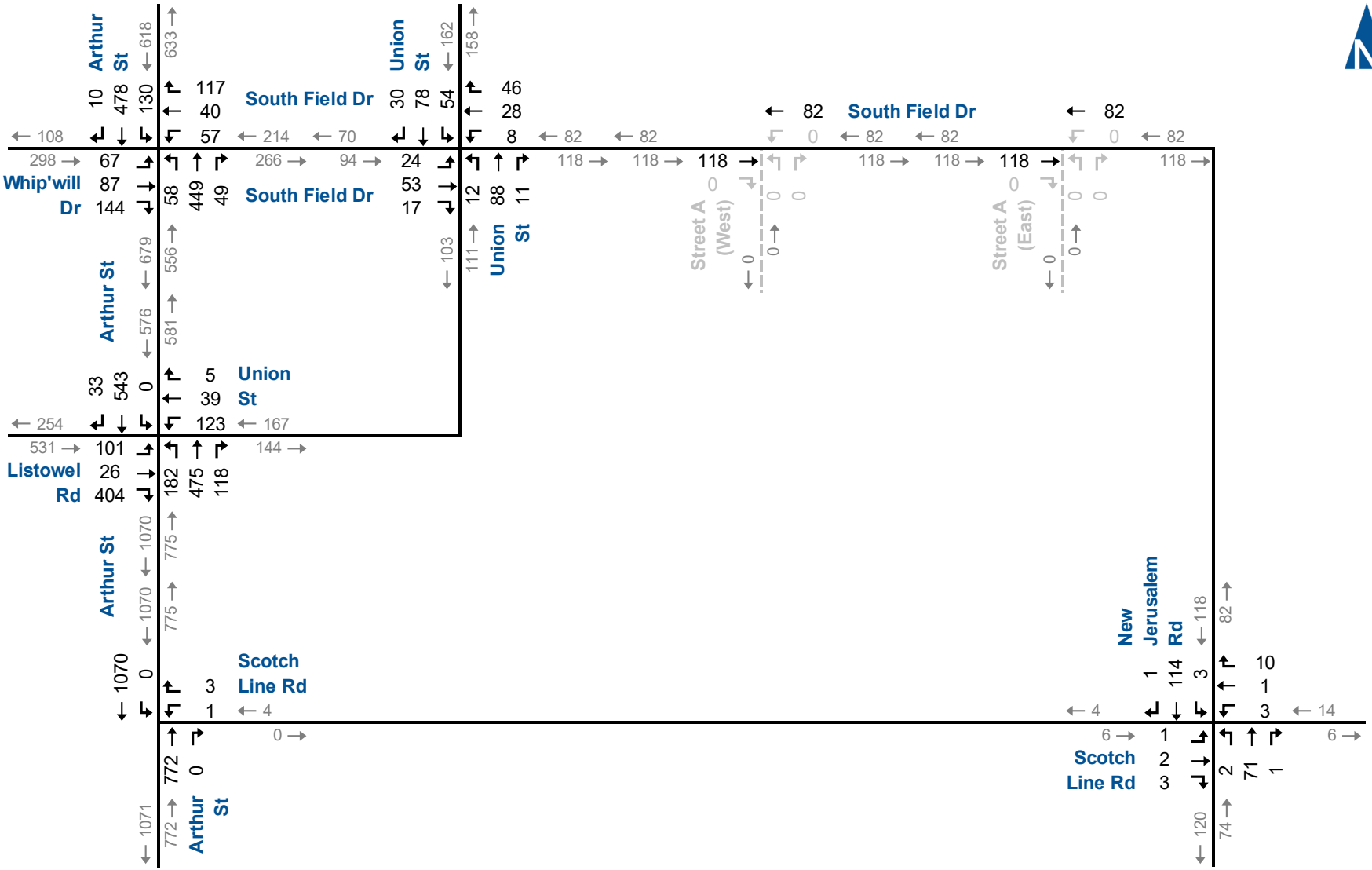
2.4 Traffic Volumes

Turning movement counts quantify the movement of vehicles through the area. Existing traffic data at an intersection or on a road section forms the foundation for the analysis. The counts are usually taken during peak periods at an intersection to complete level of service analyses under its worst-case operating conditions.

Eight-hour turning movement counts were conducted at the study area intersections on Wednesday May 29, 2024, and Wednesday December 3, 2025. The 2024 counts were factored to 2025 using a 2.0% growth rate. Balancing was done along Arthur Street between Listowel Road/Union Street and Scotch Line Road as well as South Field Drive/New Jerusalem Road between Union Street and Scotch Line Road.

Appendix B contains the existing count information and signal timing plans.

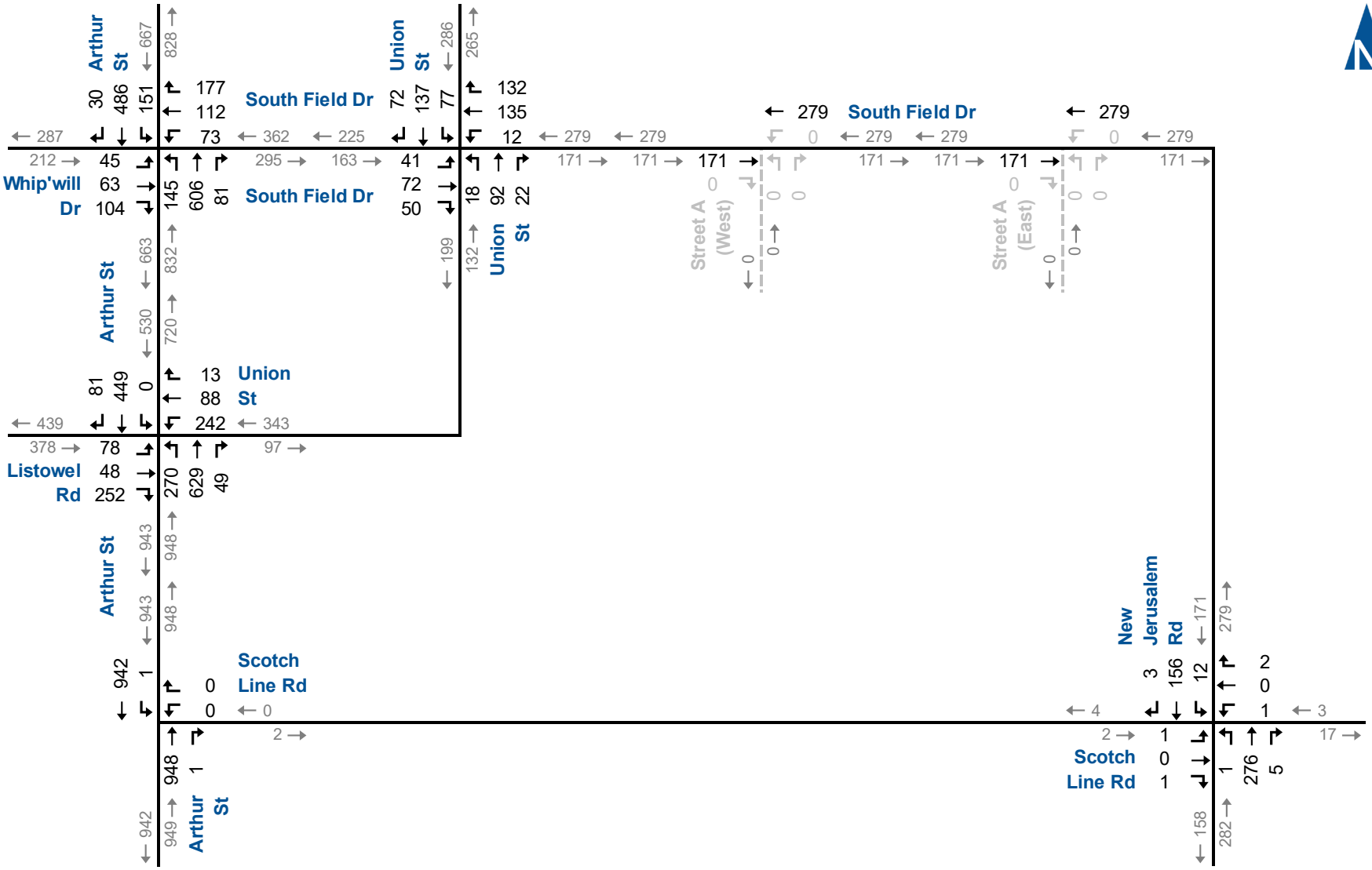
Figure 2.2A and **Figure 2.2B** illustrates the base year weekday AM and PM peak hour traffic volumes, respectively.



Base Year Traffic Volumes (AM Peak Hour)

1665 Scotch Line Road, Woolwich
240259

Figure 2.1A



Base Year Traffic Volumes (PM Peak Hour)

1665 Scotch Line Road, Woolwich
240259

Figure 2.1B

2.5 Traffic Operations

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

The highest possible rating is LOS A, under which the average total delay is equal or less than 10.0 seconds per vehicle. When the average delay exceeds 80 seconds for signalized intersections, 50 seconds for unsignalized intersections or when the volume to capacity ratio if greater than 1.00, the movement is classed as LOS F, and remedial measures are usually implemented if they are feasible.

The operations of the study intersections have been analyzed using Synchro 12, with the existing lane configurations, traffic control, and estimated base year traffic volumes. The analysis considers three separate measures of performance:

- The Level of Service (LOS) for each turning movement
- The volume-to-capacity (v/c) ratio for each movement; and
- The 95th percentile queue lengths estimated using Synchro.

The Region of Waterloo's *Traffic Impact Study Guidelines*[8] identify critical intersections as those operating at overall LOS E or F, regardless of control type (for example, signalized, unsignalized, or roundabout). The criteria for critical movements are where:

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

The Region of Waterloo's *Transportation Impact Studies (TIS) Requirements for Capacity Analysis, Roundabouts, Signal Warrants*

[8] Region of Waterloo, *Transportation Impact Study Guidelines,* (Kitchener, Region of Waterloo, 2014).

identifies saturation flow rates, peak hour factors, lost time adjustments, and other factors required for the Synchro analysis.

Table 2.1 summarizes the base year level of service conditions. The results indicate that all study intersections are operating with acceptable levels of service and within capacity.

At the intersection of Arthur Street and Listowel Road/Union Street, the westbound left-turn queue length is currently exceeding its available storage during the AM and PM peak hours.

Appendix C contains the detailed Synchro reports

TABLE 2.1: BASE YEAR OPERATIONS

Analysis Period	Intersection	Control Type	MOE	Direction / Movement / Approach																	
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	Arthur Street & Whippoorwill Drive/South Field Drive	TCS	LOS	C	C	B	B	C	C	A	B	A	B	A	B	A	B	>	B	B
			Delay	22	23	15	19	22	20	7	13	5	13	1	11	6	15	>	13	13
			V/C	0.19	0.19	0.27		0.17	0.08	0.25		0.11	0.46	0.06		0.25	0.57	>		
			Q	18	22	27		16	12	12		6	60	2		11	73	>		
			Ex	40	-	40		25	-	25		40	-	40		30	-	>		
			Avail.	22	-	13		9	-	13		34	-	38		19	-	>		
	South Field Drive & Union Street	AWSC	LOS	<	A	>	A	<	A	>	A	A	B	>	A	A	A	>	A	A
			Delay	<	8	>	8	<	8	>	8	9	12	>	9	9	9	>	9	9
			V/C	<	0.12	>		<	0.10	>		0.02	0.14	>		0.08	0.15	>		
			Q	<	3	>		<	2	>		1	4	>		2	4	>		
			Ex	<	-	>		<	-	>		25	-	>		20	-	>		
			Avail.	<	-	>		<	-	>		24	-	>		18	-	>		
	South Field Drive & Rail Crossing	TWSC	LOS		A		A		A		A									A
			Delay		10		10		9		9									10
			V/C		0.13				0.09											
			Q		4				2											
			Ex		-				-											
			Avail.		-				-											
	Arthur Street & Scotch Line Road	TWSC	LOS					D		>	D		A	>	A	<	A		A	A
			Delay					32		>	32		0	>	0	<	0		0	0
			V/C					0.03		>			0.45	>		<	0.00			
			Q					1		>			0	>		<	0			
			Ex					-		>			-	>		<	-			
			Avail.					-		>			-	>		<	-			
	Arthur Street & Listowel Road/Union Street	TCS	LOS	C	C	A	B	C	C	A	C	B	A	A	A	A	C	A	C	B
			Delay	23	20	9	12	26	21	0	24	16	9	2	9	0	25	0	23	15
			V/C	0.31	0.06	0.63		0.42	0.12	0.01		0.59	0.45	0.14		0.00	0.77	0.60		
			Q	27	9	27		33	12	0		27	60	6		0	103	0		
			Ex	60	-	60		30	-	30		100	-	100		50	-	50		
			Avail.	33	-	33		-3	-	30		73	-	94		50	-	50		
	New Jerusalem Road & Scotch Line Road	TWSC	LOS	<	A	>	A	<	A	>	A	<	A	>	A	<	A	>	A	A
			Delay	<	10	>	10	<	9	>	9	<	7	>	0	<	7	>	0	1
			V/C	<	0.08	>		<	0.02	>		<	0.00	>		<	0.00	>		
			Q	<	0	>		<	0	>		<	0	>		<	0	>		
			Ex	<	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		<	-	>		
PM Peak Hour	Arthur Street & Whippoorwill Drive/South Field Drive	TCS	LOS	C	C	B	B	C	C	A	B	A	B	A	B	A	C	>	C	B
			Delay	22	21	15	18	23	22	7	15	7	16	3	13	6	26	>	21	17
			V/C	0.15	0.14	0.17		0.24	0.24	0.36		0.35	0.68	0.11		0.35	0.81	>		
			Q	14	17	22		20	27	15		12	87	5		11	84	>		
			Ex	40	-	40		25	-	25		40	-	40		30	-	>		
			Avail.	26	-	18		5	-	10		28	-	35		19	-	>		
	South Field Drive & Union Street	AWSC	LOS	<	B	>	B	<	B	>	B	A	B	>	B	B	B	>	B	B
			Delay	<	11	>	11	<	12	>	12	10	11	>	11	10	11	>	11	11
			V/C	<	0.25	>		<	0.41	>		0.03	0.20	>		0.14	0.33	>		
			Q	<	8	>		<	16	>		1	6	>		4	12	>		
			Ex	<	-	>		<	-	>		25	-	>		20	-	>		
			Avail.	<	-	>		<	-	>		24	-	>		16	-	>		
	South Field Drive & Rail Crossing	TWSC	LOS		A		A		B		B									B
			Delay		10		10		11		11									11
			V/C		0.19				0.31											
			Q		6				10											
			Ex		-				-											
			Avail.		-				-											
	Arthur Street & Scotch Line Road	TWSC	LOS					A		>	A		A	>	A	<	A		A	A
			Delay					0		>	0		0	>	0	<	10		0	0
			V/C					0.00		>			0.56	>		<	0.00			
			Q					0		>			0	>		<	0			
			Ex					-		>			-	>		<	-			
			Avail.					-		>			-	>		<	-			
	Arthur Street & Listowel Road/Union Street	TCS	LOS	D	D	B	C	C	C	A	C	C	B	A	B	A	D	A	D	C
			Delay	47	42	11	23	32	25	0	29	26	17	2	19	0	47	4	40	26
			V/C	0.40	0.21	0.59		0.56	0.14	0.03		0.65	0.56	0.56		0.00	0.30	0.30		
			Q	33	22	25		71	28	0		68	127	4		0	136	8		
			Ex	60	-	60		30	-	30		100	-	100		50	-	50		
			Avail.	27	-	35		-41	-	30		32	-	96		50	-	42		
	New Jerusalem Road & Scotch Line Road	TWSC	LOS	<	B	>	B	<	B	>	B	<	A	>	A	<	A	>	A	A
			Delay	<	11	>	11	<	11	>	11	<	8	>	0	<	8	>	1	0
			V/C	<	0.00	>		<	0.00	>		<	0.00	>		<	0.01	>		
			Q	<	0	>		<	0	>		<	0	>		<	0	>		
			Ex	<	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		<	-	>		

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

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

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

< / > - Shared Turn Lane

3 Development Concept

3.1 Description

The subject site is located at 1665 Scotch Line Road in Township of Woolwich. The property owner is proposing to develop the 54.92 ha property to include an Industrial Park containing eight separate blocks dedicated to future industrial uses. **Table 3.1** outlines the size of each block as well as the assumed GFA for each block which is based on zoning maximum lot coverage of 50%. It indicates that the subject site is proposed to have approximately 1,998,697 sq.ft. of GFA.

TABLE 3.1: BLOCK SIZE AND COVERAGE

Block #	Hectares (ha)	Square Feet (sq.ft.)	Coverage 50%
1	10.123	1,089,630.6	544,815.3
2	4.169	448,747.4	224,373.7
3	2.501	269,205.4	134,602.7
4	3.931	423,129.3	211,564.7
5	4.192	451,223.1	225,611.6
6	4.201	452,191.9	226,095.9
7	3.925	422,483.5	211,241.7
8	4.095	440,782.1	220,391.1
Total	**14.292**	**3,997,393.3**	**1,998,696.6**

Vehicle access is proposed via two new municipal road connections to South Field Drive. Street A forms a loop within the site and is proposed to have a right-of-way width of approximately 23 metres. The internal road, Street B will also have a right-of-way width of approximately 23 metres. Final pavement width is to be determined. Both proposed connections of Street A to South Field Drive are separated by approximately 265 metres. Transportation Association of Canada (TAC) guidelines[9] recommend a minimum of 60 metres between intersections on a collector roadway.

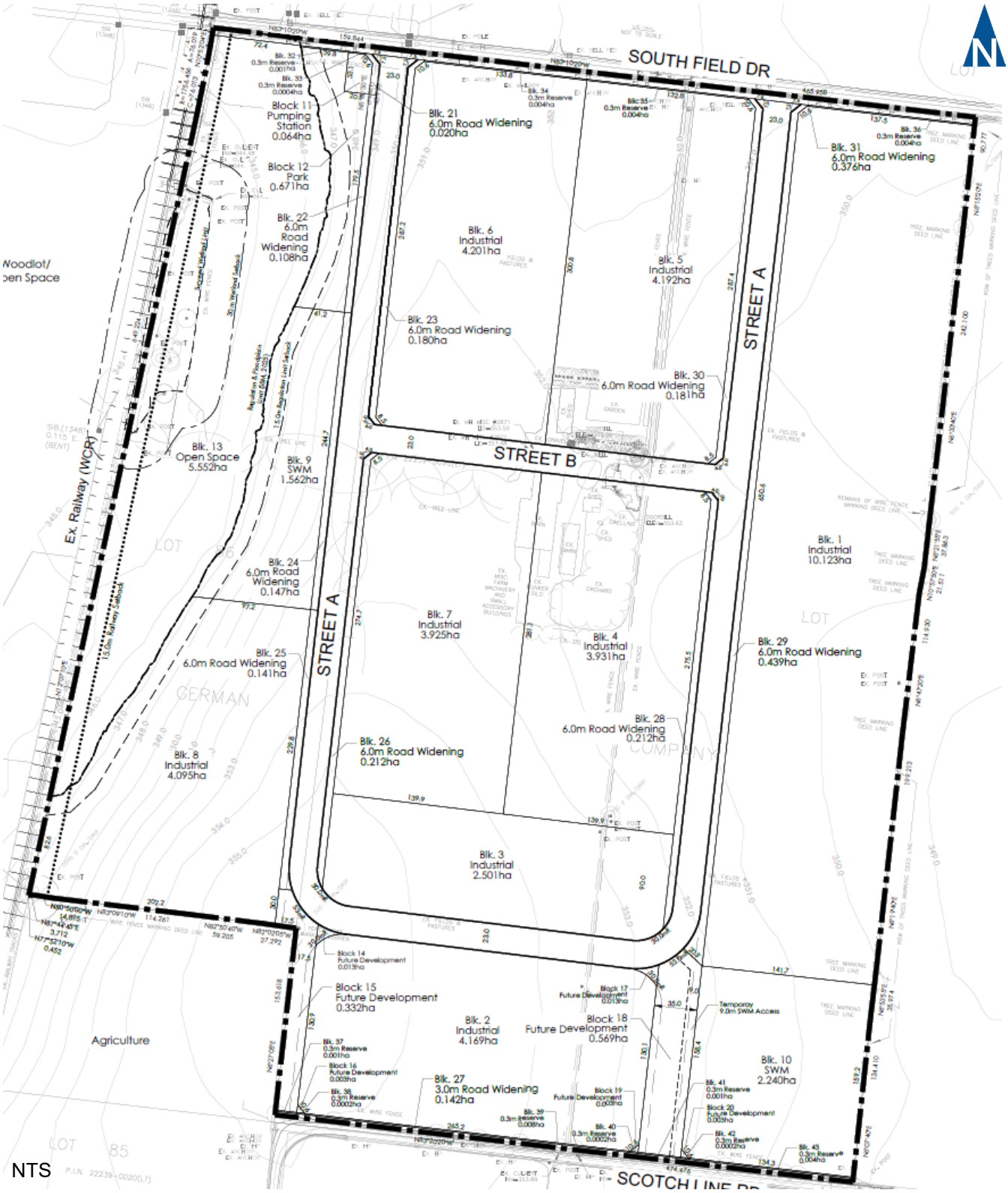
It is anticipated that all vehicles to/from the subject site will use South Field Drive as Scotch Line Road is not suitable for the forecast volume of vehicles and is prohibited for truck traffic.

Active transportation infrastructure planned for South Field Drive includes sidewalks and paved shoulders. Sidewalks should be

[9] Transportation Association of Canada, “Intersections,” chap. 9 in *Geometric Design Guide for Canadian Roads*, (Ottawa: TAC, 2017),

considered on the frontage of the subject site as well as along one side (at a minimum) along the proposed internal roadways.

Figure 3.1 shows the proposed concept plan.



paradigm TRANSPORTATION SOLUTIONS LIMITED

Concept Plan

1665 Scotch Line Road, Woolwich
240259

Figure 3.1

3.2 Sight Distance

Table 3.1 summarizes the recommended sight distance for 50 km/h, 70 km/h and 100 km/h design speeds. South Field Drive has slight vertical curvature fronting the subject site.

TABLE 3.1: RECOMMENDED SIGHT DISTANCES

Sight Distance Measurement	Design Speeds		
	50 km/h	70 km/h	100 km/h
Minimum Stopping Sight Distance [10]	65 m	105 m	185 m
Intersection Sight Distance – Left Turn from Stop [11]	105 m	150 m	210 m
Intersection Sight Distance – Right Turn from Stop [12]	95 m	130 m	185 m

Table 3.2 summarizes the sight distance analysis for both proposed municipal connections to South Field Drive. It indicates that the proposed west Street A does not meet the minimum stopping sight distance for 70 km/h design speed requirements based on sight distance to vehicle headlights. It does meet the 50 km/h design speed (40 km/h posted speed) requirements. For the eastern proposed municipal street connection, it does not meet the sight distance requirements set for 100 km/h design speed. It does meet the design speed requirements for a 70 km/h (50 km/h posted speed) design speed.

Appendix D contains the sight distance analysis.

It is recommended that the 50 km/h posted speed limit be extended east on South Field Drive past the proposed eastern municipal connection to improve sight distance requirements.

[10] TAC, "Chapter 2 – Design Controls" in *Geometric Design Guide for Canadian Road,* (Ottawa: TAC, 2017), Table 2.5.2 Stopping Sight Distance on Level Roadways for Automobiles.
[11] TAC, "Chapter 9 – Intersections" in *Geometric Design Guide for Canadian Road,* (Ottawa: TAC, 2017), Table 9.9.4 Design Intersection Sight Distance – Case B1, Left Turn from Stop.
[12] TAC, "Chapter 9 – Intersections" in *Geometric Design Guide for Canadian Road,* (Ottawa: TAC, 2017), Table 9.9.6 Design Intersection Sight Distance – Case B2, Right Turn from Stop.

TABLE 3.2: CALCULATED SIGHT DISTANCE MEASUREMENTS

Sight Distance	Street A (West)		Street A (East)	
	Towards Arthur Street	Towards New Jerusalem Road	Towards Arthur Street	Towards New Jerusalem Road
Minimum Stopping Sight Driver Eye (Car)	231 m*	92 m	162 m	219 m*
Minimum Stopping Sight Driver Eye (Truck)	231 m*	146 m	231 m	219 m*
Intersection Sight Distance Driver Eye to Headlights	231 m*	102 m	151 m	219 m*
Intersection Sight Distance Driver Eye to Top of Car	231 m*	177 m	197 m	219 m*

*Limited by survey data.

3.3 Trip Generation & Distribution

The trip generation of the site has been estimated using information contained in the Institute of Transportation Engineer's (ITE) *Trip Generation Manual.*[13] The Land Use Code (LUC) 130 – Industrial Park (GFA/1,000 sq.ft.) was used to estimate the AM and PM peak hour site trips.

As the current land uses for the site are unknown at this time, the LUC 130 covers a wide range of potential land uses most suitable for the subject site.

The average rates were used to calculate the trips generated by the site. No reductions for modal split were calculated to provide a conservative estimate.

[13] Institute of Transportation Engineers. *Trip Generation Manual (10th Edition)*. Washington, D.C. September 2017.

Table 3.3 summarizes the trip generation calculations. The site is estimated to generate 680 net new trips in the AM peak hour, and 680 net new trips in the PM peak hour.

TABLE 3.3: TRIP GENERATION

ITE Trip Gen	Units	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
130 - Industrial Park (GFA/1,000 sq.ft.)	1,998.7	551	129	**680**	150	530	**680**

AM Average Rate 0.34 / PM Average Rate 0.34

As the current industrial land uses are unknown, it is unclear what truck trip generation could be at this time. The ITE suggests that 3% of the trip generation is trucks (20 trucks in the AM and 20 trucks in the PM peak hours). It is recommended that once proposed land uses become known, truck trip generation and access requirements (turning movements, etc.) be conducted for each specific land use application.

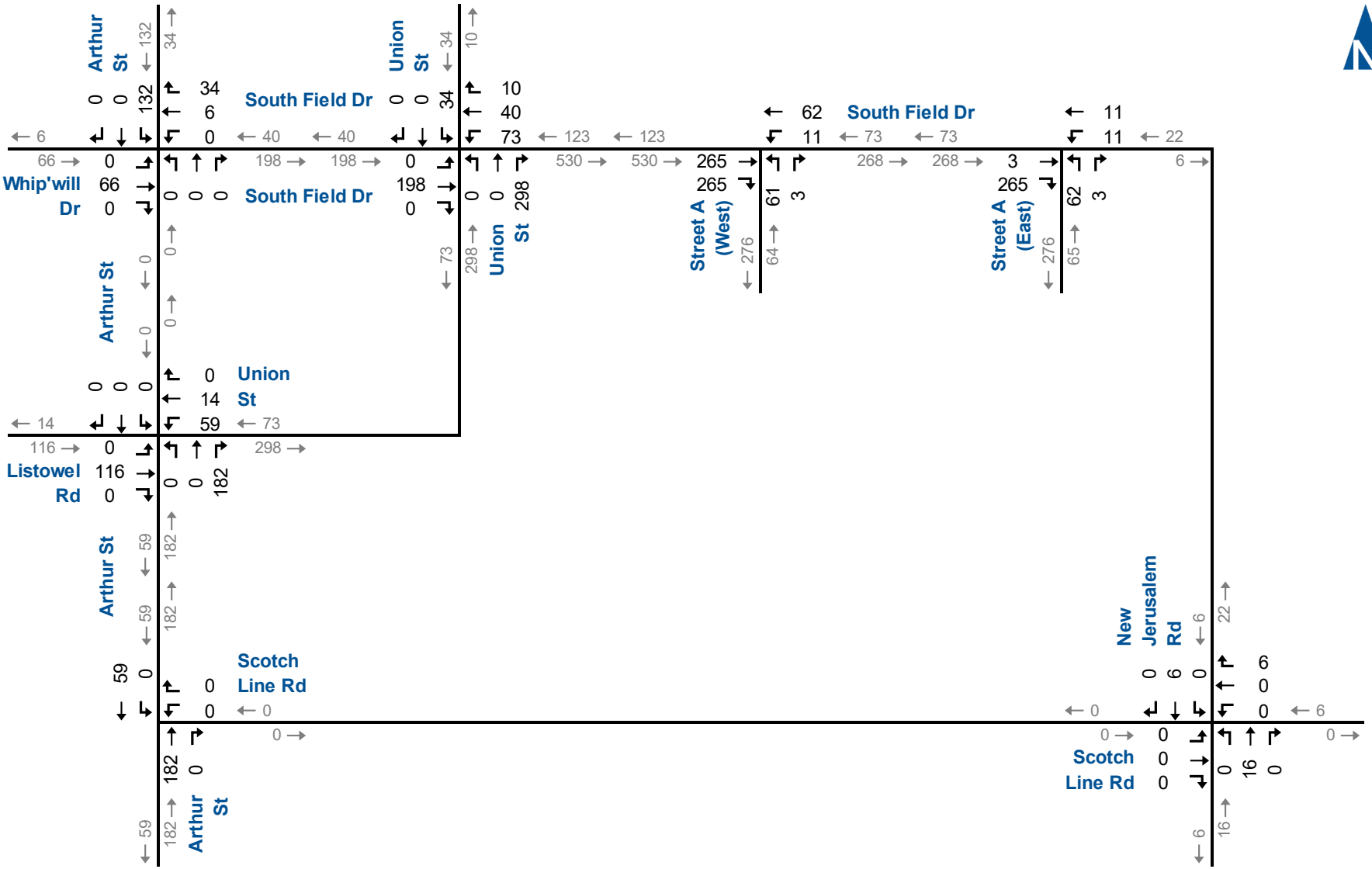
The trip distribution from the 2022 Transportation Tomorrow Survey (2022 TTS) did not distribute any trips to/from Listowel Road or south on Arthur Road towards the Kitchener/Waterloo area. **Appendix E** contains the 2022 TTS data for reference. Therefore, the site generated trips were assigned to the road network based on the existing traffic patterns at the study area intersections.

Table 3.4 summarizes the estimated trip distribution.

TABLE 3.4: ESTIMATED TRIP DISTRIBUTION

Direction/Route		AM Peak Hour		PM Peak Hour	
		In	Out	In	Out
North	Arthur Street	24%	26%	22%	27%
	Union Street	6%	8%	9%	8%
East	Scotch Line Road	1%	0%	0%	1%
South	Arthur Street	33%	46%	40%	36%
	New Jerusalem Road	3%	5%	9%	5%
West	Whippoorwill Drive	12%	4%	7%	9%
	Listowel Road	21%	11%	13%	14%
Total		**100%**	**100%**	**100%**	**100%**

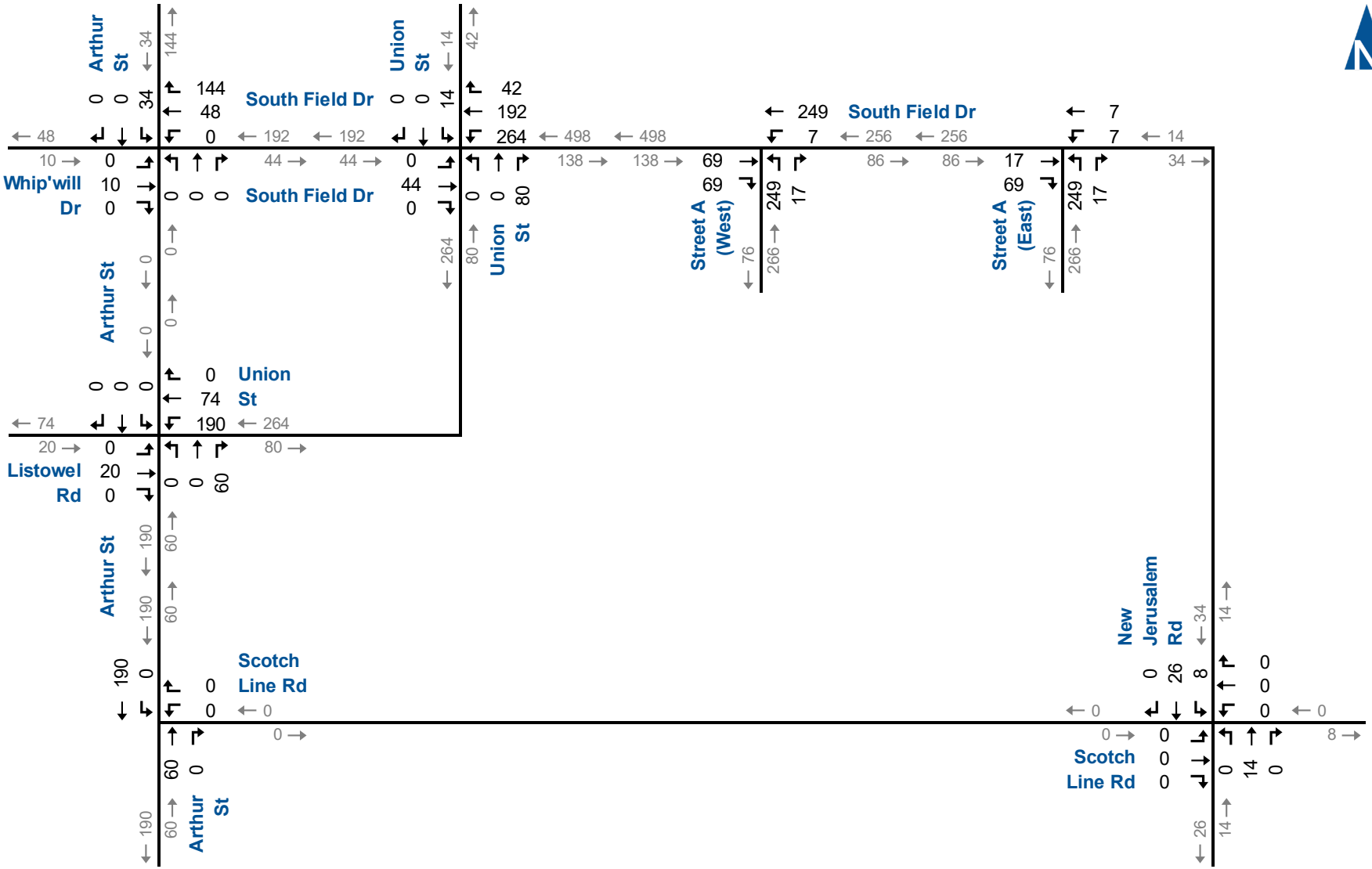
Figure 3.2A and **Figure 3.2B** illustrates the site generated traffic estimates for the AM and PM peak hours, respectively.



Site Generated Traffic Volumes (AM Peak Hour)

1665 Scotch Line Road, Woolwich
240259

Figure 3.2A



Site Generated Traffic Volumes (PM Peak Hour)

1665 Scotch Line Road, Woolwich
240259

Figure 3.2B

4 Future Conditions

4.1 Horizon Years

Consistent with the established terms of reference, traffic forecasts and analyses have been completed for five years beyond assumed opening year (2032).

4.2 Future Roadway Improvements

The Region of Waterloo is currently undertaking a Class Environmental Assessment (EA) for a potential Elmira By-pass. The current preferred plan is Alternative B4[14] which has the by-pass utilizing Union Street from Arthur Street South to Oriole Parkway, where it then runs east and then north on new construction to the north.

As the Region have indicated that the by-pass will not be required until the 2051 horizon year, it has not been considered in this future analysis.

4.3 Future Traffic Volumes

4.3.1 Future Background Traffic Volumes

The future background traffic volumes in the study area are expected to comprise general background growth and specific traffic generated by approved or in-stream developments. A general background traffic has been estimated through the application of a 2.0% per annum growth rate, as per the pre-study consultation.

The following nearby developments have bee included in the background traffic forecasts:

- 401 Arthur Street South[15], a new home building centre;
- Southwood 4[16] (1143 Listowel Road), residential subdivision;
- Schlegel Southwood Subdivision[17] (1065 Listowel Road), residential subdivision; and

[14] Region of Waterloo, Arthur Street Improvements and Elmira Bypass Class Environmental Assessment, Public Consultation Centre #2, October 29, 2025.
[15] Paradigm Transportation Solutions Limited, 401 Arthur Street South Elmira Transportation Impact Brief, (PTSL November 2024).
[16] Salvini Consulting, Southwood 4 Draft Plan of Subdivision Transportation Impact Study Township of Woolwich, 2017.
[17] Paradigm Transportation Solutions Limited, Southwood Subdivision Elmira Transportation Impact Study, (PTSL: Schlegel, June 2025).

- Activa Barnswallow Drive[18], residential subdivision.

Figure 4.1 illustrates the locations of the listed other area developments.

Appendix F contains the other area developments traffic volumes used in the future background traffic volumes.

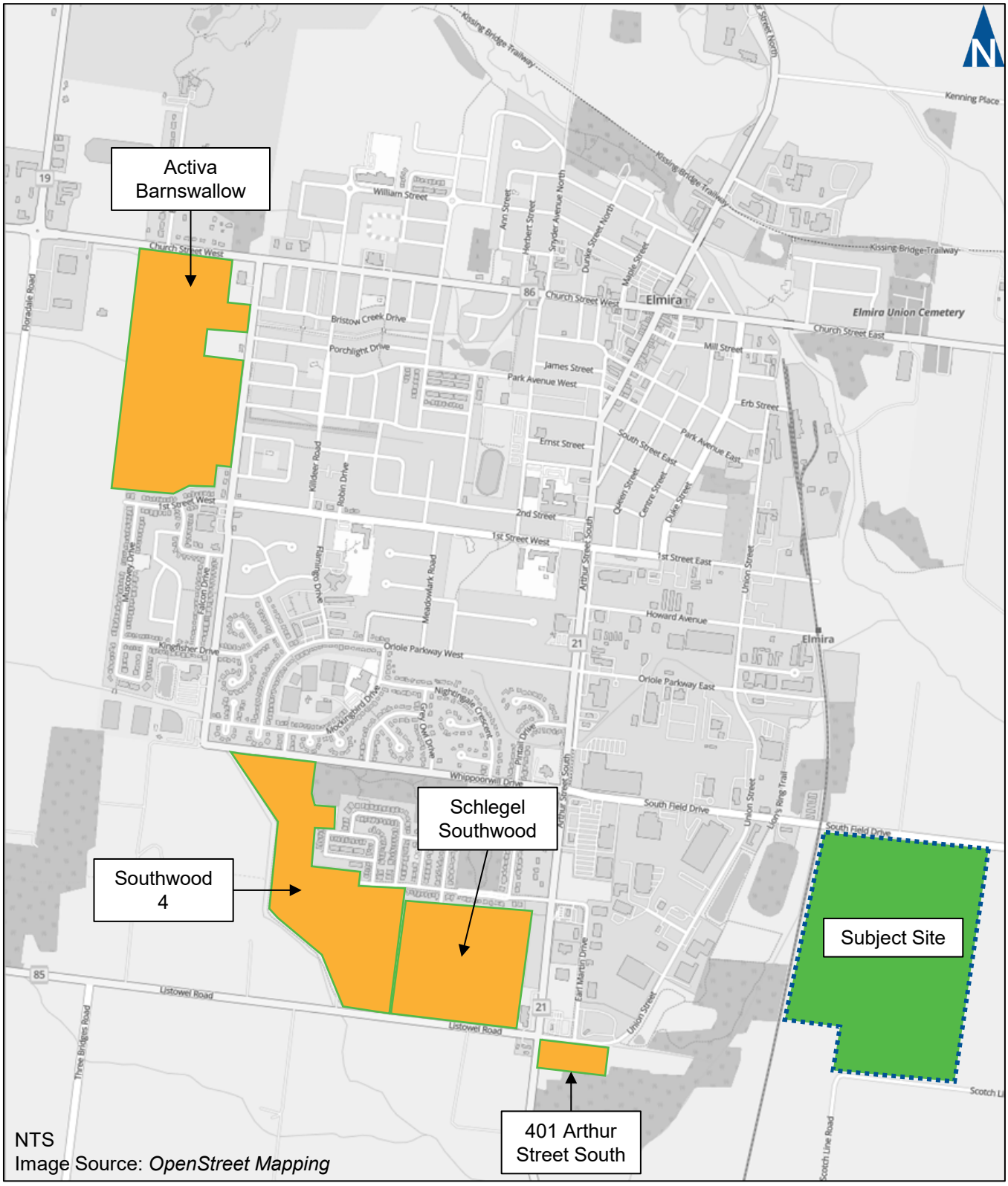
Figure 4.2A and **Figure 4.2B** illustrate the future background traffic volumes for the AM and PM peak hours, respectively.

4.3.2 Future Total Traffic Volumes

The forecast total traffic volumes have been estimated through the summation of the forecast site generated traffic volumes to the forecast background traffic volumes.

Figure 4.3A and **Figure 4.3B** illustrates the forecast total traffic volumes for the weekday AM and PM peak hours.

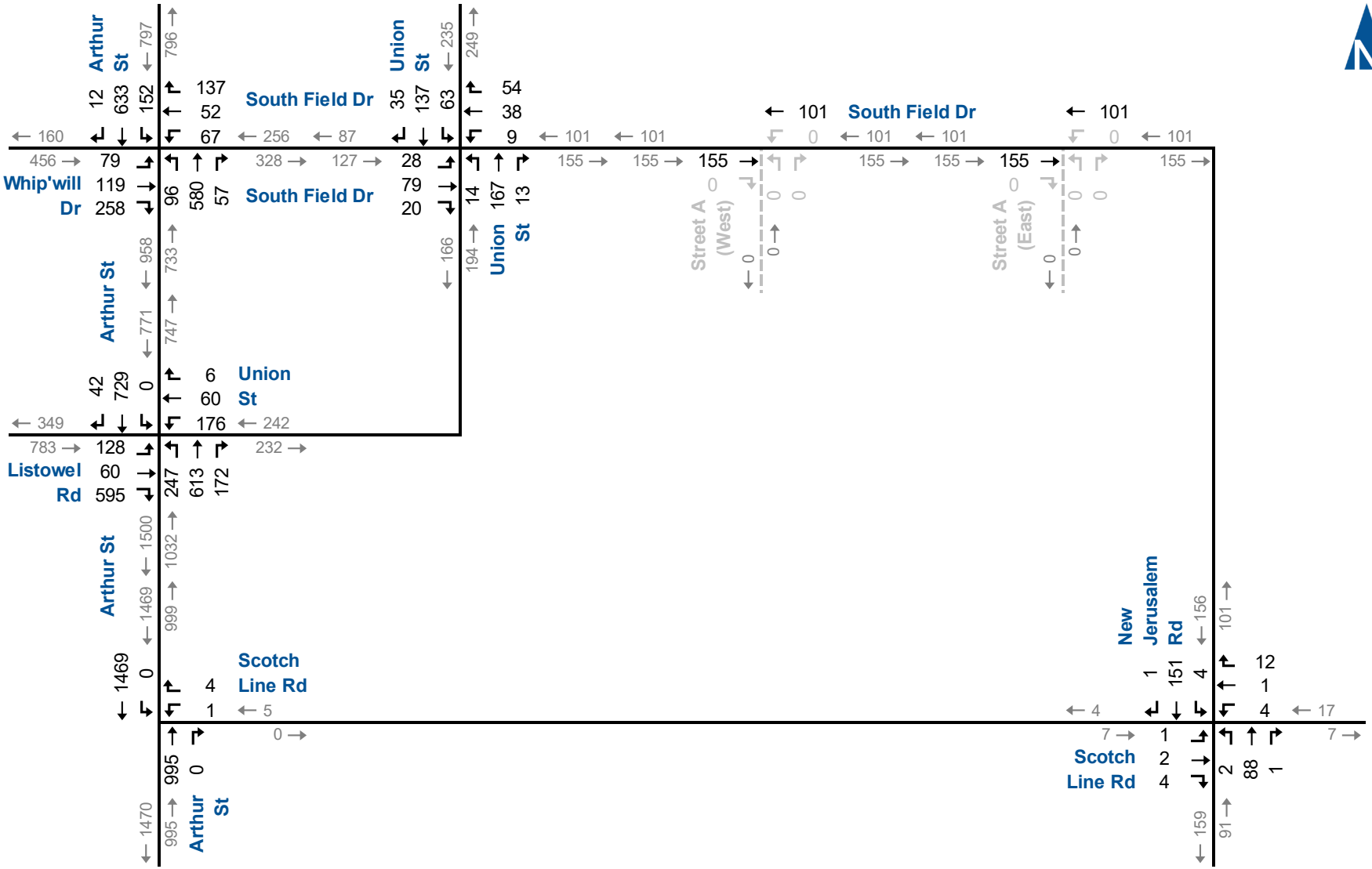
[18] Paradigm Transportation Solutions Limited, Barnswallow Drive, Elmira ON Residential Subdivision Transportation Impact Study Update, (PTSL: Activa, February 2024).



Other Area Development Locations

1665 Scotch Line Road, Woolwich
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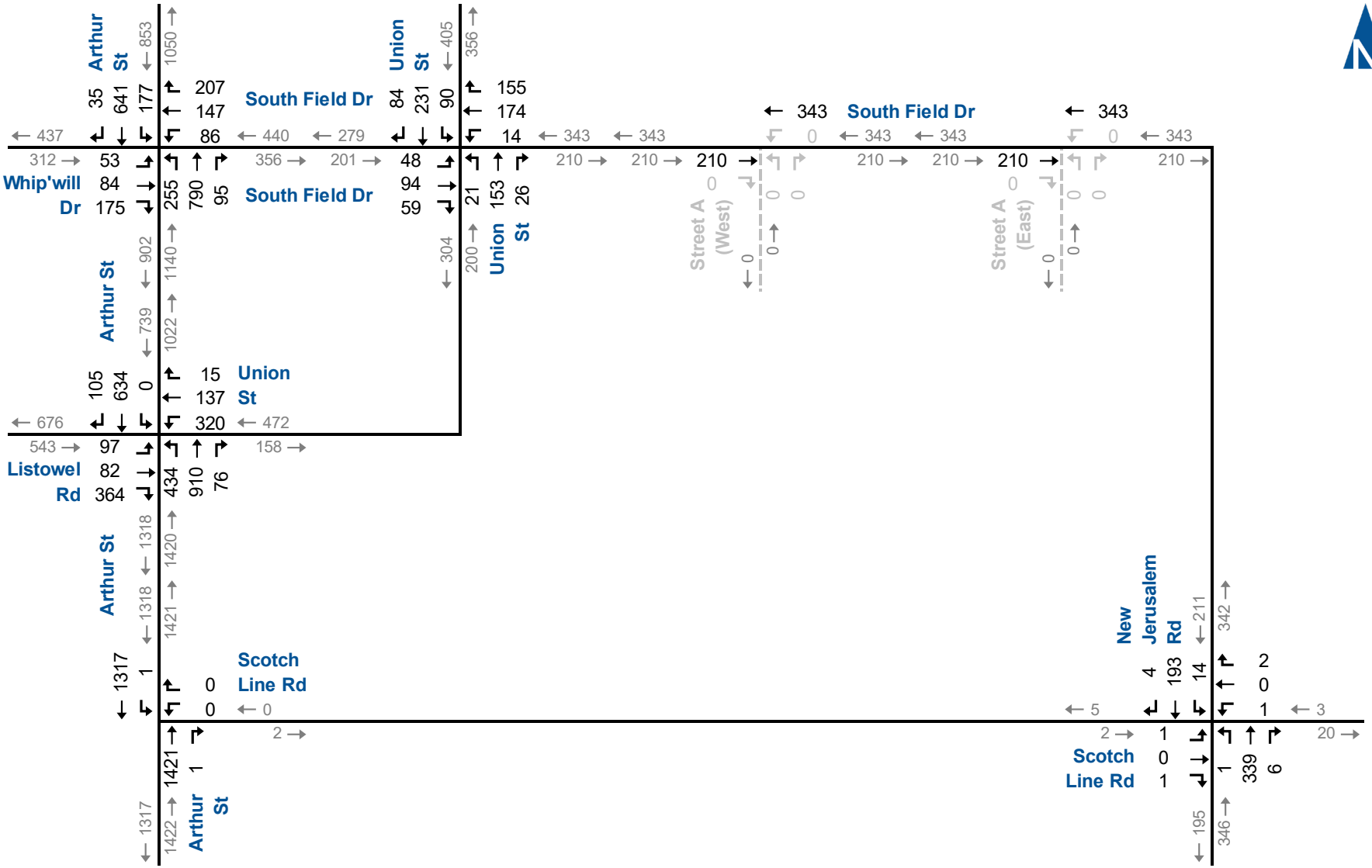
Figure 4.1



Future Background Traffic Volumes (AM Peak Hour)

1665 Scotch Line Road, Woolwich
240259

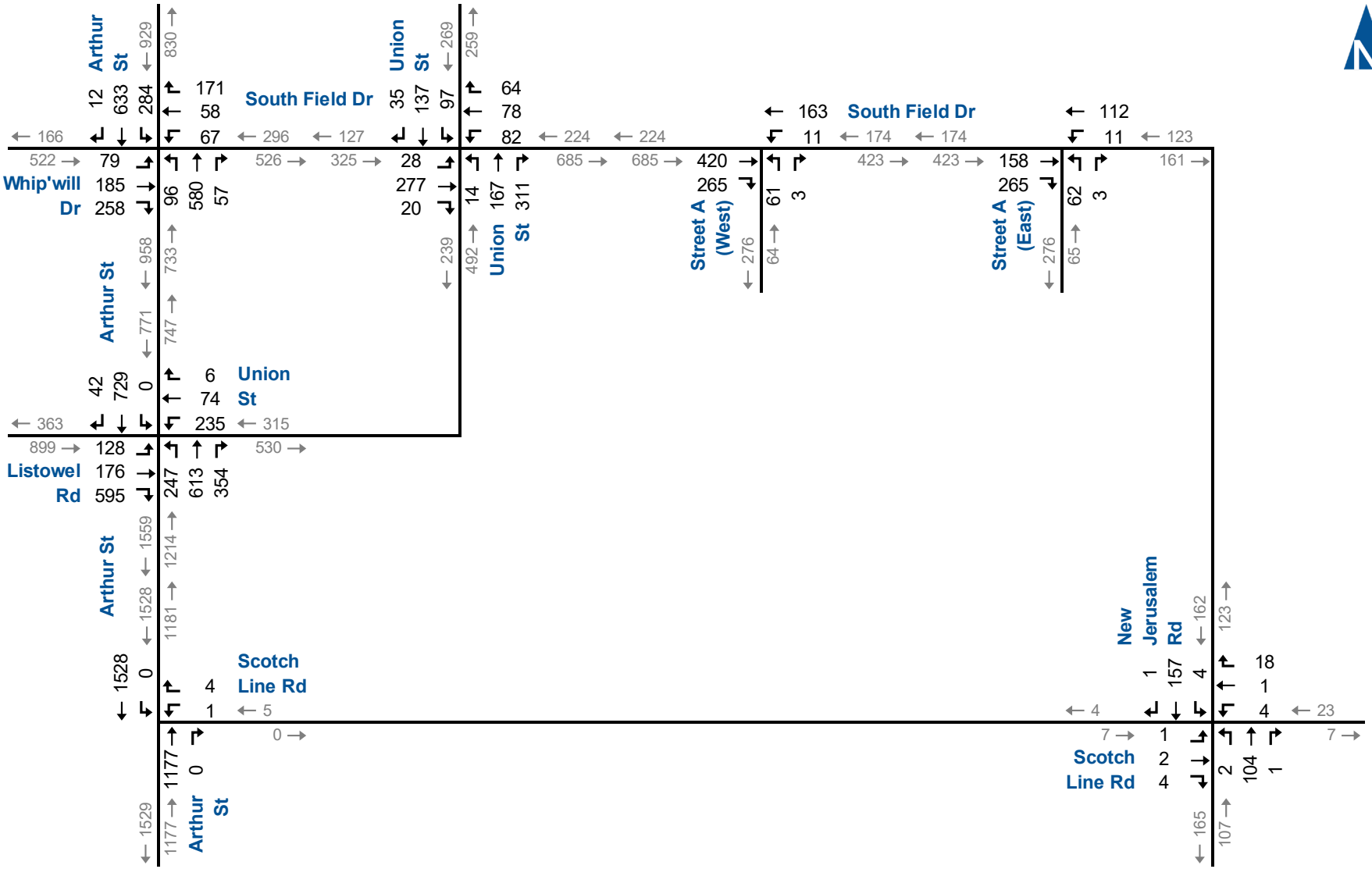
Figure 4.2A



Future Background Traffic Volumes (PM Peak Hour)

1665 Scotch Line Road, Woolwich
240259

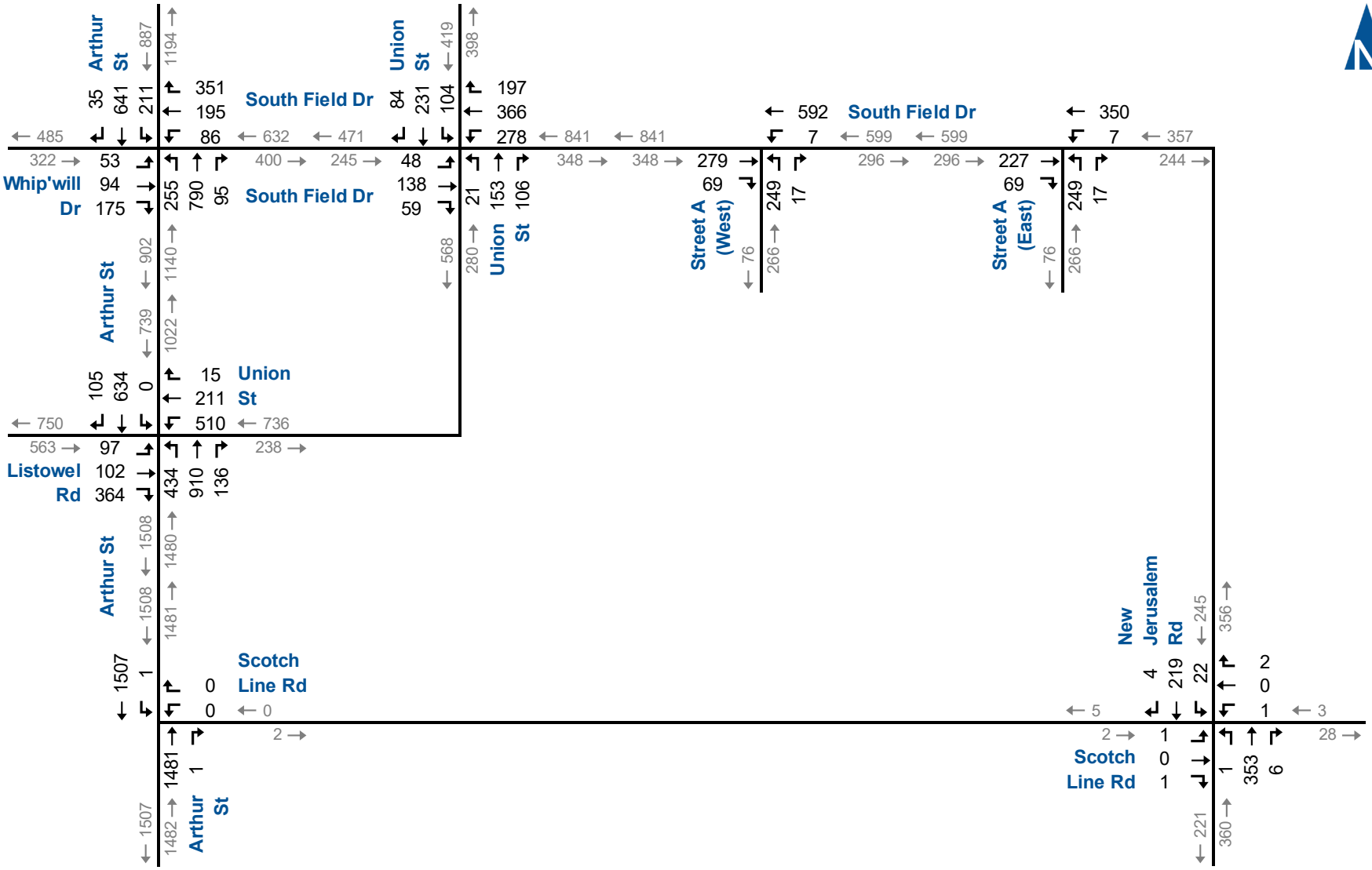
Figure 4.2B



Future Total Traffic Volumes (AM Peak Hour)

1665 Scotch Line Road, Woolwich
240259

Figure 4.3A



Future Total Traffic Volumes (PM Peak Hour)

1665 Scotch Line Road, Woolwich
240259

Figure 4.3B

4.4 Future Traffic Operations

4.4.1 Background Traffic Operations

The study area intersection operations analysis for the background traffic scenario follows the same methodology used for existing traffic conditions. **Table 4.1** summarizes the level of service conditions. The study intersections are forecast to operate at acceptable levels of service with the following critical movements noted:

- Arthur Street and Whippoorwill Drive/South Field Drive:
  - Eastbound right-turn with queue length greater than its available storage during the AM peak hour.
- Arthur Street and Scotch Line Road:
  - Westbound left/right-turn with LOS F and v/c ratio of 0.07 during the AM peak hour.
- Arthur Street and Listowel Road/Union Street:
  - Eastbound left-turn with LOS E and v/c ratio of 0.55 during the PM peak hour;
  - Eastbound right-turn with queue length greater than its available storage during the AM peak hour;
  - Westbound left-turn with queue length greater than its available storage during the AM and PM peak hours;
  - Northbound left-turn with LOS F and v/c ratios greater than 1.00 during the AM and PM peak hours. The PM peak hour queue length is greater than its available storage; and
  - Southbound through with LOS E and v/c ratio of 0.97 during the PM peak hour.

Appendix G contains the detailed Synchro reports.



TABLE 4.1: FUTURE BACKGROUND OPERATIONS

Analysis Period	Intersection	Control Type	MOE	Direction / Movement / Approach																	
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	Arthur Street & Whippoorwill Drive/South Field Drive	TCS	LOS	C	C	C	C	C	C	A	B	A	B	A	B	A	B	>	B	B
			Delay	28	30	26	27	28	26	8	17	5	14	1	12	6	19	>	17	17
			V/C	0.27	0.32	0.58		0.25	0.12	0.32		0.23	0.59	0.08		0.34	0.75	>		
			Q	23	32	55		20	16	14		9	87	3		13	118	>		
			Ex	40	-	40		25	-	25		40	-	40		30	-	>		
			Avail.	17	-	-15		5	-	11		31	-	37		17	-	>		
	South Field Drive & Union Street	AWSC	LOS	<	A	>	A	<	A	>	A	A	B	>	B	A	A	>	A	A
			Delay	<	9	>	9	<	9	>	9	9	10	>	10	9	10	>	10	10
			V/C	<	0.18	>		<	0.15	>		0.02	0.27	>		0.10	0.26	>		
			Q	<	6	>		<	3	>		1	9	>		2	8	>		
			Ex	<	-	>		<	-	>		25	-	>		20	-	>		
			Avail.	<	-	>		<	-	>		24	-	>		18	-	>		
	South Field Drive & Rail Crossing	TWSC	LOS		A		A		A		A									A
			Delay		10		10		10		10									10
			V/C		0.17				0.11											
			Q		5				3											
			Ex		-				-											
			Avail.		-				-											
	Arthur Street & Scotch Line Road	TWSC	LOS					F		>	F		A	>	A	<	A		A	A
			Delay					63		>	63		0	>	0	<	0		0	0
			V/C					0.07		>			0.59	>		<	0.00			
			Q					2		>			0	>		<	0			
			Ex					-		>			-	>		<	-			
			Avail.					-		>			-	>		<	-			
	Arthur Street & Listowel Road/Union Street	TCS	LOS	C	C	D	D	C	C	A	C	F	B	A	D	A	D	A	D	D
			Delay	28	24	41	38	33	25	0	30	188	15	2	54	0	40	1	37	43
			V/C	0.33	0.11	0.94		0.51	0.15	0.01		1.29	0.59	0.59		0.00	0.91	0.07		
			Q	36	18	142		51	19	0		99	98	8		0	193	1		
			Ex	60	-	60		30	-	30		100	-	100		50	-	50		
			Avail.	24	-	-82		-21	-	30		2	-	92		50	-	49		
	New Jerusalem Road & Scotch Line Road	TWSC	LOS	<	A	>	A	<	A	>	A	<	A	>	A	<	A	>	A	A
			Delay	<	10	>	10	<	9	>	9	<	8	>	0	<	7	>	0	1
			V/C	<	0.01	>		<	0.02	>		<	0.00	>		<	0.00	>		
			Q	<	0	>		<	1	>		<	0	>		<	0	>		
			Ex	<	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		<	-	>		
PM Peak Hour	Arthur Street & Whippoorwill Drive/South Field Drive	TCS	LOS	C	C	C	C	C	C	A	B	B	C	A	B	B	C	>	C	C
			Delay	28	27	21	24	30	29	8	19	18	20	3	18	10	27	>	24	21
			V/C	0.23	0.22	0.34		0.34	0.37	0.45		0.71	0.80	0.12		0.53	0.85	>		
			Q	17	23	37		25	36	17		30	145	7		16	157	>		
			Ex	40	-	40		25	-	25		40	-	40		30	-	>		
			Avail.	23	-	3		0	-	8		10	-	33		14	-	>		
	South Field Drive & Union Street	AWSC	LOS	<	B	>	B	<	C	>	C	B	B	>	B	B	C	>	C	C
			Delay	<	14	>	14	<	18	>	18	11	14	>	14	12	18	>	17	16
			V/C	<	0.37	>		<	0.59	>		0.05	0.36	>		0.18	0.58	>		
			Q	<	14	>		<	30	>		1	13	>		6	29	>		
			Ex	<	-	>		<	-	>		25	-	>		20	-	>		
			Avail.	<	-	>		<	-	>		24	-	>		14	-	>		
	South Field Drive & Rail Crossing	TWSC	LOS		B		B		B		B									B
			Delay		10		10		12		12									11
			V/C		0.24				0.38											
			Q		7				14											
			Ex		-				-											
			Avail.		-				-											
	Arthur Street & Scotch Line Road	TWSC	LOS					A		>	A		A	>	A	<	B		A	A
			Delay					0		>	0		0	>	0	<	12		0	0
			V/C					0.00		>			0.84	>		<	0.00			
			Q					0		>			0	>		<	0			
			Ex					-		>			-	>		<	-			
			Avail.					-		>			-	>		<	-			
	Arthur Street & Listowel Road/Union Street	TCS	LOS	E	D	B	C	D	C	A	D	F	C	A	D	A	E	A	E	D
			Delay	57	49	13	26	54	30	0	45	108	26	3	50	0	67	7	58	47
			V/C	0.55	0.38	0.71		0.83	0.24	0.03		1.10	0.81	0.09		0.00	0.97	0.18		
			Q	40	34	30		98	40	0		188	274	8		0	252	14		
			Ex	60	-	60		30	-	30		100	-	100		50	-	50		
			Avail.	20	-	30		-68	-	30		-88	-	92		50	-	36		
	New Jerusalem Road & Scotch Line Road	TWSC	LOS	<	B	>	B	<	B	>	B	<	A	>	A	<	A	>	A	A
			Delay	<	11	>	11	<	11	>	11	<	8	>	0	<	8	>	1	0
			V/C	<	0.00	>		<	0.01	>		<	0.00	>		<	0.01	>		
			Q	<	0	>		<	0	>		<	0	>		<	0	>		
			Ex	<	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		<	-	>		

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

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

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

< / > - Shared Turn Lane

4.4.1 Total Traffic Operations

The study area intersection operations analysis for the total traffic scenario follows the same methodology used for background traffic conditions. **Table 4.2** summarizes the level of service conditions.

The results forecast the study intersection to operate with acceptable levels of service and within capacity with the following critical movements noted:

- Arthur Street and Whippoorwill Drive/South Field Drive:
  - Eastbound right-turn with queue length greater than its available storage during the AM peak hour;
  - Westbound right-turn with queue length greater than its available storage during the PM peak hour;
  - Northbound left-turn with queue length greater than its available storage during the PM peak hour; and
  - Southbound left-turn with queue length greater than its available storage during the AM and PM peak hours.
- South Field Drive and Union Street:
  - Westbound left/through/right-turn with LOS F and v/c ratio greater than 1.00 during the PM peak hour.
- Arthur Street and Scotch Line Road:
  - Westbound left/right-turn with LOS F and v/c ratio of 0.11 during the AM peak hour.
- Arthur Street and Listowel Road/Union Street:
  - Eastbound left-turn with LOS E and v/c ratio of 0.57 during the PM peak hour;
  - Eastbound right-turn with queue length greater than its available storage during the AM peak hour;
  - Westbound left-turn with LOS E and v/c ratio of 0.83 during the AM peak hour and LOS F and v/c ration greater than 1.00 during the PM peak hour. The queue length is greater than its available storage during the AM and PM peak hours;
  - Northbound left-turn with LOS F and v/c ratios greater than 1.00 during the AM and PM peak hours. The PM peak hour queue length is greater than its available storage; and
  - Southbound through with LOS E and v/c ratio of 0.98 during the PM peak hour.
- South Field Drive and Street A (West):



- Northbound left/right-turn with LOS F and v/c ratio of 0.86 during the PM peak hour.

Appendix H contains the detailed Synchro reports.

The two proposed municipal street connections to South Field Drive are forecast to operate with acceptable levels of service with the exception of the Street A (West) which is forecast to operate at LOS F during the PM peak hour. There is excess capacity at Street A (East) which is forecast to operate at LOS C and v/c ratio of 0.58 during the PM peak hour, to handle any traffic from the west access road.

It should be noted that the future operations of the rail crossing of South Field Drive show the westbound approach to operate at LOS E during the PM peak hour under future total traffic conditions. The Township should consider replacing the stop sign with flashing rail crossing signals.

TABLE 4.2A: FUTURE TOTAL OPERATIONS (AM PEAK HOUR)

Analysis Period	Intersection	Control Type	MOE	Direction / Movement / Approach																
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	Arthur Street & Whippoorwill Drive/South Field Drive	TCS	LOS	C	C	C	C	C	C	A	B	A	B	A	B	C	C	>	C	C
			Delay	28	32	22	27	29	25	8	16	7	17	1	14	21	25	>	24	21
			V/C	0.29	0.51	0.48		0.28	0.14	0.39		0.28	0.65	0.08		0.74	0.83	>		
			Q	23	46	55		20	17	15		10	96	3		38	136	>		
			Ex	40	-	40		25	-	25		40	-	40		30	-	>		
			Avail.	17	-	-15		5	-	10		30	-	37		-8	-	>		
	South Field Drive & Union Street	AWSC	LOS	<	C	>	C	<	C	>	C	B	E	>	E	B	C	>	B	D
			Delay	<	23	>	23	<	17	>	17	11	49	>	48	14	15	>	15	30
			V/C	<	0.66	>		<	0.47	>		0.03	0.91	>		0.23	0.38	>		
			Q	<	38	>		<	20	>		1	90	>		7	14	>		
			Ex	<	-	>		<	-	>		25	-	>		20	-	>		
			Avail.	<	-	>		<	-	>		24	-	>		13	-	>		
	South Field Drive & Rail Crossing	TWSC	LOS		C		C		B		B									C
			Delay		21		21		10		10									18
			V/C		0.77				0.25											
			Q		61				8											
			Ex		-				-											
			Avail.		-				-											
	Arthur Street & Scotch Line Road	TWSC	LOS					F		>	F		A	>	A	<	A		A	A
			Delay					93		>	96		0	>	0	<	0		0	0
			V/C					0.11		>			0.69	>		<	0.00			
			Q					2		>			0	>		<	0			
			Ex					-		>			-	>		<	-			
			Avail.					-		>			-	>		<	-			
	Arthur Street & Listowel Road/Union Street	TCS	LOS	C	C	D	D	E	C	A	D	F	B	A	D	A	D	A	D	D
			Delay	28	27	41	36	57	26	0	48	188	15	2	46	0	40	1	37	42
			V/C	0.33	0.33	0.94		0.83	0.18	0.01		1.29	0.59	0.39		0.00	0.91	0.07		
			Q	36	46	142		89	22	0		99	98	11		0	193	1		
			Ex	60	-	60		30	-	30		100	-	100		50	-	50		
			Avail.	24	-	-82		-59	-	30		2	-	89		50	-	49		
	New Jerusalem Road & Scotch Line Road	TWSC	LOS	<	B	>	B	<	A	>	A	<	A	>	A	<	A	>	A	A
			Delay	<	10	>	10	<	10	>	10	<	8	>	0	<	7	>	0	1
			V/C	<	0.01	>		<	0.03	>		<	0.00	>		<	0.00	>		
			Q	<	0	>		<	1	>		<	0	>		<	0	>		
			Ex	<	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		<	-	>		
	South Field Drive & Street A (West)	TWSC	LOS		A	>	A	<	A		A	C		>	C					A
			Delay		0	>	0	<	9		1	17		>	17					1
			V/C		0.46	>		<	0.01			0.18		>						
			Q		0	>		<	0			5		>						
			Ex		-	>		<	-			-		>						
			Avail.		-	>		<	-			-		>						
	South Field Drive & Street A (East)	TWSC	LOS		A	>	A	<	A		A	B		>	B					A
			Delay		0	>	0	<	8		1	12		>	12					1
			V/C		0.25	>		<	0.01			0.11		>						
			Q		0	>		<	0			3		>						
			Ex		-	>		<	-			-		>						
			Avail.		-	>		<	-			-		>						

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

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

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

< / > - Shared Turn Lane

TABLE 4.2B: FUTURE TOTAL OPERATIONS (PM PEAK HOUR)

Analysis Period	Intersection	Control Type	MOE	Direction / Movement / Approach																
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
PM Peak Hour	Arthur Street & Whippoorwill Drive/South Field Drive	TCS	LOS	C	C	B	C	C	C	B	C	C	C	A	C	C	C	>	C	C
			Delay	27	25	20	23	28	28	17	22	27	25	4	24	22	33	>	31	25
			V/C	0.24	0.21	0.32		0.30	0.43	0.68		0.77	0.83	0.12		0.70	0.88	>		
			Q	17	24	36		24	46	46		50	200	9		38	187	>		
			Ex	40	-	40		25	-	25		40	-	40		30	-	>		
			Avail.	24	-	4		1	-	-21		-10	-	32		-8	-	>		
	South Field Drive & Union Street	AWSC	LOS	<	C	>	C	<	F	>	F	B	D	>	D	C	D	>	D	F
			Delay	<	24	>	24	<	354	>	354	14	27	>	26	17	32	>	28	181
			V/C	<	0.65	>		<	1.70	>		0.06	0.73	>		0.30	0.84	>		
			Q	<	26	>		<	401	>		2	30	>		8	41	>		
			Ex	<	-	>		<	-	>		25	-	>		20	-	>		
			Avail.	<	-	>		<	-	>		23	-	>		12	-	>		
	South Field Drive & Rail Crossing	TWSC	LOS		B		B		E		E									D
			Delay		12		12		39		39									31
			V/C		0.39				0.94											
			Q		15				118											
			Ex		-				-											
			Avail.		-				-											
	Arthur Street & Scotch Line Road	TWSC	LOS					A		>	A		A	>	A	<	B		A	A
			Delay					0		>	0		0	>	0	<	13		0	0
			V/C					0.00		>			0.87	>		<	0.00			
			Q					0		>			0	>		<	0			
			Ex					-		>			-	>		<	-			
			Avail.					-		>			-	>		<	-			
	Arthur Street & Listowel Road/Union Street	TCS	LOS	E	D	B	C	F	C	A	F	F	C	A	D	A	E	A	E	E
			Delay	58	51	12	27	224	32	0	165	111	27	3	49	0	68	7	60	72
			V/C	0.57	0.46	0.70		1.39	0.37	0.03		1.11	0.82	0.16		0.00	0.98	0.18		
			Q	40	40	29		243	60	0		190	295	10		0	256	14		
			Ex	60	-	60		30	-	30		100	-	100		50	-	50		
			Avail.	20	-	31		-213	-	30		-90	-	90		50	-	36		
	New Jerusalem Road & Scotch Line Road	TWSC	LOS	<	B	>	B	<	B	>	B	<	A	>	A	<	A	>	A	A
			Delay	<	12	>	12	<	12	>	12	<	8	>	0	<	8	>	1	0
			V/C	<	0.00	>		<	0.01	>		<	0.00	>		<	0.02	>		
			Q	<	0	>		<	0	>		<	0	>		<	1	>		
			Ex	<	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		<	-	>		
	South Field Drive & Street A (West)	TWSC	LOS		A	>	A	<	A		A	F		>	F					B
			Delay		0	>	0	<	8		0	60		>	60					13
			V/C		0.20	>		<	0.01			0.86		>						
			Q		0	>		<	0			62		>						
			Ex		-	>		<	-			-		>						
			Avail.		-	>		<	-			-		>						
	South Field Drive & Street A (East)	TWSC	LOS		A	>	A	<	A		A	C		>	C					A
			Delay		0	>	0	<	8		0	23		>	23					7
			V/C		0.17	>		<	0.01			0.58		>						
			Q		0	>		<	0			29		>						
			Ex		-	>		<	-			-		>						
			Avail.		-	>		<	-			-		>						

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

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

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

< / > - Shared Turn Lane

5 Remedial Measures

5.1 Left-Turn Lanes

The need for dedicated left-turn lanes at unsignalized intersections within the study area was assessed using Ministry of Transportation (MTO) procedures outlined in the *Design Supplement for the TAC Guide* [19].

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

Table 5.1 summarizes the left-turn lane analyzes for the two new roadway connections to South Field Drive for a design speed of 70 km/h, based on the recommendation to extend the 50 km/h posted speed limit further east. It indicates that left-turn lanes are not warranted during the AM peak hour, and the left-turn volume percentage is forecast to be less than 5% during the PM peak hour for both roadways. Left-turn lanes on South Field Drive at both municipal connections are not warranted.

Appendix I contains the left-turn lane warrant nomographs.

If the 50 km/h speed limit zone is kept in its current location, the left-turn lanes at the two proposed intersections would still not be warranted.

[19] Ontario Ministry of Transportation, *MTO Design Supplement for TAC Geometric Design Guide for Canadian Roads*, (Toronto: Queen's Printer for Ontario, 2020),

TABLE 5.1: LEFT-TURN LANE WARRANT SUMMARY

Roadway	South Field Drive			
Intersection	Site Access (West)		Site Access (East)	
Approach Direction	Westbound		Westbound	
Design Speed	70 km/h		70 km/h	
Horizon	Total - 2032		Total - 2032	
Peak Hour	AM	PM	AM	PM
Advancing Volume	174	599	123	357
Opposing Volumes	685	348	423	296
Left Turning Traffic	11	7	11	7
% of Left Turning Traffic	6.3%	1.2%	8.9%	2.0%
Figure Used*	9A-11		9A-11	
Warranted	No	No	No	No
Storage Length Required	-		-	

Based on MTO Design Supplement, October 2023 for TAC Geometric Design Guide for Canadian Roads - October 2023

5.2 Right-Turn Lanes

The proposed municipal connections to South Field Drive were assessed to determine if the forecast traffic volumes warrant installation of auxiliary right-turn lane.

Although right-turns are generally made more efficiently than left-turn movements, exclusive right-turn lanes are often provided for many of the same reasons that left-turn lanes are provided such as a reduction in rear-end collisions and less delay for the through traffic.

MTO guidelines (Geometric Design Standards for Ontario Highways) note that right-turn lanes or tapers may be considered where right-turn volumes exceed 60 vehicles per hour (vph) and where right-turning vehicles create a hazard or reduce capacity at the intersection.

Table 5.2 summarizes the highest forecast right-turn movements at the two proposed municipal connections to South Field Drive. It indicates that an eastbound right-turn lane are warranted on South Field Drive at both the west and east Street A with full build-out of the site.

TABLE 5.2: FORECAST RIGHT-TURN TRAFFIC VOLUMES

Intersection	Direction	Forecast Right-Turn Volumes		> 60 vph
		Total (2033)		
		AM	PM	
South Field Drive & Site Access (West)	EBR	265	69	Yes
South Field Drive & Site Access (East)	EBR	265	69	Yes

5.3 South Field Drive and Union Street

5.3.1 Left-Turn Lanes

The need for Left-turn lanes on South Field Drive at Union Street were analyzed based on the MTO procedures. **Table 5.3** summarizes the left-turn lane warrants. It indicates that an eastbound left-turn lane with 15-metres of storage and a westbound left-turn lane with 40-metres of storage are warranted on South Field Drive under total traffic conditions. **Appendix I** contains the left-turn lane warrant nomographs.

TABLE 5.3: LEFT-TURN LANE WARRANT SUMMARY – SOUTH FIELD & UNION

Roadway	South Field Drive							
Intersection	Union Street							
Approach Direction	Eastbound				Westbound			
Design Speed	60 km/h				60 km/h			
Horizon	BG - 2032		TT - 2032		BG - 2032		TT - 2032	
Peak Hour	AM	PM	AM	PM	AM	PM	AM	PM
Advancing Volume	127	201	325	245	101	343	224	841
Opposing Volumes	101	343	224	841	127	201	325	245
Left Turning Traffic	28	48	28	48	9	14	82	278
% of Left Turning Traffic	22.0%	23.9%	8.6%	19.6%	8.9%	4.1%	36.6%	33.1%
Figure Used*	9A-8	9A-9	9A-7	9A-8	9A-7		9A-10	9A-10
Warranted	No	No	No	Yes	No	No	No	Yes
Storage Length Required	-	-	-	15m	-		-	40m

Based on MTO Design Supplement for TAC Geometric Design Guide for Canadian Roads - October 2023

5.3.2 Traffic Control Signal Justification

The operational analysis indicates that the intersection of South Field Drive and Union Street will operate with delay and capacity constraints under future total traffic conditions. For forecast traffic, the signal warrant threshold has been separated into three ‘Cases’:

- Case 1 is "Signal is undoubtedly warranted" and the threshold for that is 200%;
- Case 2 is "Signal might be warranted" and its threshold is between 100%-199%; and
- Case 3 is "Signal warrant is unlikely" and that means the warrant is less than 100%.

Table 5.4 summaries the Ontario Traffic Manual (OTM) Book 12 Justification 7 [20] analyses for the intersection of South Field Drive and Union Street. It indicates that traffic control signals might be warranted

[20] Ontario Ministry of Transportation, *Ontario Traffic Manual Book 12: Traffic Signals*, (Toronto: Queen’s Printer for Ontario, 2012).

under total traffic conditions. **Appendix J** contains the traffic control signal warrants.

TABLE 5.4: TRAFFIC CONTROL SIGNAL JUSTIFICATION SUMMARY

Intersection	Horizon	OTM Warrant Sumamry				Warranted		
		1A	1B	2A	2B	<100%	100%	200%
South Field Drive & Union Street	Background 2032	62%	151%	27%	192%	✓		
	Total 2032	107%	215%	57%	208%		✓	

The signal warrant calculations shows that traffic control signals might be warranted. The description in OTM Book 12 states that when traffic control signals might be warranted, hold securities or install underground traffic signal plan and design intersection geometry for future signalization and continue to operate under two-way or all-way stop control. Therefore, with the high delays, it is recommended that this intersection be regularly monitored as construction of the subject development proceeds and that signalization of this intersection be considered to be installed upon opening of the subject development.

It is recommended that the Township of Woolwich consider the installing traffic control signals at the intersection of South Field Drive and Union Street upon the full build-out of the subject site.

5.3.3 Future Traffic Operations

Table 5.5 summarizes the traffic operations for the intersection of South Field Drive and Union Street under future total traffic conditions with the inclusions of exclusive left-turn lanes on South Field Drive and traffic control signals.

It indicates that the intersection of South Field Drive and Union Street with the improvements noted above is forecast to operate with acceptable levels of service with no critical movements during the AM and PM peak hours.

Appendix K contains the detailed Synchro reports.

TABLE 5.5: TOTAL OPERATIONS WITH IMPROVEMENTS

Analysis Period	Intersection	Control Type	MOE	Direction / Movement / Approach																
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	South Field Drive & Union Street	TCS	LOS	B	B	>	**B**	B	A	>	**B**	A	B	>	**B**	B	A	>	**A**	**B**
			Delay	13	18	>	**17**	16	9	>	**12**	8	14	>	**14**	13	8	>	**10**	**14**
			V/C	0.08	0.57	>		0.30	0.27	>		0.03	0.76	>		0.36	0.27	>		
			Q	7	50	>		17	18	>		3	49	>		15	17	>		
			Ex	15	-	>		50	-	>		25	-	>		20	-	>		
			Avail.	8	-	>		33	-	>		22	-	>		5	-	>		
PM Peak Hour	South Field Drive & Union Street	TCS	LOS	B	B	>	**B**	B	B	>	**B**	B	B	>	**B**	B	C	>	**C**	**B**
			Delay	19	16	>	**17**	16	16	>	**16**	15	18	>	**18**	19	21	>	**20**	**17**
			V/C	0.27	0.46	>		0.63	0.74	>		0.08	0.59	>		0.38	0.64	>		
			Q	11	29	>		34	76	>		6	39	>		21	50	>		
			Ex	15	-	>		50	-	>		25	-	>		20	-	>		
			Avail.	4	-	>		16	-	>		19	-	>		-1	-	>		

MOE - Measure of Effectiveness
LOS - Level of Service
Delay - Average Delay per Vehicle in Seconds
Q - 95th Percentile Queue Length (m)
Ex. - Existing Available Storage (m)
Avail. - Available Storage (m)
TCS - Traffic Control Signal
TWSC - Two-Way Stop Control
< / > - Shared Turn Lane

5.4 Sensitivity Analysis

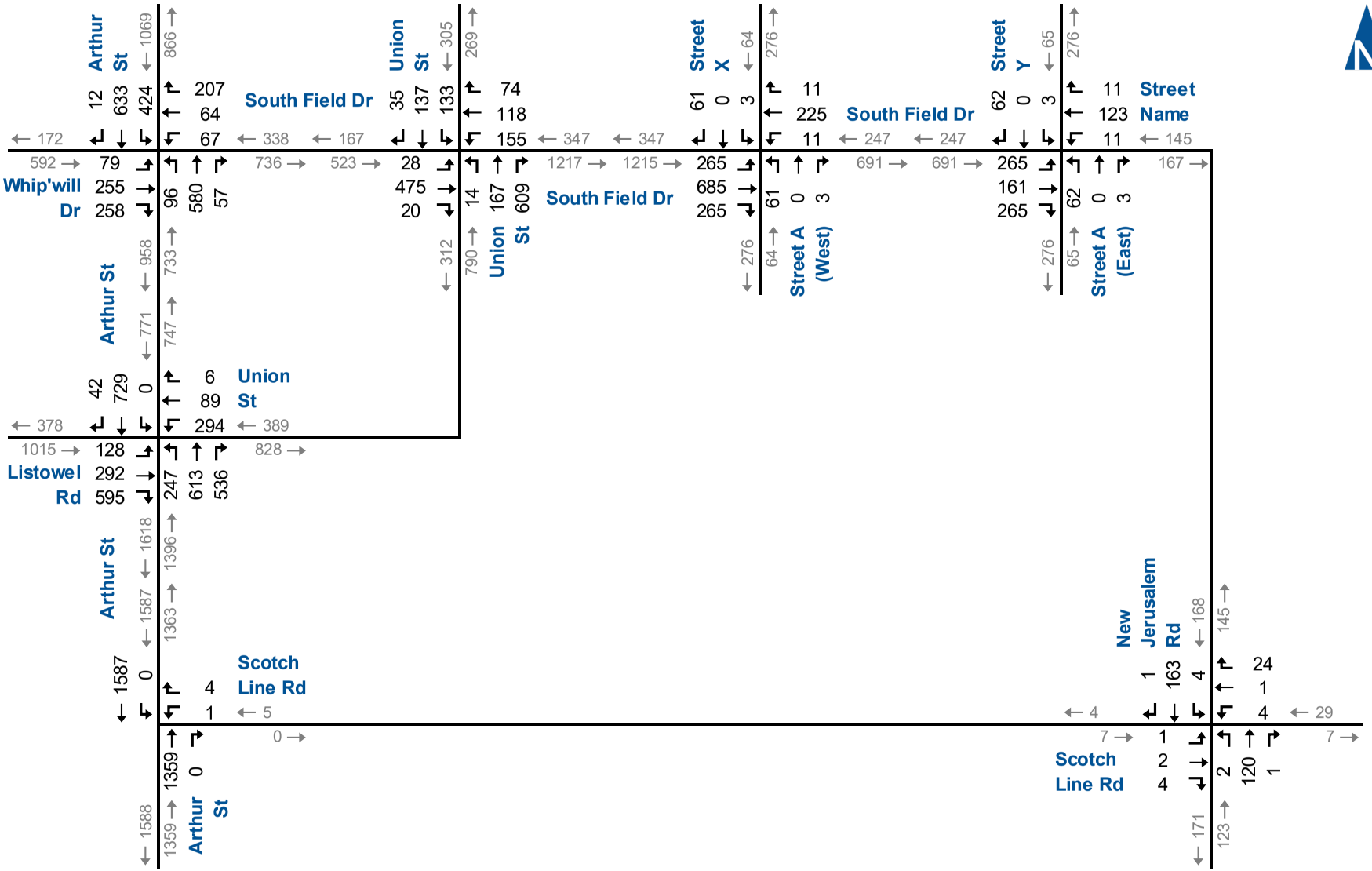
A sensitivity analysis was tested which includes potential development on the north side of South Field Drive opposite the subject site to determine the ultimate traffic forecast for South Field Drive.

As the future development of the north side is currently unknown, it is anticipated that it would be similar to that of the subject site. Therefore, the traffic volumes generated by the subject site have been used to estimate the traffic volumes from the north side lands.

Figure 5.1A and **Figure 5.1B** illustrates the future traffic volumes with the north side lands for the AM and PM peak hours, respectively.

The study area intersection operations analysis for the alternative future total traffic scenario followed the same methodology used for the 2033 total traffic conditions with the improvements noted previously for South Field Drive at Union Street, and optimized signal timings at Arthur Street at Whippoorwill Drive/South Field Drive and Arthur Street at Listowel Road/Union Street.

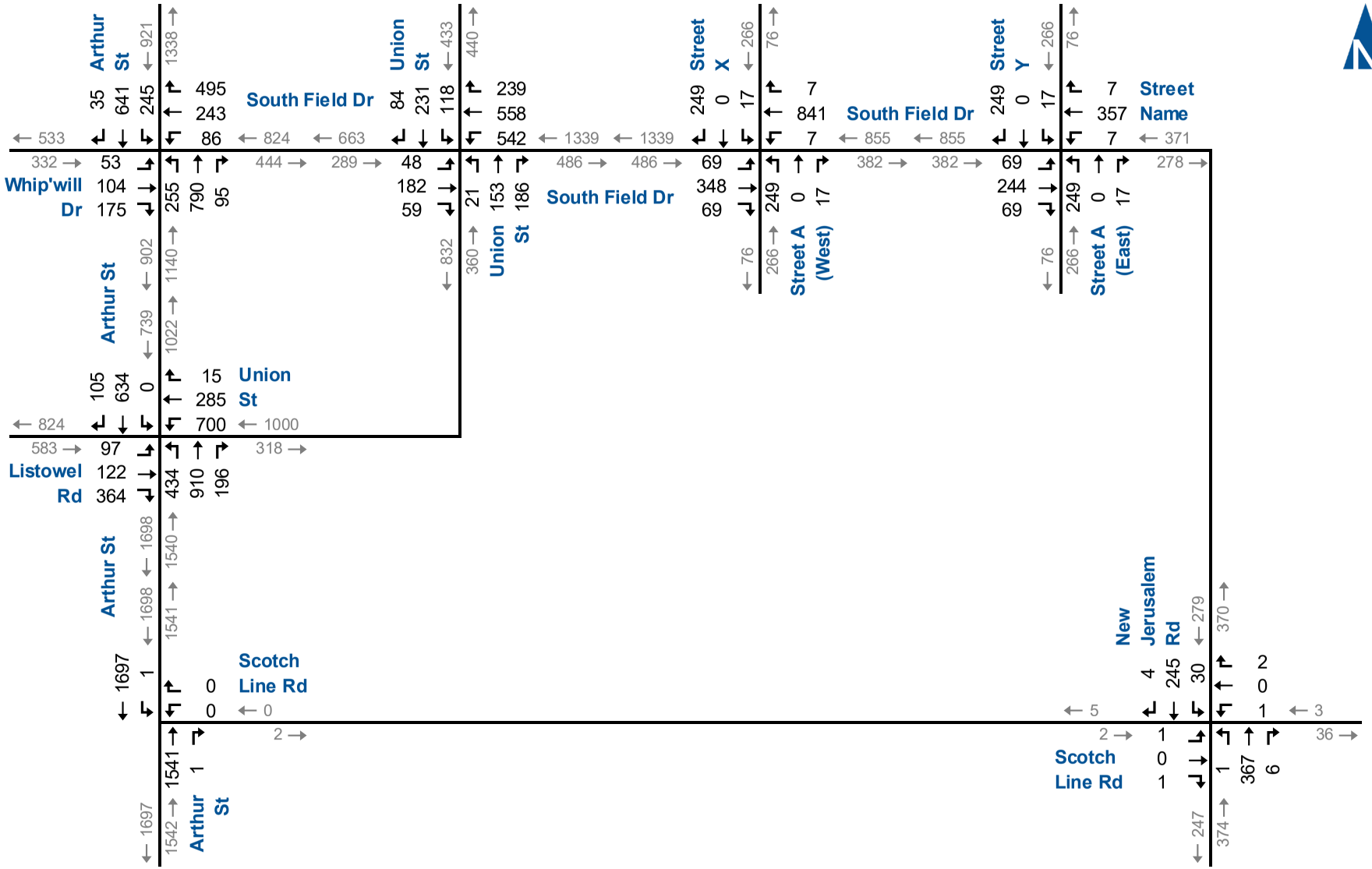
Table 5.6 details the level of service conditions for the weekday AM and PM peak hours, respectively. It indicates several individual turning movements will operate with critical movements during the AM and PM peak hours. The two new municipal intersections on South Field Drive are forecast to operate with poor conditions, especially the west intersection, with northbound operations operating at LOS F and v/c ratios greater than 1.00. **Appendix L** contains the detailed Synchro reports.



Sensitivity Total Traffic Volumes (AM Peak Hour)

1665 Scotch Line Road, Woolwich
240259

Figure 5.1A



Sensitivity Total Traffic Volumes (PM Peak Hour)

1665 Scotch Line Road, Woolwich
240259

Figure 5.1B

TABLE 5.6A: TOTAL OPERATIONS – SENSITIVITY ANALYSIS (AM PEAK HOUR)

Analysis Period	Intersection	Control Type	MOE	Direction / Movement / Approach																
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	Arthur Street & Whippoorwill Drive/South Field Drive	TCS	LOS	C	C	C	C	C	C	A	B	A	B	A	B	F	C	>	E	D
			Delay	26	34	21	28	29	24	7	15	9	19	2	16	124	29	>	66	38
			V/C	0.26	0.62	0.46		0.32	0.14	0.42		0.31	0.68	0.09		1.18	0.85	>		
			Q	22	62	54		21	18	16		12	110	3		114	161	>		
			Ex	40	-	40		25	-	25		40	-	40		30	-	>		
			Avail.	18	-	-14		4	-	9		28	-	37		-84	-	>		
	South Field Drive & Union Street	TCS	LOS	C	F	>	F	F	B	>	D	B	F	>	F	F	A	>	F	F
			Delay	25	143	>	137	95	17	>	52	11	82	>	81	152	7	>	101	93
			V/C	0.10	1.20	>		0.99	0.35	>		0.02	1.10	>		1.14	0.10	>		
			Q	11	173	>		56	35	>		4	205	>		65	10	>		
			Ex	15	-	>		50	-	>		25	-	>		20	-	>		
			Avail.	4	-	>		-6	-	>		21	-	>		-45	-	>		
	South Field Drive & Rail Crossing	TWSC	LOS		F		F		B		B									F
			Delay		185		185		12		12									146
			V/C		1.36				0.39											
			Q		396				15											
			Ex		-				-											
			Avail.		-				-											
	Arthur Street & Scotch Line Road	TWSC	LOS					F		>	F		A	>	A	<	A		A	A
			Delay					144		>	152		0	>	0	<	0		0	0
			V/C					0.16		>			0.80	>		<	0.00			
			Q					4		>			0	>		<	0			
			Ex					-		>			-	>		<	-			
			Avail.					-		>			-	>		<	-			
	Arthur Street & Listowel Road/Union Street	TCS	LOS	D	E	D	D	F	C	A	F	F	B	A	C	A	E	A	E	E
			Delay	45	58	49	51	364	30	0	282	83	17	6	24	0	60	0	57	67
			V/C	0.48	0.79	0.93		1.70	0.22	0.01		0.97	0.58	0.56		0.00	0.97	0.07		
			Q	47	100	195		162	29	0		104	126	39		0	262	0		
			Ex	60	-	60		30	-	30		100	-	100		50	-	50		
			Avail.	13	-	-135		-132	-	30		-4	-	62		50	-	50		
	New Jerusalem Road & Scotch Line Road	TWSC	LOS	<	B	>	B	<	A	>	A	<	A	>	A	<	A	>	A	A
			Delay	<	10	>	10	<	10	>	10	<	8	>	0	<	7	>	0	1
			V/C	<	0.01	>		<	0.04	>		<	0.00	>		<	0.00	>		
			Q	<	0	>		<	1	>		<	0	>		<	0	>		
			Ex	<	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		<	-	>		
	South Field Drive & Street A (West)/Street X	TWSC	LOS	<	A	>	A	<	B	>	A	<	F	>	F	<	B	>	B	C
			Delay	<	8	>	2	<	10	>	0	<	430	>	430	<	13	>	13	19
			V/C	<	0.20	>		<	0.02	>		<	1.43	>		<	0.13	>		
			Q	<	6	>		<	1	>		<	50	>		<	3	>		
			Ex	<	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		<	-	>		
	South Field Drive & Street A (East)/Street Y	TWSC	LOS	<	A	>	A	<	A	>	A	<	E	>	E	<	A	>	A	A
			Delay	<	8	>	3	<	8	>	1	<	40	>	40	<	10	>	10	6
			V/C	<	0.18	>		<	0.01	>		<	0.39	>		<	0.08	>		
			Q	<	6	>		<	0	>		<	14	>		<	2	>		
			Ex	<	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		<	-	>		

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LOS - Level of Service
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TCS - Traffic Control Signal
TWSC - Two-Way Stop Control

< / > - Shared Turn Lane

TABLE 5.6B: TOTAL OPERATIONS – SENSITIVITY ANALYSIS (PM PEAK HOUR)

Analysis Period	Intersection	Control Type	MOE	Direction / Movement / Approach																	
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
PM Peak Hour	Arthur Street & Whippoorwill Drive/South Field Drive	TCS	LOS	C	C	C	C	C	C	C	C	C	C	A	C	C	C	>	C	C
			Delay	30	26	20	24	29	32	31	31	23	23	3	21	29	33	>	32	27
			V/C	0.30	0.24	0.32		0.31	0.55	0.84		0.74	0.81	0.12		0.79	0.88	>		
			Q	17	27	36		24	57	107		41	184	8		42	175	>		
			Ex	40	-	40		25	-	25		40	-	40		30	-	>		
			Avail.	24	-	4		1	-	-82		-1	-	32		-12	-	>		
	South Field Drive & Union Street	TCS	LOS	D	D	>	D	D	C	>	C	C	D	>	D	E	D	>	D	D
			Delay	37	36	>	36	41	25	>	32	25	49	>	47	72	37	>	47	37
			V/C	0.41	0.69	>		0.94	0.89	>		0.12	0.88	>		0.82	0.74	>		
			Q	17	56	>		122	179	>		9	93	>		49	84	>		
			Ex	15	-	>		50	-	>		25	-	>		20	-	>		
			Avail.	-2	-	>		-72	-	>		16	-	>		-29	-	>		
	South Field Drive & Rail Crossing	TWSC	LOS		B		B		F		F									F
			Delay		14		14		244		244									183
			V/C		0.54				1.50											
			Q		26				507											
			Ex		-				-											
			Avail.		-				-											
	Arthur Street & Scotch Line Road	TWSC	LOS					A		>	A		A	>	A	<	B		A	A
			Delay					0		>	0		0	>	0	<	13		0	0
			V/C					0.00		>			0.91	>		<	0.00			
			Q					0		>			0	>		<	0			
			Ex					-		>			-	>		<	-			
			Avail.					-		>			-	>		<	-			
	Arthur Street & Listowel Road/Union Street	TCS	LOS	D	D	C	C	F	C	A	F	F	C	A	E	A	D	A	D	F
			Delay	54	48	23	34	485	33	0	349	173	26	1	64	0	51	5	44	130
			V/C	0.56	0.51	0.61		2.07	0.50	0.03		1.27	0.82	0.19		0.00	0.91	0.17		
			Q	38	44	80		334	77	0		192	280	6		0	227	12		
			Ex	60	-	60		30	-	30		100	-	100		50	-	50		
			Avail.	22	-	-20		-304	-	30		-92	-	94		50	-	38		
	New Jerusalem Road & Scotch Line Road	TWSC	LOS	<	B	>	B	<	B	>	B	<	A	>	A	<	A	>	A	A
			Delay	<	12	>	12	<	12	>	12	<	8	>	0	<	8	>	1	1
			V/C	<	0.00	>		<	0.01	>		<	0.00	>		<	0.03	>		
			Q	<	0	>		<	0	>		<	0	>		<	1	>		
			Ex	<	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		<	-	>		
	South Field Drive & Street A (West)/Street X	TWSC	LOS	<	A	>	A	<	A	>	A	<	F	>	F	<	F	>	F	F
			Delay	<	10	>	1	<	8	>	0	<	3127	>	3127	<	55	>	55	452
			V/C	<	0.09	>		<	0.01	>		<	7.46	>		<	0.84	>		
			Q	<	2	>		<	0	>		<	255	>		<	58	>		
			Ex	<	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		<	-	>		
	South Field Drive & Street A (East)/Street Y	TWSC	LOS	<	A	>	A	<	A	>	A	<	F	>	F	<	B	>	B	F
			Delay	<	8	>	1	<	8	>	0	<	256	>	256	<	15	>	15	57
			V/C	<	0.06	>		<	0.01	>		<	1.40	>		<	0.42	>		
			Q	<	2	>		<	0	>		<	126	>		<	17	>		
			Ex	<	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		<	-	>		

MOE - Measure of Effectiveness
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Avail. - Available Storage (m)

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

< / > - Shared Turn Lane

OTM Book 12 Justification 7 indicates that traffic control signals might be warranted for South Field Drive at Street A (West)/Street X under future traffic conditions. The intersection of South Field Drive at Street A (East)/Street Y) are not justified for traffic control signals. **Appendix L** contains the traffic control signal justifications.

It is recommended that the Township include the above intersections in the study area for the traffic studies of any future developments north of South Field Drive to ensure the proper form of traffic control is identified for future traffic conditions.

6 Conclusions and Recommendations

6.1 Conclusions

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

- **Existing Traffic Conditions:** The study area intersections are currently operating within acceptable levels of service with no critical movements during the AM and PM peak hours.
- **Development Trip Generation:** The development is forecast to generate approximately 680 and 680 trips during the AM and PM peak hours, respectively.
- **Background Traffic Conditions:** The study area intersections are forecast to operate within acceptable levels of service during the AM and PM peak hours with critical movements noted at the following intersections:
  - Arthur Street and Whippoorwill Drive/South Field Drive;
  - Arthur Street and Scotch Line Road; and
  - Arthur Street and Listowel Road/Union Street.
- **Total Traffic Conditions:** With the addition of the site generated traffic, the study area intersections are forecast to operate within acceptable levels of service during the AM and PM peak hours with critical movements noted at the following intersections:
  - Arthur Street and Whippoorwill Drive/South Field Drive;
  - Arthur Street and Scotch Line Road;
  - South Field Drive and Union Street;
  - Arthur Street and Listowel Road/Union Street; and
  - South Field Drive and Street A (West).
- The two proposed municipal street connections to South Field Drive are forecast to operate with acceptable levels of service with the exception of the Street A (West) which is forecast to operate at LOS F during the PM peak hour. There is excess capacity at Street A (East) which is forecast to operate at LOS C and v/c ratio of 0.58 during the PM peak hour, to handle any traffic from the west access road.
- The westbound approach at the rail crossing of South Field Drive is forecast to operate at LOS E during the PM peak hour under future total traffic conditions

- **Remedial Measures:** Sight distance analysis on South Field Drive at the two proposed municipal intersections shows that the west intersection meets 50 km/h design speed (40 km/h posted speed) requirements while the east intersection meets a 70 km/h design speed (50 km/h posted speed) requirement.
- Left-turn lanes on South Field Drive at the two new roadway connections are not warranted.
- Right-turn lanes on South Field Drive at Street A (West) and Street A (East) are warranted based on turning volumes.
- Eastbound left-turn lane on South Field Drive at Union Street is warranted for 15-metres of storage under future total traffic conditions.
- Westbound left-turn lane on South Field Drive at Union Street is warranted for 40-metres of storage under future total traffic conditions.
- Traffic control signals are justified at the intersection of South Field Drive and Union Street under future total traffic conditions.

6.2 Recommendations

Based on the findings of this study, it is recommended that the development be approved with the following provisions:

- Extend the 50 km/h posted speed limit on South Field Drive eastwards past the proposed Street A (East) intersection;
- Right-turn lanes on South Field Drive at Street A (West) and Street A (East);
- Eastbound left-turn lane with 15-metres of storage and westbound left-turn lane with 40-metres of storage on South Field Drive at Union Street;
- Traffic control signals at the intersection of South Field Drive and Union Street;
- Consider replacing the stop signs on South Field Drive at the rail crossing with flashing rail-crossing signs; and
- When proposed land uses are identified for the subject site, truck generation and access requirements should be assessed during the development application for each block.

Appendix A

Pre-Study Consultation

From:	Stephen Dykstra
To:	Andrew Evans
Cc:	JBhatia@regionofwaterloo.ca; Bryan Bishop; Erica Bayley
Subject:	RE: [EXT] (240259) 1665 Scotch Line Road, Elmira TIS Scope of Work
Date:	May 28, 2024 8:32:34 AM
Attachments:	image003.png

Andrew,

My role as the Township Planner will not be to comment on the TOR for the TIS, however, you may want to speak with the applicant and the other consultants as I understand that the road pattern has been changed. This may have an impact on the parameters of the TIS.

Regards,

Stephen Dykstra MCIP, RPP
Senior Planner
Township of Woolwich

From: Jeremy Vink <jvink@woolwich.ca>
Sent: Monday, May 27, 2024 2:56 PM
To: Stephen Dykstra <sdykstra@woolwich.ca>
Subject: FW: [EXT] (240259) 1665 Scotch Line Road, Elmira TIS Scope of Work

This is yours...

Jeremy Vink MCIP RPP
Manager of Planning
Development Services
Township of Woolwich

From: Andrew Evans <aevans@ptsl.com>
Sent: Monday, May 27, 2024 2:50 PM
To: Joginder Bhatia <JBhatia@regionofwaterloo.ca>; Bryan Bishop <BBishop@woolwich.ca>; Jeremy Vink <jvink@woolwich.ca>
Cc: Erica Bayley <ebayley@ptsl.com>
Subject: [EXT] (240259) 1665 Scotch Line Road, Elmira TIS Scope of Work

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Greetings,

Paradigm Transportation Solutions Limited is preparing the Transportation Impact Assessment for a proposed industrial subdivision on the lands 1665 Scotch Line Road, Elmira, Township of Woolwich, ON.

Below is a brief description of the concept and our proposed terms of reference for the TIS. Please review and provide comment at your earliest convenience. The Region of Waterloo Pre-Study Consultation Form is also attached.

SITE DESCRIPTION

The subject site is located at 1665 Scotch Line Road in Elmira, bounded by Scotch Line Road to the south and South Field Drive to the north. The property owner is proposing to redevelop the property to include a 43-hectare industrial park. Vehicle access is proposed via one new street connection to South Field Drive and emergency access to Scotch Line Road. **The concept plan is attached**.

PROPOSED TERMS OF REFERENCE

Study Area Intersections:

- Arthur Street & South Field Drive/Whippoorwill Drive (signalized)
- South Field Drive & Union Street (unsignalized)
- Arthur Street and Scotch Line Road (unsignalized); and
- New Street Connection to South Field Drive.

Analysis Periods:

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

Horizon Year

- Five-years from the assumed full build-out (Year 2032).

Existing Data:

- Eight Hour TMC at the study area intersections

Analysis

- Synchro 11

Background Traffic

- Generalized growth rate: **to be provided by Township/Region**
- Active Development Applications: **to be provided by Township/Region**

Future Road Improvements: **to be provided by Township/Region**

Trip Generation

- ITE Trip Generation Data 11th Edition with no modal split reductions.

Site Traffic Distribution

- Existing Traffic Patterns.

Report

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

Please let us know your comments on the study.

Thank you and regards.

Andrew Evans, M.Sc.
Transportation Planner, Associate

Paradigm Transportation Solutions Limited
5A-150 Pinebush Road Cambridge ON N1R 8J8
p: 519.896.3163 x305
e: aevans@ptsl.com
w: www.ptsl.com

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

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From: Cheryl Marcy
To: Erica Bayley; Andrew Evans
Cc: Joginder Bhatia; Tanikia Kinear
Subject: FW: [EXT] (240259) 1665 Scotch Line Road, Elmira TIS Scope of Work
Date: May 28, 2024 9:47:35 AM
Attachments: image006.png

Hi Erica and Andrew,

We've had some recent changes in our office and Tanikia Kinnear, Transportation Planner, would now be the Region contact for this project. Please send future information on this project to her, not to Jogi.

Thanks,

Cheryl Marcy, C.E.T.
Senior Transportation Planner

Regional Municipality of Waterloo
Planning, Development and Legislative Services
150 Frederick Street, 8th Floor
Kitchener, ON N2G 4J3

Phone: 226-753-1093
cmarcy@regionofwaterloo.ca

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From: Erica Bayley <ebayley@ptsl.com>
Sent: Tuesday, May 28, 2024 8:34 AM
To: Stephen Dykstra <sdykstra@woolwich.ca>; Andrew Evans <aevans@ptsl.com>
Cc: Joginder Bhatia <JBhatia@regionofwaterloo.ca>; Bryan Bishop <BBishop@woolwich.ca>
Subject: RE: [EXT] (240259) 1665 Scotch Line Road, Elmira TIS Scope of Work

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DO NOT click links or open attachments unless you are 100% sure that the email is safe.

Thanks Stephen. We'll review with our team.

Erica Bayley, P.Eng.
Senior Project Manager, Associate
(She/Her)

Paradigm Transportation Solutions Limited
p: 519.896.3163 x202
m: 519.635.5349

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Manager of Planning
Development Services
Township of Woolwich

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Andrew Evans, M.Sc.
Transportation Planner, Associate

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e: aevans@ptsl.com
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Office Hours: 07:30 – 17:30 M-T, closed Fridays

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APPENDIX A:
PRE-STUDY CONFERENCE FORM
1665 Scotch Line Road, Elmira, Woolwich

Item	Description	Details
ISSUES		
1	List any issues expected that may impact the content or recommendations of the subject Transportation Impact Study.	– To be determined
INTRODUCTION		
2	Nature of application (Attach a drawing)	– Official Plan Amendment – Zoning Amendment
3	TIS process, and relevant policies, procedures and approvals	– Guidelines for the preparation of Transportation Impact Studies in Support of Development Applications – Transportation Impact Studies Requirements for Capacity Analysis, Roundabouts, Turn Lanes – Synchro Lanes, Timings, and Queues preferred reporting format
	Public Meeting	– To be determined
CONTEXT		
5	Study intersections (Intersections to be analyzed) Note: the consultant is responsible to identify any further intersections impacted as the study progresses.	1. Arthur Street & South Field Drive/Whippoorwill Drive (signalized) 2. South Field Drive & Union Street (unsignalized) 3. Arthur Street & Scotch Line Road (unsignalized) 4. New Street Connection to South Field Drive
6	Size and number of phases of development	– 43 ha Industrial Park – Phasing TBD
7	Approved and pending approval development applications	– TBD
8	Planned transportation system improvements	– TBD
TRAVEL DEMAND		
9	Horizon years	– 5 years from expected year of completion (2032)

10	Peak hour determination	-AM weekday peak hour of adjacent roadway - PM weekday peak hour of adjacent roadway
11	Background	– Growth Rates: TBD – Traffic Generated from developments noted in Issue #7
12	Trip generation	– ITE average rates or fitted equation.
13	Trip reductions (TDM, internal, pass-by)	– TBD
14	Trip distribution	– ITE trip distribution IN/OUT split
15	Trip assignment	– Local traffic pattern
EVALUATION OF IMPACTS		
16	Traffic impact analysis (Use approved software)	– Signalized intersections – LOS, v/c, delay, queuing – Queuing analysis

Item	Description	Details
17	Roundabout feasibility (Use approved software)	– TBD
18	Transit assessment	– Presence of bus stops/LRT Stations
19	Pedestrian assessment	– Presence, connectivity, and width of sidewalks – Future needs (desire lines / policy / accessibility / demand)
20	Cycling assessment	– Presence of a dedicated facility – Network connectivity.
21	Safety analysis	– TBD
22	Site access and circulation	– TBD
23	Submission format	– Minimum one original electronic copy must be sealed by a professional engineer – Electronic copy of complete report and all appendices – Electronic copy of operational analysis files (e.g. Synchro)

Appendix B

Traffic Data

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Arthur Street & South Field Drive
Site Code: 240259
Start Date: 05/29/2024

Turning Movement Data

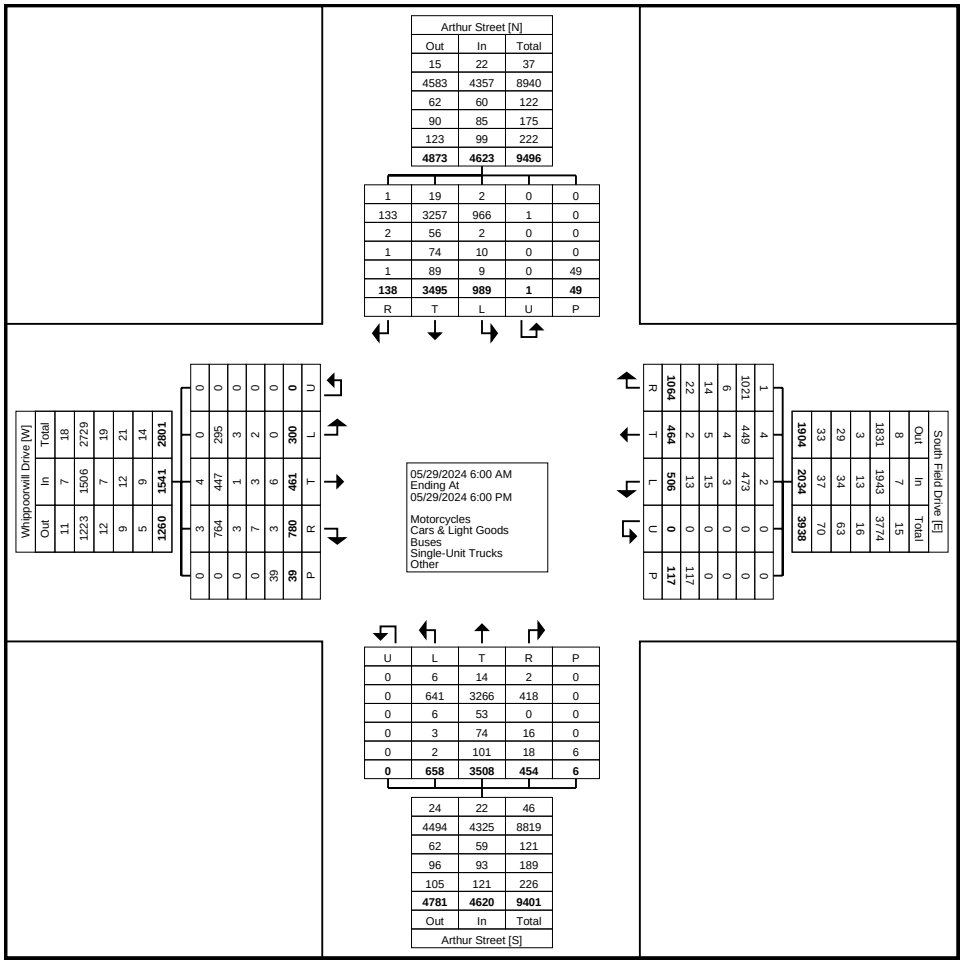
Start Time	Whippoorwill Drive Eastbound						South Field Drive Westbound						Arthur Street Northbound						Arthur Street Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
6:00 AM	8	11	21	0	0	40	5	1	9	0	2	15	2	24	27	0	0	53	21	66	1	0	0	88	196
6:15 AM	2	13	13	0	1	28	9	4	10	0	1	23	2	53	38	0	0	93	27	93	0	0	0	120	264
6:30 AM	7	24	34	0	1	65	8	5	18	0	7	31	3	52	31	0	0	86	22	109	2	0	2	133	315
6:45 AM	5	12	25	0	2	42	7	3	9	0	1	19	12	77	23	0	0	112	34	98	0	0	2	132	305
Hourly Total	22	60	93	0	4	175	29	13	46	0	11	88	19	206	119	0	0	344	104	366	3	0	4	473	1080
7:00 AM	5	12	25	0	0	42	12	6	17	0	1	35	11	75	12	0	0	98	27	76	1	0	0	104	279
7:15 AM	11	17	38	0	0	66	13	4	13	0	3	30	6	123	9	0	0	138	15	100	2	0	2	117	351
7:30 AM	12	29	35	0	2	76	15	12	20	0	1	47	13	94	8	0	0	115	32	137	0	0	1	169	407
7:45 AM	26	22	34	0	2	82	13	6	39	0	0	58	15	134	16	0	0	165	30	125	3	0	0	158	463
Hourly Total	54	80	132	0	4	266	53	28	89	0	5	170	45	426	45	0	0	516	104	438	6	0	3	548	1500
8:00 AM	17	14	41	0	1	72	10	6	24	0	2	40	19	123	13	0	0	155	37	113	5	0	0	155	422
8:15 AM	11	20	31	0	3	62	18	15	32	0	1	65	10	89	11	0	0	110	28	94	2	0	1	124	361
8:30 AM	10	15	44	0	0	69	11	3	27	0	2	41	13	90	17	0	0	120	24	117	2	0	1	143	373
8:45 AM	18	14	32	0	0	64	11	6	29	0	2	46	11	103	12	0	0	126	36	103	6	0	3	145	381
Hourly Total	56	63	148	0	4	267	50	30	112	0	7	192	53	405	53	0	0	511	125	427	15	0	5	567	1537
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:30 AM	9	10	22	0	0	41	15	14	43	0	8	72	17	101	8	0	0	126	23	101	3	0	1	127	366
11:45 AM	4	16	14	0	0	34	13	12	35	0	7	60	25	97	11	0	0	133	39	107	7	0	1	153	380
Hourly Total	13	26	36	0	0	75	28	26	78	0	15	132	42	198	19	0	0	259	62	208	10	0	2	280	746
12:00 PM	8	11	19	0	0	38	13	14	46	0	7	73	14	86	12	0	0	112	38	126	4	0	6	168	391
12:15 PM	6	12	22	0	0	40	24	13	31	0	4	68	19	106	11	0	0	136	31	113	2	1	0	147	391
12:30 PM	8	16	22	0	3	46	21	11	28	0	3	60	24	110	10	0	1	144	44	118	6	0	3	168	418
12:45 PM	16	11	13	0	2	40	16	6	51	0	6	73	27	100	9	0	0	136	35	123	3	0	4	161	410
Hourly Total	38	50	76	0	5	164	74	44	156	0	20	274	84	402	42	0	1	528	148	480	15	1	13	644	1610
1:00 PM	4	13	18	0	0	35	14	19	31	0	10	64	14	99	9	0	0	122	38	93	6	0	3	137	358
1:15 PM	7	14	9	0	2	30	15	13	33	0	7	61	19	93	15	0	0	127	34	96	3	0	3	133	351
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	11	27	27	0	2	65	29	32	64	0	17	125	33	192	24	0	0	249	72	189	9	0	6	270	709
3:00 PM	8	13	23	0	0	44	29	16	48	0	5	93	23	133	11	0	0	167	22	116	6	0	1	144	448
3:15 PM	9	7	13	0	3	29	20	20	43	0	4	83	33	160	9	0	1	202	35	127	6	0	4	168	482
3:30 PM	8	11	30	0	7	49	23	29	41	0	0	93	23	120	8	0	2	151	38	121	7	0	0	166	459
3:45 PM	7	6	20	0	4	33	12	23	38	0	7	73	24	151	9	0	1	184	20	108	2	0	3	130	420
Hourly Total	32	37	86	0	14	155	84	88	170	0	16	342	103	564	37	0	4	704	115	472	21	0	8	608	1809
4:00 PM	6	15	19	0	2	40	34	19	43	0	1	96	33	134	9	0	1	176	25	117	4	0	1	146	458
4:15 PM	9	9	25	0	0	43	26	28	50	0	7	104	31	128	5	0	0	164	36	109	11	0	0	156	467

4:30 PM	14	11	24	0	0	49	13	27	42	0	2	82	38	164	10	0	0	212	31	143	10	0	0	184	527
4:45 PM	6	19	28	0	0	53	28	29	47	0	4	104	30	163	19	0	0	212	40	87	8	0	1	135	504
Hourly Total	35	54	96	0	2	185	101	103	182	0	14	386	132	589	43	0	1	764	132	456	33	0	2	621	1956
5:00 PM	13	16	23	0	0	52	15	30	49	0	4	94	37	141	22	0	0	200	41	125	5	0	2	171	517
5:15 PM	11	16	27	0	1	54	16	24	36	0	3	76	37	126	28	0	0	191	36	121	6	0	0	163	484
5:30 PM	6	15	14	0	1	35	12	30	39	0	4	81	46	127	16	0	0	189	30	117	6	0	3	153	458
5:45 PM	9	17	22	0	2	48	15	16	43	0	1	74	27	132	6	0	0	165	20	96	9	0	1	125	412
Hourly Total	39	64	86	0	4	189	58	100	167	0	12	325	147	526	72	0	0	745	127	459	26	0	6	612	1871
Grand Total	300	461	780	0	39	1541	506	464	1064	0	117	2034	658	3508	454	0	6	4620	989	3495	138	1	49	4623	12818
Approach %	19.5	29.9	50.6	0.0	-	-	24.9	22.8	52.3	0.0	-	-	14.2	75.9	9.8	0.0	-	-	21.4	75.6	3.0	0.0	-	-	-
Total %	2.3	3.6	6.1	0.0	-	12.0	3.9	3.6	8.3	0.0	-	15.9	5.1	27.4	3.5	0.0	-	36.0	7.7	27.3	1.1	0.0	-	36.1	-
Motorcycles	0	4	3	0	-	7	2	4	1	0	-	7	6	14	2	0	-	22	2	19	1	0	-	22	58
% Motorcycles	0.0	0.9	0.4	-	-	0.5	0.4	0.9	0.1	-	-	0.3	0.9	0.4	0.4	-	-	0.5	0.2	0.5	0.7	0.0	-	0.5	0.5
Cars & Light Goods	295	447	764	0	-	1506	473	449	1021	0	-	1943	641	3266	418	0	-	4325	966	3257	133	1	-	4357	12131
% Cars & Light Goods	98.3	97.0	97.9	-	-	97.7	93.5	96.8	96.0	-	-	95.5	97.4	93.1	92.1	-	-	93.6	97.7	93.2	96.4	100.0	-	94.2	94.6
Buses	3	1	3	0	-	7	3	4	6	0	-	13	6	53	0	0	-	59	2	56	2	0	-	60	139
% Buses	1.0	0.2	0.4	-	-	0.5	0.6	0.9	0.6	-	-	0.6	0.9	1.5	0.0	-	-	1.3	0.2	1.6	1.4	0.0	-	1.3	1.1
Single-Unit Trucks	2	3	7	0	-	12	15	5	14	0	-	34	3	74	16	0	-	93	10	74	1	0	-	85	224
% Single-Unit Trucks	0.7	0.7	0.9	-	-	0.8	3.0	1.1	1.3	-	-	1.7	0.5	2.1	3.5	-	-	2.0	1.0	2.1	0.7	0.0	-	1.8	1.7
Articulated Trucks	0	1	0	0	-	1	13	0	19	0	-	32	1	96	14	0	-	111	8	86	1	0	-	95	239
% Articulated Trucks	0.0	0.2	0.0	-	-	0.1	2.6	0.0	1.8	-	-	1.6	0.2	2.7	3.1	-	-	2.4	0.8	2.5	0.7	0.0	-	2.1	1.9
Bicycles on Road	0	5	3	0	-	8	0	2	3	0	-	5	1	5	4	0	-	10	1	3	0	0	-	4	27
% Bicycles on Road	0.0	1.1	0.4	-	-	0.5	0.0	0.4	0.3	-	-	0.2	0.2	0.1	0.9	-	-	0.2	0.1	0.1	0.0	0.0	-	0.1	0.2
Bicycles on Crosswalk	-	-	-	-	7	-	-	-	-	-	20	-	-	-	-	-	1	-	-	-	-	-	8	-	-
% Bicycles on Crosswalk	-	-	-	-	17.9	-	-	-	-	-	17.1	-	-	-	-	-	16.7	-	-	-	-	-	16.3	-	-
Pedestrians	-	-	-	-	32	-	-	-	-	-	97	-	-	-	-	-	5	-	-	-	-	-	41	-	-
% Pedestrians	-	-	-	-	82.1	-	-	-	-	-	82.9	-	-	-	-	-	83.3	-	-	-	-	-	83.7	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Arthur Street & South Field Drive
Site Code: 240259
Start Date: 05/29/2024



Turning Movement Data Plot

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Count Name: Arthur Street & South Field Drive
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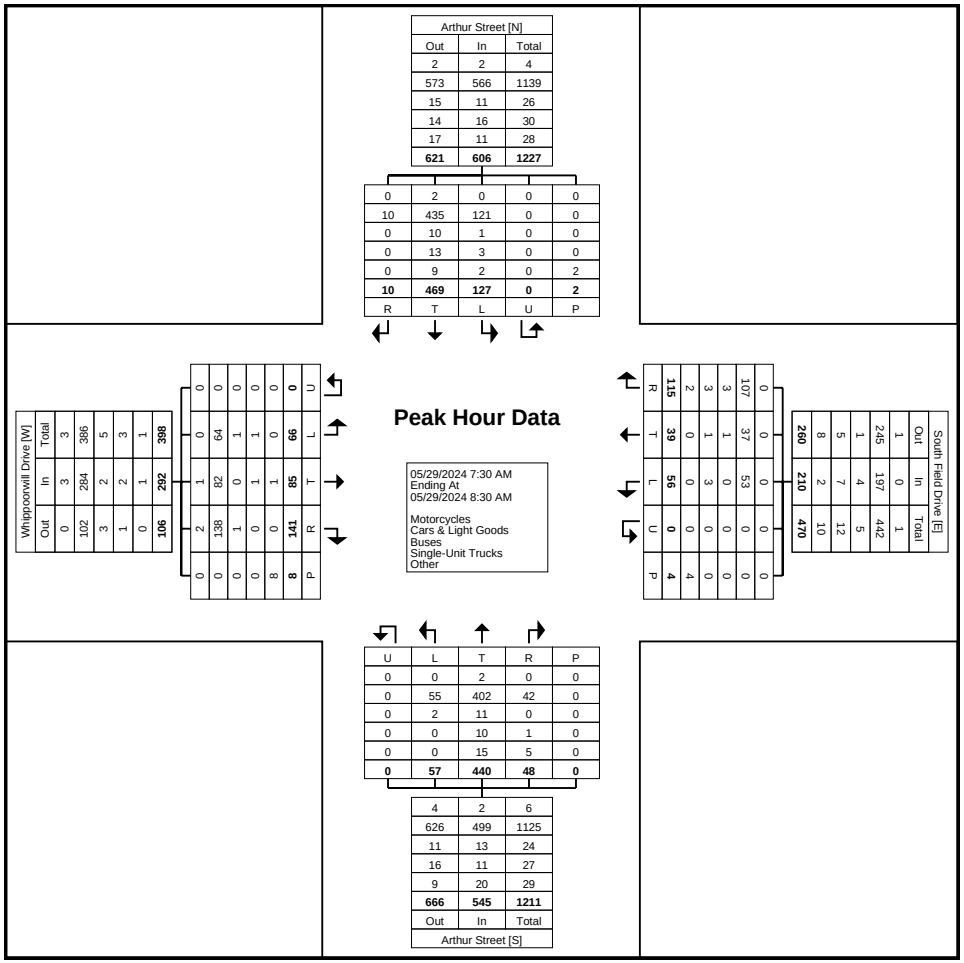
Turning Movement Peak Hour Data (7:30 AM)

Start Time	Whippoorwill Drive Eastbound						South Field Drive Westbound						Arthur Street Northbound						Arthur Street Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:30 AM	12	29	35	0	2	76	15	12	20	0	1	47	13	94	8	0	0	115	32	137	0	0	1	169	407
7:45 AM	26	22	34	0	2	82	13	6	39	0	0	58	15	134	16	0	0	165	30	125	3	0	0	158	463
8:00 AM	17	14	41	0	1	72	10	6	24	0	2	40	19	123	13	0	0	155	37	113	5	0	0	155	422
8:15 AM	11	20	31	0	3	62	18	15	32	0	1	65	10	89	11	0	0	110	28	94	2	0	1	124	361
Total	66	85	141	0	8	292	56	39	115	0	4	210	57	440	48	0	0	545	127	469	10	0	2	606	1653
Approach %	22.6	29.1	48.3	0.0	-	-	26.7	18.6	54.8	0.0	-	-	10.5	80.7	8.8	0.0	-	-	21.0	77.4	1.7	0.0	-	-	-
Total %	4.0	5.1	8.5	0.0	-	17.7	3.4	2.4	7.0	0.0	-	12.7	3.4	26.6	2.9	0.0	-	33.0	7.7	28.4	0.6	0.0	-	36.7	-
PHF	0.635	0.733	0.860	0.000	-	0.890	0.778	0.650	0.737	0.000	-	0.808	0.750	0.821	0.750	0.000	-	0.826	0.858	0.856	0.500	0.000	-	0.896	0.893
Motorcycles	0	1	2	0	-	3	0	0	0	0	-	0	0	2	0	0	-	2	0	2	0	0	-	2	7
% Motorcycles	0.0	1.2	1.4	-	-	1.0	0.0	0.0	0.0	-	-	0.0	0.0	0.5	0.0	-	-	0.4	0.0	0.4	0.0	-	-	0.3	0.4
Cars & Light Goods	64	82	138	0	-	284	53	37	107	0	-	197	55	402	42	0	-	499	121	435	10	0	-	566	1546
% Cars & Light Goods	97.0	96.5	97.9	-	-	97.3	94.6	94.9	93.0	-	-	93.8	96.5	91.4	87.5	-	-	91.6	95.3	92.8	100.0	-	-	93.4	93.5
Buses	1	0	1	0	-	2	0	1	3	0	-	4	2	11	0	0	-	13	1	10	0	0	-	11	30
% Buses	1.5	0.0	0.7	-	-	0.7	0.0	2.6	2.6	-	-	1.9	3.5	2.5	0.0	-	-	2.4	0.8	2.1	0.0	-	-	1.8	1.8
Single-Unit Trucks	1	1	0	0	-	2	3	1	3	0	-	7	0	10	1	0	-	11	3	13	0	0	-	16	36
% Single-Unit Trucks	1.5	1.2	0.0	-	-	0.7	5.4	2.6	2.6	-	-	3.3	0.0	2.3	2.1	-	-	2.0	2.4	2.8	0.0	-	-	2.6	2.2
Articulated Trucks	0	0	0	0	-	0	0	0	2	0	-	2	0	15	4	0	-	19	1	9	0	0	-	10	31
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	1.7	-	-	1.0	0.0	3.4	8.3	-	-	3.5	0.8	1.9	0.0	-	-	1.7	1.9
Bicycles on Road	0	1	0	0	-	1	0	0	0	0	-	0	0	0	1	0	-	1	1	0	0	0	-	1	3
% Bicycles on Road	0.0	1.2	0.0	-	-	0.3	0.0	0.0	0.0	-	-	0.0	0.0	0.0	2.1	-	-	0.2	0.8	0.0	0.0	-	-	0.2	0.2
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	12.5	-	-	-	-	-	25.0	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	7	-	-	-	-	-	3	-	-	-	-	-	0	-	-	-	-	-	2	-	-
% Pedestrians	-	-	-	-	87.5	-	-	-	-	-	75.0	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

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Site Code: 240259
Start Date: 05/29/2024



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

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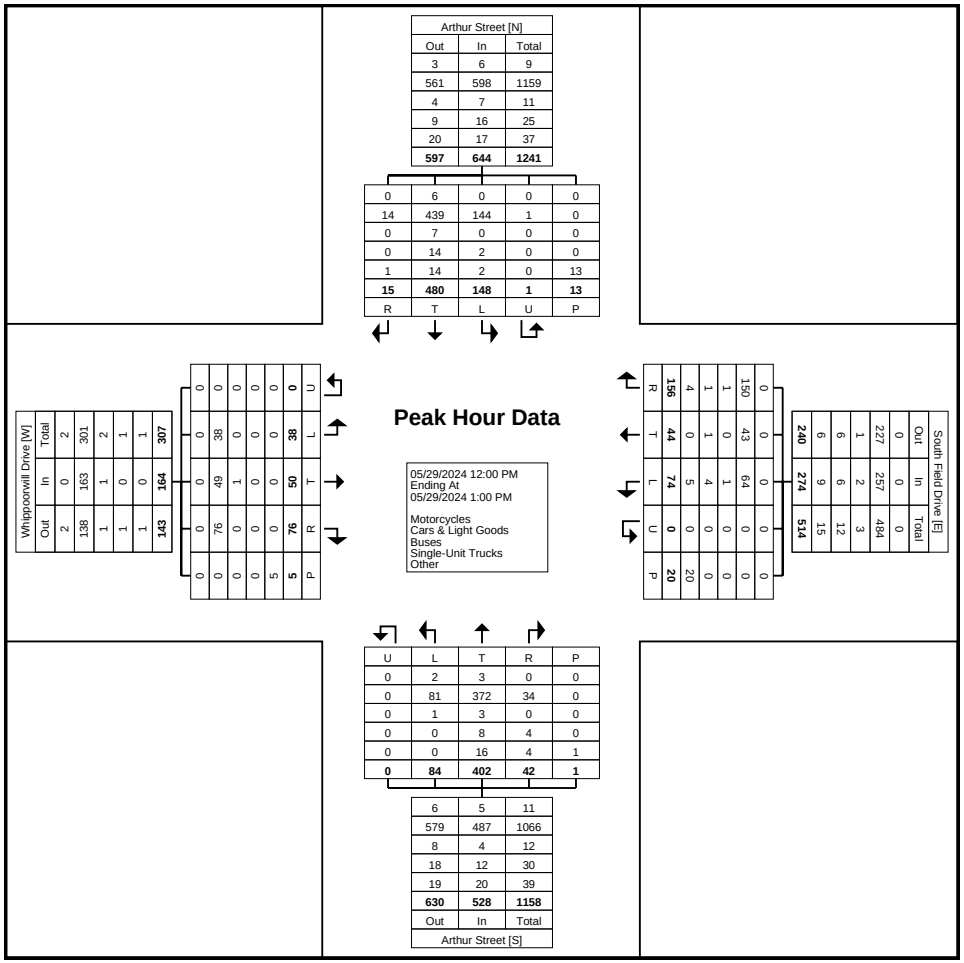
Turning Movement Peak Hour Data (12:00 PM)

Start Time	Whippoorwill Drive Eastbound						South Field Drive Westbound						Arthur Street Northbound						Arthur Street Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
12:00 PM	8	11	19	0	0	38	13	14	46	0	7	73	14	86	12	0	0	112	38	126	4	0	6	168	391
12:15 PM	6	12	22	0	0	40	24	13	31	0	4	68	19	106	11	0	0	136	31	113	2	1	0	147	391
12:30 PM	8	16	22	0	3	46	21	11	28	0	3	60	24	110	10	0	1	144	44	118	6	0	3	168	418
12:45 PM	16	11	13	0	2	40	16	6	51	0	6	73	27	100	9	0	0	136	35	123	3	0	4	161	410
Total	38	50	76	0	5	164	74	44	156	0	20	274	84	402	42	0	1	528	148	480	15	1	13	644	1610
Approach %	23.2	30.5	46.3	0.0	-	-	27.0	16.1	56.9	0.0	-	-	15.9	76.1	8.0	0.0	-	-	23.0	74.5	2.3	0.2	-	-	-
Total %	2.4	3.1	4.7	0.0	-	10.2	4.6	2.7	9.7	0.0	-	17.0	5.2	25.0	2.6	0.0	-	32.8	9.2	29.8	0.9	0.1	-	40.0	-
PHF	0.594	0.781	0.864	0.000	-	0.891	0.771	0.786	0.765	0.000	-	0.938	0.778	0.914	0.875	0.000	-	0.917	0.841	0.952	0.625	0.250	-	0.958	0.963
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	2	3	0	0	-	5	0	6	0	0	-	6	11
% Motorcycles	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	2.4	0.7	0.0	-	-	0.9	0.0	1.3	0.0	0.0	-	0.9	0.7
Cars & Light Goods	38	49	76	0	-	163	64	43	150	0	-	257	81	372	34	0	-	487	144	439	14	1	-	598	1505
% Cars & Light Goods	100.0	98.0	100.0	-	-	99.4	86.5	97.7	96.2	-	-	93.8	96.4	92.5	81.0	-	-	92.2	97.3	91.5	93.3	100.0	-	92.9	93.5
Buses	0	1	0	0	-	1	1	0	1	0	-	2	1	3	0	0	-	4	0	7	0	0	-	7	14
% Buses	0.0	2.0	0.0	-	-	0.6	1.4	0.0	0.6	-	-	0.7	1.2	0.7	0.0	-	-	0.8	0.0	1.5	0.0	0.0	-	1.1	0.9
Single-Unit Trucks	0	0	0	0	-	0	4	1	1	0	-	6	0	8	4	0	-	12	2	14	0	0	-	16	34
% Single-Unit Trucks	0.0	0.0	0.0	-	-	0.0	5.4	2.3	0.6	-	-	2.2	0.0	2.0	9.5	-	-	2.3	1.4	2.9	0.0	0.0	-	2.5	2.1
Articulated Trucks	0	0	0	0	-	0	5	0	4	0	-	9	0	16	4	0	-	20	2	14	1	0	-	17	46
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	6.8	0.0	2.6	-	-	3.3	0.0	4.0	9.5	-	-	3.8	1.4	2.9	6.7	0.0	-	2.6	2.9
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	-	2	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	10.0	-	-	-	-	-	0.0	-	-	-	-	-	15.4	-	-
Pedestrians	-	-	-	-	5	-	-	-	-	-	18	-	-	-	-	-	1	-	-	-	-	-	11	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	90.0	-	-	-	-	-	100.0	-	-	-	-	-	84.6	-	-

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

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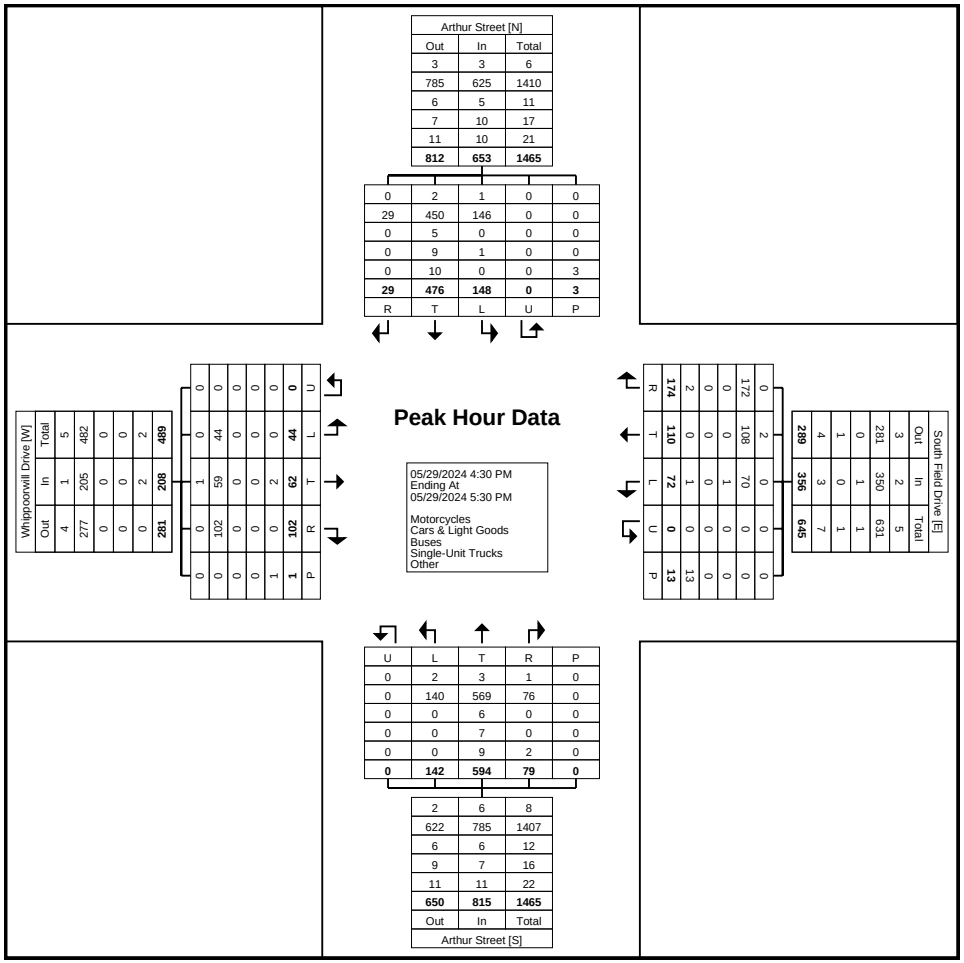
Turning Movement Peak Hour Data (4:30 PM)

Start Time	Whippoorwill Drive Eastbound						South Field Drive Westbound						Arthur Street Northbound						Arthur Street Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
4:30 PM	14	11	24	0	0	49	13	27	42	0	2	82	38	164	10	0	0	212	31	143	10	0	0	184	527
4:45 PM	6	19	28	0	0	53	28	29	47	0	4	104	30	163	19	0	0	212	40	87	8	0	1	135	504
5:00 PM	13	16	23	0	0	52	15	30	49	0	4	94	37	141	22	0	0	200	41	125	5	0	2	171	517
5:15 PM	11	16	27	0	1	54	16	24	36	0	3	76	37	126	28	0	0	191	36	121	6	0	0	163	484
Total	44	62	102	0	1	208	72	110	174	0	13	356	142	594	79	0	0	815	148	476	29	0	3	653	2032
Approach %	21.2	29.8	49.0	0.0	-	-	20.2	30.9	48.9	0.0	-	-	17.4	72.9	9.7	0.0	-	-	22.7	72.9	4.4	0.0	-	-	-
Total %	2.2	3.1	5.0	0.0	-	10.2	3.5	5.4	8.6	0.0	-	17.5	7.0	29.2	3.9	0.0	-	40.1	7.3	23.4	1.4	0.0	-	32.1	-
PHF	0.786	0.816	0.911	0.000	-	0.963	0.643	0.917	0.888	0.000	-	0.856	0.934	0.905	0.705	0.000	-	0.961	0.902	0.832	0.725	0.000	-	0.887	0.964
Motorcycles	0	1	0	0	-	1	0	2	0	0	-	2	2	3	1	0	-	6	1	2	0	0	-	3	12
% Motorcycles	0.0	1.6	0.0	-	-	0.5	0.0	1.8	0.0	-	-	0.6	1.4	0.5	1.3	-	-	0.7	0.7	0.4	0.0	-	-	0.5	0.6
Cars & Light Goods	44	59	102	0	-	205	70	108	172	0	-	350	140	569	76	0	-	785	146	450	29	0	-	625	1965
% Cars & Light Goods	100.0	95.2	100.0	-	-	98.6	97.2	98.2	98.9	-	-	98.3	98.6	95.8	96.2	-	-	96.3	98.6	94.5	100.0	-	-	95.7	96.7
Buses	0	0	0	0	-	0	1	0	0	0	-	1	0	6	0	0	-	6	0	5	0	0	-	5	12
% Buses	0.0	0.0	0.0	-	-	0.0	1.4	0.0	0.0	-	-	0.3	0.0	1.0	0.0	-	-	0.7	0.0	1.1	0.0	-	-	0.8	0.6
Single-Unit Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	7	0	0	-	7	1	9	0	0	-	10	17
% Single-Unit Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	1.2	0.0	-	-	0.9	0.7	1.9	0.0	-	-	1.5	0.8
Articulated Trucks	0	0	0	0	-	0	1	0	2	0	-	3	0	7	1	0	-	8	0	10	0	0	-	10	21
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	1.4	0.0	1.1	-	-	0.8	0.0	1.2	1.3	-	-	1.0	0.0	2.1	0.0	-	-	1.5	1.0
Bicycles on Road	0	2	0	0	-	2	0	0	0	0	-	0	0	2	1	0	-	3	0	0	0	0	-	0	5
% Bicycles on Road	0.0	3.2	0.0	-	-	1.0	0.0	0.0	0.0	-	-	0.0	0.0	0.3	1.3	-	-	0.4	0.0	0.0	0.0	-	-	0.0	0.2
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	-	3	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	100.0	-	-	-	-	-	23.1	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	10	-	-	-	-	-	0	-	-	-	-	-	3	-	-
% Pedestrians	-	-	-	-	0.0	-	-	-	-	-	76.9	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Arthur Street & South Field Drive
Site Code: 240259
Start Date: 05/29/2024



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

Region of Waterloo

CURRENT TRAFFIC SIGNAL TIMING

INT # 841 | ARTHUR STREET @ Whippoorwill Dr-South Field Dr | T08-50/ 15WOOL

Date Prepared: May 29, 2024

Mode of Control: Pre-timed running SEMI-ACTUATED

Left Info:

Actuated	SB	LT	-	ARTHUR STREET
Actuated	NB	LT	-	ARTHUR STREET

LPI: **5** second **LPI in use 24/7 when ped. buttons pushed to cross north and south legs only.**

*Offsets are a percentage of the cycle length and refers to the beginning of Main Street green

Pattern 1 6:00-15:00 Monday-Friday, 8:30-20:00 Saturday, 11:00-18:00 Sunday

ARTHUR STREET OFFSET 25%

SBL	Green Arrow	Min	5.0	seconds	NBL	Green Arrow	Min	5.0	seconds
		Ext	3.0	seconds			Ext	3.0	seconds
		Max	5.9	seconds			Max	5.9	seconds
SBL	Amber Arrow		3.0	seconds	NBL	Amber Arrow		3.0	seconds
All Red			1.0	seconds	All Red			1.0	seconds
Green			41.7	seconds					
Amber			4.0	seconds	Walk	22.7	seconds		
All Red			2.0	seconds	FDW	19.0	seconds		

Whippoorwill Dr-South Field Dr

				Pedestrian Call		
Green	Min	12.0	seconds	Green/Walk	10.0	seconds
	Ext	3.0	seconds	Green/FDW	16.0	seconds
	Max	26.4	seconds	Green/SDW	0.4	seconds
Amber		4.0	seconds	Amber	4.0	seconds
All Red		2.0	seconds	All Red	2.0	seconds
TOTAL		90.0	seconds			

Pattern 2 15:00-20:00 Monday-Friday

ARTHUR STREET OFFSET 53%

SBL	Green Arrow	Min	5.0	seconds	NBL	Green Arrow	Min	5.0	seconds
		Ext	3.0	seconds			Ext	3.0	seconds
		Max	6.8	seconds			Max	6.8	seconds
SBL	Amber Arrow		3.0	seconds	NBL	Amber Arrow		3.0	seconds
All Red			1.0	seconds	All Red			1.0	seconds
Green			40.8	seconds					
Amber			4.0	seconds	Walk	21.8	seconds		
All Red			2.0	seconds	FDW	19.0	seconds		

Whippoorwill Dr-South Field Dr

				Pedestrian Call		
Green	Min	12.0	seconds	Green/Walk	10.0	seconds
	Ext	3.0	seconds	Green/FDW	16.0	seconds
	Max	26.4	seconds	Green/SDW	0.4	seconds
Amber		4.0	seconds	Amber	4.0	seconds
All Red		2.0	seconds	All Red	2.0	seconds
TOTAL		90.0	seconds			

Min=Minimum Time
Ext=Extension Time
Max=Maximum Time

This signal timing cannot be presented as evidence in a court of law.

Max 2 - TP 2 ALL OTHER TIMES

ARTHUR STREET

Green		30.0	seconds			
Amber		4.0	seconds	Walk	11.0	seconds
All Red		2.0	seconds	FDW	19.0	seconds

Whippoorwill Dr-South Field Dr

				Pedestrian Call		
Green	Min	12.0	seconds	Green/Walk	10.0	seconds
	Ext	3.0	seconds	Green/FDW	16.0	seconds
	Max	20.0	seconds	Green/SDW	0.0	seconds
Amber		4.0	seconds	Amber	4.0	seconds
All Red		2.0	seconds	All Red	2.0	seconds
TOTAL		62.0	seconds			

Min=Minimum Time
Ext=Extension Time
Max=Maximum Time

This signal timing cannot be presented as evidence in a court of law.

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: South Field Drive & Union Street
Site Code: 240259
Start Date: 05/29/2024

Turning Movement Data

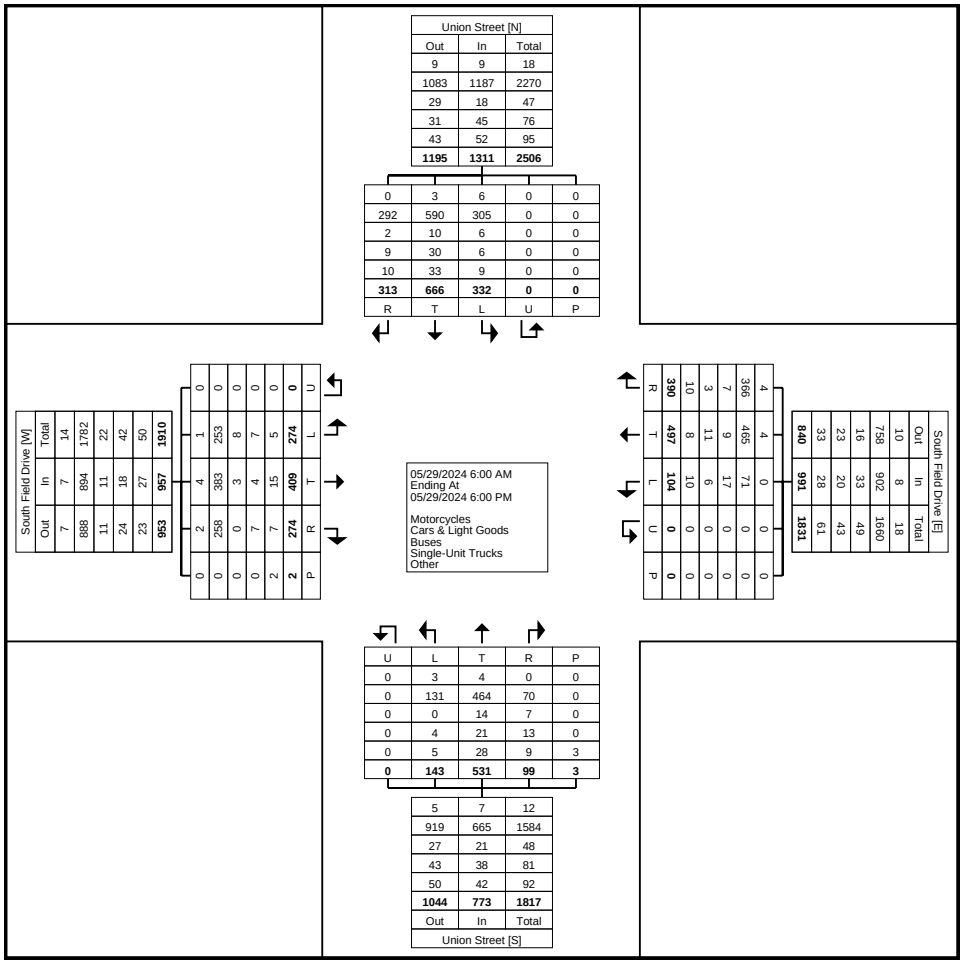
Start Time	South Field Drive Eastbound						South Field Drive Westbound						Union Street Northbound						Union Street Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
6:00 AM	4	2	9	0	0	15	1	3	1	0	0	5	6	7	1	0	0	14	1	6	6	0	0	13	47
6:15 AM	4	7	6	0	0	17	0	13	5	0	0	18	7	5	0	0	0	12	3	18	7	0	0	28	75
6:30 AM	10	12	6	0	1	28	7	8	6	0	0	21	11	10	6	0	0	27	2	15	6	0	0	23	99
6:45 AM	9	12	14	0	0	35	1	7	13	0	0	21	4	23	6	0	0	33	5	25	7	0	0	37	126
Hourly Total	27	33	35	0	1	95	9	31	25	0	0	65	28	45	13	0	0	86	11	64	26	0	0	101	347
7:00 AM	7	9	5	0	0	21	7	5	3	0	0	15	6	13	2	0	0	21	5	15	5	0	0	25	82
7:15 AM	8	12	3	0	0	23	6	6	7	0	0	19	1	18	1	0	0	20	8	22	7	0	0	37	99
7:30 AM	3	15	7	0	0	25	5	9	18	0	0	32	3	13	4	0	0	20	9	19	3	0	0	31	108
7:45 AM	5	17	5	0	0	27	3	13	20	0	0	36	2	34	1	0	0	37	13	16	12	0	0	41	141
Hourly Total	23	53	20	0	0	96	21	33	48	0	0	102	12	78	8	0	0	98	35	72	27	0	0	134	430
8:00 AM	7	11	4	0	0	22	2	2	20	0	0	24	4	20	6	0	0	30	23	23	8	0	0	54	130
8:15 AM	9	17	1	0	0	27	2	19	16	0	0	37	3	19	2	0	0	24	17	18	6	0	0	41	129
8:30 AM	6	9	3	0	0	18	1	8	9	0	0	18	1	22	2	0	0	25	2	20	6	0	0	28	89
8:45 AM	5	15	6	0	0	26	3	13	2	0	0	18	1	12	4	0	0	17	8	14	7	0	0	29	90
Hourly Total	27	52	14	0	0	93	8	42	47	0	0	97	9	73	14	0	0	96	50	75	27	0	0	152	438
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:30 AM	6	6	4	0	0	16	3	13	12	0	0	28	3	19	2	0	0	24	12	13	12	0	0	37	105
11:45 AM	13	17	4	0	0	34	4	5	9	0	0	18	5	8	0	0	0	13	9	8	8	0	0	25	90
Hourly Total	19	23	8	0	0	50	7	18	21	0	0	46	8	27	2	0	0	37	21	21	20	0	0	62	195
12:00 PM	8	17	10	0	0	35	1	16	7	0	0	24	11	17	3	0	0	31	11	24	15	0	0	50	140
12:15 PM	14	15	12	0	0	41	1	15	6	0	0	22	11	13	2	0	0	26	4	15	11	0	0	30	119
12:30 PM	16	10	20	0	0	46	4	12	12	0	0	28	5	14	4	0	0	23	8	16	9	0	0	33	130
12:45 PM	15	12	4	0	0	31	7	8	5	0	0	20	5	15	0	0	0	20	9	13	10	0	0	32	103
Hourly Total	53	54	46	0	0	153	13	51	30	0	0	94	32	59	9	0	0	100	32	68	45	0	0	145	492
1:00 PM	8	13	6	0	1	27	2	10	11	0	0	23	2	14	3	0	0	19	9	21	13	0	0	43	112
1:15 PM	10	12	8	0	0	30	1	12	8	0	0	21	0	9	2	0	0	11	9	10	5	0	0	24	86
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	18	25	14	0	1	57	3	22	19	0	0	44	2	23	5	0	0	30	18	31	18	0	0	67	198
3:00 PM	7	12	9	0	0	28	2	17	8	0	0	27	5	13	2	0	0	20	14	44	13	0	0	71	146
3:15 PM	6	10	8	0	0	24	3	17	12	0	0	32	3	6	4	0	0	13	13	23	11	0	0	47	116
3:30 PM	7	23	14	0	0	44	4	24	13	0	0	41	6	27	4	0	0	37	8	25	10	0	0	43	165
3:45 PM	12	14	10	0	0	36	0	24	14	0	0	38	5	13	3	0	1	21	12	22	6	0	0	40	135
Hourly Total	32	59	41	0	0	132	9	82	47	0	0	138	19	59	13	0	1	91	47	114	40	0	0	201	562
4:00 PM	10	24	28	0	0	62	7	23	11	0	0	41	3	25	4	0	0	32	17	25	11	0	0	53	188
4:15 PM	4	15	27	0	0	46	1	29	27	0	0	57	6	27	9	0	0	42	12	30	9	0	0	51	196

4:30 PM	10	10	8	0	0	28	1	27	24	0	0	52	3	25	1	0	0	29	22	39	27	0	0	88	197
4:45 PM	10	17	4	0	0	31	5	25	23	0	0	53	3	18	3	0	0	24	14	26	14	0	0	54	162
Hourly Total	34	66	67	0	0	167	14	104	85	0	0	203	15	95	17	0	0	127	65	120	61	0	0	246	743
5:00 PM	16	14	10	0	0	40	3	30	35	0	0	68	6	20	4	0	0	30	12	39	21	0	0	72	210
5:15 PM	8	14	11	0	0	33	7	27	14	0	0	48	3	21	7	0	2	31	24	22	10	0	0	56	168
5:30 PM	7	6	7	0	0	20	6	37	10	0	0	53	4	15	4	0	0	23	8	19	14	0	0	41	137
5:45 PM	10	10	1	0	0	21	4	20	9	0	0	33	5	16	3	0	0	24	9	21	4	0	0	34	112
Hourly Total	41	44	29	0	0	114	20	114	68	0	0	202	18	72	18	0	2	108	53	101	49	0	0	203	627
Grand Total	274	409	274	0	2	957	104	497	390	0	0	991	143	531	99	0	3	773	332	666	313	0	0	1311	4032
Approach %	28.6	42.7	28.6	0.0	-	-	10.5	50.2	39.4	0.0	-	-	18.5	68.7	12.8	0.0	-	-	25.3	50.8	23.9	0.0	-	-	-
Total %	6.8	10.1	6.8	0.0	-	23.7	2.6	12.3	9.7	0.0	-	24.6	3.5	13.2	2.5	0.0	-	19.2	8.2	16.5	7.8	0.0	-	32.5	-
Motorcycles	1	4	2	0	-	7	0	4	4	0	-	8	3	4	0	0	-	7	6	3	0	0	-	9	31
% Motorcycles	0.4	1.0	0.7	-	-	0.7	0.0	0.8	1.0	-	-	0.8	2.1	0.8	0.0	-	-	0.9	1.8	0.5	0.0	-	-	0.7	0.8
Cars & Light Goods	253	383	258	0	-	894	71	465	366	0	-	902	131	464	70	0	-	665	305	590	292	0	-	1187	3648
% Cars & Light Goods	92.3	93.6	94.2	-	-	93.4	68.3	93.6	93.8	-	-	91.0	91.6	87.4	70.7	-	-	86.0	91.9	88.6	93.3	-	-	90.5	90.5
Buses	8	3	0	0	-	11	17	9	7	0	-	33	0	14	7	0	-	21	6	10	2	0	-	18	83
% Buses	2.9	0.7	0.0	-	-	1.1	16.3	1.8	1.8	-	-	3.3	0.0	2.6	7.1	-	-	2.7	1.8	1.5	0.6	-	-	1.4	2.1
Single-Unit Trucks	7	4	7	0	-	18	6	11	3	0	-	20	4	21	13	0	-	38	6	30	9	0	-	45	121
% Single-Unit Trucks	2.6	1.0	2.6	-	-	1.9	5.8	2.2	0.8	-	-	2.0	2.8	4.0	13.1	-	-	4.9	1.8	4.5	2.9	-	-	3.4	3.0
Articulated Trucks	5	5	6	0	-	16	9	3	1	0	-	13	5	27	6	0	-	38	1	32	10	0	-	43	110
% Articulated Trucks	1.8	1.2	2.2	-	-	1.7	8.7	0.6	0.3	-	-	1.3	3.5	5.1	6.1	-	-	4.9	0.3	4.8	3.2	-	-	3.3	2.7
Bicycles on Road	0	10	1	0	-	11	1	5	9	0	-	15	0	1	3	0	-	4	8	1	0	0	-	9	39
% Bicycles on Road	0.0	2.4	0.4	-	-	1.1	1.0	1.0	2.3	-	-	1.5	0.0	0.2	3.0	-	-	0.5	2.4	0.2	0.0	-	-	0.7	1.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	3	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: South Field Drive & Union Street
Site Code: 240259
Start Date: 05/29/2024



Turning Movement Data Plot

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: South Field Drive & Union Street
Site Code: 240259
Start Date: 05/29/2024

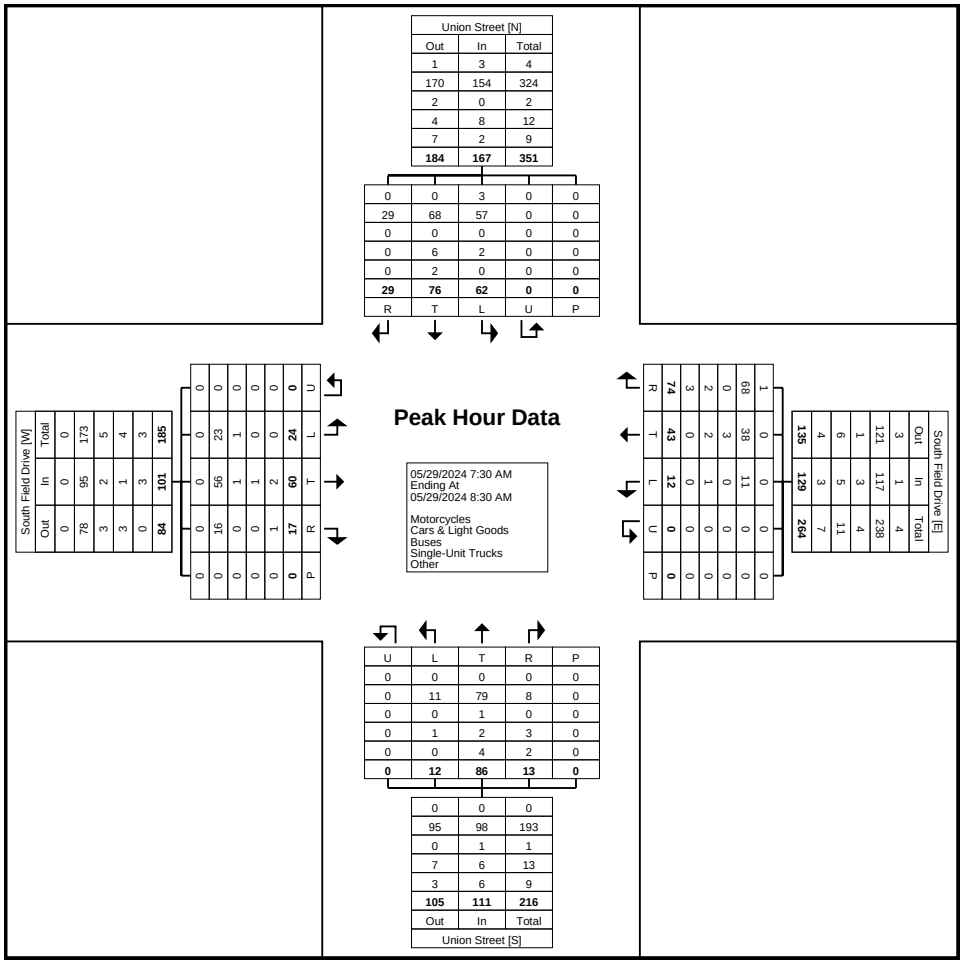
Turning Movement Peak Hour Data (7:30 AM)

Start Time	South Field Drive Eastbound						South Field Drive Westbound						Union Street Northbound						Union Street Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:30 AM	3	15	7	0	0	25	5	9	18	0	0	32	3	13	4	0	0	20	9	19	3	0	0	31	108
7:45 AM	5	17	5	0	0	27	3	13	20	0	0	36	2	34	1	0	0	37	13	16	12	0	0	41	141
8:00 AM	7	11	4	0	0	22	2	2	20	0	0	24	4	20	6	0	0	30	23	23	8	0	0	54	130
8:15 AM	9	17	1	0	0	27	2	19	16	0	0	37	3	19	2	0	0	24	17	18	6	0	0	41	129
Total	24	60	17	0	0	101	12	43	74	0	0	129	12	86	13	0	0	111	62	76	29	0	0	167	508
Approach %	23.8	59.4	16.8	0.0	-	-	9.3	33.3	57.4	0.0	-	-	10.8	77.5	11.7	0.0	-	-	37.1	45.5	17.4	0.0	-	-	-
Total %	4.7	11.8	3.3	0.0	-	19.9	2.4	8.5	14.6	0.0	-	25.4	2.4	16.9	2.6	0.0	-	21.9	12.2	15.0	5.7	0.0	-	32.9	-
PHF	0.667	0.882	0.607	0.000	-	0.935	0.600	0.566	0.925	0.000	-	0.872	0.750	0.632	0.542	0.000	-	0.750	0.674	0.826	0.604	0.000	-	0.773	0.901
Motorcycles	0	0	0	0	-	0	0	0	1	0	-	1	0	0	0	0	-	0	3	0	0	0	-	3	4
% Motorcycles	0.0	0.0	0.0	-	-	0.0	0.0	0.0	1.4	-	-	0.8	0.0	0.0	0.0	-	-	0.0	4.8	0.0	0.0	-	-	1.8	0.8
Cars & Light Goods	23	56	16	0	-	95	11	38	68	0	-	117	11	79	8	0	-	98	57	68	29	0	-	154	464
% Cars & Light Goods	95.8	93.3	94.1	-	-	94.1	91.7	88.4	91.9	-	-	90.7	91.7	91.9	61.5	-	-	88.3	91.9	89.5	100.0	-	-	92.2	91.3
Buses	1	1	0	0	-	2	0	3	0	0	-	3	0	1	0	0	-	1	0	0	0	0	-	0	6
% Buses	4.2	1.7	0.0	-	-	2.0	0.0	7.0	0.0	-	-	2.3	0.0	1.2	0.0	-	-	0.9	0.0	0.0	0.0	-	-	0.0	1.2
Single-Unit Trucks	0	1	0	0	-	1	1	2	2	0	-	5	1	2	3	0	-	6	2	6	0	0	-	8	20
% Single-Unit Trucks	0.0	1.7	0.0	-	-	1.0	8.3	4.7	2.7	-	-	3.9	8.3	2.3	23.1	-	-	5.4	3.2	7.9	0.0	-	-	4.8	3.9
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	4	1	0	-	5	0	2	0	0	-	2	7
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	4.7	7.7	-	-	4.5	0.0	2.6	0.0	-	-	1.2	1.4
Bicycles on Road	0	2	1	0	-	3	0	0	3	0	-	3	0	0	1	0	-	1	0	0	0	0	-	0	7
% Bicycles on Road	0.0	3.3	5.9	-	-	3.0	0.0	0.0	4.1	-	-	2.3	0.0	0.0	7.7	-	-	0.9	0.0	0.0	0.0	-	-	0.0	1.4
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: South Field Drive & Union Street
Site Code: 240259
Start Date: 05/29/2024



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

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: South Field Drive & Union Street
Site Code: 240259
Start Date: 05/29/2024

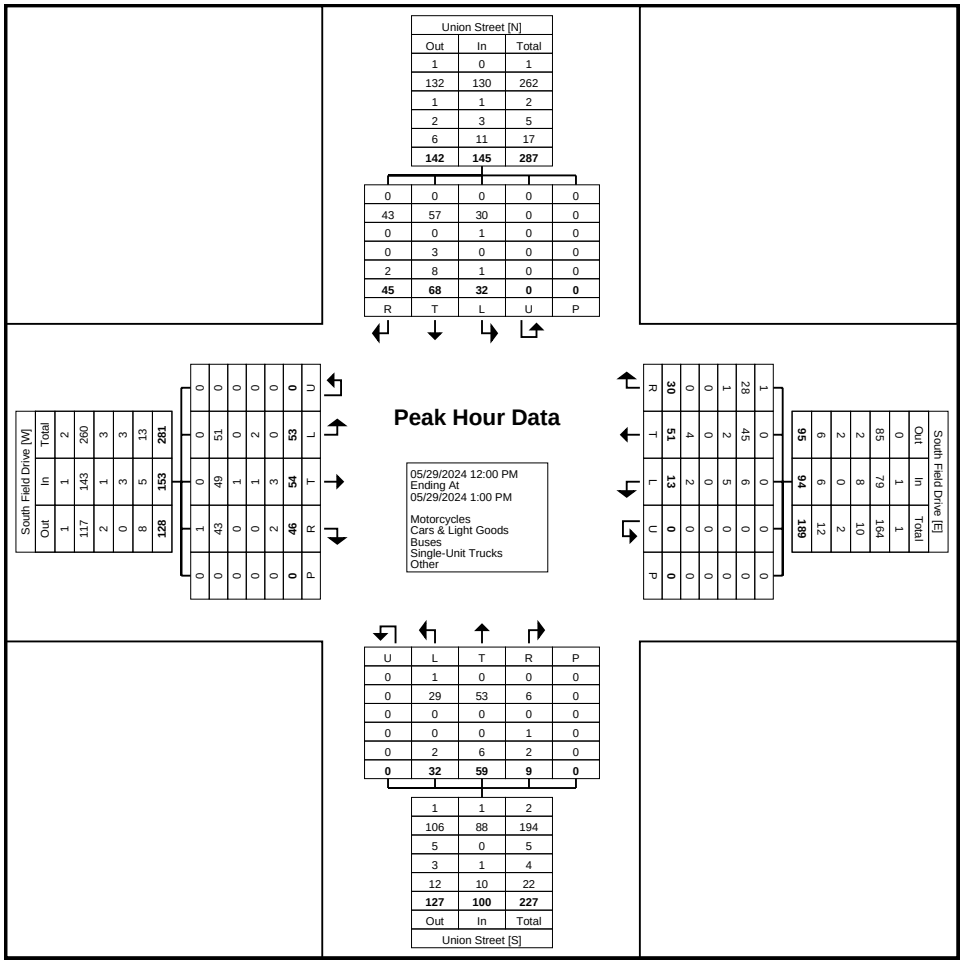
Turning Movement Peak Hour Data (12:00 PM)

Start Time	South Field Drive Eastbound						South Field Drive Westbound						Union Street Northbound						Union Street Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
12:00 PM	8	17	10	0	0	35	1	16	7	0	0	24	11	17	3	0	0	31	11	24	15	0	0	50	140
12:15 PM	14	15	12	0	0	41	1	15	6	0	0	22	11	13	2	0	0	26	4	15	11	0	0	30	119
12:30 PM	16	10	20	0	0	46	4	12	12	0	0	28	5	14	4	0	0	23	8	16	9	0	0	33	130
12:45 PM	15	12	4	0	0	31	7	8	5	0	0	20	5	15	0	0	0	20	9	13	10	0	0	32	103
Total	53	54	46	0	0	153	13	51	30	0	0	94	32	59	9	0	0	100	32	68	45	0	0	145	492
Approach %	34.6	35.3	30.1	0.0	-	-	13.8	54.3	31.9	0.0	-	-	32.0	59.0	9.0	0.0	-	-	22.1	46.9	31.0	0.0	-	-	-
Total %	10.8	11.0	9.3	0.0	-	31.1	2.6	10.4	6.1	0.0	-	19.1	6.5	12.0	1.8	0.0	-	20.3	6.5	13.8	9.1	0.0	-	29.5	-
PHF	0.828	0.794	0.575	0.000	-	0.832	0.464	0.797	0.625	0.000	-	0.839	0.727	0.868	0.563	0.000	-	0.806	0.727	0.708	0.750	0.000	-	0.725	0.879
Motorcycles	0	0	1	0	-	1	0	0	1	0	-	1	1	0	0	0	-	1	0	0	0	0	-	0	3
% Motorcycles	0.0	0.0	2.2	-	-	0.7	0.0	0.0	3.3	-	-	1.1	3.1	0.0	0.0	-	-	1.0	0.0	0.0	0.0	-	-	0.0	0.6
Cars & Light Goods	51	49	43	0	-	143	6	45	28	0	-	79	29	53	6	0	-	88	30	57	43	0	-	130	440
% Cars & Light Goods	96.2	90.7	93.5	-	-	93.5	46.2	88.2	93.3	-	-	84.0	90.6	89.8	66.7	-	-	88.0	93.8	83.8	95.6	-	-	89.7	89.4
Buses	0	1	0	0	-	1	5	2	1	0	-	8	0	0	0	0	-	0	1	0	0	0	-	1	10
% Buses	0.0	1.9	0.0	-	-	0.7	38.5	3.9	3.3	-	-	8.5	0.0	0.0	0.0	-	-	0.0	3.1	0.0	0.0	-	-	0.7	2.0
Single-Unit Trucks	2	1	0	0	-	3	0	0	0	0	-	0	0	0	1	0	-	1	0	3	0	0	-	3	7
% Single-Unit Trucks	3.8	1.9	0.0	-	-	2.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	11.1	-	-	1.0	0.0	4.4	0.0	-	-	2.1	1.4
Articulated Trucks	0	2	2	0	-	4	2	1	0	0	-	3	2	6	2	0	-	10	0	8	2	0	-	10	27
% Articulated Trucks	0.0	3.7	4.3	-	-	2.6	15.4	2.0	0.0	-	-	3.2	6.3	10.2	22.2	-	-	10.0	0.0	11.8	4.4	-	-	6.9	5.5
Bicycles on Road	0	1	0	0	-	1	0	3	0	0	-	3	0	0	0	0	-	0	1	0	0	0	-	1	5
% Bicycles on Road	0.0	1.9	0.0	-	-	0.7	0.0	5.9	0.0	-	-	3.2	0.0	0.0	0.0	-	-	0.0	3.1	0.0	0.0	-	-	0.7	1.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: South Field Drive & Union Street
Site Code: 240259
Start Date: 05/29/2024



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

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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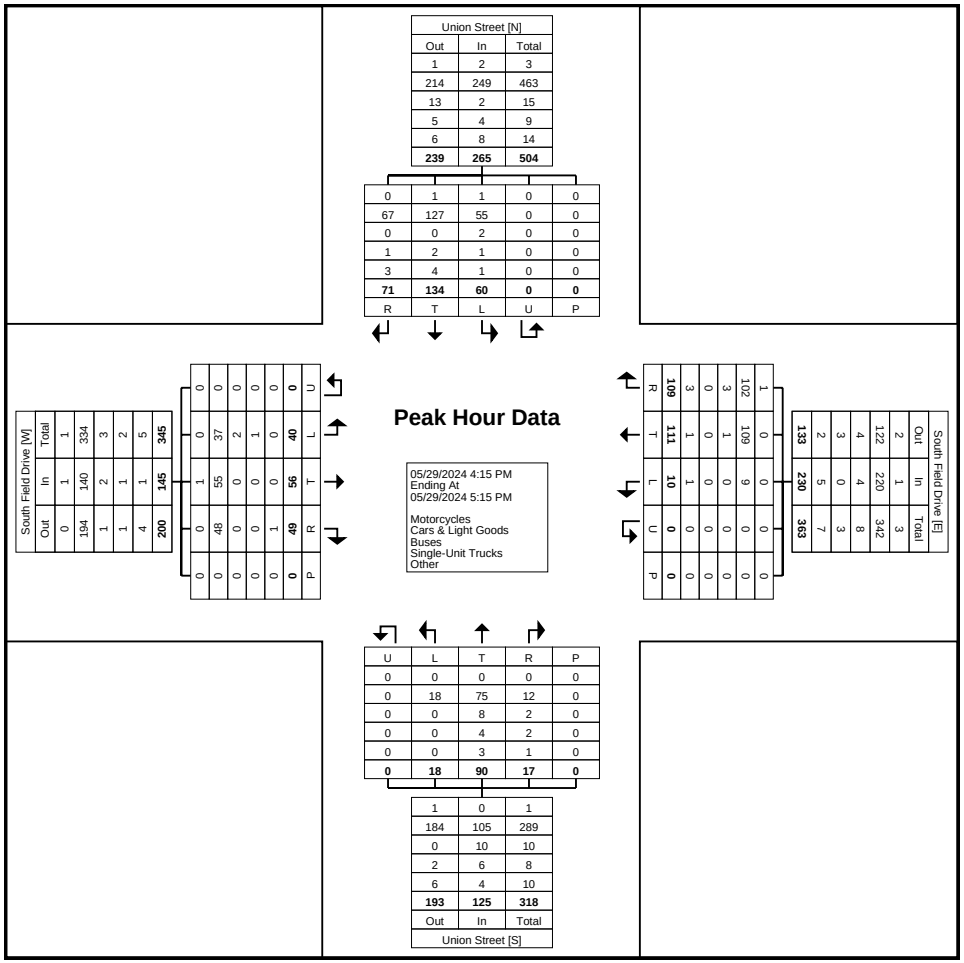
Turning Movement Peak Hour Data (4:15 PM)

Start Time	South Field Drive Eastbound						South Field Drive Westbound						Union Street Northbound						Union Street Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
4:15 PM	4	15	27	0	0	46	1	29	27	0	0	57	6	27	9	0	0	42	12	30	9	0	0	51	196
4:30 PM	10	10	8	0	0	28	1	27	24	0	0	52	3	25	1	0	0	29	22	39	27	0	0	88	197
4:45 PM	10	17	4	0	0	31	5	25	23	0	0	53	3	18	3	0	0	24	14	26	14	0	0	54	162
5:00 PM	16	14	10	0	0	40	3	30	35	0	0	68	6	20	4	0	0	30	12	39	21	0	0	72	210
Total	40	56	49	0	0	145	10	111	109	0	0	230	18	90	17	0	0	125	60	134	71	0	0	265	765
Approach %	27.6	38.6	33.8	0.0	-	-	4.3	48.3	47.4	0.0	-	-	14.4	72.0	13.6	0.0	-	-	22.6	50.6	26.8	0.0	-	-	-
Total %	5.2	7.3	6.4	0.0	-	19.0	1.3	14.5	14.2	0.0	-	30.1	2.4	11.8	2.2	0.0	-	16.3	7.8	17.5	9.3	0.0	-	34.6	-
PHF	0.625	0.824	0.454	0.000	-	0.788	0.500	0.925	0.779	0.000	-	0.846	0.750	0.833	0.472	0.000	-	0.744	0.682	0.859	0.657	0.000	-	0.753	0.911
Motorcycles	0	1	0	0	-	1	0	0	1	0	-	1	0	0	0	0	-	0	1	1	0	0	-	2	4
% Motorcycles	0.0	1.8	0.0	-	-	0.7	0.0	0.0	0.9	-	-	0.4	0.0	0.0	0.0	-	-	0.0	1.7	0.7	0.0	-	-	0.8	0.5
Cars & Light Goods	37	55	48	0	-	140	9	109	102	0	-	220	18	75	12	0	-	105	55	127	67	0	-	249	714
% Cars & Light Goods	92.5	98.2	98.0	-	-	96.6	90.0	98.2	93.6	-	-	95.7	100.0	83.3	70.6	-	-	84.0	91.7	94.8	94.4	-	-	94.0	93.3
Buses	2	0	0	0	-	2	0	1	3	0	-	4	0	8	2	0	-	10	2	0	0	0	-	2	18
% Buses	5.0	0.0	0.0	-	-	1.4	0.0	0.9	2.8	-	-	1.7	0.0	8.9	11.8	-	-	8.0	3.3	0.0	0.0	-	-	0.8	2.4
Single-Unit Trucks	1	0	0	0	-	1	0	0	0	0	-	0	0	4	2	0	-	6	1	2	1	0	-	4	11
% Single-Unit Trucks	2.5	0.0	0.0	-	-	0.7	0.0	0.0	0.0	-	-	0.0	0.0	4.4	11.8	-	-	4.8	1.7	1.5	1.4	-	-	1.5	1.4
Articulated Trucks	0	0	1	0	-	1	1	0	0	0	-	1	0	2	0	0	-	2	0	4	3	0	-	7	11
% Articulated Trucks	0.0	0.0	2.0	-	-	0.7	10.0	0.0	0.0	-	-	0.4	0.0	2.2	0.0	-	-	1.6	0.0	3.0	4.2	-	-	2.6	1.4
Bicycles on Road	0	0	0	0	-	0	0	1	3	0	-	4	0	1	1	0	-	2	1	0	0	0	-	1	7
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.9	2.8	-	-	1.7	0.0	1.1	5.9	-	-	1.6	1.7	0.0	0.0	-	-	0.4	0.9
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: South Field Drive & Union Street
Site Code: 240259
Start Date: 05/29/2024



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

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Arthur Street & Scotch Line Road
Site Code: 240259
Start Date: 05/29/2024

Turning Movement Data

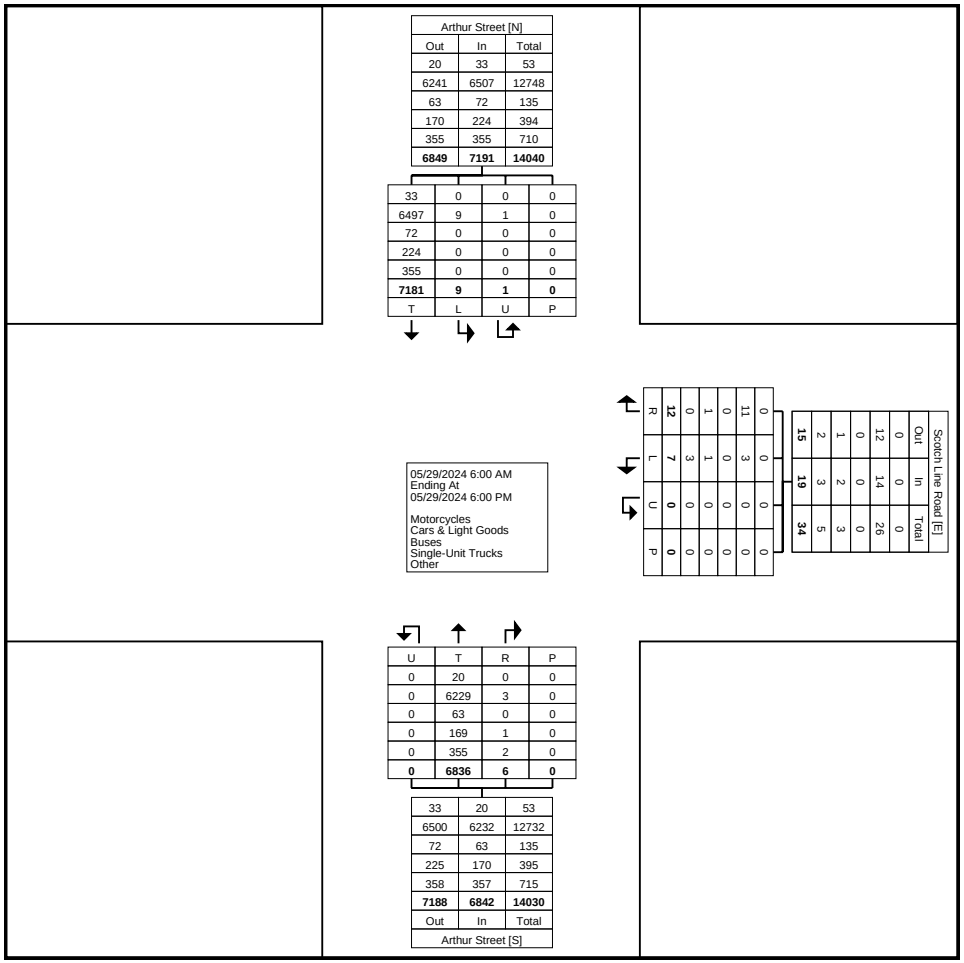
Start Time	Scotch Line Road Westbound					Arthur Street Northbound					Arthur Street Southbound					Int. Total
	Left	Right	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	
6:00 AM	0	0	0	0	0	148	0	0	0	148	0	135	0	0	135	283
6:15 AM	0	0	0	0	0	176	0	0	0	176	1	197	0	0	198	374
6:30 AM	0	0	0	0	0	177	0	0	0	177	0	249	0	0	249	426
6:45 AM	0	1	0	0	1	207	0	0	0	207	0	195	0	0	195	403
Hourly Total	0	1	0	0	1	708	0	0	0	708	1	776	0	0	777	1486
7:00 AM	0	0	0	0	0	186	0	0	0	186	1	215	0	0	216	402
7:15 AM	0	1	0	0	1	193	0	0	0	193	0	233	0	0	233	427
7:30 AM	0	0	0	0	0	190	0	0	0	190	0	264	0	0	264	454
7:45 AM	0	2	0	0	2	256	0	0	0	256	0	276	0	0	276	534
Hourly Total	0	3	0	0	3	825	0	0	0	825	1	988	0	0	989	1817
8:00 AM	0	0	0	0	0	209	0	0	0	209	0	304	0	0	304	513
8:15 AM	1	1	0	0	2	181	0	0	0	181	0	256	0	0	256	439
8:30 AM	1	0	0	0	1	158	1	0	0	159	0	263	0	0	263	423
8:45 AM	0	1	0	0	1	169	0	0	0	169	0	239	0	0	239	409
Hourly Total	2	2	0	0	4	717	1	0	0	718	0	1062	0	0	1062	1784
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:30 AM	0	2	0	0	2	180	1	0	0	181	1	169	0	0	170	353
11:45 AM	1	2	0	0	3	158	0	0	0	158	0	178	0	0	178	339
Hourly Total	1	4	0	0	5	338	1	0	0	339	1	347	0	0	348	692
12:00 PM	0	0	0	0	0	149	0	0	0	149	0	182	0	0	182	331
12:15 PM	1	1	0	0	2	161	0	0	0	161	2	195	0	0	197	360
12:30 PM	0	0	0	0	0	178	0	0	0	178	0	183	0	0	183	361
12:45 PM	0	0	0	0	0	193	1	0	0	194	1	199	0	0	200	394
Hourly Total	1	1	0	0	2	681	1	0	0	682	3	759	0	0	762	1446
1:00 PM	1	0	0	0	1	171	0	0	0	171	1	162	0	0	163	335
1:15 PM	1	0	0	0	1	175	0	0	0	175	0	172	0	0	172	348
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	2	0	0	0	2	346	0	0	0	346	1	334	0	0	335	683
3:00 PM	0	0	0	0	0	216	0	0	0	216	0	236	0	0	236	452
3:15 PM	0	0	0	0	0	258	0	0	0	258	0	241	0	0	241	499
3:30 PM	1	0	0	0	1	253	0	0	0	253	0	253	0	0	253	507
3:45 PM	0	0	0	0	0	263	0	0	0	263	0	215	0	0	215	478
Hourly Total	1	0	0	0	1	990	0	0	0	990	0	945	0	0	945	1936
4:00 PM	0	0	0	0	0	274	0	0	0	274	1	267	0	0	268	542
4:15 PM	0	0	0	0	0	297	0	0	0	297	0	281	1	0	282	579
4:30 PM	0	0	0	0	0	291	0	0	0	291	0	302	0	0	302	593

4:45 PM	0	0	0	0	0	326	1	0	0	327	0	242	0	0	242	569
Hourly Total	0	0	0	0	0	1188	1	0	0	1189	1	1092	1	0	1094	2283
5:00 PM	0	0	0	0	0	300	1	0	0	301	0	236	0	0	236	537
5:15 PM	0	0	0	0	0	278	0	0	0	278	0	238	0	0	238	516
5:30 PM	0	0	0	0	0	237	0	0	0	237	1	227	0	0	228	465
5:45 PM	0	1	0	0	1	228	1	0	0	229	0	177	0	0	177	407
Hourly Total	0	1	0	0	1	1043	2	0	0	1045	1	878	0	0	879	1925
Grand Total	7	12	0	0	19	6836	6	0	0	6842	9	7181	1	0	7191	14052
Approach %	36.8	63.2	0.0	-	-	99.9	0.1	0.0	-	-	0.1	99.9	0.0	-	-	-
Total %	0.0	0.1	0.0	-	0.1	48.6	0.0	0.0	-	48.7	0.1	51.1	0.0	-	51.2	-
Motorcycles	0	0	0	-	0	20	0	0	-	20	0	33	0	-	33	53
% Motorcycles	0.0	0.0	-	-	0.0	0.3	0.0	-	-	0.3	0.0	0.5	0.0	-	0.5	0.4
Cars & Light Goods	3	11	0	-	14	6229	3	0	-	6232	9	6497	1	-	6507	12753
% Cars & Light Goods	42.9	91.7	-	-	73.7	91.1	50.0	-	-	91.1	100.0	90.5	100.0	-	90.5	90.8
Buses	0	0	0	-	0	63	0	0	-	63	0	72	0	-	72	135
% Buses	0.0	0.0	-	-	0.0	0.9	0.0	-	-	0.9	0.0	1.0	0.0	-	1.0	1.0
Single-Unit Trucks	1	1	0	-	2	169	1	0	-	170	0	224	0	-	224	396
% Single-Unit Trucks	14.3	8.3	-	-	10.5	2.5	16.7	-	-	2.5	0.0	3.1	0.0	-	3.1	2.8
Articulated Trucks	0	0	0	-	0	346	1	0	-	347	0	346	0	-	346	693
% Articulated Trucks	0.0	0.0	-	-	0.0	5.1	16.7	-	-	5.1	0.0	4.8	0.0	-	4.8	4.9
Bicycles on Road	3	0	0	-	3	9	1	0	-	10	0	9	0	-	9	22
% Bicycles on Road	42.9	0.0	-	-	15.8	0.1	16.7	-	-	0.1	0.0	0.1	0.0	-	0.1	0.2
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Turning Movement Data Plot

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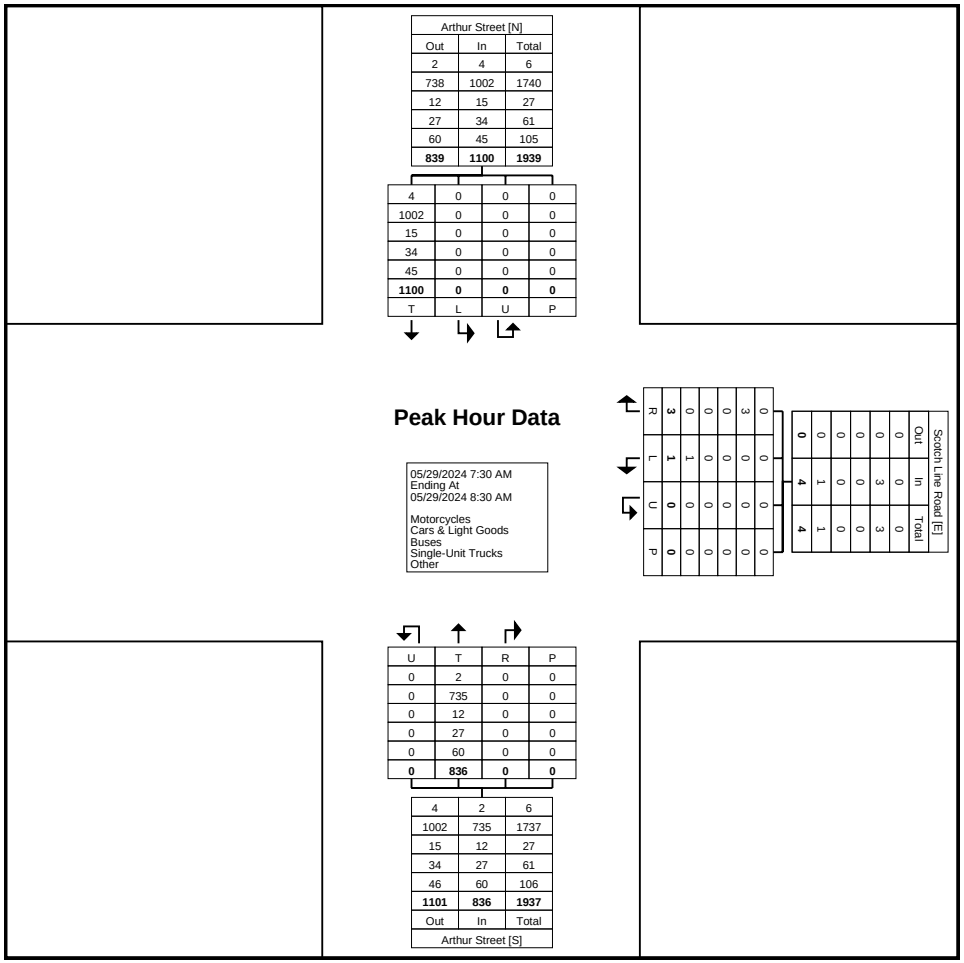
Turning Movement Peak Hour Data (7:30 AM)

Start Time	Scotch Line Road Westbound					Arthur Street Northbound					Arthur Street 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	0	0	0	0	0	190	0	0	0	190	0	264	0	0	264	454
7:45 AM	0	2	0	0	2	256	0	0	0	256	0	276	0	0	276	534
8:00 AM	0	0	0	0	0	209	0	0	0	209	0	304	0	0	304	513
8:15 AM	1	1	0	0	2	181	0	0	0	181	0	256	0	0	256	439
Total	1	3	0	0	4	836	0	0	0	836	0	1100	0	0	1100	1940
Approach %	25.0	75.0	0.0	-	-	100.0	0.0	0.0	-	-	0.0	100.0	0.0	-	-	-
Total %	0.1	0.2	0.0	-	0.2	43.1	0.0	0.0	-	43.1	0.0	56.7	0.0	-	56.7	-
PHF	0.250	0.375	0.000	-	0.500	0.816	0.000	0.000	-	0.816	0.000	0.905	0.000	-	0.905	0.908
Motorcycles	0	0	0	-	0	2	0	0	-	2	0	4	0	-	4	6
% Motorcycles	0.0	0.0	-	-	0.0	0.2	-	-	-	0.2	-	0.4	-	-	0.4	0.3
Cars & Light Goods	0	3	0	-	3	735	0	0	-	735	0	1002	0	-	1002	1740
% Cars & Light Goods	0.0	100.0	-	-	75.0	87.9	-	-	-	87.9	-	91.1	-	-	91.1	89.7
Buses	0	0	0	-	0	12	0	0	-	12	0	15	0	-	15	27
% Buses	0.0	0.0	-	-	0.0	1.4	-	-	-	1.4	-	1.4	-	-	1.4	1.4
Single-Unit Trucks	0	0	0	-	0	27	0	0	-	27	0	34	0	-	34	61
% Single-Unit Trucks	0.0	0.0	-	-	0.0	3.2	-	-	-	3.2	-	3.1	-	-	3.1	3.1
Articulated Trucks	0	0	0	-	0	58	0	0	-	58	0	44	0	-	44	102
% Articulated Trucks	0.0	0.0	-	-	0.0	6.9	-	-	-	6.9	-	4.0	-	-	4.0	5.3
Bicycles on Road	1	0	0	-	1	2	0	0	-	2	0	1	0	-	1	4
% Bicycles on Road	100.0	0.0	-	-	25.0	0.2	-	-	-	0.2	-	0.1	-	-	0.1	0.2
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Arthur Street & Scotch Line Road
Site Code: 240259
Start Date: 05/29/2024



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

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Arthur Street & Scotch Line Road
Site Code: 240259
Start Date: 05/29/2024

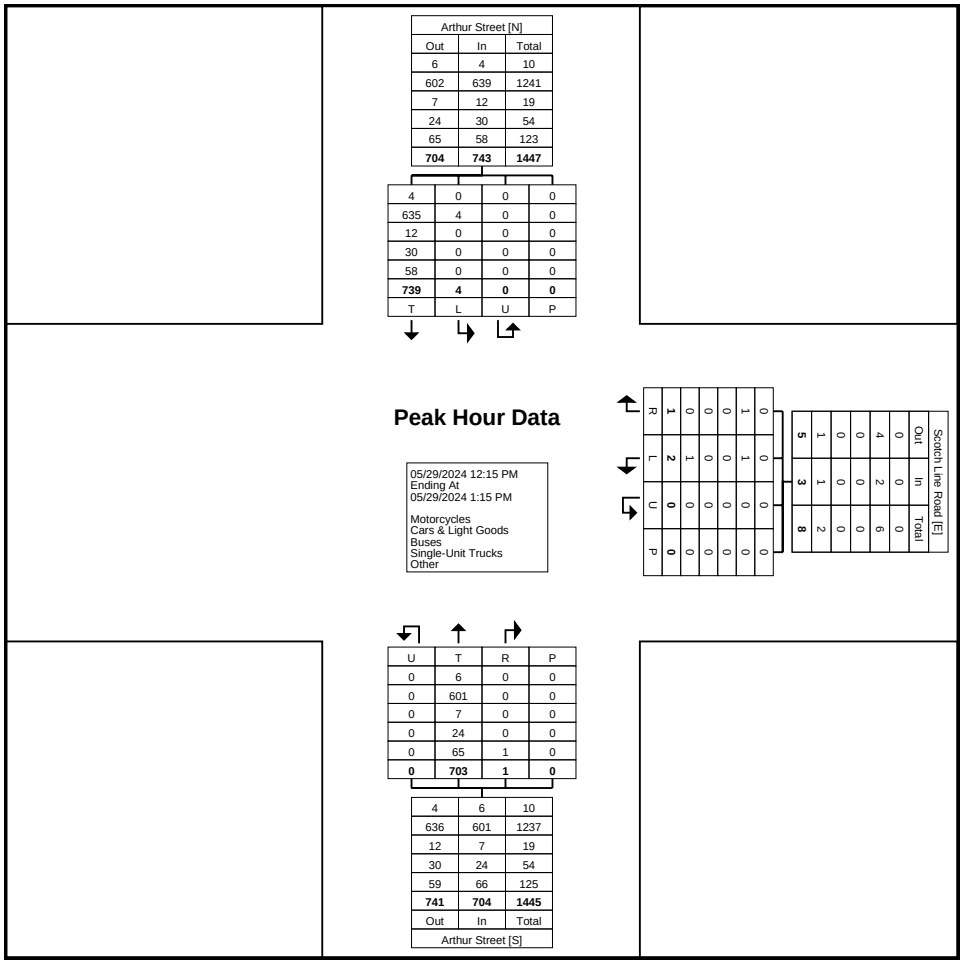
Turning Movement Peak Hour Data (12:15 PM)

Start Time	Scotch Line Road Westbound					Arthur Street Northbound					Arthur Street Southbound					
	Left	Right	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Int. Total
12:15 PM	1	1	0	0	2	161	0	0	0	161	2	195	0	0	197	360
12:30 PM	0	0	0	0	0	178	0	0	0	178	0	183	0	0	183	361
12:45 PM	0	0	0	0	0	193	1	0	0	194	1	199	0	0	200	394
1:00 PM	1	0	0	0	1	171	0	0	0	171	1	162	0	0	163	335
Total	2	1	0	0	3	703	1	0	0	704	4	739	0	0	743	1450
Approach %	66.7	33.3	0.0	-	-	99.9	0.1	0.0	-	-	0.5	99.5	0.0	-	-	-
Total %	0.1	0.1	0.0	-	0.2	48.5	0.1	0.0	-	48.6	0.3	51.0	0.0	-	51.2	-
PHF	0.500	0.250	0.000	-	0.375	0.911	0.250	0.000	-	0.907	0.500	0.928	0.000	-	0.929	0.920
Motorcycles	0	0	0	-	0	6	0	0	-	6	0	4	0	-	4	10
% Motorcycles	0.0	0.0	-	-	0.0	0.9	0.0	-	-	0.9	0.0	0.5	-	-	0.5	0.7
Cars & Light Goods	1	1	0	-	2	601	0	0	-	601	4	635	0	-	639	1242
% Cars & Light Goods	50.0	100.0	-	-	66.7	85.5	0.0	-	-	85.4	100.0	85.9	-	-	86.0	85.7
Buses	0	0	0	-	0	7	0	0	-	7	0	12	0	-	12	19
% Buses	0.0	0.0	-	-	0.0	1.0	0.0	-	-	1.0	0.0	1.6	-	-	1.6	1.3
Single-Unit Trucks	0	0	0	-	0	24	0	0	-	24	0	30	0	-	30	54
% Single-Unit Trucks	0.0	0.0	-	-	0.0	3.4	0.0	-	-	3.4	0.0	4.1	-	-	4.0	3.7
Articulated Trucks	0	0	0	-	0	65	1	0	-	66	0	57	0	-	57	123
% Articulated Trucks	0.0	0.0	-	-	0.0	9.2	100.0	-	-	9.4	0.0	7.7	-	-	7.7	8.5
Bicycles on Road	1	0	0	-	1	0	0	0	-	0	0	1	0	-	1	2
% Bicycles on Road	50.0	0.0	-	-	33.3	0.0	0.0	-	-	0.0	0.0	0.1	-	-	0.1	0.1
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Arthur Street & Scotch Line Road
Site Code: 240259
Start Date: 05/29/2024



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

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Arthur Street & Scotch Line Road
Site Code: 240259
Start Date: 05/29/2024

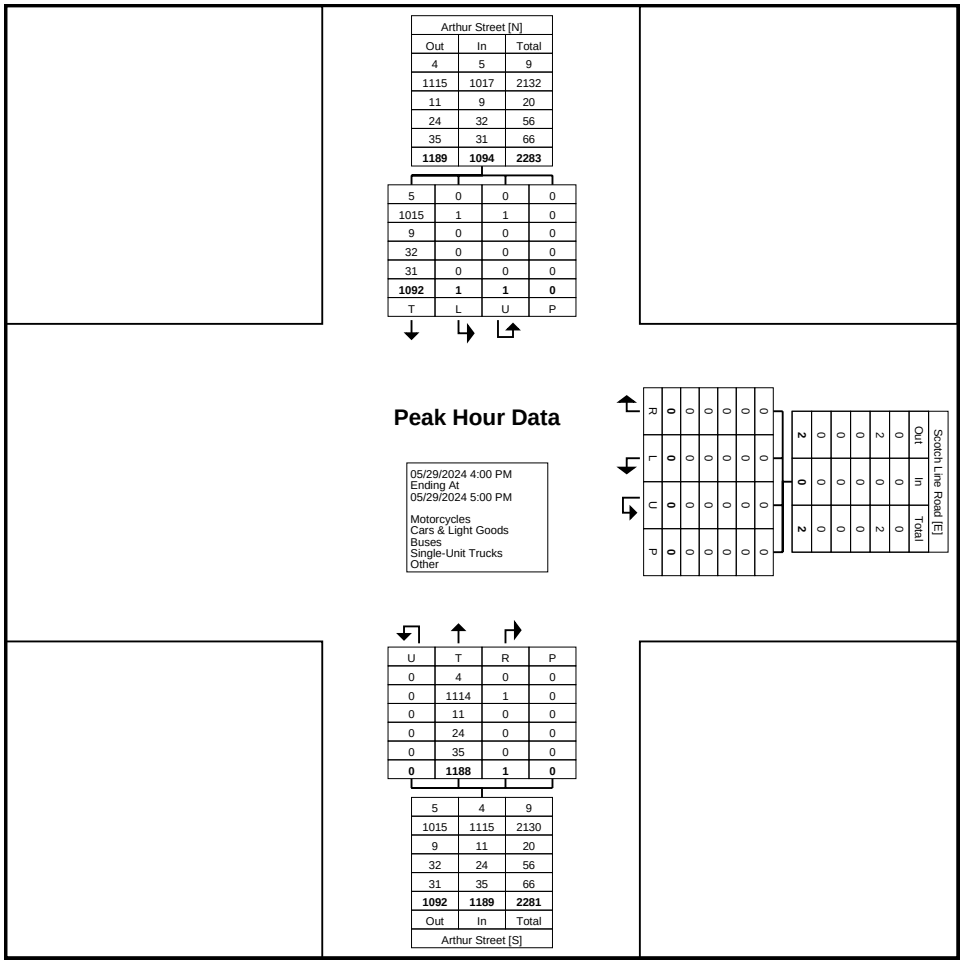
Turning Movement Peak Hour Data (4:00 PM)

Start Time	Scotch Line Road Westbound					Arthur Street Northbound					Arthur Street Southbound					
	Left	Right	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Int. Total
4:00 PM	0	0	0	0	0	274	0	0	0	274	1	267	0	0	268	542
4:15 PM	0	0	0	0	0	297	0	0	0	297	0	281	1	0	282	579
4:30 PM	0	0	0	0	0	291	0	0	0	291	0	302	0	0	302	593
4:45 PM	0	0	0	0	0	326	1	0	0	327	0	242	0	0	242	569
Total	0	0	0	0	0	1188	1	0	0	1189	1	1092	1	0	1094	2283
Approach %	0.0	0.0	0.0	-	-	99.9	0.1	0.0	-	-	0.1	99.8	0.1	-	-	-
Total %	0.0	0.0	0.0	-	0.0	52.0	0.0	0.0	-	52.1	0.0	47.8	0.0	-	47.9	-
PHF	0.000	0.000	0.000	-	0.000	0.911	0.250	0.000	-	0.909	0.250	0.904	0.250	-	0.906	0.962
Motorcycles	0	0	0	-	0	4	0	0	-	4	0	5	0	-	5	9
% Motorcycles	-	-	-	-	-	0.3	0.0	-	-	0.3	0.0	0.5	0.0	-	0.5	0.4
Cars & Light Goods	0	0	0	-	0	1114	1	0	-	1115	1	1015	1	-	1017	2132
% Cars & Light Goods	-	-	-	-	-	93.8	100.0	-	-	93.8	100.0	92.9	100.0	-	93.0	93.4
Buses	0	0	0	-	0	11	0	0	-	11	0	9	0	-	9	20
% Buses	-	-	-	-	-	0.9	0.0	-	-	0.9	0.0	0.8	0.0	-	0.8	0.9
Single-Unit Trucks	0	0	0	-	0	24	0	0	-	24	0	32	0	-	32	56
% Single-Unit Trucks	-	-	-	-	-	2.0	0.0	-	-	2.0	0.0	2.9	0.0	-	2.9	2.5
Articulated Trucks	0	0	0	-	0	31	0	0	-	31	0	29	0	-	29	60
% Articulated Trucks	-	-	-	-	-	2.6	0.0	-	-	2.6	0.0	2.7	0.0	-	2.7	2.6
Bicycles on Road	0	0	0	-	0	4	0	0	-	4	0	2	0	-	2	6
% Bicycles on Road	-	-	-	-	-	0.3	0.0	-	-	0.3	0.0	0.2	0.0	-	0.2	0.3
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Arthur Street & Scotch Line Road
Site Code: 240259
Start Date: 05/29/2024



Turning Movement Peak Hour Data Plot (4:00 PM)

Region of Waterloo

CURRENT TRAFFIC SIGNAL TIMING

INT # 840 | ARTHUR STREET @ Listowel Road-Union Street | T08-50/ 14WOOL

Date Prepared: November 13, 2025

Mode of Control: Pre-timed running SEMI-ACTUATED

Left Info					
Actuated	NB	LT	-	ARTHUR STREET
Actuated	WB	LT	-	UNION STREET

*Offsets are a percentage of the cycle length and refers to the beginning of Main Street green

Max 1 06:00-15:00 Mon-Fri, 0830-20:00 Sat, 09:00-18:00 Sun

ARTHUR STREET

NBL	Green Arrow	Min	7.0	seconds			
		Ext	5.0	seconds			
		Max	12.0	seconds			
NBL	Amber Arrow		3.0	seconds			
All Red			1.0	seconds			
Green			45.0	seconds			
Amber			3.7	seconds	Walk	25.0	seconds
All Red			2.7	seconds	FDW	20.0	seconds

Listowel Road-Union Street

				Pedestrian Call		
Green	Min	10.0	seconds	Green/Walk	7.0	seconds
	Ext	3.0	seconds	Green/FDW	20.0	seconds
	Max	27.0	seconds	Green/SDW	0.0	seconds
Amber		3.3	seconds	Amber	3.3	seconds
All Red		3.5	seconds	All Red	3.5	seconds
TOTAL		101.2	seconds			

Min=Minimum Time
Ext=Extension Time
Max=Maximum Time

This signal timing cannot be presented as evidence in a court of law.

Max 2 15:00-20:00 Mon-Fri

ARTHUR STREET

NBL	Green Arrow	Min	7.0	seconds			
		Ext	5.0	seconds			
		Max	25.0	seconds			
NBL	Amber Arrow		3.0	seconds			
All Red			1.0	seconds			
Green			40.0	seconds			
Amber			3.7	seconds	Walk	20.0	seconds
All Red			2.7	seconds	FDW	20.0	seconds

Listowel Road-Union Street

WBL	Green Arrow	Min	7.0	seconds			
		Ext	3.0	seconds			
		Max	15.0	seconds			
WBL	Amber Arrow		3.0	seconds			
All Red			1.0	seconds			
					Pedestrian Call		
Green		Min	10.0	seconds	Green/Walk	7.0	seconds
		Ext	3.0	seconds	Green/FDW	20.0	seconds
		Max	25.0	seconds	Green/SDW	0.0	seconds
Amber			3.3	seconds	Amber	3.3	seconds
All Red			3.5	seconds	All Red	3.5	seconds
TOTAL			126.2	seconds			

Max 3 All other times

ARTHUR STREET

Green			50.0	seconds			
Amber			3.7	seconds	Walk	30.0	seconds
All Red			2.7	seconds	FDW	20.0	seconds

Listowel Road-Union Street

					Pedestrian Call		
Green		Min	10.0	seconds	Green/Walk	7.0	seconds
		Ext	3.0	seconds	Green/FDW	20.0	seconds
		Max	25.0	seconds	Green/SDW	0.0	seconds
Amber			3.3	seconds	Amber	3.3	seconds
All Red			3.5	seconds	All Red	3.5	seconds
TOTAL			88.2	seconds			

Min=Minimum Time
Ext=Extension Time
Max=Maximum Time

This signal timing cannot be presented as evidence in a court of law.

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Arthur Street S & Listowel Road
Site Code: 240259
Start Date: 12/03/2025

Turning Movement Data

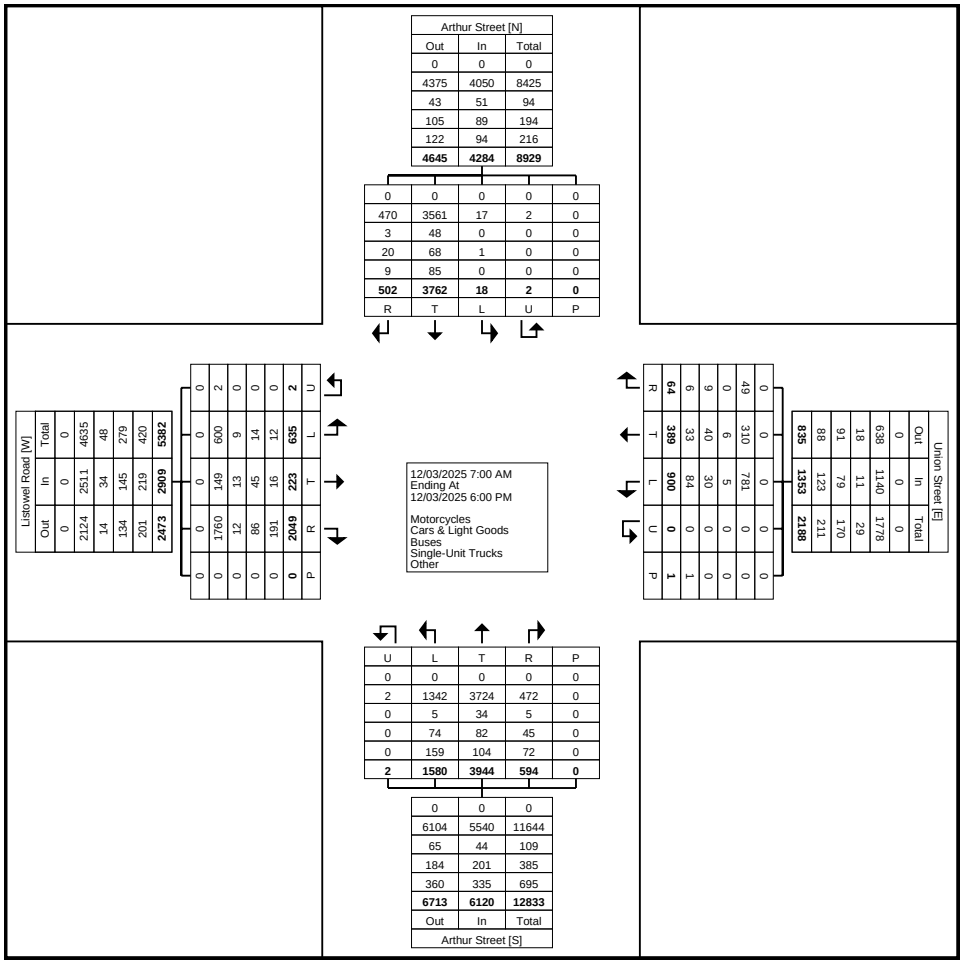
Start Time	Listowel Road Eastbound						Union Street Westbound						Arthur Street Northbound						Arthur Street Southbound						
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Int. Total
7:00 AM	14	5	79	0	0	98	19	9	3	0	0	31	31	93	29	0	0	153	0	123	12	0	0	135	417
7:15 AM	22	0	84	0	0	106	29	13	1	0	0	43	48	92	17	0	0	157	1	126	10	0	0	137	443
7:30 AM	16	0	113	0	0	129	15	9	1	0	0	25	41	101	32	0	0	174	0	157	10	0	0	167	495
7:45 AM	38	0	94	0	0	132	29	12	0	0	0	41	44	160	33	1	0	238	0	129	13	0	0	142	553
Hourly Total	90	5	370	0	0	465	92	43	5	0	0	140	164	446	111	1	0	722	1	535	45	0	0	581	1908
8:00 AM	20	13	106	0	0	139	40	6	2	0	0	48	46	106	45	0	0	197	0	142	5	0	0	147	531
8:15 AM	16	4	82	0	0	102	38	11	1	0	0	50	46	98	19	0	0	163	0	139	8	0	0	147	462
8:30 AM	27	9	122	0	0	158	16	10	2	0	0	28	46	111	21	0	0	178	0	133	7	0	0	140	504
8:45 AM	23	14	70	0	0	107	17	11	1	0	0	29	46	114	15	0	0	175	0	141	6	0	0	147	458
Hourly Total	86	40	380	0	0	506	111	38	6	0	0	155	184	429	100	0	0	713	0	555	26	0	0	581	1955
9:00 AM	21	9	51	0	0	81	17	5	1	0	0	23	39	102	19	0	0	160	0	114	14	0	0	128	392
9:15 AM	18	8	80	0	0	106	11	6	3	0	0	20	45	94	18	0	0	157	0	128	9	0	0	137	420
9:30 AM	16	6	66	0	0	88	13	3	1	0	1	17	40	88	15	0	0	143	1	131	10	0	0	142	390
9:45 AM	13	12	54	0	0	79	8	6	2	0	0	16	60	94	18	0	0	172	0	123	12	0	0	135	402
Hourly Total	68	35	251	0	0	354	49	20	7	0	1	76	184	378	70	0	0	632	1	496	45	0	0	542	1604
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:30 AM	22	10	58	0	0	90	15	15	3	0	0	33	39	111	19	0	0	169	2	121	14	0	0	137	429
11:45 AM	20	4	50	1	0	75	19	6	1	0	0	26	46	104	20	0	0	170	2	132	15	0	0	149	420
Hourly Total	42	14	108	1	0	165	34	21	4	0	0	59	85	215	39	0	0	339	4	253	29	0	0	286	849
12:00 PM	33	8	67	0	0	108	23	15	4	0	0	42	42	133	11	0	0	186	0	99	17	0	0	116	452
12:15 PM	21	8	42	0	0	71	15	5	4	0	0	24	40	98	11	0	0	149	0	102	32	0	0	134	378
12:30 PM	21	10	57	0	0	88	20	14	0	0	0	34	39	104	7	0	0	150	1	97	24	0	0	122	394
12:45 PM	13	4	67	0	0	84	24	7	1	0	0	32	45	133	15	0	0	193	1	91	20	1	0	113	422
Hourly Total	88	30	233	0	0	351	82	41	9	0	0	132	166	468	44	0	0	678	2	389	93	1	0	485	1646
1:00 PM	19	9	48	0	0	76	13	9	0	0	0	22	38	104	15	0	0	157	1	102	24	0	0	127	382
1:15 PM	12	7	58	0	0	77	14	11	2	0	0	27	51	115	14	0	0	180	2	108	15	0	0	125	409
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	31	16	106	0	0	153	27	20	2	0	0	49	89	219	29	0	0	337	3	210	39	0	0	252	791
3:00 PM	14	4	49	0	0	67	52	11	0	0	0	63	46	141	17	0	0	204	1	119	18	0	0	138	472
3:15 PM	14	6	55	0	0	75	36	16	2	0	0	54	75	133	14	0	0	222	0	110	26	0	0	136	487
3:30 PM	18	8	62	0	0	88	36	21	2	0	0	59	51	125	16	0	0	192	1	116	13	0	0	130	469
3:45 PM	17	6	47	0	0	70	37	10	3	0	0	50	73	161	13	0	0	247	1	107	16	0	0	124	491
Hourly Total	63	24	213	0	0	300	161	58	7	0	0	226	245	560	60	0	0	865	3	452	73	0	0	528	1919
4:00 PM	20	9	65	0	0	94	46	19	4	0	0	69	62	154	13	0	0	229	0	111	20	1	0	132	524
4:15 PM	15	9	58	0	0	82	45	14	3	0	0	62	76	157	9	0	0	242	0	112	18	0	0	130	516

4:30 PM	19	18	62	0	0	99	65	29	3	0	0	97	74	159	14	0	0	247	0	115	22	0	0	137	580
4:45 PM	24	12	67	1	0	104	86	26	3	0	0	115	58	159	13	1	0	231	0	111	21	0	0	132	582
Hourly Total	78	48	252	1	0	379	242	88	13	0	0	343	270	629	49	1	0	949	0	449	81	1	0	531	2202
5:00 PM	17	2	33	0	0	52	38	22	3	0	0	63	42	124	24	0	0	190	3	102	20	0	0	125	430
5:15 PM	34	0	34	0	0	68	27	16	3	0	0	46	48	149	35	0	0	232	0	121	19	0	0	140	486
5:30 PM	20	4	27	0	0	51	20	13	2	0	0	35	47	169	18	0	0	234	1	94	23	0	0	118	438
5:45 PM	18	5	42	0	0	65	17	9	3	0	0	29	56	158	15	0	0	229	0	106	9	0	0	115	438
Hourly Total	89	11	136	0	0	236	102	60	11	0	0	173	193	600	92	0	0	885	4	423	71	0	0	498	1792
Grand Total	635	223	2049	2	0	2909	900	389	64	0	1	1353	1580	3944	594	2	0	6120	18	3762	502	2	0	4284	14666
Approach %	21.8	7.7	70.4	0.1	-	-	66.5	28.8	4.7	0.0	-	-	25.8	64.4	9.7	0.0	-	-	0.4	87.8	11.7	0.0	-	-	-
Total %	4.3	1.5	14.0	0.0	-	19.8	6.1	2.7	0.4	0.0	-	9.2	10.8	26.9	4.1	0.0	-	41.7	0.1	25.7	3.4	0.0	-	29.2	-
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0
Cars & Light Goods	600	149	1760	2	-	2511	781	310	49	0	-	1140	1342	3724	472	2	-	5540	17	3561	470	2	-	4050	13241
% Cars & Light Goods	94.5	66.8	85.9	100.0	-	86.3	86.8	79.7	76.6	-	-	84.3	84.9	94.4	79.5	100.0	-	90.5	94.4	94.7	93.6	100.0	-	94.5	90.3
Buses	9	13	12	0	-	34	5	6	0	0	-	11	5	34	5	0	-	44	0	48	3	0	-	51	140
% Buses	1.4	5.8	0.6	0.0	-	1.2	0.6	1.5	0.0	-	-	0.8	0.3	0.9	0.8	0.0	-	0.7	0.0	1.3	0.6	0.0	-	1.2	1.0
Single-Unit Trucks	14	45	86	0	-	145	30	40	9	0	-	79	74	82	45	0	-	201	1	68	20	0	-	89	514
% Single-Unit Trucks	2.2	20.2	4.2	0.0	-	5.0	3.3	10.3	14.1	-	-	5.8	4.7	2.1	7.6	0.0	-	3.3	5.6	1.8	4.0	0.0	-	2.1	3.5
Articulated Trucks	12	16	189	0	-	217	84	33	6	0	-	123	159	104	72	0	-	335	0	84	9	0	-	93	768
% Articulated Trucks	1.9	7.2	9.2	0.0	-	7.5	9.3	8.5	9.4	-	-	9.1	10.1	2.6	12.1	0.0	-	5.5	0.0	2.2	1.8	0.0	-	2.2	5.2
Bicycles on Road	0	0	2	0	-	2	0	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	1	3
% Bicycles on Road	0.0	0.0	0.1	0.0	-	0.1	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Arthur Street S & Listowel Road
Site Code: 240259
Start Date: 12/03/2025



Turning Movement Data Plot

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Arthur Street S & Listowel Road
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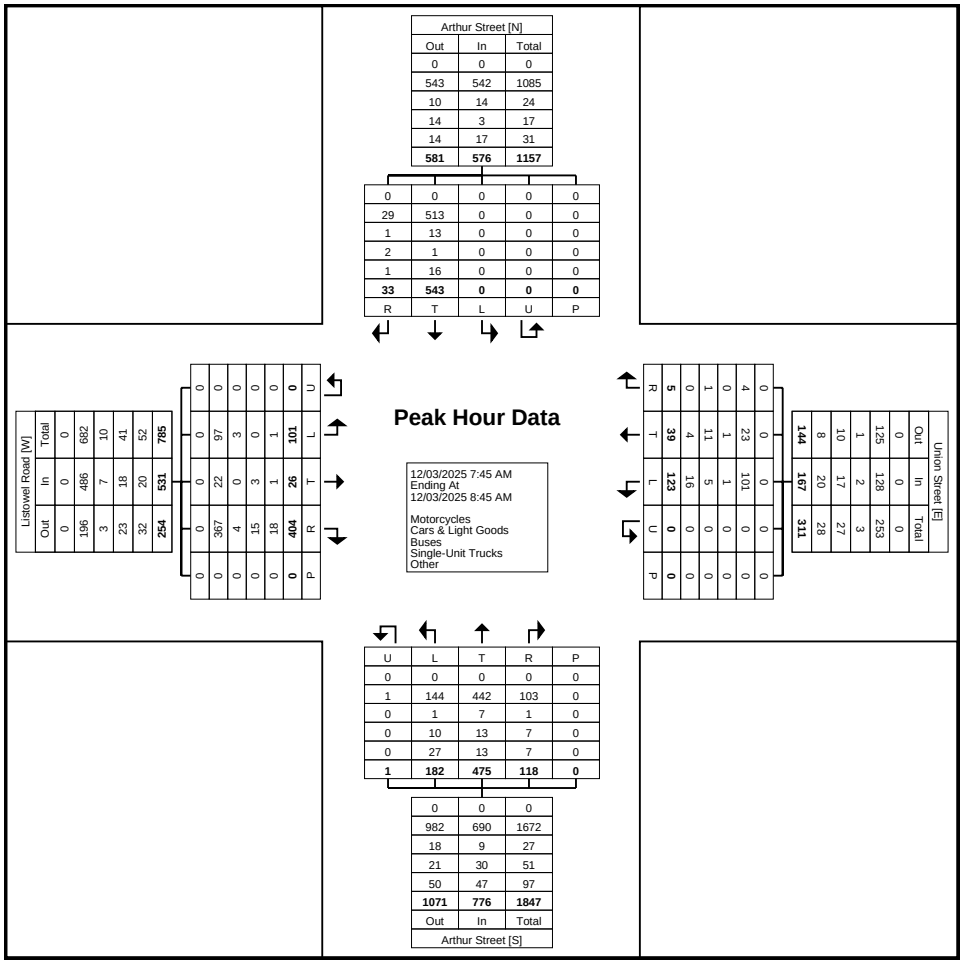
Turning Movement Peak Hour Data (7:45 AM)

Start Time	Listowel Road Eastbound						Union Street Westbound						Arthur Street Northbound						Arthur Street 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
7:45 AM	38	0	94	0	0	132	29	12	0	0	0	41	44	160	33	1	0	238	0	129	13	0	0	142	553
8:00 AM	20	13	106	0	0	139	40	6	2	0	0	48	46	106	45	0	0	197	0	142	5	0	0	147	531
8:15 AM	16	4	82	0	0	102	38	11	1	0	0	50	46	98	19	0	0	163	0	139	8	0	0	147	462
8:30 AM	27	9	122	0	0	158	16	10	2	0	0	28	46	111	21	0	0	178	0	133	7	0	0	140	504
Total	101	26	404	0	0	531	123	39	5	0	0	167	182	475	118	1	0	776	0	543	33	0	0	576	2050
Approach %	19.0	4.9	76.1	0.0	-	-	73.7	23.4	3.0	0.0	-	-	23.5	61.2	15.2	0.1	-	-	0.0	94.3	5.7	0.0	-	-	-
Total %	4.9	1.3	19.7	0.0	-	25.9	6.0	1.9	0.2	0.0	-	8.1	8.9	23.2	5.8	0.0	-	37.9	0.0	26.5	1.6	0.0	-	28.1	-
PHF	0.664	0.500	0.828	0.000	-	0.840	0.769	0.813	0.625	0.000	-	0.835	0.989	0.742	0.656	0.250	-	0.815	0.000	0.956	0.635	0.000	-	0.980	0.927
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	-	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	97	22	367	0	-	486	101	23	4	0	-	128	144	442	103	1	-	690	0	513	29	0	-	542	1846
% Cars & Light Goods	96.0	84.6	90.8	-	-	91.5	82.1	59.0	80.0	-	-	76.6	79.1	93.1	87.3	100.0	-	88.9	-	94.5	87.9	-	-	94.1	90.0
Buses	3	0	4	0	-	7	1	1	0	0	-	2	1	7	1	0	-	9	0	13	1	0	-	14	32
% Buses	3.0	0.0	1.0	-	-	1.3	0.8	2.6	0.0	-	-	1.2	0.5	1.5	0.8	0.0	-	1.2	-	2.4	3.0	-	-	2.4	1.6
Single-Unit Trucks	0	3	15	0	-	18	5	11	1	0	-	17	10	13	7	0	-	30	0	1	2	0	-	3	68
% Single-Unit Trucks	0.0	11.5	3.7	-	-	3.4	4.1	28.2	20.0	-	-	10.2	5.5	2.7	5.9	0.0	-	3.9	-	0.2	6.1	-	-	0.5	3.3
Articulated Trucks	1	1	18	0	-	20	16	4	0	0	-	20	27	13	7	0	-	47	0	15	1	0	-	16	103
% Articulated Trucks	1.0	3.8	4.5	-	-	3.8	13.0	10.3	0.0	-	-	12.0	14.8	2.7	5.9	0.0	-	6.1	-	2.8	3.0	-	-	2.8	5.0
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	1	1
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	-	0.2	0.0	-	-	0.2	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Arthur Street S & Listowel Road
Site Code: 240259
Start Date: 12/03/2025



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

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Arthur Street S & Listowel Road
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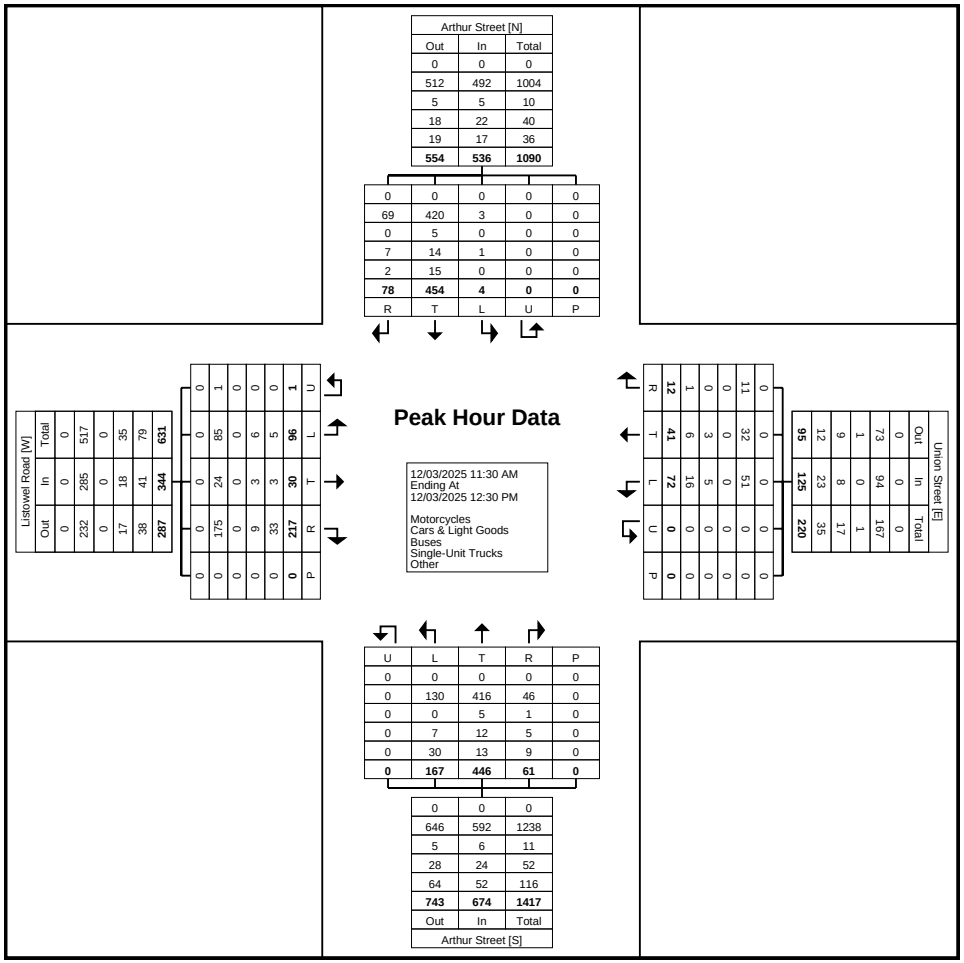
Turning Movement Peak Hour Data (11:30 AM)

Start Time	Listowel Road Eastbound						Union Street Westbound						Arthur Street Northbound						Arthur Street Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
11:30 AM	22	10	58	0	0	90	15	15	3	0	0	33	39	111	19	0	0	169	2	121	14	0	0	137	429
11:45 AM	20	4	50	1	0	75	19	6	1	0	0	26	46	104	20	0	0	170	2	132	15	0	0	149	420
12:00 PM	33	8	67	0	0	108	23	15	4	0	0	42	42	133	11	0	0	186	0	99	17	0	0	116	452
12:15 PM	21	8	42	0	0	71	15	5	4	0	0	24	40	98	11	0	0	149	0	102	32	0	0	134	378
Total	96	30	217	1	0	344	72	41	12	0	0	125	167	446	61	0	0	674	4	454	78	0	0	536	1679
Approach %	27.9	8.7	63.1	0.3	-	-	57.6	32.8	9.6	0.0	-	-	24.8	66.2	9.1	0.0	-	-	0.7	84.7	14.6	0.0	-	-	-
Total %	5.7	1.8	12.9	0.1	-	20.5	4.3	2.4	0.7	0.0	-	7.4	9.9	26.6	3.6	0.0	-	40.1	0.2	27.0	4.6	0.0	-	31.9	-
PHF	0.727	0.750	0.810	0.250	-	0.796	0.783	0.683	0.750	0.000	-	0.744	0.908	0.838	0.763	0.000	-	0.906	0.500	0.860	0.609	0.000	-	0.899	0.929
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	85	24	175	1	-	285	51	32	11	0	-	94	130	416	46	0	-	592	3	420	69	0	-	492	1463
% Cars & Light Goods	88.5	80.0	80.6	100.0	-	82.8	70.8	78.0	91.7	-	-	75.2	77.8	93.3	75.4	-	-	87.8	75.0	92.5	88.5	-	-	91.8	87.1
Buses	0	0	0	0	-	0	0	0	0	0	-	0	0	5	1	0	-	6	0	5	0	0	-	5	11
% Buses	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	1.1	1.6	-	-	0.9	0.0	1.1	0.0	-	-	0.9	0.7
Single-Unit Trucks	6	3	9	0	-	18	5	3	0	0	-	8	7	12	5	0	-	24	1	14	7	0	-	22	72
% Single-Unit Trucks	6.3	10.0	4.1	0.0	-	5.2	6.9	7.3	0.0	-	-	6.4	4.2	2.7	8.2	-	-	3.6	25.0	3.1	9.0	-	-	4.1	4.3
Articulated Trucks	5	3	33	0	-	41	16	6	1	0	-	23	30	13	9	0	-	52	0	15	2	0	-	17	133
% Articulated Trucks	5.2	10.0	15.2	0.0	-	11.9	22.2	14.6	8.3	-	-	18.4	18.0	2.9	14.8	-	-	7.7	0.0	3.3	2.6	-	-	3.2	7.9
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Arthur Street S & Listowel Road
Site Code: 240259
Start Date: 12/03/2025



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

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5A-150 Pinebush Rd

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

Count Name: Arthur Street S & Listowel Road
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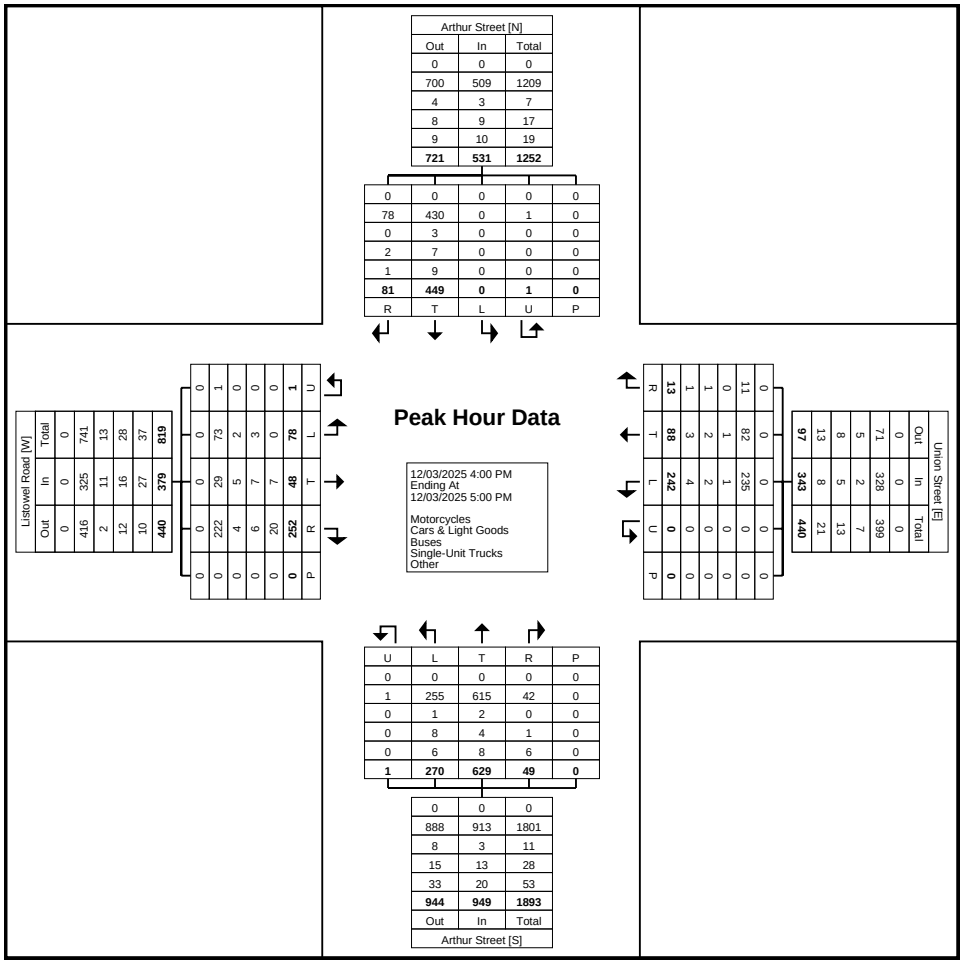
Turning Movement Peak Hour Data (4:00 PM)

Start Time	Listowel Road Eastbound						Union Street Westbound						Arthur Street Northbound						Arthur Street Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
4:00 PM	20	9	65	0	0	94	46	19	4	0	0	69	62	154	13	0	0	229	0	111	20	1	0	132	524
4:15 PM	15	9	58	0	0	82	45	14	3	0	0	62	76	157	9	0	0	242	0	112	18	0	0	130	516
4:30 PM	19	18	62	0	0	99	65	29	3	0	0	97	74	159	14	0	0	247	0	115	22	0	0	137	580
4:45 PM	24	12	67	1	0	104	86	26	3	0	0	115	58	159	13	1	0	231	0	111	21	0	0	132	582
Total	78	48	252	1	0	379	242	88	13	0	0	343	270	629	49	1	0	949	0	449	81	1	0	531	2202
Approach %	20.6	12.7	66.5	0.3	-	-	70.6	25.7	3.8	0.0	-	-	28.5	66.3	5.2	0.1	-	-	0.0	84.6	15.3	0.2	-	-	-
Total %	3.5	2.2	11.4	0.0	-	17.2	11.0	4.0	0.6	0.0	-	15.6	12.3	28.6	2.2	0.0	-	43.1	0.0	20.4	3.7	0.0	-	24.1	-
PHF	0.813	0.667	0.940	0.250	-	0.911	0.703	0.759	0.813	0.000	-	0.746	0.888	0.989	0.875	0.250	-	0.961	0.000	0.976	0.920	0.250	-	0.969	0.946
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	0.0
Cars & Light Goods	73	29	222	1	-	325	235	82	11	0	-	328	255	615	42	1	-	913	0	430	78	1	-	509	2075
% Cars & Light Goods	93.6	60.4	88.1	100.0	-	85.8	97.1	93.2	84.6	-	-	95.6	94.4	97.8	85.7	100.0	-	96.2	-	95.8	96.3	100.0	-	95.9	94.2
Buses	2	5	4	0	-	11	1	1	0	0	-	2	1	2	0	0	-	3	0	3	0	0	-	3	19
% Buses	2.6	10.4	1.6	0.0	-	2.9	0.4	1.1	0.0	-	-	0.6	0.4	0.3	0.0	0.0	-	0.3	-	0.7	0.0	0.0	-	0.6	0.9
Single-Unit Trucks	3	7	6	0	-	16	2	2	1	0	-	5	8	4	1	0	-	13	0	7	2	0	-	9	43
% Single-Unit Trucks	3.8	14.6	2.4	0.0	-	4.2	0.8	2.3	7.7	-	-	1.5	3.0	0.6	2.0	0.0	-	1.4	-	1.6	2.5	0.0	-	1.7	2.0
Articulated Trucks	0	7	20	0	-	27	4	3	1	0	-	8	6	8	6	0	-	20	0	9	1	0	-	10	65
% Articulated Trucks	0.0	14.6	7.9	0.0	-	7.1	1.7	3.4	7.7	-	-	2.3	2.2	1.3	12.2	0.0	-	2.1	-	2.0	1.2	0.0	-	1.9	3.0
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
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Count Name: Arthur Street S & Listowel Road
Site Code: 240259
Start Date: 12/03/2025



Turning Movement Peak Hour Data Plot (4:00 PM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: New Jerusalem Road & Scotch Line Road
Site Code: 240259
Start Date: 12/03/2025

Turning Movement Data

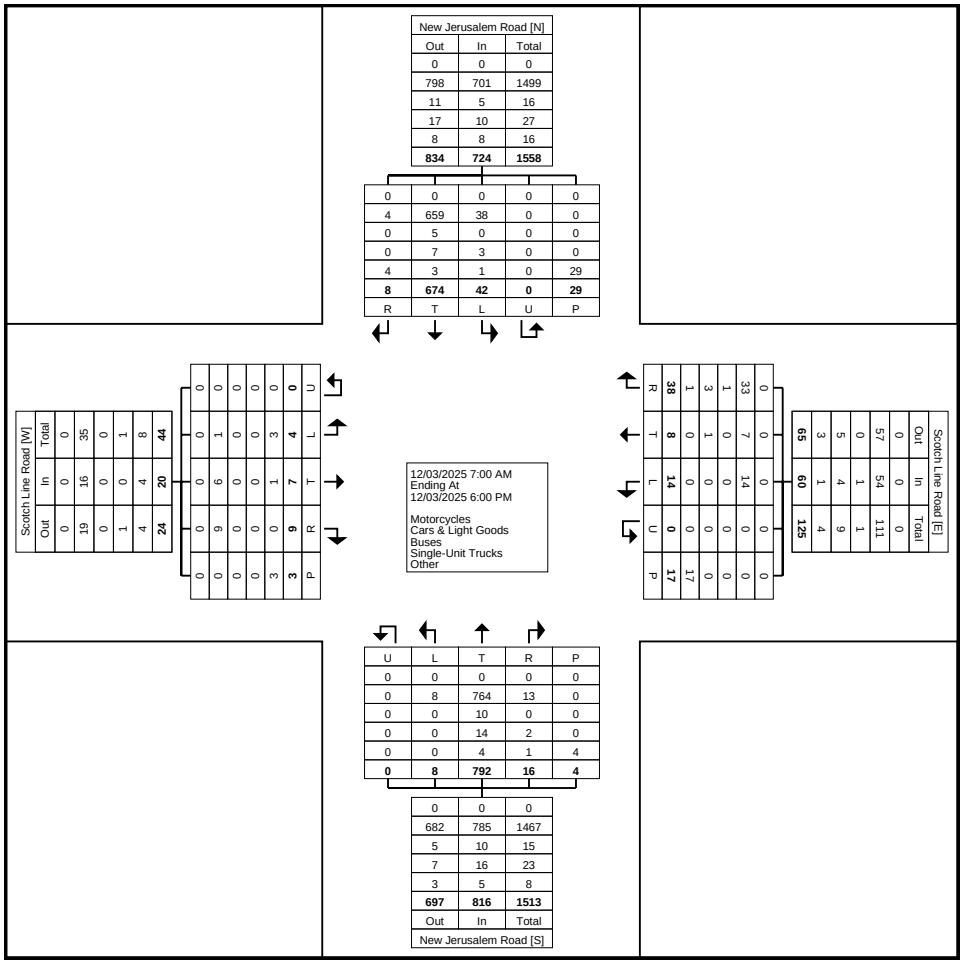
Start Time	Scotch Line Road Eastbound						Scotch Line Road Westbound						New Jerusalem Road Northbound						New Jerusalem Road Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:00 AM	0	1	0	0	0	1	0	0	2	0	0	2	0	5	0	0	0	5	2	13	0	0	0	15	23
7:15 AM	1	0	0	0	0	1	1	3	1	0	0	5	0	26	0	0	0	26	0	15	0	0	0	15	47
7:30 AM	0	1	0	0	0	1	0	0	3	0	0	3	0	14	0	0	0	14	1	23	0	0	0	24	42
7:45 AM	0	0	0	0	0	0	3	0	2	0	0	5	0	24	1	0	0	25	2	22	0	0	0	24	54
Hourly Total	1	2	0	0	0	3	4	3	8	0	0	15	0	69	1	0	0	70	5	73	0	0	0	78	166
8:00 AM	1	0	0	0	0	1	0	0	5	0	0	5	0	20	0	0	0	20	0	33	0	0	0	33	59
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	10	0	0	0	10	1	38	0	0	0	39	49
8:30 AM	0	2	3	0	2	5	0	1	3	0	0	4	2	17	0	0	0	19	0	21	1	0	8	22	50
8:45 AM	0	1	0	0	0	1	2	0	1	0	0	3	0	11	1	0	0	12	0	14	0	0	0	14	30
Hourly Total	1	3	3	0	2	7	2	1	9	0	0	12	2	58	1	0	0	61	1	106	1	0	8	108	188
9:00 AM	0	0	0	0	0	0	0	1	0	0	0	1	0	14	2	0	0	16	0	15	0	0	0	15	32
9:15 AM	0	0	0	0	0	0	0	0	1	0	0	1	0	15	0	0	0	15	1	9	0	0	0	10	26
9:30 AM	1	0	0	0	0	1	1	0	0	0	0	1	0	12	0	0	0	12	0	13	0	0	0	13	27
9:45 AM	0	0	1	0	0	1	0	0	1	0	0	1	0	12	0	0	0	12	1	14	0	0	0	15	29
Hourly Total	1	0	1	0	0	2	1	1	2	0	0	4	0	53	2	0	0	55	2	51	0	0	0	53	114
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:30 AM	0	0	0	0	0	0	1	0	2	0	0	3	0	11	0	0	0	11	0	19	0	0	0	19	33
11:45 AM	0	0	0	0	0	0	0	2	2	0	0	4	0	11	0	0	0	11	1	14	0	0	0	15	30
Hourly Total	0	0	0	0	0	0	1	2	4	0	0	7	0	22	0	0	0	22	1	33	0	0	0	34	63
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	12	0	0	0	13	1	13	0	0	0	14	27
12:15 PM	0	1	0	0	0	1	0	0	2	0	0	2	2	6	0	0	0	8	1	7	0	0	0	8	19
12:30 PM	0	0	0	0	0	0	0	0	1	0	0	1	0	13	0	0	0	13	1	15	0	0	0	16	30
12:45 PM	0	0	0	0	0	0	0	0	1	0	0	1	0	6	1	0	0	7	2	19	1	0	0	22	30
Hourly Total	0	1	0	0	0	1	0	0	4	0	0	4	3	37	1	0	0	41	5	54	1	0	0	60	106
1:00 PM	0	0	0	0	0	0	0	0	1	0	0	1	0	12	3	0	1	15	2	9	0	0	0	11	27
1:15 PM	0	0	0	0	0	0	1	0	2	0	0	3	0	12	0	0	0	12	0	11	0	0	0	11	26
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	0	0	0	0	0	1	0	3	0	0	4	0	24	3	0	1	27	2	20	0	0	0	22	53
3:00 PM	0	0	0	0	0	0	0	0	3	0	0	3	0	23	1	0	0	24	2	22	0	0	0	24	51
3:15 PM	0	0	0	0	0	0	0	0	2	0	0	2	0	15	0	0	0	15	4	22	0	0	0	26	43
3:30 PM	0	1	0	0	0	1	0	1	0	0	0	1	0	19	0	0	0	19	3	30	0	0	0	33	54
3:45 PM	0	0	3	0	1	3	1	0	0	0	17	1	2	26	0	0	3	28	1	24	1	0	21	26	58
Hourly Total	0	1	3	0	1	4	1	1	5	0	17	7	2	83	1	0	3	86	10	98	1	0	21	109	206
4:00 PM	0	0	0	0	0	0	1	0	0	0	0	1	0	34	0	0	0	34	2	29	0	0	0	31	66
4:15 PM	0	0	0	0	0	0	1	0	0	0	0	1	0	44	0	0	0	44	0	24	0	0	0	24	69

4:30 PM	1	0	0	0	0	1	0	0	1	0	0	1	0	59	0	0	0	59	4	57	1	0	0	62	123
4:45 PM	0	0	1	0	0	1	0	0	0	0	0	0	1	68	0	0	0	69	4	37	0	0	0	41	111
Hourly Total	1	0	1	0	0	2	2	0	1	0	0	3	1	205	0	0	0	206	10	147	1	0	0	158	369
5:00 PM	0	0	0	0	0	0	1	0	1	0	0	2	0	47	3	0	0	50	2	41	1	0	0	44	96
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	102	2	0	0	104	2	21	1	0	0	24	128
5:30 PM	0	0	0	0	0	0	1	0	0	0	0	1	0	55	1	0	0	56	1	15	2	0	0	18	75
5:45 PM	0	0	1	0	0	1	0	0	1	0	0	1	0	37	1	0	0	38	1	15	0	0	0	16	56
Hourly Total	0	0	1	0	0	1	2	0	2	0	0	4	0	241	7	0	0	248	6	92	4	0	0	102	355
Grand Total	4	7	9	0	3	20	14	8	38	0	17	60	8	792	16	0	4	816	42	674	8	0	29	724	1620
Approach %	20.0	35.0	45.0	0.0	-	-	23.3	13.3	63.3	0.0	-	-	1.0	97.1	2.0	0.0	-	-	5.8	93.1	1.1	0.0	-	-	-
Total %	0.2	0.4	0.6	0.0	-	1.2	0.9	0.5	2.3	0.0	-	3.7	0.5	48.9	1.0	0.0	-	50.4	2.6	41.6	0.5	0.0	-	44.7	-
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	1	6	9	0	-	16	14	7	33	0	-	54	8	764	13	0	-	785	38	659	4	0	-	701	1556
% Cars & Light Goods	25.0	85.7	100.0	-	-	80.0	100.0	87.5	86.8	-	-	90.0	100.0	96.5	81.3	-	-	96.2	90.5	97.8	50.0	-	-	96.8	96.0
Buses	0	0	0	0	-	0	0	0	1	0	-	1	0	10	0	0	-	10	0	5	0	0	-	5	16
% Buses	0.0	0.0	0.0	-	-	0.0	0.0	0.0	2.6	-	-	1.7	0.0	1.3	0.0	-	-	1.2	0.0	0.7	0.0	-	-	0.7	1.0
Single-Unit Trucks	0	0	0	0	-	0	0	1	3	0	-	4	0	14	2	0	-	16	3	7	0	0	-	10	30
% Single-Unit Trucks	0.0	0.0	0.0	-	-	0.0	0.0	12.5	7.9	-	-	6.7	0.0	1.8	12.5	-	-	2.0	7.1	1.0	0.0	-	-	1.4	1.9
Articulated Trucks	0	1	0	0	-	1	0	0	1	0	-	1	0	3	1	0	-	4	1	1	1	0	-	3	9
% Articulated Trucks	0.0	14.3	0.0	-	-	5.0	0.0	0.0	2.6	-	-	1.7	0.0	0.4	6.3	-	-	0.5	2.4	0.1	12.5	-	-	0.4	0.6
Bicycles on Road	3	0	0	0	-	3	0	0	0	0	-	0	0	1	0	0	-	1	0	2	3	0	-	5	9
% Bicycles on Road	75.0	0.0	0.0	-	-	15.0	0.0	0.0	0.0	-	-	0.0	0.0	0.1	0.0	-	-	0.1	0.0	0.3	37.5	-	-	0.7	0.6
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	3	-	-	-	-	-	17	-	-	-	-	-	4	-	-	-	-	-	29	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: New Jerusalem Road & Scotch Line Road
Site Code: 240259
Start Date: 12/03/2025



Turning Movement Data Plot

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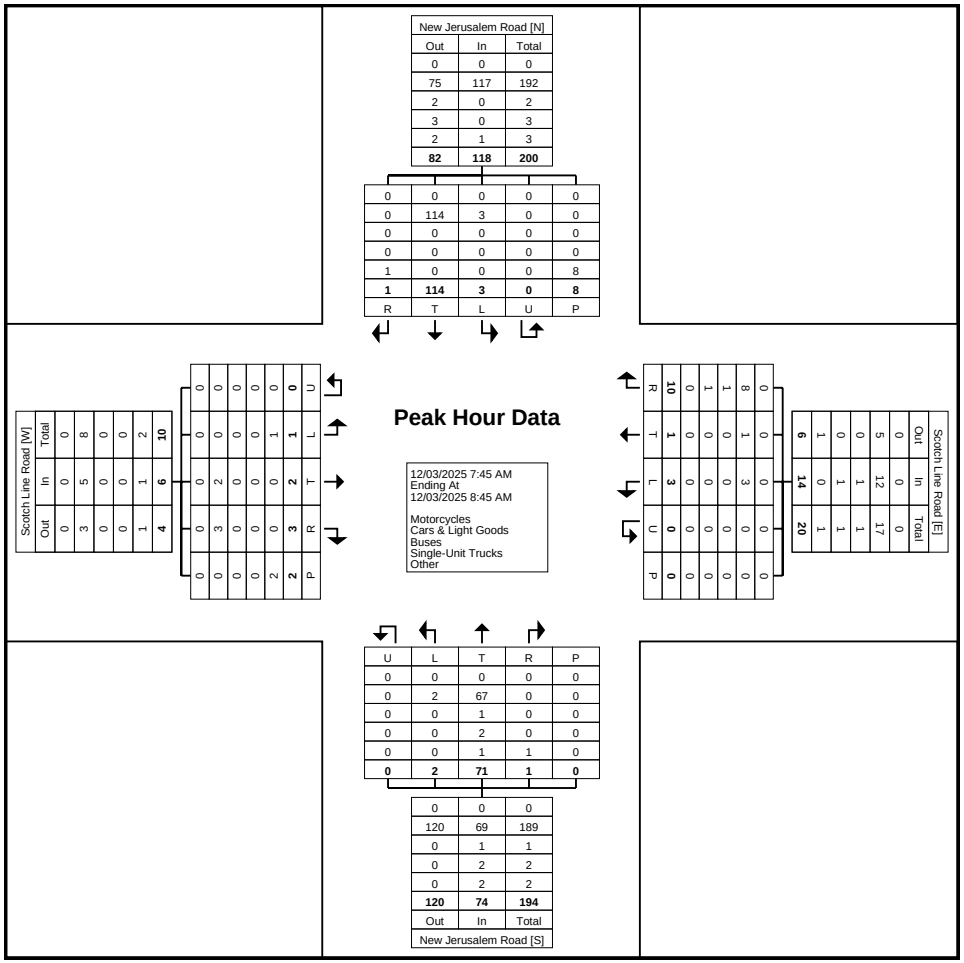
Turning Movement Peak Hour Data (7:45 AM)

Start Time	Scotch Line Road Eastbound						Scotch Line Road Westbound						New Jerusalem Road Northbound						New Jerusalem 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	0	0	0	0	0	0	3	0	2	0	0	5	0	24	1	0	0	25	2	22	0	0	0	24	54
8:00 AM	1	0	0	0	0	1	0	0	5	0	0	5	0	20	0	0	0	20	0	33	0	0	0	33	59
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	10	0	0	0	10	1	38	0	0	0	39	49
8:30 AM	0	2	3	0	2	5	0	1	3	0	0	4	2	17	0	0	0	19	0	21	1	0	8	22	50
Total	1	2	3	0	2	6	3	1	10	0	0	14	2	71	1	0	0	74	3	114	1	0	8	118	212
Approach %	16.7	33.3	50.0	0.0	-	-	21.4	7.1	71.4	0.0	-	-	2.7	95.9	1.4	0.0	-	-	2.5	96.6	0.8	0.0	-	-	-
Total %	0.5	0.9	1.4	0.0	-	2.8	1.4	0.5	4.7	0.0	-	6.6	0.9	33.5	0.5	0.0	-	34.9	1.4	53.8	0.5	0.0	-	55.7	-
PHF	0.250	0.250	0.250	0.000	-	0.300	0.250	0.250	0.500	0.000	-	0.700	0.250	0.740	0.250	0.000	-	0.740	0.375	0.750	0.250	0.000	-	0.756	0.898
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	0	2	3	0	-	5	3	1	8	0	-	12	2	67	0	0	-	69	3	114	0	0	-	117	203
% Cars & Light Goods	0.0	100.0	100.0	-	-	83.3	100.0	100.0	80.0	-	-	85.7	100.0	94.4	0.0	-	-	93.2	100.0	100.0	0.0	-	-	99.2	95.8
Buses	0	0	0	0	-	0	0	0	1	0	-	1	0	1	0	0	-	1	0	0	0	0	-	0	2
% Buses	0.0	0.0	0.0	-	-	0.0	0.0	0.0	10.0	-	-	7.1	0.0	1.4	0.0	-	-	1.4	0.0	0.0	0.0	-	-	0.0	0.9
Single-Unit Trucks	0	0	0	0	-	0	0	0	1	0	-	1	0	2	0	0	-	2	0	0	0	0	-	0	3
% Single-Unit Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	10.0	-	-	7.1	0.0	2.8	0.0	-	-	2.7	0.0	0.0	0.0	-	-	0.0	1.4
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	1	0	-	1	0	0	1	0	-	1	2
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	100.0	-	-	1.4	0.0	0.0	100.0	-	-	0.8	0.9
Bicycles on Road	1	0	0	0	-	1	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	2
% Bicycles on Road	100.0	0.0	0.0	-	-	16.7	0.0	0.0	0.0	-	-	0.0	0.0	1.4	0.0	-	-	1.4	0.0	0.0	0.0	-	-	0.0	0.9
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	8	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

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Start Date: 12/03/2025



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

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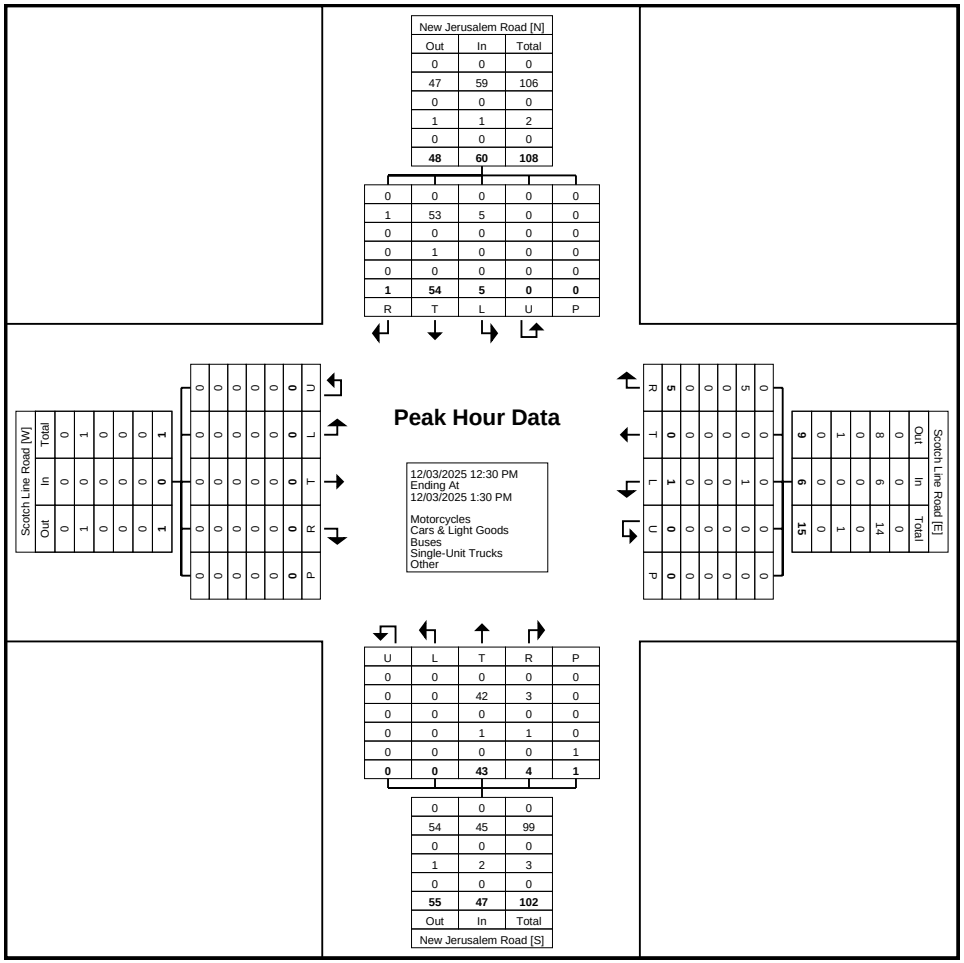
Turning Movement Peak Hour Data (12:30 PM)

Start Time	Scotch Line Road Eastbound						Scotch Line Road Westbound						New Jerusalem Road Northbound						New Jerusalem 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	0	0	0	0	0	0	0	0	1	0	0	1	0	13	0	0	0	13	1	15	0	0	0	16	30
12:45 PM	0	0	0	0	0	0	0	0	1	0	0	1	0	6	1	0	0	7	2	19	1	0	0	22	30
1:00 PM	0	0	0	0	0	0	0	0	1	0	0	1	0	12	3	0	1	15	2	9	0	0	0	11	27
1:15 PM	0	0	0	0	0	0	1	0	2	0	0	3	0	12	0	0	0	12	0	11	0	0	0	11	26
Total	0	0	0	0	0	0	1	0	5	0	0	6	0	43	4	0	1	47	5	54	1	0	0	60	113
Approach %	0.0	0.0	0.0	0.0	-	-	16.7	0.0	83.3	0.0	-	-	0.0	91.5	8.5	0.0	-	-	8.3	90.0	1.7	0.0	-	-	-
Total %	0.0	0.0	0.0	0.0	-	0.0	0.9	0.0	4.4	0.0	-	5.3	0.0	38.1	3.5	0.0	-	41.6	4.4	47.8	0.9	0.0	-	53.1	-
PHF	0.000	0.000	0.000	0.000	-	0.000	0.250	0.000	0.625	0.000	-	0.500	0.000	0.827	0.333	0.000	-	0.783	0.625	0.711	0.250	0.000	-	0.682	0.942
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Motorcycles	-	-	-	-	-	-	0.0	-	0.0	-	-	0.0	-	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	0	0	0	0	-	0	1	0	5	0	-	6	0	42	3	0	-	45	5	53	1	0	-	59	110
% Cars & Light Goods	-	-	-	-	-	-	100.0	-	100.0	-	-	100.0	-	97.7	75.0	-	-	95.7	100.0	98.1	100.0	-	-	98.3	97.3
Buses	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Buses	-	-	-	-	-	-	0.0	-	0.0	-	-	0.0	-	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Single-Unit Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	1	1	0	-	2	0	1	0	0	-	1	3
% Single-Unit Trucks	-	-	-	-	-	-	0.0	-	0.0	-	-	0.0	-	2.3	25.0	-	-	4.3	0.0	1.9	0.0	-	-	1.7	2.7
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
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	-	-	-	-	-	-	0.0	-	0.0	-	-	0.0	-	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-

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Start Date: 12/03/2025



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

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Site Code: 240259
Start Date: 12/03/2025

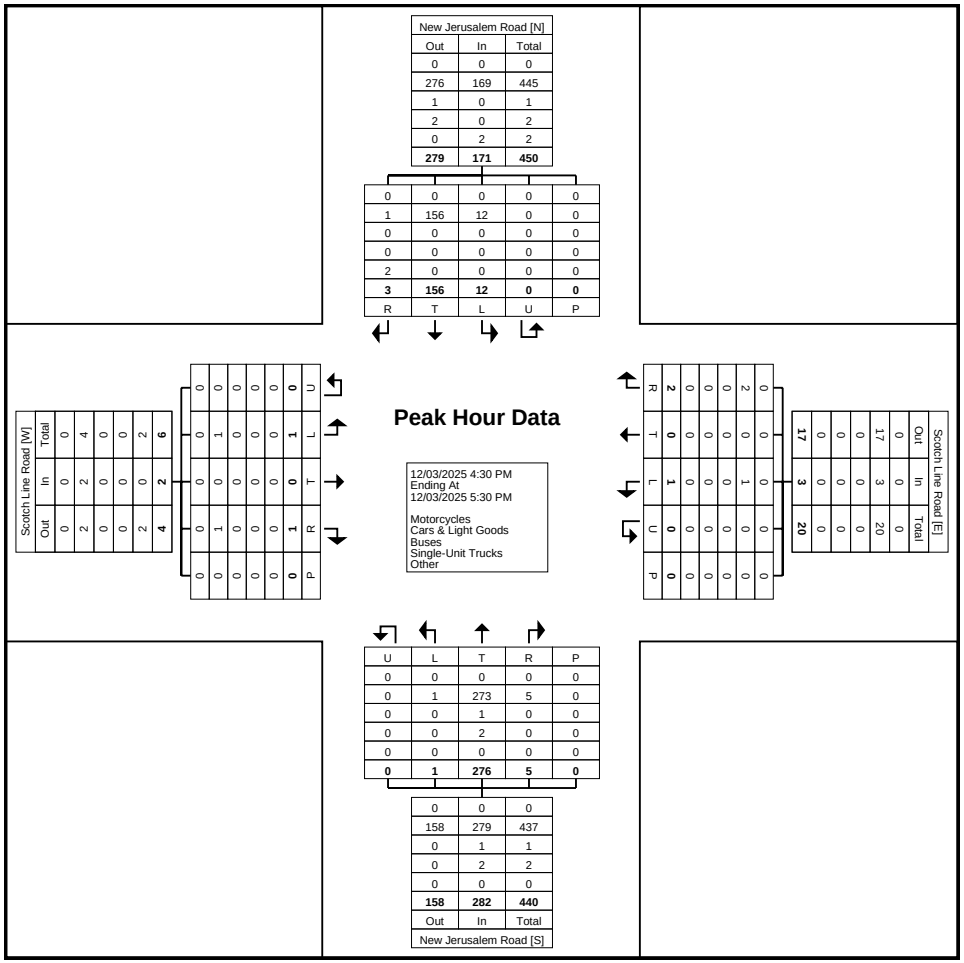
Turning Movement Peak Hour Data (4:30 PM)

Start Time	Scotch Line Road Eastbound						Scotch Line Road Westbound						New Jerusalem Road Northbound						New Jerusalem 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	1	0	0	0	0	1	0	0	1	0	0	1	0	59	0	0	0	59	4	57	1	0	0	62	123
4:45 PM	0	0	1	0	0	1	0	0	0	0	0	0	1	68	0	0	0	69	4	37	0	0	0	41	111
5:00 PM	0	0	0	0	0	0	1	0	1	0	0	2	0	47	3	0	0	50	2	41	1	0	0	44	96
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	102	2	0	0	104	2	21	1	0	0	24	128
Total	1	0	1	0	0	2	1	0	2	0	0	3	1	276	5	0	0	282	12	156	3	0	0	171	458
Approach %	50.0	0.0	50.0	0.0	-	-	33.3	0.0	66.7	0.0	-	-	0.4	97.9	1.8	0.0	-	-	7.0	91.2	1.8	0.0	-	-	-
Total %	0.2	0.0	0.2	0.0	-	0.4	0.2	0.0	0.4	0.0	-	0.7	0.2	60.3	1.1	0.0	-	61.6	2.6	34.1	0.7	0.0	-	37.3	-
PHF	0.250	0.000	0.250	0.000	-	0.500	0.250	0.000	0.500	0.000	-	0.375	0.250	0.676	0.417	0.000	-	0.678	0.750	0.684	0.750	0.000	-	0.690	0.895
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Motorcycles	0.0	-	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	1	0	1	0	-	2	1	0	2	0	-	3	1	273	5	0	-	279	12	156	1	0	-	169	453
% Cars & Light Goods	100.0	-	100.0	-	-	100.0	100.0	-	100.0	-	-	100.0	100.0	98.9	100.0	-	-	98.9	100.0	100.0	33.3	-	-	98.8	98.9
Buses	0	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	1
% Buses	0.0	-	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	0.0	0.4	0.0	-	-	0.4	0.0	0.0	0.0	-	-	0.0	0.2
Single-Unit Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	2	0	0	-	2	0	0	0	0	-	0	2
% Single-Unit Trucks	0.0	-	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	0.0	0.7	0.0	-	-	0.7	0.0	0.0	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	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
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	2	0	-	2	2
% Bicycles on Road	0.0	-	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	66.7	-	-	1.2	0.4
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

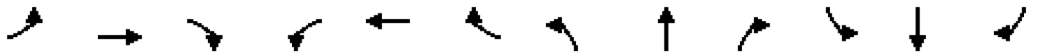
Count Name: New Jerusalem Road & Scotch Line Road
Site Code: 240259
Start Date: 12/03/2025



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

Appendix C

Base Year Operation Synchro Reports

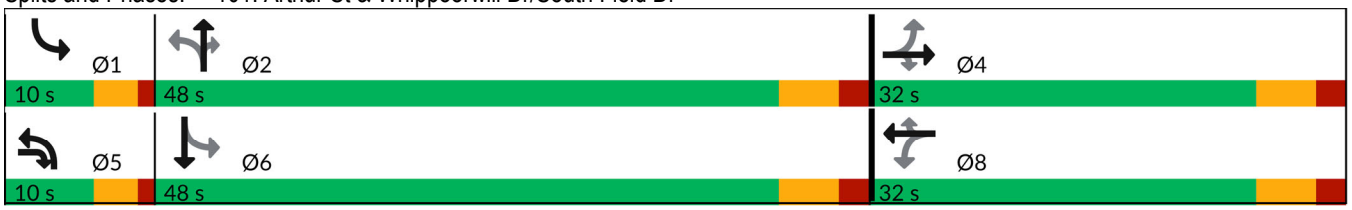


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	67	87	144	57	40	117	58	449	49	130	478	10
Future Volume (vph)	67	87	144	57	40	117	58	449	49	130	478	10
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1650	1650
Storage Length (m)	40.0		40.0	25.0		25.0	45.0		40.0	30.0		1.0
Storage Lanes	1		1	1		1	1		1	1		0
Taper Length (m)	50.0			50.0			40.0			60.0		
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	
Frt			0.850			0.850			0.850		0.997	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1619	1842	1456	1588	1789	1375	1603	1740	1302	1588	1522	0
Flt Permitted	0.731			0.701			0.375			0.408		
Satd. Flow (perm)	1242	1842	1456	1172	1789	1343	631	1740	1270	681	1522	0
Right Turn on Red			No			Yes			Yes			Yes
Satd. Flow (RTOR)						117			85		2	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		886.0			669.7			893.6			887.4	
Travel Time (s)		63.8			48.2			53.6			53.2	
Confl. Peds. (#/hr)	2					2	8		4	4		8
Peak Hour Factor	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 (%)	3%	2%	1%	5%	5%	7%	4%	8%	13%	5%	7%	0%
Adj. Flow (vph)	67	87	144	57	40	117	58	449	49	130	478	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	67	87	144	57	40	117	58	449	49	130	488	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.11	1.01	1.13	1.11	1.01	1.13	1.11	1.01	1.13	1.11	1.21	1.21
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	pm+ov	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4	5		8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		
Detector Phase	4	4	5	8	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	12.0	12.0	5.0	12.0	12.0	12.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	32.0	32.0	9.5	32.0	32.0	32.0	9.5	47.7	47.7	9.5	47.7	
Total Split (s)	32.0	32.0	10.0	32.0	32.0	32.0	10.0	48.0	48.0	10.0	48.0	
Total Split (%)	35.6%	35.6%	11.1%	35.6%	35.6%	35.6%	11.1%	53.3%	53.3%	11.1%	53.3%	
Maximum Green (s)	26.0	26.0	6.0	26.0	26.0	26.0	6.0	42.0	42.0	6.0	42.0	
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	2.0	2.0	1.0	2.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	
Lost Time Adjust (s)	-2.0	0.0	0.0	-2.0	-2.0	-2.0	0.0	-2.0	-2.0	0.0	-2.0	
Total Lost Time (s)	4.0	6.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag			Lead				Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?			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	Min	Min	None	Min	
Walk Time (s)	10.0	10.0		10.0	10.0	10.0		22.7	22.7		22.7	
Flash Don't Walk (s)	16.0	16.0		16.0	16.0	16.0		19.0	19.0		19.0	
Pedestrian Calls (#/hr)	0	0		0	0	0		0	0		0	
Act Effct Green (s)	15.4	13.2	19.8	15.4	15.4	15.4	33.6	30.7	30.7	33.6	30.7	
Actuated g/C Ratio	0.28	0.24	0.37	0.28	0.28	0.28	0.62	0.57	0.57	0.62	0.57	
v/c Ratio	0.19	0.19	0.27	0.17	0.08	0.25	0.11	0.46	0.06	0.25	0.57	
Control Delay (s/veh)	21.7	22.7	14.6	21.6	20.1	6.8	4.9	12.7	1.0	5.9	15.1	
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 (s/veh)	21.7	22.7	14.6	21.6	20.1	6.8	4.9	12.7	1.0	5.9	15.1	
LOS	C	C	B	C	C	A	A	B	A	A	B	
Approach Delay (s/veh)		18.6			13.3			10.9			13.1	
Approach LOS		B			B			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 54.2			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.57			
Intersection Signal Delay (s/veh): 13.4		Intersection LOS: B	
Intersection Capacity Utilization 60.6%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 101: Arthur St & Whippoorwill Dr/South Field Dr





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	67	87	144	57	40	117	58	449	49	130	488
v/c Ratio	0.19	0.19	0.27	0.17	0.08	0.25	0.11	0.46	0.06	0.25	0.57
Control Delay (s/veh)	21.7	22.7	14.6	21.6	20.1	6.8	4.9	12.7	1.0	5.9	15.1
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 (s/veh)	21.7	22.7	14.6	21.6	20.1	6.8	4.9	12.7	1.0	5.9	15.1
Queue Length 50th (m)	5.8	7.8	9.5	4.9	3.3	0.0	2.2	35.0	0.0	5.1	41.3
Queue Length 95th (m)	18.1	22.2	27.0	16.0	11.9	12.1	5.6	59.8	2.1	10.9	73.2
Internal Link Dist (m)		862.0			645.7			869.6			863.4
Turn Bay Length (m)	40.0		40.0	25.0		25.0	45.0		40.0	30.0	
Base Capacity (vph)	695	957	532	656	1001	803	508	1377	1022	531	1204
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	0.10	0.09	0.27	0.09	0.04	0.15	0.11	0.33	0.05	0.24	0.41

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	67	87	144	57	40	117	58	449	49	130	478	10
Future Volume (vph)	67	87	144	57	40	117	58	449	49	130	478	10
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1650	1650
Total Lost time (s)	4.0	6.0	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	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	
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	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1616	1842	1456	1588	1789	1344	1602	1740	1272	1587	1521	
Flt Permitted	0.73	1.00	1.00	0.70	1.00	1.00	0.37	1.00	1.00	0.41	1.00	
Satd. Flow (perm)	1243	1842	1456	1171	1789	1344	632	1740	1272	682	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)	67	87	144	57	40	117	58	449	49	130	478	10
RTOR Reduction (vph)	0	0	0	0	0	94	0	0	24	0	1	0
Lane Group Flow (vph)	67	87	144	57	40	23	58	449	25	130	487	0
Confl. Peds. (#/hr)	2					2	8		4	4		8
Heavy Vehicles (%)	3%	2%	1%	5%	5%	7%	4%	8%	13%	5%	7%	0%
Turn Type	Perm	NA	pm+ov	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4	5		8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		
Actuated Green, G (s)	9.0	9.0	13.4	9.0	9.0	9.0	31.5	27.1	27.1	31.5	27.1	
Effective Green, g (s)	11.0	9.0	13.4	11.0	11.0	11.0	31.5	29.1	29.1	31.5	29.1	
Actuated g/C Ratio	0.19	0.16	0.24	0.19	0.19	0.19	0.56	0.52	0.52	0.56	0.52	
Clearance Time (s)	6.0	6.0	4.0	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	3.0	
Lane Grp Cap (vph)	242	293	345	227	348	261	427	896	655	450	783	
v/s Ratio Prot		0.05	c0.03		0.02		0.01	0.26		0.02	c0.32	
v/s Ratio Perm	0.05		0.07	0.05		0.02	0.07		0.02	0.14		
v/c Ratio	0.28	0.30	0.42	0.25	0.11	0.09	0.14	0.50	0.04	0.29	0.62	
Uniform Delay, d1	19.4	21.0	18.2	19.3	18.7	18.6	6.1	9.0	6.8	6.3	9.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.6	0.6	0.8	0.6	0.1	0.1	0.1	0.4	0.0	0.4	1.5	
Delay (s)	20.0	21.5	19.1	19.8	18.9	18.8	6.2	9.4	6.8	6.7	11.3	
Level of Service	B	C	B	B	B	B	A	A	A	A	B	
Approach Delay (s/veh)		20.0			19.1			8.8			10.3	
Approach LOS		B			B			A			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	12.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	56.5	Sum of lost time (s)	14.0
Intersection Capacity Utilization	60.6%	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)	24	53	17	8	28	46	12	88	11	54	78	30
Future Volume (vph)	24	53	17	8	28	46	12	88	11	54	78	30
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1775	1650	1650	1775	1650	1650
Storage Length (m)	0.0		0.0	0.0		0.0	25.0		0.0	20.0		0.0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			40.0			25.0		
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		0.976			0.924			0.983			0.958	
Flt Protected		0.987			0.995		0.950			0.950		
Satd. Flow (prot)	0	1392	0	0	1295	0	1544	1441	0	1619	1448	0
Flt Permitted		0.987			0.995		0.950			0.950		
Satd. Flow (perm)	0	1392	0	0	1295	0	1544	1441	0	1619	1448	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		669.7			258.4			884.2			256.9	
Travel Time (s)		48.2			18.6			63.7			18.5	
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 (%)	4%	7%	6%	8%	12%	7%	8%	8%	38%	3%	11%	0%
Adj. Flow (vph)	24	53	17	8	28	46	12	88	11	54	78	30
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	94	0	0	82	0	12	99	0	54	108	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.31	1.31	1.31	1.31	1.31	1.31	1.11	1.21	1.21	1.11	1.21	1.21
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 29.2%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	24	53	17	8	28	46	12	88	11	54	78	30
Future Volume (vph)	24	53	17	8	28	46	12	88	11	54	78	30
Peak Hour Factor	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)	24	53	17	8	28	46	12	88	11	54	78	30

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	94	82	12	99	54	108
Volume Left (vph)	24	8	12	0	54	0
Volume Right (vph)	17	46	0	11	0	30
Hadj (s)	0.05	-0.17	0.64	0.11	0.55	-0.06
Departure Headway (s)	4.7	4.5	5.7	5.2	5.6	5.0
Degree Utilization, x	0.12	0.10	0.02	0.14	0.08	0.15
Capacity (veh/h)	712	740	601	660	615	692
Control Delay (s/veh)	8.4	8.0	7.6	7.9	7.9	7.7
Approach Delay (s/veh)	8.4	8.0	7.9		7.7	
Approach LOS	A	A	A		A	

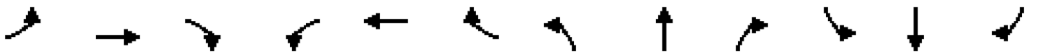
Intersection Summary				
Delay	8.0			
Level of Service	A			
Intersection Capacity Utilization	29.2%	ICU Level of Service	A	
Analysis Period (min)	15			

Intersection	
Intersection Delay, s/veh	8.5
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	24	53	17	8	28	46	12	88	11	54	78	30
Future Vol, veh/h	24	53	17	8	28	46	12	88	11	54	78	30
Peak Hour Factor	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	7	6	8	12	7	8	8	38	3	11	0
Mvmt Flow	24	53	17	8	28	46	12	88	11	54	78	30
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0

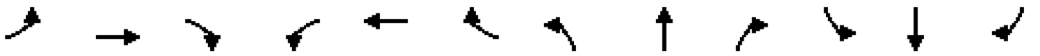
Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	1
HCM Control Delay, s/veh	8.4	8.1	8.7	8.7
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	26%	10%	100%	0%
Vol Thru, %	0%	89%	56%	34%	0%	72%
Vol Right, %	0%	11%	18%	56%	0%	28%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	12	99	94	82	54	108
LT Vol	12	0	24	8	54	0
Through Vol	0	88	53	28	0	78
RT Vol	0	11	17	46	0	30
Lane Flow Rate	12	99	94	82	54	108
Geometry Grp	5	5	2	2	5	5
Degree of Util (X)	0.019	0.141	0.123	0.103	0.084	0.15
Departure Headway (Hd)	5.714	5.133	4.692	4.519	5.575	5.014
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	627	699	764	793	643	715
Service Time	3.446	2.865	2.72	2.548	3.306	2.744
HCM Lane V/C Ratio	0.019	0.142	0.123	0.103	0.084	0.151
HCM Control Delay, s/veh	8.6	8.7	8.4	8.1	8.8	8.6
HCM Lane LOS	A	A	A	A	A	A
HCM 95th-tile Q	0.1	0.5	0.4	0.3	0.3	0.5



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑			↑			↑			↑	
Traffic Volume (vph)	0	118	0	0	82	0	0	0	0	0	0	0
Future Volume (vph)	0	118	0	0	82	0	0	0	0	0	0	0
Ideal Flow (vphpl)	1000	1900	1000	1000	1900	1000	1000	1900	1000	1000	1900	1000
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	1842	0	0	1842	0	0	1842	0	0	1842	0
Flt Permitted												
Satd. Flow (perm)	0	1842	0	0	1842	0	0	1842	0	0	1842	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		258.4			1257.8			175.3			172.7	
Travel Time (s)		18.6			90.6			12.6			12.4	
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
Adj. Flow (vph)	0	118	0	0	82	0	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	118	0	0	82	0	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	2.20	1.01	2.20	2.20	1.01	2.20	2.20	1.01	2.20	2.20	1.01	2.20
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 9.5%		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)	0	118	0	0	82	0	0	0	0	0	0	0
Future Volume (Veh/h)	0	118	0	0	82	0	0	0	0	0	0	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	118	0	0	82	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	41	0	0	59	0	0	0			0		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	41	0	0	59	0	0	0			0		
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	87	100	100	91	100	100			100		
cM capacity (veh/h)	895	896	1085	842	896	1085	1623			1623		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	118	82	0	0
Volume Left	0	0	0	0
Volume Right	0	0	0	0
cSH	896	896	1700	1700
Volume to Capacity	0.13	0.09	0.00	0.00
Queue Length 95th (m)	3.6	2.4	0.0	0.0
Control Delay (s/veh)	9.6	9.4	0.0	0.0
Lane LOS	A	A		
Approach Delay (s/veh)	9.6	9.4	0.0	0.0
Approach LOS	A	A		

Intersection Summary			
Average Delay	9.5		
Intersection Capacity Utilization	9.5%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	9.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑			↑			↑			↑	
Traffic Vol, veh/h	0	118	0	0	82	0	0	0	0	0	0	0
Future Vol, veh/h	0	118	0	0	82	0	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	118	0	0	82	0	0	0	0	0	0	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	1	-	-	1	-	-	0	-	-	-	0
Stage 1	-	1	-	-	0	-	-	-	-	-	-	-
Stage 2	-	0	-	-	1	-	-	-	-	-	-	-
Critical Hdwy	-	6.52	-	-	6.52	-	-	-	-	-	-	-
Critical Hdwy Stg 1	-	5.52	-	-	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	5.52	-	-	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	-	4.018	-	-	4.018	-	-	-	-	-	-	-
Pot Cap-1 Maneuver	0	895	0	0	895	0	0	-	0	0	-	0
Stage 1	0	895	0	0	-	0	0	-	0	0	-	0
Stage 2	0	-	0	0	895	0	0	-	0	0	-	0
Platoon blocked, %								-			-	
Mov Cap-1 Maneuver	-	895	-	-	895	-	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	895	-	-	895	-	-	-	-	-	-	-
Stage 1	-	895	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	895	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	9.63	9.43	0	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBT	EBLn1	WBLn1	SBT
Capacity (veh/h)	-	895	895	-
HCM Lane V/C Ratio	-	0.132	0.092	-
HCM Ctrl Dly (s/v)	-	9.6	9.4	-
HCM Lane LOS	-	A	A	-
HCM 95th %tile Q(veh)	-	0.5	0.3	-



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	1	3	772	0	0	1070
Future Volume (vph)	1	3	772	0	0	1070
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					
Flt Protected	0.988					
Satd. Flow (prot)	1240	0	1539	0	0	1525
Flt Permitted	0.988					
Satd. Flow (perm)	1240	0	1539	0	0	1525
Link Speed (k/h)	60		80			80
Link Distance (m)	527.8		756.1			487.8
Travel Time (s)	31.7		34.0			22.0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	100%	0%	6%	0%	0%	7%
Adj. Flow (vph)	1	3	772	0	0	1070
Shared Lane Traffic (%)						
Lane Group Flow (vph)	4	0	772	0	0	1070
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.5		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.12	1.12	1.21	1.21	1.21	1.21
Turning Speed (k/h)	25	15		15	25	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 74.8%		ICU Level of Service D	
Analysis Period (min) 15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	1	3	772	0	0	1070
Future Volume (Veh/h)	1	3	772	0	0	1070
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)	1	3	772	0	0	1070
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1842	772			772	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1842	772			772	
tC, single (s)	7.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	4.4	3.3			2.2	
p0 queue free %	98	99			100	
cM capacity (veh/h)	47	403			852	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	4	772	1070
Volume Left	1	0	0
Volume Right	3	0	0
cSH	139	1700	852
Volume to Capacity	0.03	0.45	0.00
Queue Length 95th (m)	0.7	0.0	0.0
Control Delay (s/veh)	31.8	0.0	0.0
Lane LOS	D		
Approach Delay (s/veh)	31.8	0.0	0.0
Approach LOS	D		

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	74.8%	ICU Level of Service	D
Analysis Period (min)	15		

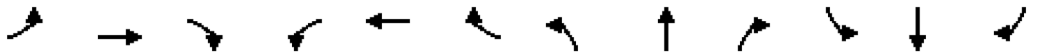
Intersection	
Int Delay, s/veh	0.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	3	772	0	0	1070
Future Vol, veh/h	1	3	772	0	0	1070
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	100	0	6	0	0	7
Mvmt Flow	1	3	772	0	0	1070

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1842	772	0	0	772	0
Stage 1	772	-	-	-	-	-
Stage 2	1070	-	-	-	-	-
Critical Hdwy	7.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	6.4	-	-	-	-	-
Critical Hdwy Stg 2	6.4	-	-	-	-	-
Follow-up Hdwy	4.4	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	47	403	-	-	852	-
Stage 1	320	-	-	-	-	-
Stage 2	219	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	47	403	-	-	852	-
Mov Cap-2 Maneuver	47	-	-	-	-	-
Stage 1	320	-	-	-	-	-
Stage 2	219	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	31.75	0	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	139	852	-
HCM Lane V/C Ratio	-	-	0.029	-	-
HCM Ctrl Dly (s/v)	-	-	31.8	0	-
HCM Lane LOS	-	-	D	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0	-

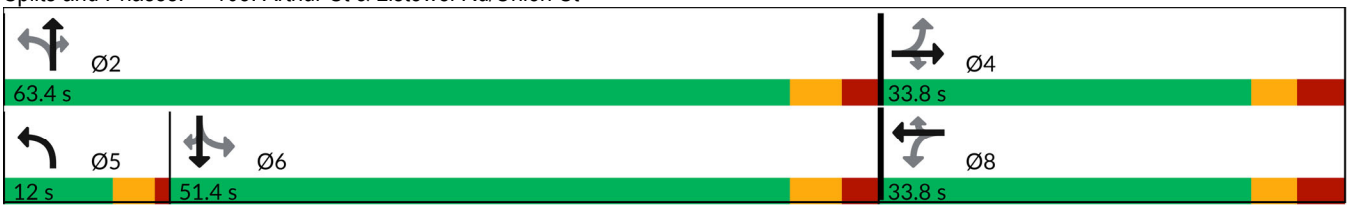


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	101	26	404	123	39	5	182	475	116	0	543	33
Future Volume (vph)	101	26	404	123	39	5	182	475	116	0	543	33
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1900	1750
Storage Length (m)	60.0		60.0	25.0		25.0	100.0		100.0	50.0		50.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	60.0			60.0			80.0			75.0		
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			0.850			0.850
Flt Protected	0.950			0.950			0.950					
Satd. Flow (prot)	1603	1634	1350	1413	1261	1226	1378	1756	1302	1755	1773	1313
Flt Permitted	0.732			0.740			0.184					
Satd. Flow (perm)	1235	1634	1350	1101	1261	1226	267	1756	1302	1755	1773	1313
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			382			83			116			88
Link Speed (k/h)		50			50			60			50	
Link Distance (m)		1221.5			248.3			356.1			893.6	
Travel Time (s)		87.9			17.9			21.4			64.3	
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%	15%	9%	18%	49%	20%	21%	7%	13%	0%	6%	12%
Adj. Flow (vph)	101	26	404	123	39	5	182	475	116	0	543	33
Shared Lane Traffic (%)												
Lane Group Flow (vph)	101	26	404	123	39	5	182	475	116	0	543	33
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.11	1.01	1.13	1.11	1.01	1.13	1.11	1.01	1.13	1.11	1.01	1.13
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		4			8		5	2			6	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	4	4	4	8	8	8	5	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	33.8	33.8	33.8	33.8	33.8	33.8	11.5	51.4	51.4	51.4	51.4	51.4
Total Split (s)	33.8	33.8	33.8	33.8	33.8	33.8	12.0	63.4	63.4	51.4	51.4	51.4
Total Split (%)	34.8%	34.8%	34.8%	34.8%	34.8%	34.8%	12.3%	65.2%	65.2%	52.9%	52.9%	52.9%
Maximum Green (s)	27.0	27.0	27.0	27.0	27.0	27.0	8.0	57.0	57.0	45.0	45.0	45.0
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.0	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	1.0	2.7	2.7	2.7	2.7	2.7
Lost Time Adjust (s)	-2.8	-2.8	-2.8	-2.8	-2.8	-2.8	0.0	-2.4	-2.4	-2.4	-2.4	-2.4
Total Lost Time (s)	4.0	4.0	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	5.0	0.2	0.2	0.2	0.2	0.2
Recall Mode	None	None	None	None	None	None	None	Min	Min	Min	Min	Min
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0		25.0	25.0	25.0	25.0	25.0
Flash Don't Walk (s)	20.0	20.0	20.0	20.0	20.0	20.0		20.0	20.0	20.0	20.0	20.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0		0	0	0	0	0
Act Effct Green (s)	16.6	16.6	16.6	16.6	16.6	16.6	37.2	37.2	37.2		24.7	24.7
Actuated g/C Ratio	0.27	0.27	0.27	0.27	0.27	0.27	0.60	0.60	0.60		0.40	0.40
v/c Ratio	0.31	0.06	0.63	0.42	0.12	0.01	0.59	0.45	0.14		0.77	0.06
Control Delay (s/veh)	23.4	20.1	8.5	26.2	20.7	0.0	15.9	8.8	1.9		24.5	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay (s/veh)	23.4	20.1	8.5	26.2	20.7	0.0	15.9	8.8	1.9		24.5	0.2
LOS	C	C	A	C	C	A	B	A	A		C	A
Approach Delay (s/veh)		11.9			24.1			9.4			23.1	
Approach LOS		B			C			A			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 97.2			
Actuated Cycle Length: 62.1			
Natural Cycle: 100			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay (s/veh): 15.1		Intersection LOS: B	
Intersection Capacity Utilization 74.1%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 105: Arthur St & Listowel Rd/Union St

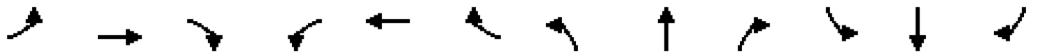




Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	101	26	404	123	39	5	182	475	116	543	33
v/c Ratio	0.31	0.06	0.63	0.42	0.12	0.01	0.59	0.45	0.14	0.77	0.06
Control Delay (s/veh)	23.4	20.1	8.5	26.2	20.7	0.0	15.9	8.8	1.9	24.5	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	23.4	20.1	8.5	26.2	20.7	0.0	15.9	8.8	1.9	24.5	0.2
Queue Length 50th (m)	9.2	2.2	1.9	11.6	3.4	0.0	8.0	24.8	0.0	50.6	0.0
Queue Length 95th (m)	26.6	9.2	27.3	32.7	12.3	0.0	#27.2	59.5	5.9	102.9	0.0
Internal Link Dist (m)		1197.5			224.3			332.1		869.6	
Turn Bay Length (m)	60.0		60.0	25.0		25.0	100.0		100.0		50.0
Base Capacity (vph)	617	817	865	550	630	654	309	1609	1203	1410	1062
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	0.16	0.03	0.47	0.22	0.06	0.01	0.59	0.30	0.10	0.39	0.03

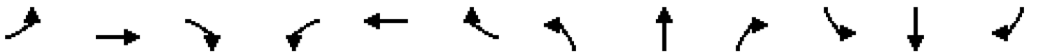
Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	101	26	404	123	39	5	182	475	116	0	543	33
Future Volume (vph)	101	26	404	123	39	5	182	475	116	0	543	33
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	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	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	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00		1.00	1.00
Satd. Flow (prot)	1603	1634	1350	1413	1261	1226	1378	1756	1302		1773	1313
Flt Permitted	0.73	1.00	1.00	0.74	1.00	1.00	0.18	1.00	1.00		1.00	1.00
Satd. Flow (perm)	1235	1634	1350	1101	1261	1226	267	1756	1302		1773	1313
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)	101	26	404	123	39	5	182	475	116	0	543	33
RTOR Reduction (vph)	0	0	280	0	0	4	0	0	46	0	0	20
Lane Group Flow (vph)	101	26	124	123	39	1	182	475	70	0	543	13
Heavy Vehicles (%)	4%	15%	9%	18%	49%	20%	21%	7%	13%	0%	6%	12%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	13.6	13.6	13.6	13.6	13.6	13.6	34.7	34.7	34.7		22.4	22.4
Effective Green, g (s)	16.4	16.4	16.4	16.4	16.4	16.4	34.7	37.1	37.1		24.8	24.8
Actuated g/C Ratio	0.27	0.27	0.27	0.27	0.27	0.27	0.56	0.60	0.60		0.40	0.40
Clearance Time (s)	6.8	6.8	6.8	6.8	6.8	6.8	4.0	6.4	6.4		6.4	6.4
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	5.0	0.2	0.2		0.2	0.2
Lane Grp Cap (vph)	329	435	360	293	336	326	300	1059	785		714	529
v/s Ratio Prot		0.02			0.03		c0.08	0.27			c0.31	
v/s Ratio Perm	0.08		0.09	c0.11		0.00	0.26		0.05			0.01
v/c Ratio	0.31	0.06	0.34	0.42	0.12	0.00	0.61	0.45	0.09		0.76	0.03
Uniform Delay, d1	18.0	16.8	18.2	18.6	17.1	16.6	9.5	6.6	5.1		15.8	11.1
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	0.5	0.1	0.6	1.0	0.2	0.0	5.0	0.1	0.0		4.3	0.0
Delay (s)	18.5	16.9	18.8	19.6	17.2	16.6	14.6	6.7	5.1		20.1	11.1
Level of Service	B	B	B	B	B	B	B	A	A		C	B
Approach Delay (s/veh)		18.6			18.9			8.3			19.6	
Approach LOS		B			B			A			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	15.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	61.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	74.1%	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)	1	2	3	3	1	10	2	71	1	3	114	1
Future Volume (vph)	1	2	3	3	1	10	2	71	1	3	114	1
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		0.932			0.904			0.998			0.999	
Flt Protected		0.992			0.989			0.999			0.999	
Satd. Flow (prot)	0	1215	0	0	1199	0	0	1427	0	0	1517	0
Flt Permitted		0.992			0.989			0.999			0.999	
Satd. Flow (perm)	0	1215	0	0	1199	0	0	1427	0	0	1517	0
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		1098.8			1503.1			836.4			884.7	
Travel Time (s)		65.9			90.2			50.2			53.1	
Confl. Peds. (#/hr)	8					8	2					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 (%)	100%	0%	0%	0%	0%	20%	0%	6%	100%	0%	0%	100%
Adj. Flow (vph)	1	2	3	3	1	10	2	71	1	3	114	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	6	0	0	14	0	0	74	0	0	118	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 21.7%		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)	1	2	3	3	1	10	2	71	1	3	114	1
Future Volume (Veh/h)	1	2	3	3	1	10	2	71	1	3	114	1
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)	1	2	3	3	1	10	2	71	1	3	114	1
Pedestrians		2									8	
Lane Width (m)		3.5									3.5	
Walking Speed (m/s)		1.2									1.2	
Percent Blockage		0									1	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	217	199	117	200	199	80	117			72		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	217	199	117	200	199	80	117			72		
tC, single (s)	8.1	6.5	6.2	7.1	6.5	6.4	4.1			4.1		
tC, 2 stage (s)												
tF (s)	4.4	4.0	3.3	3.5	4.0	3.5	2.2			2.2		
p0 queue free %	100	100	100	100	100	99	100			100		
cM capacity (veh/h)	559	697	940	756	697	927	1482			1541		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	6	14	74	118
Volume Left	1	3	2	3
Volume Right	3	10	1	1
cSH	764	865	1482	1541
Volume to Capacity	0.01	0.02	0.00	0.00
Queue Length 95th (m)	0.2	0.4	0.0	0.0
Control Delay (s/veh)	9.7	9.2	0.2	0.2
Lane LOS	A	A	A	A
Approach Delay (s/veh)	9.7	9.2	0.2	0.2
Approach LOS	A	A		

Intersection Summary				
Average Delay	1.1			
Intersection Capacity Utilization	21.7%	ICU Level of Service	A	
Analysis Period (min)	15			

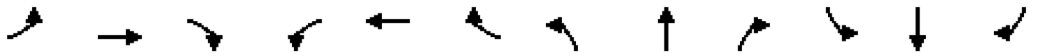
Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	2	3	3	1	10	2	71	1	3	114	1
Future Vol, veh/h	1	2	3	3	1	10	2	71	1	3	114	1
Conflicting Peds, #/hr	8	0	0	0	0	8	2	0	0	0	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	100	0	0	0	0	20	0	6	100	0	0	100
Mvmt Flow	1	2	3	3	1	10	2	71	1	3	114	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	206	199	117	197	199	80	117	0	0	72	0	0
Stage 1	123	123	-	76	76	-	-	-	-	-	-	-
Stage 2	84	76	-	121	123	-	-	-	-	-	-	-
Critical Hdwy	8.1	6.5	6.2	7.1	6.5	6.4	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	7.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	7.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	4.4	4	3.3	3.5	4	3.48	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	582	701	941	767	701	933	1484	-	-	1541	-	-
Stage 1	692	798	-	939	836	-	-	-	-	-	-	-
Stage 2	730	836	-	888	798	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	569	697	940	760	697	927	1482	-	-	1541	-	-
Mov Cap-2 Maneuver	569	697	-	760	697	-	-	-	-	-	-	-
Stage 1	689	795	-	937	835	-	-	-	-	-	-	-
Stage 2	716	834	-	881	795	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	9.73	9.23	0.2	0.19
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	49	-	-	767	866	46	-	-
HCM Lane V/C Ratio	0.001	-	-	0.008	0.016	0.002	-	-
HCM Ctrl Dly (s/v)	7.4	0	-	9.7	9.2	7.3	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

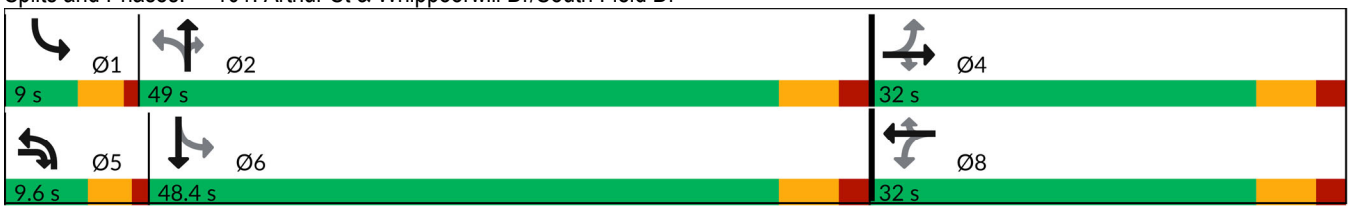


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	63	104	73	112	177	145	606	81	151	486	30
Future Volume (vph)	45	63	104	73	112	177	145	606	81	151	486	30
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1650	1650
Storage Length (m)	40.0		40.0	25.0		25.0	45.0		40.0	30.0		1.0
Storage Lanes	1		1	1		1	1		1	1		0
Taper Length (m)	50.0			50.0			40.0			60.0		
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	1.00		0.97	1.00	1.00	
Frt			0.850			0.850			0.850		0.991	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	1824	1471	1619	1879	1456	1668	1807	1428	1651	1542	0
Flt Permitted	0.685			0.716			0.305			0.280		
Satd. Flow (perm)	1197	1824	1471	1220	1879	1420	535	1807	1379	484	1542	0
Right Turn on Red			No			Yes			Yes			Yes
Satd. Flow (RTOR)						177			85		5	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		886.0			669.7			889.8			887.4	
Travel Time (s)		63.8			48.2			53.4			53.2	
Confl. Peds. (#/hr)	3					3	1		13	13		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%	3%	0%	3%	0%	1%	0%	4%	3%	1%	5%	0%
Adj. Flow (vph)	45	63	104	73	112	177	145	606	81	151	486	30
Shared Lane Traffic (%)												
Lane Group Flow (vph)	45	63	104	73	112	177	145	606	81	151	516	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.11	1.01	1.13	1.11	1.01	1.13	1.11	1.01	1.13	1.11	1.21	1.21
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	pm+ov	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4	5		8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		
Detector Phase	4	4	5	8	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	12.0	12.0	5.0	12.0	12.0	12.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	32.0	32.0	9.5	32.0	32.0	32.0	9.5	47.7	47.7	9.0	47.7	
Total Split (s)	32.0	32.0	9.6	32.0	32.0	32.0	9.6	49.0	49.0	9.0	48.4	
Total Split (%)	35.6%	35.6%	10.7%	35.6%	35.6%	35.6%	10.7%	54.4%	54.4%	10.0%	53.8%	
Maximum Green (s)	26.0	26.0	5.6	26.0	26.0	26.0	5.6	43.0	43.0	5.0	42.4	
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	2.0	2.0	1.0	2.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0	0.0	-2.0	-2.0	-2.0	0.0	-2.0	-2.0	-2.0	0.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	2.0	6.0	
Lead/Lag			Lead				Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?			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	Min	Min	None	Min	
Walk Time (s)	10.0	10.0		10.0	10.0	10.0		21.8	21.8		21.8	
Flash Don't Walk (s)	16.0	16.0		16.0	16.0	16.0		19.0	19.0		19.0	
Pedestrian Calls (#/hr)	0	0		0	0	0		0	0		0	
Act Effct Green (s)	14.6	14.6	24.4	14.6	14.6	14.6	33.4	29.1	29.1	35.5	24.3	
Actuated g/C Ratio	0.25	0.25	0.41	0.25	0.25	0.25	0.57	0.49	0.49	0.60	0.41	
v/c Ratio	0.15	0.14	0.17	0.24	0.24	0.36	0.35	0.68	0.11	0.35	0.81	
Control Delay (s/veh)	22.0	21.1	14.5	23.1	22.0	6.8	7.1	16.4	2.5	6.2	25.7	
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 (s/veh)	22.0	21.1	14.5	23.1	22.0	6.8	7.1	16.4	2.5	6.2	25.7	
LOS	C	C	B	C	C	A	A	B	A	A	C	
Approach Delay (s/veh)		18.0			14.8			13.4			21.2	
Approach LOS		B			B			B			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 58.9			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay (s/veh): 16.6		Intersection LOS: B	
Intersection Capacity Utilization 65.8%		ICU Level of Service C	
Analysis Period (min) 15			

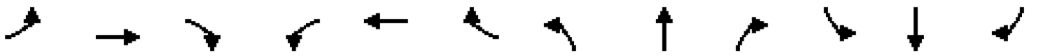
Splits and Phases: 101: Arthur St & Whippoorwill Dr/South Field Dr





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	45	63	104	73	112	177	145	606	81	151	516
v/c Ratio	0.15	0.14	0.17	0.24	0.24	0.36	0.35	0.68	0.11	0.35	0.81
Control Delay (s/veh)	22.0	21.1	14.5	23.1	22.0	6.8	7.1	16.4	2.5	6.2	25.7
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 (s/veh)	22.0	21.1	14.5	23.1	22.0	6.8	7.1	16.4	2.5	6.2	25.7
Queue Length 50th (m)	3.9	5.4	6.8	6.4	9.8	0.0	5.7	50.7	0.0	5.2	47.1
Queue Length 95th (m)	13.9	17.3	21.6	20.3	27.3	15.1	12.2	86.7	5.2	11.3	84.0
Internal Link Dist (m)		862.0			645.7			865.8			863.4
Turn Bay Length (m)	40.0		40.0	25.0		25.0	45.0		40.0	30.0	
Base Capacity (vph)	580	885	610	592	911	779	413	1409	1093	433	1134
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	0.08	0.07	0.17	0.12	0.12	0.23	0.35	0.43	0.07	0.35	0.46

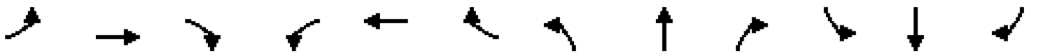
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	63	104	73	112	177	145	606	81	151	486	30
Future Volume (vph)	45	63	104	73	112	177	145	606	81	151	486	30
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	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	2.0	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	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00	
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	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1663	1824	1471	1619	1879	1422	1667	1807	1386	1650	1543	
Flt Permitted	0.68	1.00	1.00	0.72	1.00	1.00	0.31	1.00	1.00	0.28	1.00	
Satd. Flow (perm)	1199	1824	1471	1220	1879	1422	536	1807	1386	487	1543	
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)	45	63	104	73	112	177	145	606	81	151	486	30
RTOR Reduction (vph)	0	0	0	0	0	134	0	0	42	0	3	0
Lane Group Flow (vph)	45	63	104	73	112	43	145	606	39	151	513	0
Confl. Peds. (#/hr)	3					3	1		13	13		1
Heavy Vehicles (%)	0%	3%	0%	3%	0%	1%	0%	4%	3%	1%	5%	0%
Turn Type	Perm	NA	pm+ov	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4	5		8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		
Actuated Green, G (s)	12.6	12.6	18.3	12.6	12.6	12.6	32.7	27.0	27.0	29.1	25.2	
Effective Green, g (s)	14.6	14.6	18.3	14.6	14.6	14.6	32.7	29.0	29.0	33.1	25.2	
Actuated g/C Ratio	0.25	0.25	0.31	0.25	0.25	0.25	0.55	0.49	0.49	0.56	0.42	
Clearance Time (s)	6.0	6.0	4.0	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	3.0	
Lane Grp Cap (vph)	294	447	452	299	461	348	402	880	675	386	653	
v/s Ratio Prot		0.03	0.02		0.06		c0.03	c0.34		c0.04	0.33	
v/s Ratio Perm	0.04		0.05	c0.06		0.03	0.16		0.03	0.18		
v/c Ratio	0.15	0.14	0.23	0.24	0.24	0.12	0.36	0.69	0.06	0.39	0.79	
Uniform Delay, d1	17.6	17.5	15.4	18.0	18.0	17.5	7.5	11.8	8.0	7.4	14.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.2	0.1	0.3	0.4	0.3	0.2	0.6	2.3	0.0	0.7	6.2	
Delay (s)	17.8	17.7	15.6	18.4	18.3	17.6	8.1	14.0	8.1	8.1	21.0	
Level of Service	B	B	B	B	B	B	A	B	A	A	C	
Approach Delay (s/veh)		16.7			18.0			12.4			18.1	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	15.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	59.5	Sum of lost time (s)	14.0
Intersection Capacity Utilization	65.8%	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)	41	72	50	12	135	132	18	92	22	77	137	72
Future Volume (vph)	41	72	50	12	135	132	18	92	22	77	137	72
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1775	1650	1650	1775	1650	1650
Storage Length (m)	0.0		0.0	0.0		0.0	25.0		0.0	20.0		0.0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			40.0			25.0		
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		0.959			0.936			0.971			0.948	
Flt Protected		0.988			0.998		0.950			0.950		
Satd. Flow (prot)	0	1415	0	0	1374	0	1668	1328	0	1558	1478	0
Flt Permitted		0.988			0.998		0.950			0.950		
Satd. Flow (perm)	0	1415	0	0	1374	0	1668	1328	0	1558	1478	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		669.7			255.5			857.7			256.9	
Travel Time (s)		48.2			18.4			61.8			18.5	
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 (%)	8%	0%	2%	10%	2%	6%	0%	17%	29%	7%	4%	6%
Adj. Flow (vph)	41	72	50	12	135	132	18	92	22	77	137	72
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	163	0	0	279	0	18	114	0	77	209	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.31	1.31	1.31	1.31	1.31	1.31	1.11	1.21	1.21	1.11	1.21	1.21
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 53.6%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	41	72	50	12	135	132	18	92	22	77	137	72
Future Volume (vph)	41	72	50	12	135	132	18	92	22	77	137	72
Peak Hour Factor	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	72	50	12	135	132	18	92	22	77	137	72

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	163	279	18	114	77	209
Volume Left (vph)	41	12	18	0	77	0
Volume Right (vph)	50	132	0	22	0	72
Hadj (s)	-0.09	-0.20	0.50	0.19	0.62	-0.16
Departure Headway (s)	5.4	5.1	6.7	6.3	6.6	5.8
Degree Utilization, x	0.25	0.40	0.03	0.20	0.14	0.33
Capacity (veh/h)	609	659	496	520	515	587
Control Delay (s/veh)	10.2	11.4	8.7	9.7	9.4	10.4
Approach Delay (s/veh)	10.2	11.4	9.6		10.2	
Approach LOS	B	B	A		B	

Intersection Summary				
Delay	10.5			
Level of Service	B			
Intersection Capacity Utilization	53.6%	ICU Level of Service		A
Analysis Period (min)	15			

Intersection	
Intersection Delay, s/veh	11.2
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	41	72	50	12	135	132	18	92	22	77	137	72
Future Vol, veh/h	41	72	50	12	135	132	18	92	22	77	137	72
Peak Hour Factor	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, %	8	0	2	10	2	6	0	17	29	7	4	6
Mvmt Flow	41	72	50	12	135	132	18	92	22	77	137	72
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0

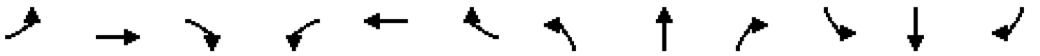
Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	1
HCM Control Delay, s/veh	10.5	11.9	10.5	11.1
HCM LOS	B	B	B	B

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	25%	4%	100%	0%
Vol Thru, %	0%	81%	44%	48%	0%	66%
Vol Right, %	0%	19%	31%	47%	0%	34%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	18	114	163	279	77	209
LT Vol	18	0	41	12	77	0
Through Vol	0	92	72	135	0	137
RT Vol	0	22	50	132	0	72
Lane Flow Rate	18	114	163	279	77	209
Geometry Grp	5	5	2	2	5	5
Degree of Util (X)	0.033	0.2	0.251	0.407	0.14	0.335
Departure Headway (Hd)	6.675	6.322	5.553	5.258	6.568	5.764
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	536	568	645	684	547	625
Service Time	4.417	4.065	3.594	3.293	4.303	3.498
HCM Lane V/C Ratio	0.034	0.201	0.253	0.408	0.141	0.334
HCM Control Delay, s/veh	9.6	10.6	10.5	11.9	10.4	11.4
HCM Lane LOS	A	B	B	B	B	B
HCM 95th-tile Q	0.1	0.7	1	2	0.5	1.5



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑			↑			↑			↑	
Traffic Volume (vph)	0	171	0	0	279	0	0	0	0	0	0	0
Future Volume (vph)	0	171	0	0	279	0	0	0	0	0	0	0
Ideal Flow (vphpl)	1000	1900	1000	1000	1900	1000	1000	1900	1000	1000	1900	1000
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	1842	0	0	1842	0	0	1842	0	0	1842	0
Flt Permitted												
Satd. Flow (perm)	0	1842	0	0	1842	0	0	1842	0	0	1842	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		255.5			1269.9			164.4			156.0	
Travel Time (s)		18.4			91.4			11.8			11.2	
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
Adj. Flow (vph)	0	171	0	0	279	0	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	171	0	0	279	0	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	2.20	1.01	2.20	2.20	1.01	2.20	2.20	1.01	2.20	2.20	1.01	2.20
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 18.0%		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	171	0	0	279	0	0	0	0	0	0	0
Future Volume (Veh/h)	0	171	0	0	279	0	0	0	0	0	0	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	171	0	0	279	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	140	0	0	86	0	0	0			0		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	140	0	0	86	0	0	0			0		
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	81	100	100	69	100	100			100		
cM capacity (veh/h)	630	896	1085	769	896	1085	1623			1623		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	171	279	0	0
Volume Left	0	0	0	0
Volume Right	0	0	0	0
cSH	896	896	1700	1700
Volume to Capacity	0.19	0.31	0.00	0.00
Queue Length 95th (m)	5.6	10.7	0.0	0.0
Control Delay (s/veh)	10.0	10.8	0.0	0.0
Lane LOS	A	B		
Approach Delay (s/veh)	10.0	10.8	0.0	0.0
Approach LOS	A	B		

Intersection Summary				
Average Delay	10.5			
Intersection Capacity Utilization	18.0%	ICU Level of Service	A	
Analysis Period (min)	15			

Intersection	
Int Delay, s/veh	10.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑			↑			↑			↑	
Traffic Vol, veh/h	0	171	0	0	279	0	0	0	0	0	0	0
Future Vol, veh/h	0	171	0	0	279	0	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	171	0	0	279	0	0	0	0	0	0	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	1	-	-	1	-	-	0	-	-	-	0
Stage 1	-	1	-	-	0	-	-	-	-	-	-	-
Stage 2	-	0	-	-	1	-	-	-	-	-	-	-
Critical Hdwy	-	6.52	-	-	6.52	-	-	-	-	-	-	-
Critical Hdwy Stg 1	-	5.52	-	-	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	5.52	-	-	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	-	4.018	-	-	4.018	-	-	-	-	-	-	-
Pot Cap-1 Maneuver	0	895	0	0	895	0	0	-	0	0	-	0
Stage 1	0	895	0	0	-	0	0	-	0	0	-	0
Stage 2	0	-	0	0	895	0	0	-	0	0	-	0
Platoon blocked, %								-			-	
Mov Cap-1 Maneuver	-	895	-	-	895	-	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	895	-	-	895	-	-	-	-	-	-	-
Stage 1	-	895	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	895	-	-	-	-	-	-	-

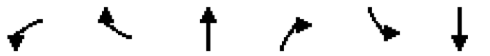
Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	9.97	10.84	0	0
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBT	EBLn1	WBLn1	SBT
Capacity (veh/h)	-	895	895	-
HCM Lane V/C Ratio	-	0.191	0.312	-
HCM Ctrl Dly (s/v)	-	10	10.8	-
HCM Lane LOS	-	A	B	-
HCM 95th %tile Q(veh)	-	0.7	1.3	-



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	948	1	1	942
Future Volume (vph)	0	0	948	1	1	942
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)	1745	0	1539	0	0	1525
Flt Permitted						
Satd. Flow (perm)	1745	0	1539	0	0	1525
Link Speed (k/h)	60		80			80
Link Distance (m)	527.8		756.1			487.8
Travel Time (s)	31.7		34.0			22.0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	6%	0%	0%	7%
Adj. Flow (vph)	0	0	948	1	1	942
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	949	0	0	943
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.5		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.12	1.12	1.21	1.21	1.21	1.21
Turning Speed (k/h)	25	15		15	25	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 61.3%		ICU Level of Service B	
Analysis Period (min) 15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	948	1	1	942
Future Volume (Veh/h)	0	0	948	1	1	942
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	948	1	1	942
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1893	949			949	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1893	949			949	
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)	78	319			732	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	0	949	943
Volume Left	0	0	1
Volume Right	0	1	0
cSH	1700	1700	732
Volume to Capacity	0.00	0.56	0.00
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s/veh)	0.0	0.0	0.0
Lane LOS	A		A
Approach Delay (s/veh)	0.0	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	61.3%	ICU Level of Service	B
Analysis Period (min)	15		

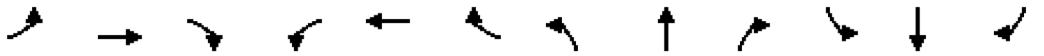
Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	948	1	1	942
Future Vol, veh/h	0	0	948	1	1	942
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	6	0	0	7
Mvmt Flow	0	0	948	1	1	942

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1893	949	0	0	949	0
Stage 1	949	-	-	-	-	-
Stage 2	944	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	78	319	-	-	732	-
Stage 1	380	-	-	-	-	-
Stage 2	381	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	78	319	-	-	732	-
Mov Cap-2 Maneuver	78	-	-	-	-	-
Stage 1	380	-	-	-	-	-
Stage 2	380	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	0	0	0.01
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	2	-
HCM Lane V/C Ratio	-	-	-	0.001	-
HCM Ctrl Dly (s/v)	-	-	0	9.9	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	-	0	-

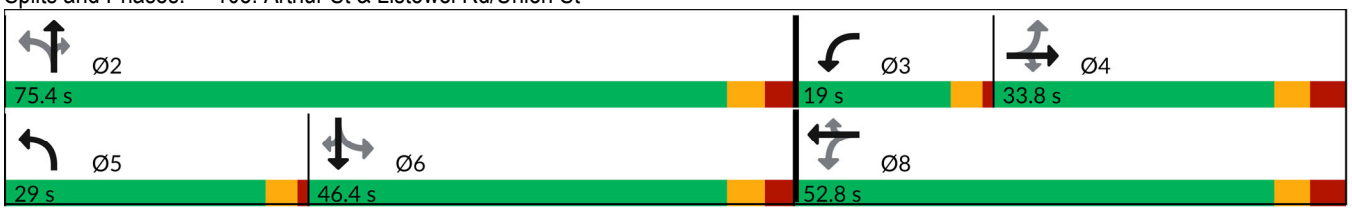


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	78	48	252	242	88	13	270	629	49	0	449	81
Future Volume (vph)	78	48	252	242	88	13	270	629	49	0	449	81
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1900	1750
Storage Length (m)	60.0		60.0	25.0		25.0	100.0		100.0	50.0		50.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	60.0			60.0			80.0			75.0		
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			0.850			0.850
Flt Protected	0.950			0.950			0.950					
Satd. Flow (prot)	1573	1342	1313	1619	1756	1279	1573	1842	1290	1755	1807	1414
Flt Permitted	0.700			0.558			0.134					
Satd. Flow (perm)	1159	1342	1313	951	1756	1279	222	1842	1290	1755	1807	1414
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			252			63			66			100
Link Speed (k/h)		50			50			60			50	
Link Distance (m)		1165.2			256.4			359.9			889.8	
Travel Time (s)		83.9			18.5			21.6			64.1	
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 (%)	6%	40%	12%	3%	7%	15%	6%	2%	14%	0%	4%	4%
Adj. Flow (vph)	78	48	252	242	88	13	270	629	49	0	449	81
Shared Lane Traffic (%)												
Lane Group Flow (vph)	78	48	252	242	88	13	270	629	49	0	449	81
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.11	1.01	1.13	1.11	1.01	1.13	1.11	1.01	1.13	1.11	1.01	1.13
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		4		3	8		5	2			6	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	4	4	4	3	8	8	5	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	7.0	10.0	10.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	33.8	33.8	33.8	11.5	33.8	33.8	11.5	46.4	46.4	46.4	46.4	46.4
Total Split (s)	33.8	33.8	33.8	19.0	52.8	52.8	29.0	75.4	75.4	46.4	46.4	46.4
Total Split (%)	26.4%	26.4%	26.4%	14.8%	41.2%	41.2%	22.6%	58.8%	58.8%	36.2%	36.2%	36.2%
Maximum Green (s)	27.0	27.0	27.0	15.0	46.0	46.0	25.0	69.0	69.0	40.0	40.0	40.0
Yellow Time (s)	3.3	3.3	3.3	3.0	3.3	3.3	3.0	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	3.5	3.5	3.5	1.0	3.5	3.5	1.0	2.7	2.7	2.7	2.7	2.7
Lost Time Adjust (s)	-2.8	-2.8	-2.8	0.0	-2.8	-2.8	0.0	-2.4	-2.4	-2.4	-2.4	-2.4
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lag	Lead			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	5.0	0.2	0.2	0.2	0.2	0.2
Recall Mode	None	None	None	None	None	None	None	Min	Min	Min	Min	Min
Walk Time (s)	7.0	7.0	7.0		7.0	7.0		20.0	20.0	20.0	20.0	20.0
Flash Don't Walk (s)	20.0	20.0	20.0		20.0	20.0		20.0	20.0	20.0	20.0	20.0
Pedestrian Calls (#/hr)	0	0	0		0	0		0	0	0	0	0
Act Effct Green (s)	16.1	16.1	16.1	33.8	33.8	33.8	53.4	53.4	53.4		28.4	28.4
Actuated g/C Ratio	0.17	0.17	0.17	0.35	0.35	0.35	0.56	0.56	0.56		0.30	0.30
v/c Ratio	0.40	0.21	0.59	0.56	0.14	0.03	0.65	0.61	0.07		0.84	0.17
Control Delay (s/veh)	46.9	41.7	11.4	31.9	25.2	0.1	26.3	17.1	1.7		46.8	4.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay (s/veh)	46.9	41.7	11.4	31.9	25.2	0.1	26.3	17.1	1.7		46.8	4.3
LOS	D	D	B	C	C	A	C	B	A		D	A
Approach Delay (s/veh)		22.6			29.0			18.9			40.3	
Approach LOS		C			C			B			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 128.2			
Actuated Cycle Length: 95.6			
Natural Cycle: 105			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay (s/veh): 26.3		Intersection LOS: C	
Intersection Capacity Utilization 70.7%		ICU Level of Service C	
Analysis Period (min) 15			

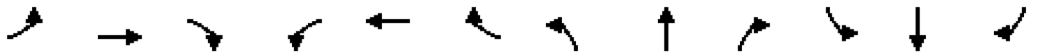
Splits and Phases: 105: Arthur St & Listowel Rd/Union St





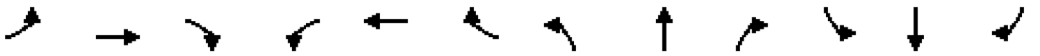
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	78	48	252	242	88	13	270	629	49	449	81
v/c Ratio	0.40	0.21	0.59	0.56	0.14	0.03	0.65	0.61	0.07	0.84	0.17
Control Delay (s/veh)	46.9	41.7	11.4	31.9	25.2	0.1	26.3	17.1	1.7	46.8	4.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	46.9	41.7	11.4	31.9	25.2	0.1	26.3	17.1	1.7	46.8	4.3
Queue Length 50th (m)	14.1	8.4	0.0	35.9	11.7	0.0	30.1	76.0	0.0	82.3	0.0
Queue Length 95th (m)	33.0	22.0	24.7	71.3	27.7	0.0	68.4	127.1	3.5	135.5	7.6
Internal Link Dist (m)		1141.2			232.4			335.9		865.8	
Turn Bay Length (m)	60.0		60.0	25.0		25.0	100.0		100.0		50.0
Base Capacity (vph)	375	435	595	445	932	708	491	1417	1007	833	706
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	0.21	0.11	0.42	0.54	0.09	0.02	0.55	0.44	0.05	0.54	0.11

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	78	48	252	242	88	13	270	629	49	0	449	81
Future Volume (vph)	78	48	252	242	88	13	270	629	49	0	449	81
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	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	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	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00		1.00	1.00
Satd. Flow (prot)	1573	1342	1313	1619	1756	1279	1573	1842	1290		1807	1414
Flt Permitted	0.70	1.00	1.00	0.56	1.00	1.00	0.13	1.00	1.00		1.00	1.00
Satd. Flow (perm)	1159	1342	1313	951	1756	1279	221	1842	1290		1807	1414
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)	78	48	252	242	88	13	270	629	49	0	449	81
RTOR Reduction (vph)	0	0	209	0	0	8	0	0	22	0	0	57
Lane Group Flow (vph)	78	48	43	242	88	5	270	629	27	0	449	24
Heavy Vehicles (%)	6%	40%	12%	3%	7%	15%	6%	2%	14%	0%	4%	4%
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		4		3	8		5	2			6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	13.3	13.3	13.3	30.9	30.9	30.9	50.9	50.9	50.9		26.1	26.1
Effective Green, g (s)	16.1	16.1	16.1	30.9	33.7	33.7	50.9	53.3	53.3		28.5	28.5
Actuated g/C Ratio	0.17	0.17	0.17	0.33	0.35	0.35	0.54	0.56	0.56		0.30	0.30
Clearance Time (s)	6.8	6.8	6.8	4.0	6.8	6.8	4.0	6.4	6.4		6.4	6.4
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	5.0	0.2	0.2		0.2	0.2
Lane Grp Cap (vph)	196	227	222	404	622	453	414	1033	723		542	424
v/s Ratio Prot		0.04		c0.09	0.05		c0.14	0.34			c0.25	
v/s Ratio Perm	0.07		0.03	c0.11		0.00	0.21		0.02			0.02
v/c Ratio	0.40	0.21	0.19	0.60	0.14	0.01	0.65	0.61	0.04		0.83	0.06
Uniform Delay, d1	35.1	34.0	33.9	25.5	20.8	19.8	19.1	13.9	9.4		31.0	23.7
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	1.3	0.5	0.4	2.4	0.1	0.0	4.9	0.7	0.0		9.6	0.0
Delay (s)	36.5	34.4	34.3	27.9	20.9	19.9	24.1	14.6	9.4		40.6	23.7
Level of Service	D	C	C	C	C	B	C	B	A		D	C
Approach Delay (s/veh)		34.8			25.8			17.0			38.0	
Approach LOS		C			C			B			D	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	26.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	95.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	70.7%	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)	1	0	1	1	0	2	1	276	5	12	156	3
Future Volume (vph)	1	0	1	1	0	2	1	276	5	12	156	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		0.932			0.910			0.998			0.998	
Flt Protected		0.976			0.984						0.997	
Satd. Flow (prot)	0	1394	0	0	1363	0	0	1515	0	0	1507	0
Flt Permitted		0.976			0.984						0.997	
Satd. Flow (perm)	0	1394	0	0	1363	0	0	1515	0	0	1507	0
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		1098.4			1523.9			918.5			889.7	
Travel Time (s)		65.9			91.4			55.1			53.4	
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%	2%	0%	0%	0%	1%	0%	0%	0%	67%
Adj. Flow (vph)	1	0	1	1	0	2	1	276	5	12	156	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	2	0	0	3	0	0	282	0	0	171	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 31.3%		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)	1	0	1	1	0	2	1	276	5	12	156	3
Future Volume (Veh/h)	1	0	1	1	0	2	1	276	5	12	156	3
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)	1	0	1	1	0	2	1	276	5	12	156	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	464	465	158	463	464	279	159			281		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	464	465	158	463	464	279	159			281		
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			99		
cM capacity (veh/h)	507	493	893	505	494	765	1433			1293		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	2	3	282	171
Volume Left	1	1	1	12
Volume Right	1	2	5	3
cSH	646	653	1433	1293
Volume to Capacity	0.00	0.00	0.00	0.01
Queue Length 95th (m)	0.1	0.1	0.0	0.2
Control Delay (s/veh)	10.6	10.5	0.0	0.6
Lane LOS	B	B	A	A
Approach Delay (s/veh)	10.6	10.5	0.0	0.6
Approach LOS	B	B		

Intersection Summary				
Average Delay	0.4			
Intersection Capacity Utilization	31.3%	ICU Level of Service	A	
Analysis Period (min)	15			

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	1	0	1	1	0	2	1	276	5	12	156	3
Future Vol, veh/h	1	0	1	1	0	2	1	276	5	12	156	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	2	0	0	0	1	0	0	0	67
Mvmt Flow	1	0	1	1	0	2	1	276	5	12	156	3

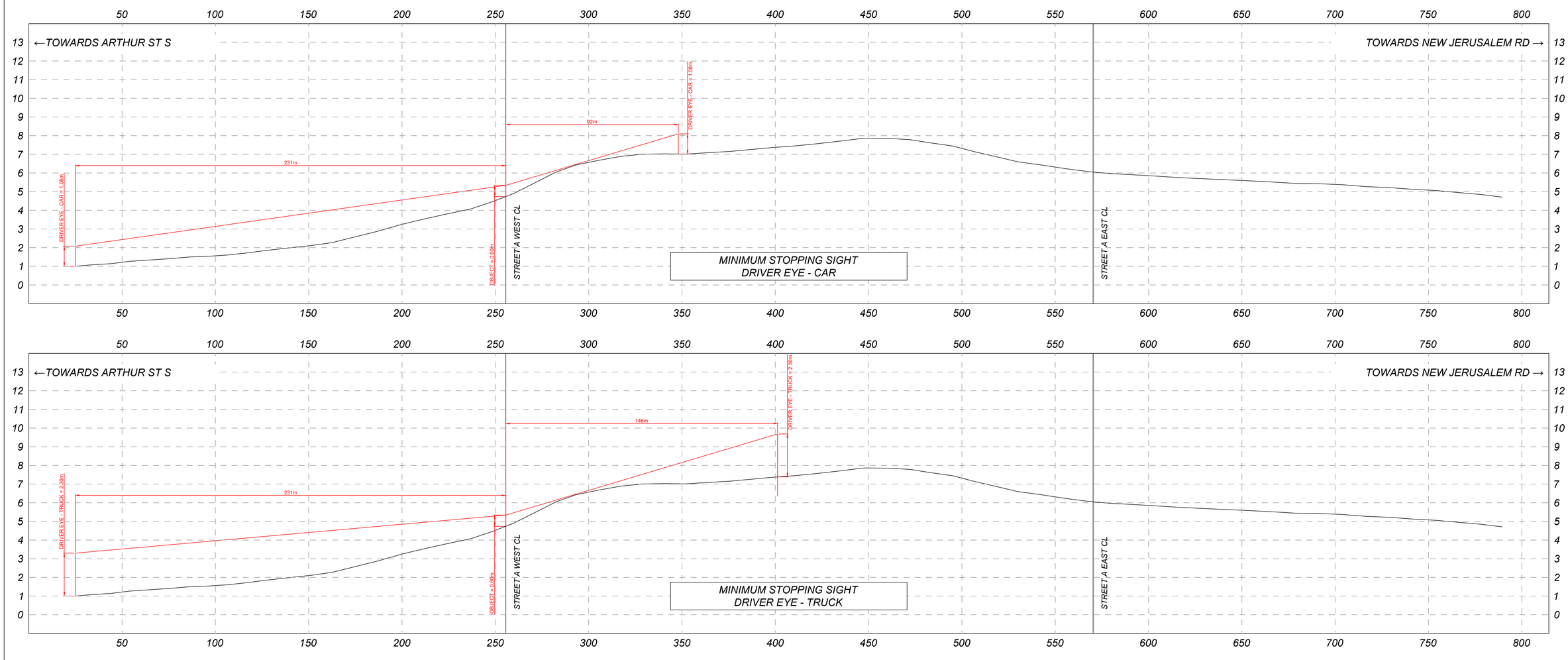
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	460	465	158	461	464	279	159	0	0	281	0	0
Stage 1	182	182	-	281	281	-	-	-	-	-	-	-
Stage 2	278	283	-	180	183	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.12	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.12	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.12	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.518	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	515	498	893	511	499	765	1433	-	-	1293	-	-
Stage 1	825	753	-	726	682	-	-	-	-	-	-	-
Stage 2	733	681	-	822	752	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	508	493	893	505	493	765	1433	-	-	1293	-	-
Mov Cap-2 Maneuver	508	493	-	505	493	-	-	-	-	-	-	-
Stage 1	817	745	-	726	682	-	-	-	-	-	-	-
Stage 2	730	680	-	812	744	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	10.57	10.54	0.03	0.55
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	6	-	-	648	653	126	-	-
HCM Lane V/C Ratio	0.001	-	-	0.003	0.005	0.009	-	-
HCM Ctrl Dly (s/v)	7.5	0	-	10.6	10.5	7.8	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

Appendix D

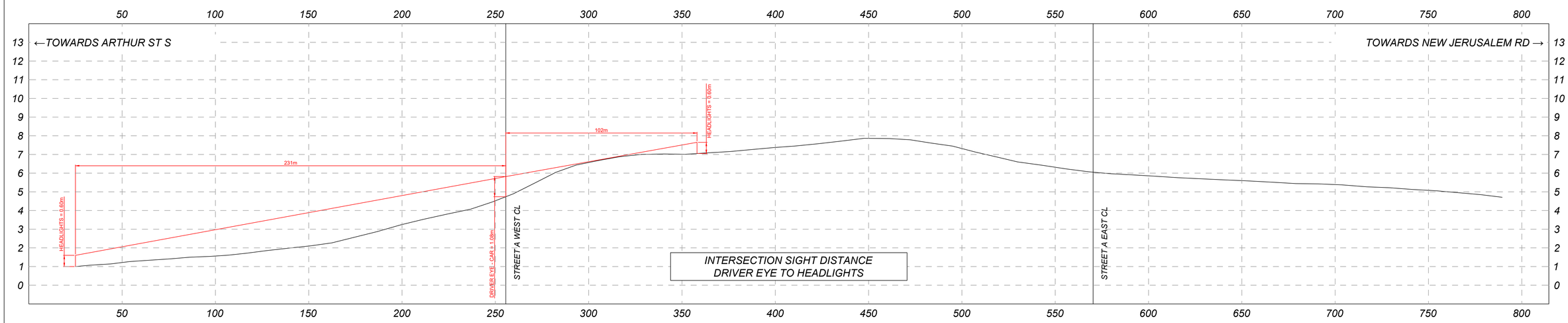
Sight Distance Analysis

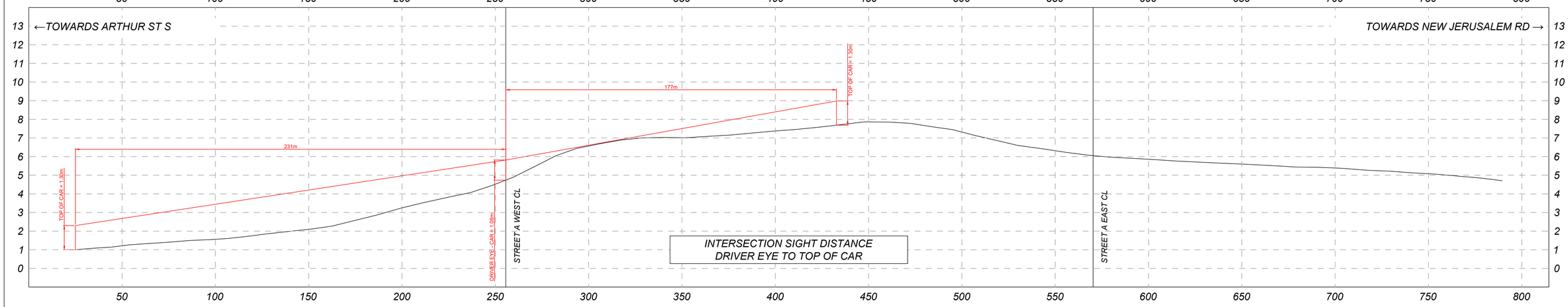


paradigm TRANSPORTATION SOLUTIONS LIMITED

SIGHT DISTANCE ASSESSMENT
1665 SCOTCH LINE ROAD
WOOLWICH, ON

PROJECT NO.: 240259	DATE: JAN 2026	SCALE HOR: 1:1000 SCALE VERT: 10:1	DRAWING NO.: 01
DESIGN: SC	DRAWN: SC	CHECK: EB	

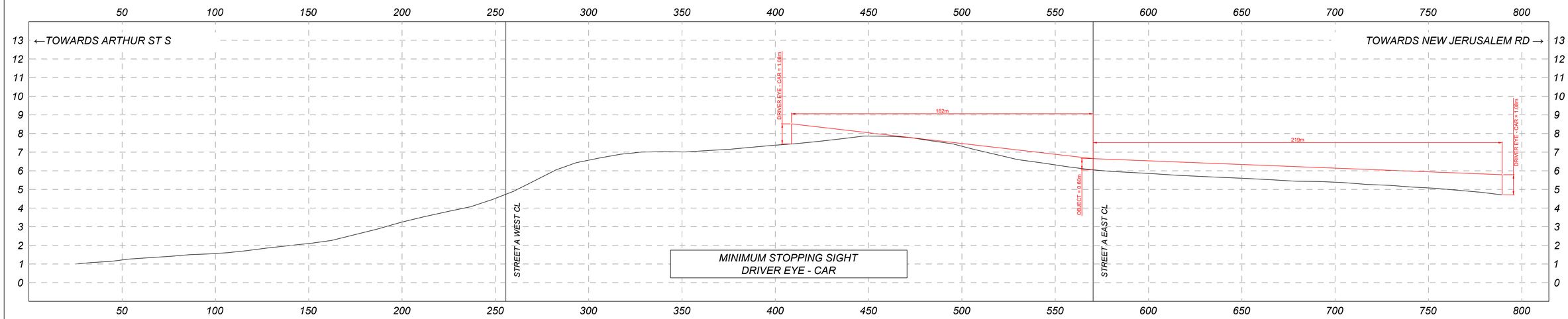


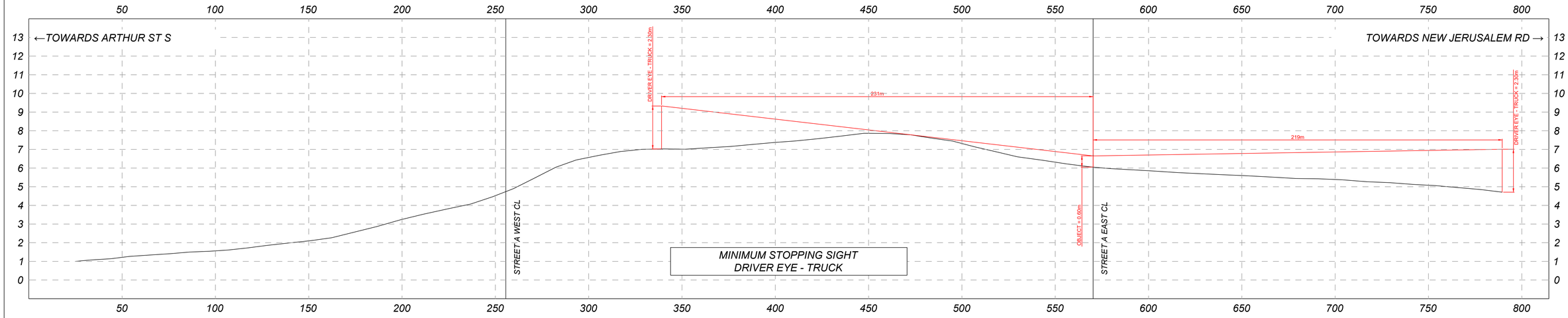


paradigm TRANSPORTATION SOLUTIONS LIMITED

SIGHT DISTANCE ASSESSMENT
1665 SCOTCH LINE ROAD
WOOLWICH, ON

PROJECT NO.: 240259	DATE: JAN 2026	SCALE HOR: 1:1000 SCALE VERT: 10:1	DRAWING NO.: 02
DESIGN: SC	DRAWN: SC	CHECK: EB	

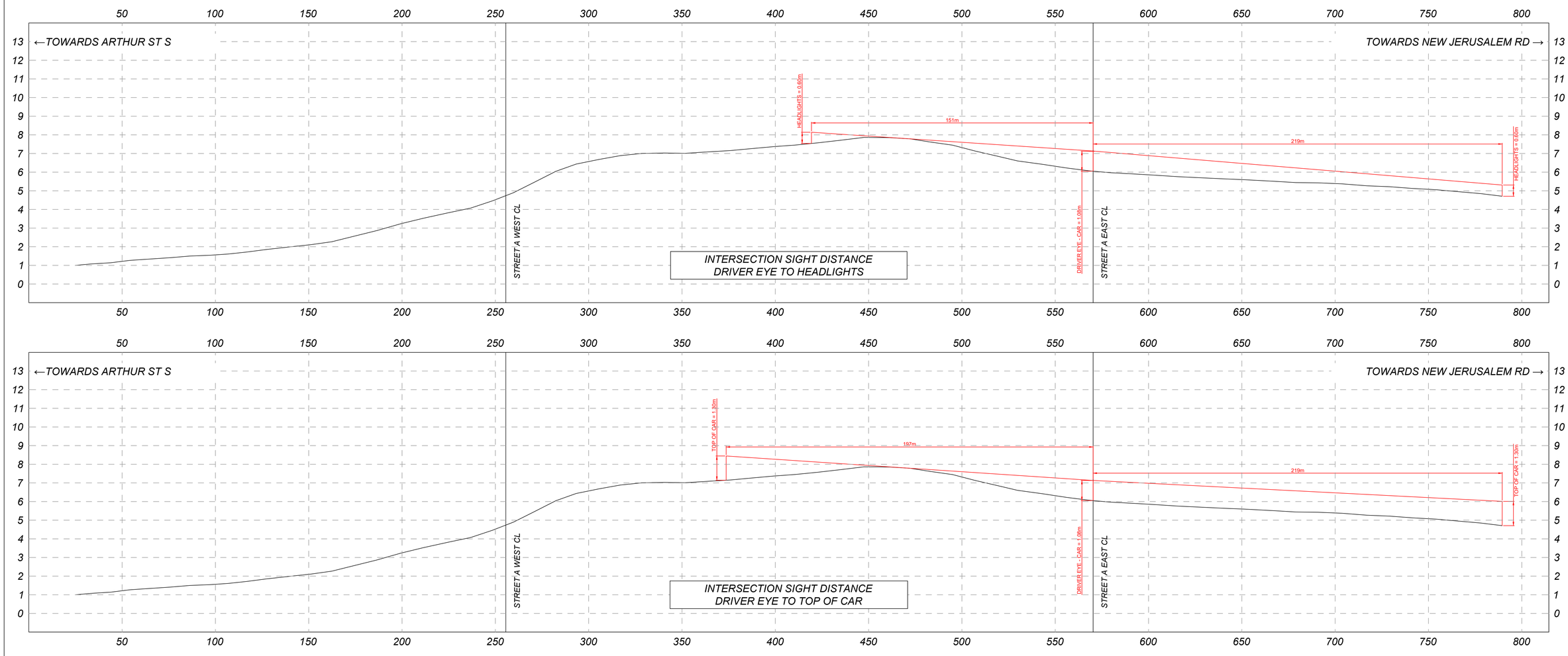




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SIGHT DISTANCE ASSESSMENT
1665 SCOTCH LINE ROAD
WOOLWICH, ON

PROJECT NO.: 240259	DATE: JAN 2026	SCALE HOR: 1:1000 SCALE VERT: 10:1	DRAWING NO.: 03
DESIGN: SC	DRAWN: SC	CHECK: EB	



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SIGHT DISTANCE ASSESSMENT
1665 SCOTCH LINE ROAD
WOOLWICH, ON

PROJECT NO.: 240259	DATE: JAN 2026	SCALE HOR: 1:1000 SCALE VERT: 10:1	DRAWING NO.: 04
DESIGN: SC	DRAWN: SC	CHECK: EB	

Appendix E

2022 TTS Data

origin_id	dest_id	route_type	POI	total
1519	12556	origin_to_site		12
4057	12556	origin_to_site	North Arthur	7
4376	12556	origin_to_site		50
12022	12556	origin_to_site		13
12047	12556	origin_to_site		29
12059	12556	origin_to_site		12
12065	12556	origin_to_site		52
12072	12556	origin_to_site		25
12075	12556	origin_to_site		23
12089	12556	origin_to_site		15
12097	12556	origin_to_site		39
12113	12556	origin_to_site		53
12118	12556	origin_to_site		38
12173	12556	origin_to_site		35
12187	12556	origin_to_site		18
12201	12556	origin_to_site		29
12205	12556	origin_to_site		42
12215	12556	origin_to_site		125
12224	12556	origin_to_site		31
12230	12556	origin_to_site		9
12240	12556	origin_to_site		17
12247	12556	origin_to_site		49
12253	12556	origin_to_site		19
12255	12556	origin_to_site		36
12283	12556	origin_to_site		18
12297	12556	origin_to_site		13
12298	12556	origin_to_site		19
12343	12556	origin_to_site		55
12384	12556	origin_to_site		19
12478	12556	origin_to_site		32
12486	12556	origin_to_site	West Listowel	11

12498	12556	origin_to_site	West Listowel	77
12524	12556	origin_to_site		13
12538	12556	origin_to_site		4
12546	12556	origin_to_site		50
12554	12556	origin_to_site	West Listowel	44
12556	1340	site_to_destination		10
12556	4376	site_to_destination		151
12556	12042	site_to_destination		16
12556	12047	site_to_destination		29
12556	12053	site_to_destination		20
12556	12207	site_to_destination		64
12556	12274	site_to_destination		10
12556	12555	site_to_destination		11
12556	12556	origin_to_site	North Union	126
12556	12556	site_to_destination	North Union	126
12556	12557	site_to_destination	West Whippoorwill	296
12556	12558	site_to_destination	North Arthur	58
12556	12562	site_to_destination	West Whippoorwill	58
12556	12565	site_to_destination	West Listowel	10
12556	27016	site_to_destination	North Arthur	25
12556	98005	invalid_zone	Invalid zone - route not processed	14
12557	12556	origin_to_site	West Whippoorwill	344
12558	12556	origin_to_site	North Arthur	132
12559	12556	origin_to_site	North Arthur	12
12562	12556	origin_to_site	North Arthur	117
12565	12556	origin_to_site	West Listowel	10
12576	12556	origin_to_site		6
13012	12556	origin_to_site	North Arthur	12
13168	12556	origin_to_site	North Arthur	9
14056	12556	origin_to_site	North Arthur	39
14061	12556	origin_to_site	North Arthur	76
14077	12556	origin_to_site	North Arthur	14

POI Name	POI_ID	Latitude	Longitude	Threshold (km)
North Arthur	POI_1	43.58621941	-80.56191487	0.103
North Union	POI_2	43.58716109	-80.55441162	0.103
West Whippoorwill	POI_3	43.58473959	-80.56653939	0.1
West Listowel	POI_4	43.57687539	-80.56992053	0.1
South Arthur	POI_5	43.57006766	-80.56276632	0.1
South New Jerusalem	POI_6	43.56948482	-80.53546194	0.1

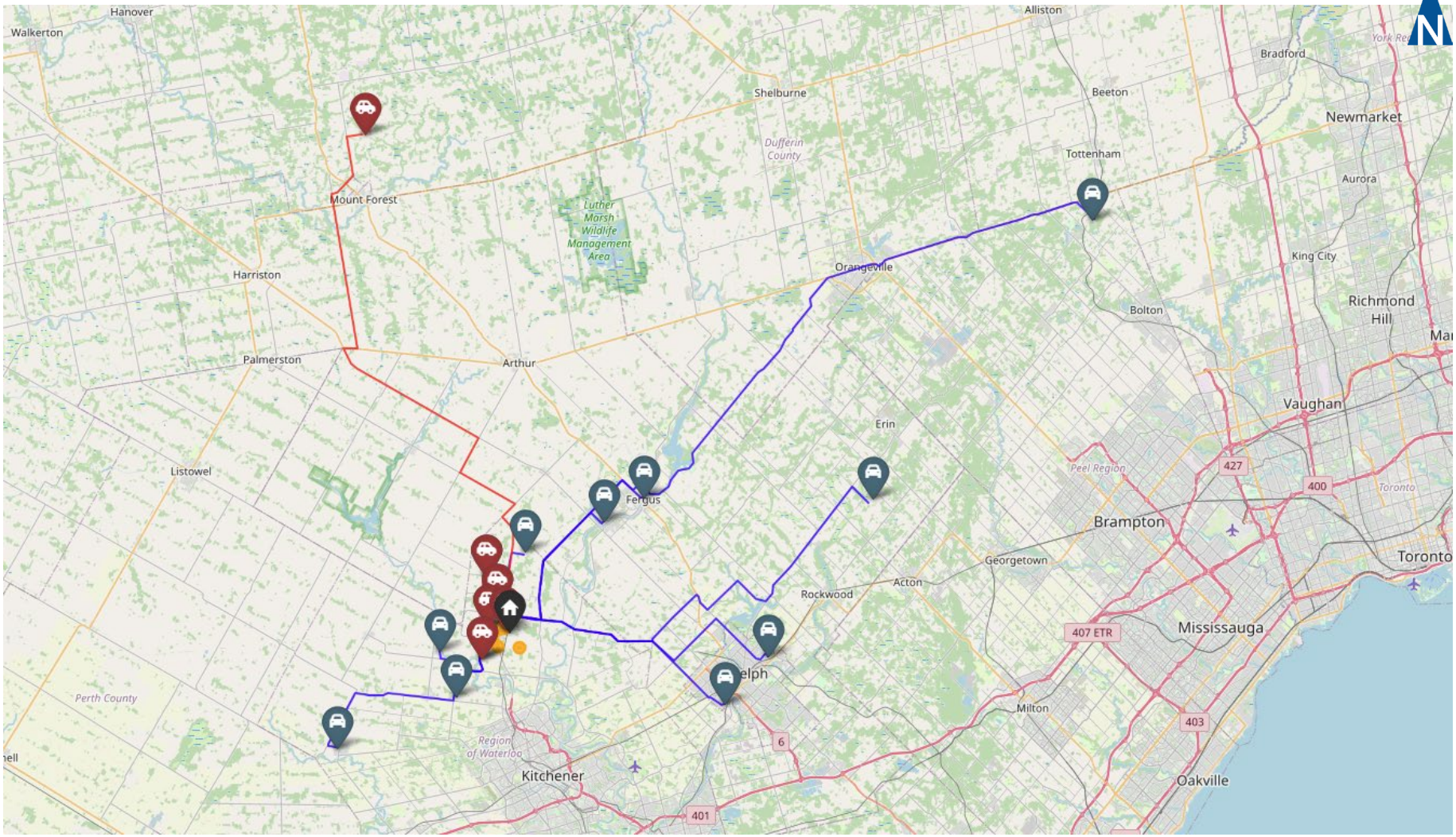
Site TTS2022 Zone
12556

Zone Latitude	Zone Longitude
43.58687718	-80.55407205

Site Latitude	Site Longitude
43.58299818	-80.54871095

From/To	In		Out	
North Arthur	418	40.58%	83	14.49%
North Union	126	12.23%	126	21.99%
West Whippoorwill	344	33.40%	354	61.78%
West Listowel	142	13.79%	10	1.75%
South Arthur	0	0.00%	0	0.00%
South New Jerusalem	0	0.00%	0	0.00%
Total	**1030**	**100.00%**	**573**	**100.00%**

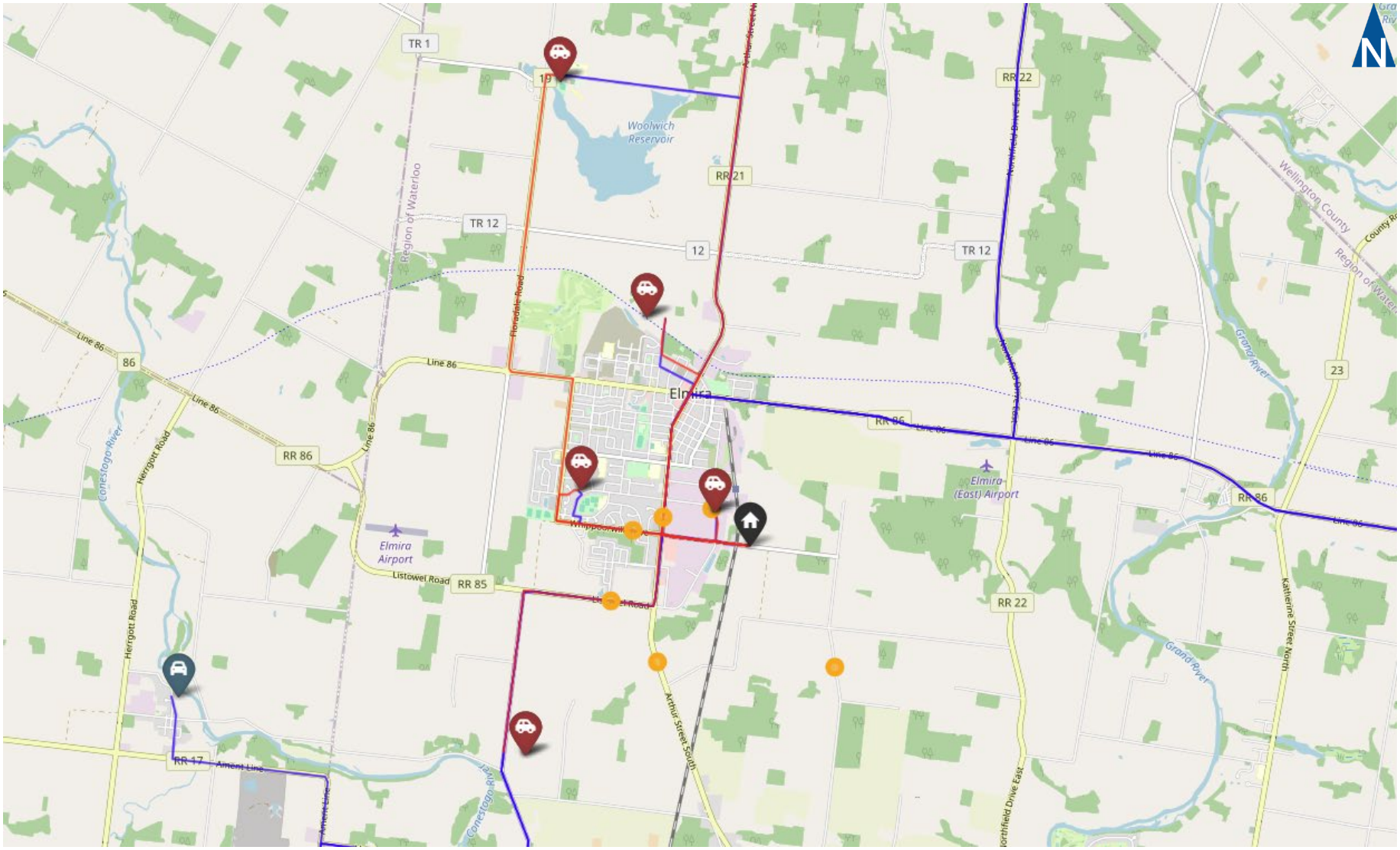
From/To	In	Out
North Arthur	40.00%	15.00%
North Union	10.00%	20.00%
West Whippoorwill	35.00%	60.00%
West Listowel	15.00%	0.00%
South Arthur	0.00%	0.00%
South New Jerusalem	0.00%	0.00%
Total	**100.00%**	**95.00%**



2022 Transportation Tomorrow Survey
O/D Routing (AM Peak Hour)

1665 Scotch Line Road, Woolwich
240259

Figure 1A



2022 Transportation Tomorrow Survey
O/D Routing (AM Peak Hour)

1665 Scotch Line Road, Woolwich
240259

Figure 1B

origin_id	dest_id	route_type	POI	total
4376	12556	origin_to_site		50
12033	12556	origin_to_site		34
12047	12556	origin_to_site		75
12054	12556	origin_to_site		17
12073	12556	origin_to_site		18
12076	12556	origin_to_site		17
12123	12556	origin_to_site		13
12207	12556	origin_to_site		64
12230	12556	origin_to_site		64
12274	12556	origin_to_site		10
12546	12556	origin_to_site		31
12555	12556	origin_to_site		103
12556	12022	site_to_destination		13
12556	12050	site_to_destination		52
12556	12059	site_to_destination		12
12556	12075	site_to_destination		23
12556	12076	site_to_destination		17
12556	12089	site_to_destination		15
12556	12094	site_to_destination		9
12556	12097	site_to_destination		39
12556	12113	site_to_destination		53
12556	12118	site_to_destination		38
12556	12137	site_to_destination		13
12556	12151	site_to_destination		17
12556	12166	site_to_destination		11
12556	12173	site_to_destination		35
12556	12187	site_to_destination		18
12556	12199	site_to_destination		71
12556	12201	site_to_destination		29
12556	12205	site_to_destination		42
12556	12212	site_to_destination		49

12556	12240	site_to_destination		17
12556	12241	site_to_destination		36
12556	12243	site_to_destination		44
12556	12251	site_to_destination		19
12556	12255	site_to_destination		36
12556	12283	site_to_destination		36
12556	12297	site_to_destination		13
12556	12298	site_to_destination		19
12556	12343	site_to_destination		55
12556	12384	site_to_destination		19
12556	12478	site_to_destination		32
12556	12486	site_to_destination	West Listowel	11
12556	12498	site_to_destination	West Listowel	77
12556	12538	site_to_destination		4
12556	12546	site_to_destination		151
12556	12554	site_to_destination	West Listowel	33
12556	12555	site_to_destination		144
12556	12556	origin_to_site	North Union	342
12556	12556	site_to_destination	North Union	342
12556	12557	site_to_destination	West Whippoorwill	548
12556	12558	site_to_destination	North Arthur	241
12556	12559	site_to_destination	North Arthur	12
12556	12560	site_to_destination	North Arthur	10
12556	12562	site_to_destination	West Whippoorwill	17
12556	13168	site_to_destination	North Arthur	9
12556	13181	site_to_destination	North Arthur	12
12556	14052	site_to_destination	North Arthur	16
12556	14056	site_to_destination	North Arthur	45
12556	14061	site_to_destination	North Arthur	11
12556	14077	site_to_destination	North Arthur	14
12557	12556	origin_to_site	West Whippoorwill	416
12558	12556	origin_to_site	North Arthur	81

12562	12556	origin_to_site	North Arthur	41
12570	12556	origin_to_site	North Arthur	15
12574	12556	origin_to_site		18
14013	12556	origin_to_site	North Arthur	18
14052	12556	origin_to_site	North Arthur	16
14061	12556	origin_to_site	North Arthur	11

POI Name	POI_ID	Latitude	Longitude	Threshold (km)
North Arthur	POI_1	43.58621941	-80.56191487	0.103
North Union	POI_2	43.58716109	-80.55441162	0.103
West Whippoorwill	POI_3	43.58473959	-80.56653939	0.1
West Listowel	POI_4	43.57687539	-80.56992053	0.1
South Arthur	POI_5	43.57006766	-80.56276632	0.1
South New Jerusalem	POI_6	43.56948482	-80.53546194	0.1

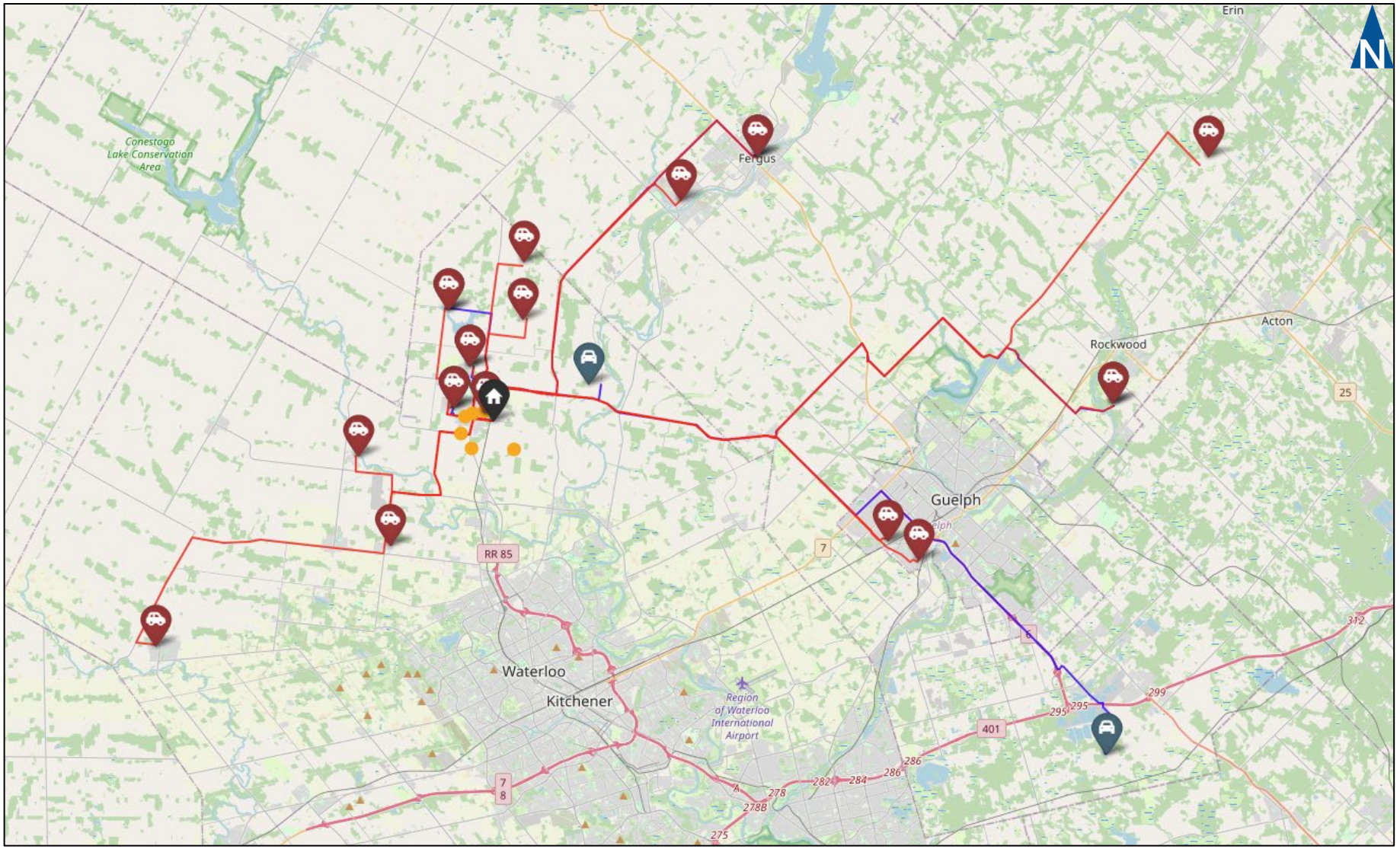
Site TTS2022 Zone
12556

Zone Latitude	Zone Longitude
43.58687718	-80.55407205

Site Latitude	Site Longitude
43.58299818	-80.54871095

From/To	In		Out	
North Arthur	182	19.36%	370	26.47%
North Union	342	36.38%	342	24.46%
West Whippoorwill	416	44.26%	565	40.41%
West Listowel	0	0.00%	121	8.66%
South Arthur	0	0.00%	0	0.00%
South New Jerusalem	0	0.00%	0	0.00%
Total	**940**	**100.00%**	**1398**	**100.00%**

From/To	In	Out
North Arthur	20.00%	25.00%
North Union	35.00%	25.00%
West Whippoorwill	45.00%	40.00%
West Listowel	0.00%	10.00%
South Arthur	0.00%	0.00%
South New Jerusalem	0.00%	0.00%
Total	**100.00%**	**100.00%**

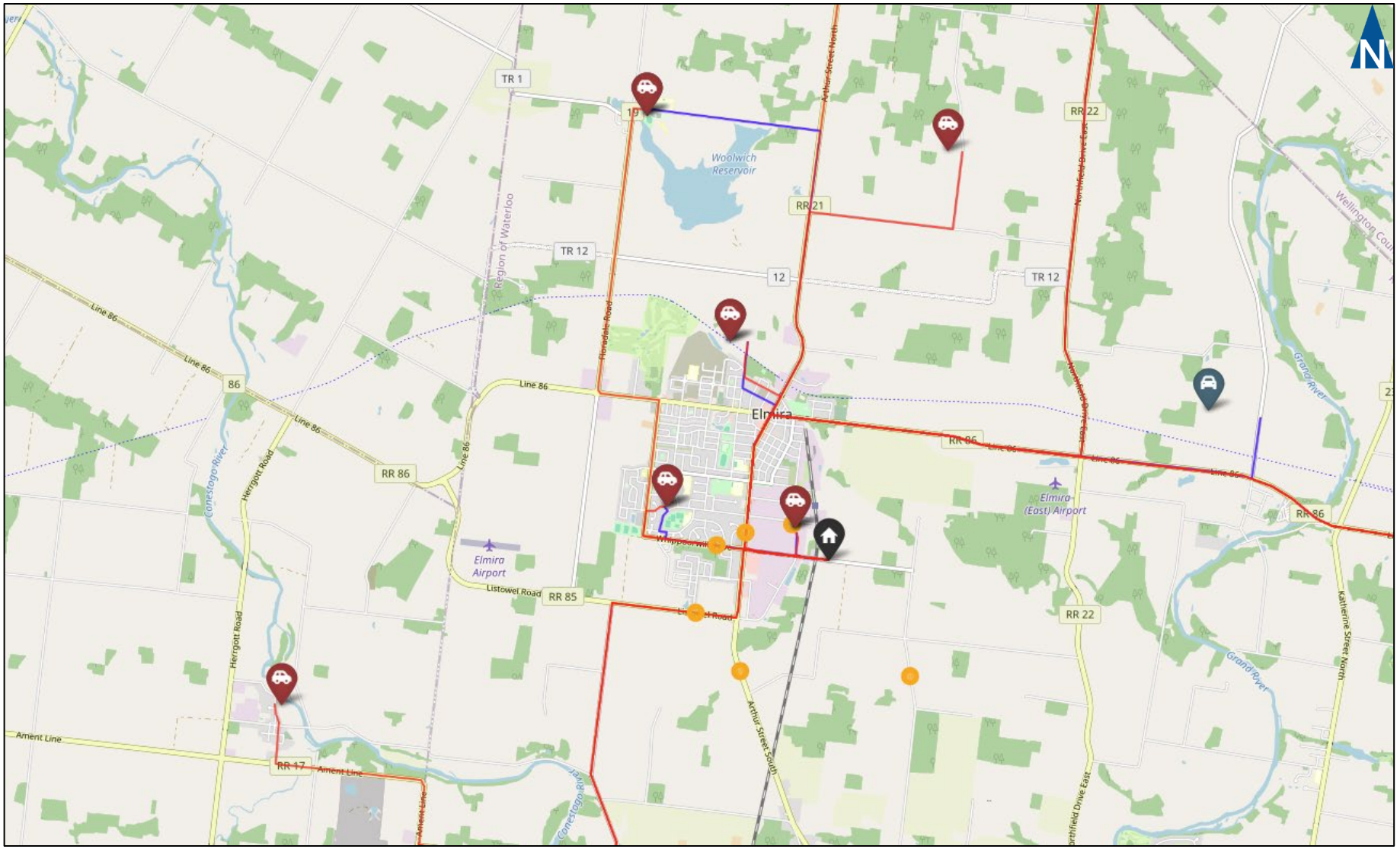


paradigm TRANSPORTATION SOLUTIONS LIMITED

2022 Transportation Tomorrow Survey
O/D Routing (PM Peak Hour)

1665 Scotch Line Road, Woolwich
240259

Figure 2A



paradigm TRANSPORTATION SOLUTIONS LIMITED

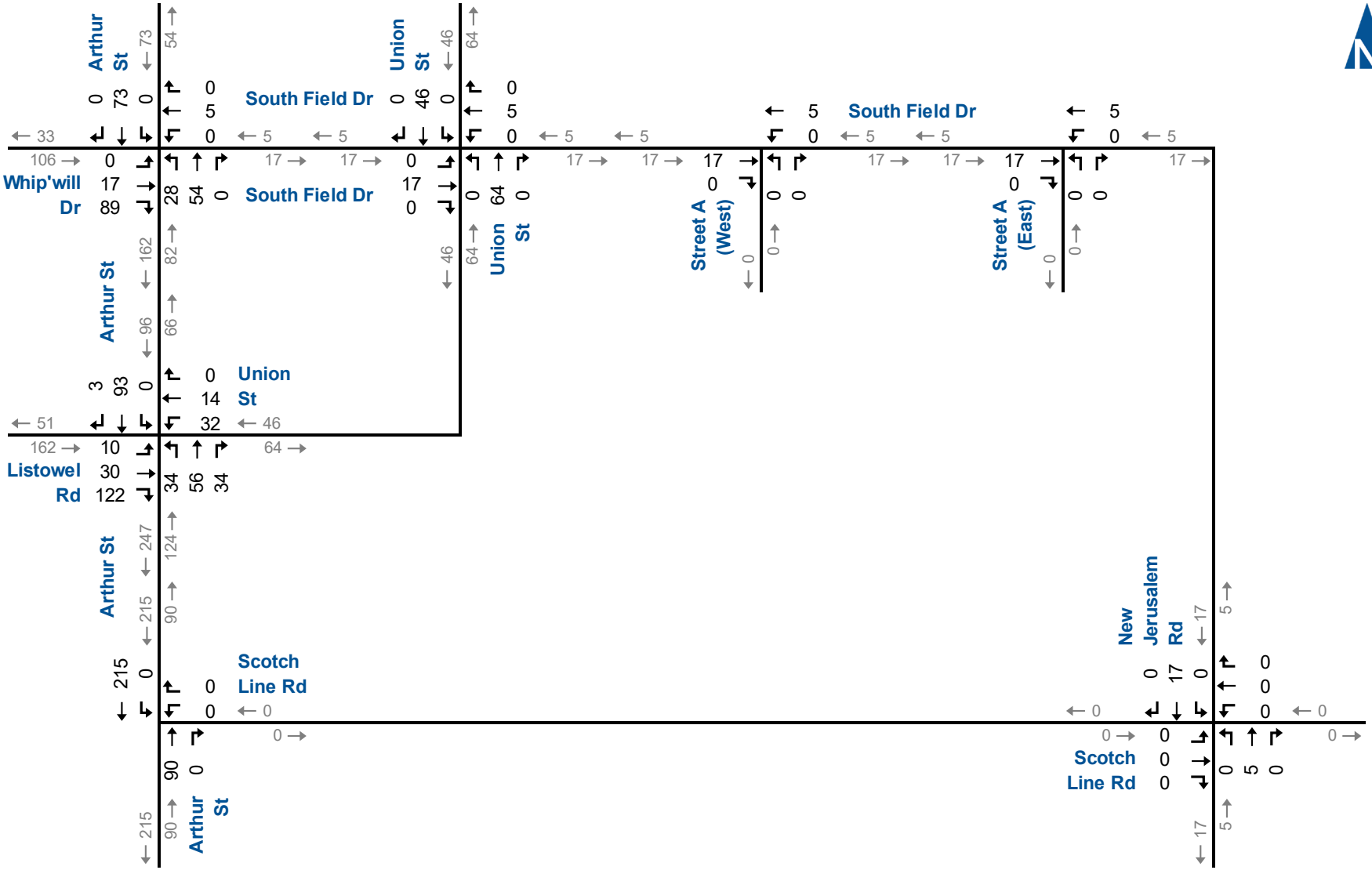
2022 Transportation Tomorrow Survey
O/D Routing (PM Peak Hour)

1665 Scotch Line Road, Woolwich
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Figure 2B

Appendix F

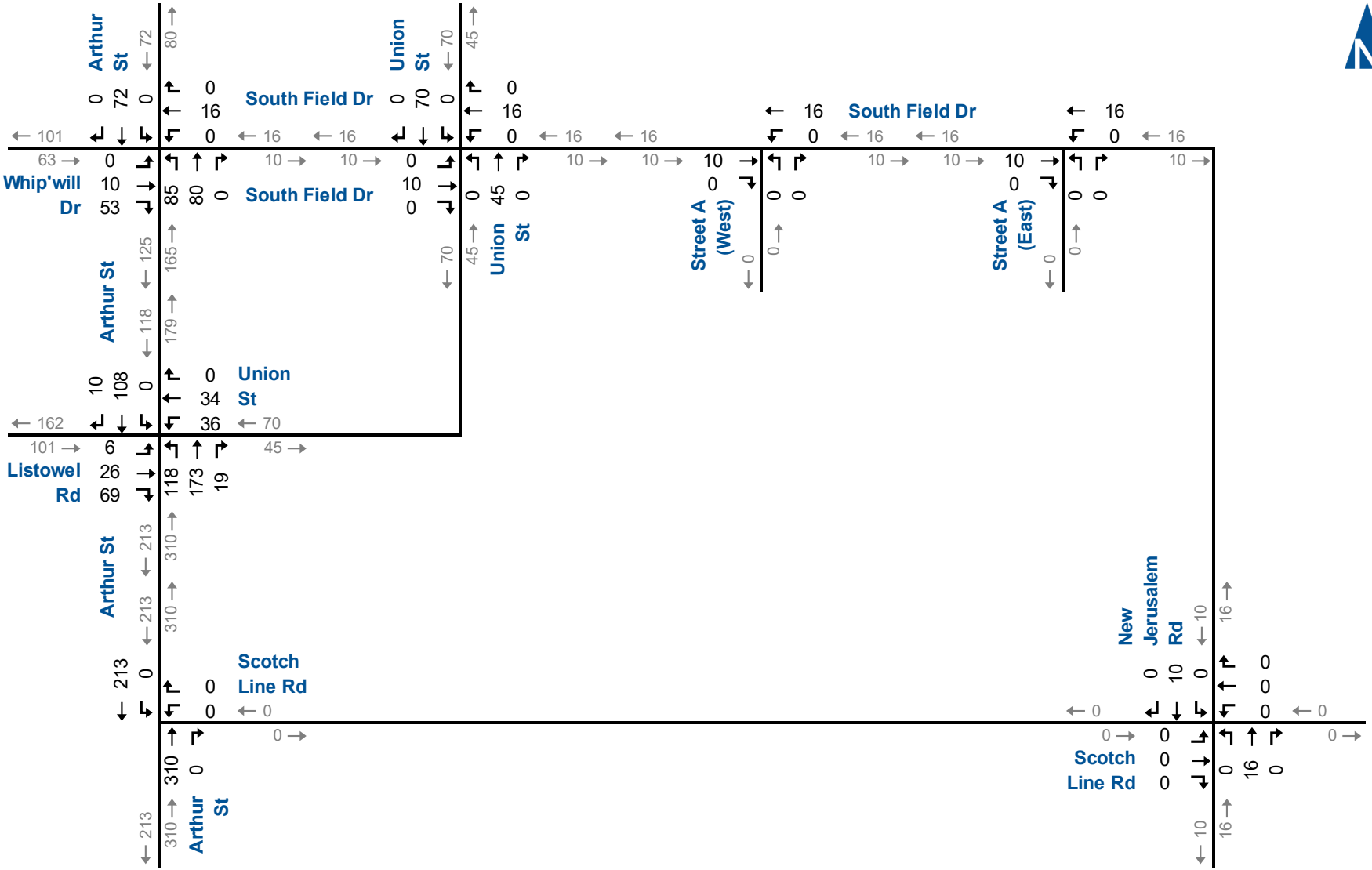
Other Area Developments Traffic Volumes



Other Area Development Traffic Volumes (AM Peak Hour)

1665 Scotch Line Road, Woolwich
240259

Figure 1A



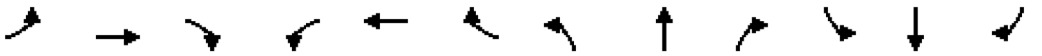
Other Area Development Traffic Volumes (PM Peak Hour)

1665 Scotch Line Road, Woolwich
240259

Figure 1B

Appendix G

Background Operations Synchro Reports

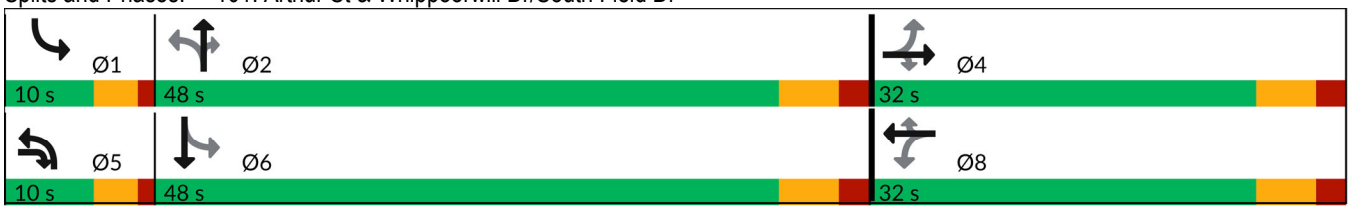


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	79	119	258	67	52	137	96	580	57	152	633	12
Future Volume (vph)	79	119	258	67	52	137	96	580	57	152	633	12
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1650	1650
Storage Length (m)	40.0		40.0	25.0		25.0	45.0		40.0	30.0		1.0
Storage Lanes	1		1	1		1	1		1	1		0
Taper Length (m)	50.0			50.0			40.0			60.0		
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	
Frt			0.850			0.850			0.850		0.997	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1619	1842	1456	1588	1789	1375	1603	1740	1302	1588	1521	0
Flt Permitted	0.723			0.681			0.268			0.316		
Satd. Flow (perm)	1228	1842	1456	1138	1789	1343	451	1740	1270	527	1521	0
Right Turn on Red			No			Yes			Yes			Yes
Satd. Flow (RTOR)						137			85		1	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		886.0			669.7			893.6			887.4	
Travel Time (s)		63.8			48.2			53.6			53.2	
Confl. Peds. (#/hr)	2					2	8		4	4		8
Peak Hour Factor	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 (%)	3%	2%	1%	5%	5%	7%	4%	8%	13%	5%	7%	0%
Adj. Flow (vph)	79	119	258	67	52	137	96	580	57	152	633	12
Shared Lane Traffic (%)												
Lane Group Flow (vph)	79	119	258	67	52	137	96	580	57	152	645	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.11	1.01	1.13	1.11	1.01	1.13	1.11	1.01	1.13	1.11	1.21	1.21
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	pm+ov	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4	5		8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		
Detector Phase	4	4	5	8	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	12.0	12.0	5.0	12.0	12.0	12.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	32.0	32.0	9.5	32.0	32.0	32.0	9.5	47.7	47.7	9.5	47.7	
Total Split (s)	32.0	32.0	10.0	32.0	32.0	32.0	10.0	48.0	48.0	10.0	48.0	
Total Split (%)	35.6%	35.6%	11.1%	35.6%	35.6%	35.6%	11.1%	53.3%	53.3%	11.1%	53.3%	
Maximum Green (s)	26.0	26.0	6.0	26.0	26.0	26.0	6.0	42.0	42.0	6.0	42.0	
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	2.0	2.0	1.0	2.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	
Lost Time Adjust (s)	-2.0	0.0	0.0	-2.0	-2.0	-2.0	0.0	-2.0	-2.0	0.0	-2.0	
Total Lost Time (s)	4.0	6.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag			Lead				Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?			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	Min	Min	None	Min	
Walk Time (s)	10.0	10.0		10.0	10.0	10.0		22.7	22.7		22.7	
Flash Don't Walk (s)	16.0	16.0		16.0	16.0	16.0		19.0	19.0		19.0	
Pedestrian Calls (#/hr)	0	0		0	0	0		0	0		0	
Act Effct Green (s)	15.4	13.3	20.0	15.4	15.4	15.4	43.0	36.7	36.7	43.2	36.8	
Actuated g/C Ratio	0.24	0.20	0.31	0.24	0.24	0.24	0.66	0.56	0.56	0.66	0.56	
v/c Ratio	0.27	0.32	0.58	0.25	0.12	0.32	0.23	0.59	0.08	0.34	0.75	
Control Delay (s/veh)	28.4	29.8	25.7	28.3	25.5	7.9	5.4	13.7	1.2	6.3	19.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	28.4	29.8	25.7	28.3	25.5	7.9	5.4	13.7	1.2	6.3	19.3	
LOS	C	C	C	C	C	A	A	B	A	A	B	
Approach Delay (s/veh)		27.2			16.8			11.7			16.8	
Approach LOS		C			B			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 65.3			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.75			
Intersection Signal Delay (s/veh): 17.2		Intersection LOS: B	
Intersection Capacity Utilization 76.6%		ICU Level of Service D	
Analysis Period (min) 15			

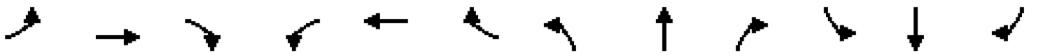
Splits and Phases: 101: Arthur St & Whippoorwill Dr/South Field Dr





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	79	119	258	67	52	137	96	580	57	152	645
v/c Ratio	0.27	0.32	0.58	0.25	0.12	0.32	0.23	0.59	0.08	0.34	0.75
Control Delay (s/veh)	28.4	29.8	25.7	28.3	25.5	7.9	5.4	13.7	1.2	6.3	19.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	28.4	29.8	25.7	28.3	25.5	7.9	5.4	13.7	1.2	6.3	19.3
Queue Length 50th (m)	9.3	14.5	27.4	7.8	5.9	0.0	3.7	50.3	0.0	6.0	64.7
Queue Length 95th (m)	22.9	31.6	55.1	20.2	15.9	13.9	8.8	87.1	2.8	13.0	118.1
Internal Link Dist (m)		862.0			645.7			869.6			863.4
Turn Bay Length (m)	40.0		40.0	25.0		25.0	45.0		40.0	30.0	
Base Capacity (vph)	563	785	446	522	821	690	410	1205	905	452	1053
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	0.14	0.15	0.58	0.13	0.06	0.20	0.23	0.48	0.06	0.34	0.61

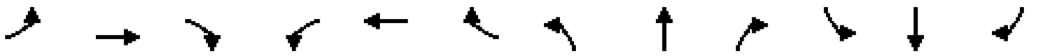
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	79	119	258	67	52	137	96	580	57	152	633	12
Future Volume (vph)	79	119	258	67	52	137	96	580	57	152	633	12
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1650	1650
Total Lost time (s)	4.0	6.0	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	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	
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	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1615	1842	1456	1588	1789	1344	1603	1740	1272	1588	1522	
Flt Permitted	0.72	1.00	1.00	0.68	1.00	1.00	0.27	1.00	1.00	0.32	1.00	
Satd. Flow (perm)	1229	1842	1456	1138	1789	1344	452	1740	1272	528	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)	79	119	258	67	52	137	96	580	57	152	633	12
RTOR Reduction (vph)	0	0	0	0	0	114	0	0	25	0	0	0
Lane Group Flow (vph)	79	119	258	67	52	23	96	580	32	152	645	0
Confl. Peds. (#/hr)	2					2	8		4	4		8
Heavy Vehicles (%)	3%	2%	1%	5%	5%	7%	4%	8%	13%	5%	7%	0%
Turn Type	Perm	NA	pm+ov	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4	5		8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		
Actuated Green, G (s)	9.2	9.2	15.6	9.2	9.2	9.2	41.0	34.6	34.6	41.0	34.6	
Effective Green, g (s)	11.2	9.2	15.6	11.2	11.2	11.2	41.0	36.6	36.6	41.0	36.6	
Actuated g/C Ratio	0.17	0.14	0.24	0.17	0.17	0.17	0.62	0.55	0.55	0.62	0.55	
Clearance Time (s)	6.0	6.0	4.0	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	3.0	
Lane Grp Cap (vph)	207	255	343	192	302	227	391	961	703	429	841	
v/s Ratio Prot		0.06	c0.07		0.03		0.02	0.33		0.03	c0.42	
v/s Ratio Perm	0.06		0.10	0.06		0.02	0.13		0.02	0.18		
v/c Ratio	0.38	0.47	0.75	0.35	0.17	0.10	0.25	0.60	0.04	0.35	0.77	
Uniform Delay, d1	24.4	26.2	23.5	24.3	23.5	23.2	6.5	9.9	6.8	6.3	11.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.2	1.4	9.0	1.1	0.3	0.2	0.3	1.1	0.0	0.5	4.2	
Delay (s)	25.6	27.6	32.5	25.4	23.8	23.4	6.8	11.0	6.8	6.8	15.7	
Level of Service	C	C	C	C	C	C	A	B	A	A	B	
Approach Delay (s/veh)		30.0			24.0			10.1			14.0	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	17.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	66.2	Sum of lost time (s)	14.0
Intersection Capacity Utilization	76.6%	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)	28	79	20	9	38	57	14	167	13	63	137	35
Future Volume (vph)	28	79	20	9	38	57	14	167	13	63	137	35
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1775	1650	1650	1775	1650	1650
Storage Length (m)	0.0		0.0	0.0		0.0	25.0		0.0	20.0		0.0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			40.0			25.0		
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		0.979			0.926			0.989			0.969	
Flt Protected		0.989			0.996		0.950			0.950		
Satd. Flow (prot)	0	1398	0	0	1298	0	1544	1465	0	1619	1454	0
Flt Permitted		0.989			0.996		0.950			0.950		
Satd. Flow (perm)	0	1398	0	0	1298	0	1544	1465	0	1619	1454	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		669.7			258.4			884.2			256.9	
Travel Time (s)		48.2			18.6			63.7			18.5	
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 (%)	4%	7%	6%	8%	12%	7%	8%	8%	38%	3%	11%	0%
Adj. Flow (vph)	28	79	20	9	38	57	14	167	13	63	137	35
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	127	0	0	104	0	14	180	0	63	172	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.31	1.31	1.31	1.31	1.31	1.31	1.11	1.21	1.21	1.11	1.21	1.21
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 39.9%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	28	79	20	9	38	57	14	167	13	63	137	35
Future Volume (vph)	28	79	20	9	38	57	14	167	13	63	137	35
Peak Hour Factor	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	79	20	9	38	57	14	167	13	63	137	35

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	127	104	14	180	63	172
Volume Left (vph)	28	9	14	0	63	0
Volume Right (vph)	20	57	0	13	0	35
Hadj (s)	0.05	-0.16	0.64	0.12	0.55	0.01
Departure Headway (s)	5.2	5.0	6.0	5.5	5.9	5.4
Degree Utilization, x	0.18	0.15	0.02	0.28	0.10	0.26
Capacity (veh/h)	636	651	567	622	580	642
Control Delay (s/veh)	9.4	8.9	8.0	9.4	8.4	9.0
Approach Delay (s/veh)	9.4	8.9	9.3		8.8	
Approach LOS	A	A	A		A	

Intersection Summary				
Delay	9.1			
Level of Service	A			
Intersection Capacity Utilization	39.9%	ICU Level of Service	A	
Analysis Period (min)	15			

Intersection	
Intersection Delay, s/veh	9.6
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	28	79	20	9	38	57	14	167	13	63	137	35
Future Vol, veh/h	28	79	20	9	38	57	14	167	13	63	137	35
Peak Hour Factor	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	7	6	8	12	7	8	8	38	3	11	0
Mvmt Flow	28	79	20	9	38	57	14	167	13	63	137	35
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0

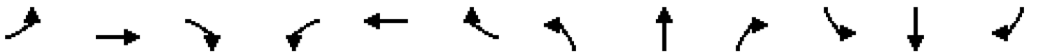
Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	1
HCM Control Delay, s/veh	9.4	8.9	10.1	9.7
HCM LOS	A	A	B	A

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	22%	9%	100%	0%
Vol Thru, %	0%	93%	62%	37%	0%	80%
Vol Right, %	0%	7%	16%	55%	0%	20%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	14	180	127	104	63	172
LT Vol	14	0	28	9	63	0
Through Vol	0	167	79	38	0	137
RT Vol	0	13	20	57	0	35
Lane Flow Rate	14	180	127	104	63	172
Geometry Grp	5	5	2	2	5	5
Degree of Util (X)	0.023	0.271	0.182	0.144	0.102	0.255
Departure Headway (Hd)	5.975	5.419	5.146	4.993	5.841	5.33
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	595	657	692	712	610	669
Service Time	3.75	3.195	3.216	3.067	3.613	3.102
HCM Lane V/C Ratio	0.024	0.274	0.184	0.146	0.103	0.257
HCM Control Delay, s/veh	8.9	10.2	9.4	8.9	9.3	9.9
HCM Lane LOS	A	B	A	A	A	A
HCM 95th-tile Q	0.1	1.1	0.7	0.5	0.3	1



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑			↑			↑			↑	
Traffic Volume (vph)	0	155	0	0	101	0	0	0	0	0	0	0
Future Volume (vph)	0	155	0	0	101	0	0	0	0	0	0	0
Ideal Flow (vphpl)	1000	1900	1000	1000	1900	1000	1000	1900	1000	1000	1900	1000
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	1842	0	0	1842	0	0	1842	0	0	1842	0
Flt Permitted												
Satd. Flow (perm)	0	1842	0	0	1842	0	0	1842	0	0	1842	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		258.4			1257.8			175.3			172.7	
Travel Time (s)		18.6			90.6			12.6			12.4	
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
Adj. Flow (vph)	0	155	0	0	101	0	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	155	0	0	101	0	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	2.20	1.01	2.20	2.20	1.01	2.20	2.20	1.01	2.20	2.20	1.01	2.20
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 11.5%		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)	0	155	0	0	101	0	0	0	0	0	0	0
Future Volume (Veh/h)	0	155	0	0	101	0	0	0	0	0	0	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	155	0	0	101	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	51	0	0	78	0	0	0			0		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	51	0	0	78	0	0	0			0		
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	83	100	100	89	100	100			100		
cM capacity (veh/h)	867	896	1085	790	896	1085	1623			1623		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	155	101	0	0
Volume Left	0	0	0	0
Volume Right	0	0	0	0
cSH	896	896	1700	1700
Volume to Capacity	0.17	0.11	0.00	0.00
Queue Length 95th (m)	5.0	3.0	0.0	0.0
Control Delay (s/veh)	9.9	9.5	0.0	0.0
Lane LOS	A	A		
Approach Delay (s/veh)	9.9	9.5	0.0	0.0
Approach LOS	A	A		

Intersection Summary				
Average Delay	9.7			
Intersection Capacity Utilization	11.5%	ICU Level of Service	A	
Analysis Period (min)	15			

Intersection	
Int Delay, s/veh	9.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑			↑			↑			↑	
Traffic Vol, veh/h	0	155	0	0	101	0	0	0	0	0	0	0
Future Vol, veh/h	0	155	0	0	101	0	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	155	0	0	101	0	0	0	0	0	0	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	1	-	-	1	-	-	0	-	-	-	0
Stage 1	-	1	-	-	0	-	-	-	-	-	-	-
Stage 2	-	0	-	-	1	-	-	-	-	-	-	-
Critical Hdwy	-	6.52	-	-	6.52	-	-	-	-	-	-	-
Critical Hdwy Stg 1	-	5.52	-	-	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	5.52	-	-	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	-	4.018	-	-	4.018	-	-	-	-	-	-	-
Pot Cap-1 Maneuver	0	895	0	0	895	0	0	-	0	0	-	0
Stage 1	0	895	0	0	-	0	0	-	0	0	-	0
Stage 2	0	-	0	0	895	0	0	-	0	0	-	0
Platoon blocked, %								-			-	
Mov Cap-1 Maneuver	-	895	-	-	895	-	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	895	-	-	895	-	-	-	-	-	-	-
Stage 1	-	895	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	895	-	-	-	-	-	-	-

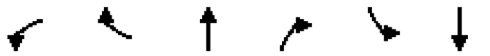
Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	9.86	9.53	0	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBT	EBLn1	WBLn1	SBT
Capacity (veh/h)	-	895	895	-
HCM Lane V/C Ratio	-	0.173	0.113	-
HCM Ctrl Dly (s/v)	-	9.9	9.5	-
HCM Lane LOS	-	A	A	-
HCM 95th %tile Q(veh)	-	0.6	0.4	-



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	1	4	995	0	0	1469
Future Volume (vph)	1	4	995	0	0	1469
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	0.892					
Flt Protected	0.990					
Satd. Flow (prot)	1284	0	1539	0	0	1525
Flt Permitted	0.990					
Satd. Flow (perm)	1284	0	1539	0	0	1525
Link Speed (k/h)	60		80			80
Link Distance (m)	527.8		756.1			487.8
Travel Time (s)	31.7		34.0			22.0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	100%	0%	6%	0%	0%	7%
Adj. Flow (vph)	1	4	995	0	0	1469
Shared Lane Traffic (%)						
Lane Group Flow (vph)	5	0	995	0	0	1469
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.5		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.12	1.12	1.21	1.21	1.21	1.21
Turning Speed (k/h)	25	15		15	25	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 99.0%		ICU Level of Service F	
Analysis Period (min) 15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	1	4	995	0	0	1469
Future Volume (Veh/h)	1	4	995	0	0	1469
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)	1	4	995	0	0	1469
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	2464	995			995	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2464	995			995	
tC, single (s)	7.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	4.4	3.3			2.2	
p0 queue free %	94	99			100	
cM capacity (veh/h)	16	300			703	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	5	995	1469
Volume Left	1	0	0
Volume Right	4	0	0
cSH	67	1700	703
Volume to Capacity	0.07	0.59	0.00
Queue Length 95th (m)	1.9	0.0	0.0
Control Delay (s/veh)	62.9	0.0	0.0
Lane LOS	F		
Approach Delay (s/veh)	62.9	0.0	0.0
Approach LOS	F		

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	99.0%	ICU Level of Service	F
Analysis Period (min)	15		

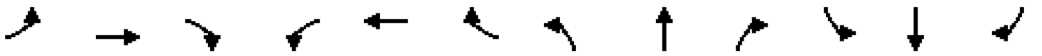
Intersection	
Int Delay, s/veh	0.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	4	995	0	0	1469
Future Vol, veh/h	1	4	995	0	0	1469
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	100	0	6	0	0	7
Mvmt Flow	1	4	995	0	0	1469

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2464	995	0	0	995	0
Stage 1	995	-	-	-	-	-
Stage 2	1469	-	-	-	-	-
Critical Hdwy	7.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	6.4	-	-	-	-	-
Critical Hdwy Stg 2	6.4	-	-	-	-	-
Follow-up Hdwy	4.4	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	16	300	-	-	703	-
Stage 1	241	-	-	-	-	-
Stage 2	129	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	16	300	-	-	703	-
Mov Cap-2 Maneuver	16	-	-	-	-	-
Stage 1	241	-	-	-	-	-
Stage 2	129	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	62.88	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	67	703	-
HCM Lane V/C Ratio	-	-	0.074	-	-
HCM Ctrl Dly (s/v)	-	-	62.9	0	-
HCM Lane LOS	-	-	F	A	-
HCM 95th %tile Q(veh)	-	-	0.2	0	-

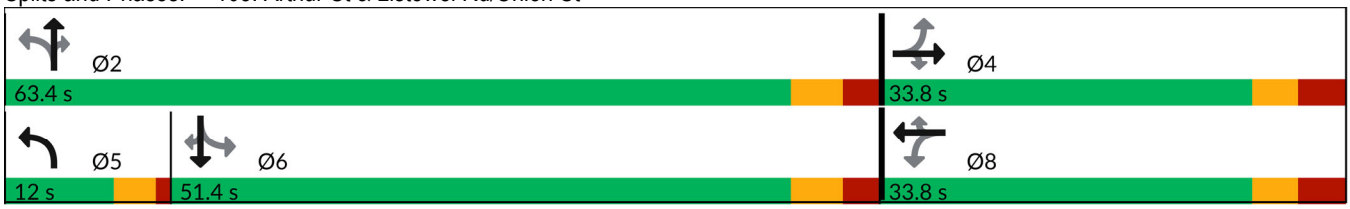


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	128	60	595	176	60	6	247	613	172	0	729	42
Future Volume (vph)	128	60	595	176	60	6	247	613	172	0	729	42
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1900	1750
Storage Length (m)	60.0		60.0	25.0		25.0	100.0		100.0	50.0		50.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	60.0			60.0			80.0			75.0		
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			0.850			0.850
Flt Protected	0.950			0.950			0.950					
Satd. Flow (prot)	1603	1634	1350	1413	1261	1226	1378	1756	1302	1755	1773	1313
Flt Permitted	0.718			0.718			0.094					
Satd. Flow (perm)	1212	1634	1350	1068	1261	1226	136	1756	1302	1755	1773	1313
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			294			83			172			88
Link Speed (k/h)		50			50			60			50	
Link Distance (m)		1221.5			248.3			356.1			893.6	
Travel Time (s)		87.9			17.9			21.4			64.3	
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%	15%	9%	18%	49%	20%	21%	7%	13%	0%	6%	12%
Adj. Flow (vph)	128	60	595	176	60	6	247	613	172	0	729	42
Shared Lane Traffic (%)												
Lane Group Flow (vph)	128	60	595	176	60	6	247	613	172	0	729	42
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.11	1.01	1.13	1.11	1.01	1.13	1.11	1.01	1.13	1.11	1.01	1.13
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		4			8		5	2			6	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	4	4	4	8	8	8	5	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	33.8	33.8	33.8	33.8	33.8	33.8	11.5	51.4	51.4	51.4	51.4	51.4
Total Split (s)	33.8	33.8	33.8	33.8	33.8	33.8	12.0	63.4	63.4	51.4	51.4	51.4
Total Split (%)	34.8%	34.8%	34.8%	34.8%	34.8%	34.8%	12.3%	65.2%	65.2%	52.9%	52.9%	52.9%
Maximum Green (s)	27.0	27.0	27.0	27.0	27.0	27.0	8.0	57.0	57.0	45.0	45.0	45.0
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.0	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	1.0	2.7	2.7	2.7	2.7	2.7
Lost Time Adjust (s)	-2.8	-2.8	-2.8	-2.8	-2.8	-2.8	0.0	-2.4	-2.4	-2.4	-2.4	-2.4
Total Lost Time (s)	4.0	4.0	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	5.0	0.2	0.2	0.2	0.2	0.2
Recall Mode	None	None	None	None	None	None	None	Min	Min	Min	Min	Min
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0		25.0	25.0	25.0	25.0	25.0
Flash Don't Walk (s)	20.0	20.0	20.0	20.0	20.0	20.0		20.0	20.0	20.0	20.0	20.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0		0	0	0	0	0
Act Effct Green (s)	29.0	29.0	29.0	29.0	29.0	29.0	52.9	52.9	52.9		40.8	40.8
Actuated g/C Ratio	0.32	0.32	0.32	0.32	0.32	0.32	0.59	0.59	0.59		0.45	0.45
v/c Ratio	0.33	0.11	0.94	0.51	0.15	0.01	1.29	0.59	0.21		0.91	0.07
Control Delay (s/veh)	27.9	24.4	41.0	32.9	25.2	0.0	187.7	14.5	1.9		39.5	0.5
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 (s/veh)	27.9	24.4	41.0	32.9	25.2	0.0	187.7	14.5	1.9		39.5	0.5
LOS	C	C	D	C	C	A	F	B	A		D	A
Approach Delay (s/veh)		37.6			30.2			53.9			37.4	
Approach LOS		D			C			D			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 97.2			
Actuated Cycle Length: 90			
Natural Cycle: 100			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.29			
Intersection Signal Delay (s/veh): 42.8		Intersection LOS: D	
Intersection Capacity Utilization 98.8%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 105: Arthur St & Listowel Rd/Union St



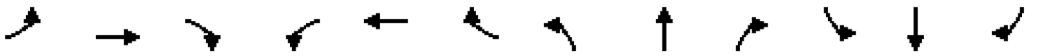


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	128	60	595	176	60	6	247	613	172	729	42
v/c Ratio	0.33	0.11	0.94	0.51	0.15	0.01	1.29	0.59	0.21	0.91	0.07
Control Delay (s/veh)	27.9	24.4	41.0	32.9	25.2	0.0	187.7	14.5	1.9	39.5	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	27.9	24.4	41.0	32.9	25.2	0.0	187.7	14.5	1.9	39.5	0.5
Queue Length 50th (m)	18.8	8.2	63.7	27.6	8.3	0.0	~47.8	66.6	0.0	120.6	0.0
Queue Length 95th (m)	36.1	18.3	#142.1	51.3	18.8	0.0	#98.5	98.1	7.8	#193.4	0.8
Internal Link Dist (m)		1197.5			224.3			332.1		869.6	
Turn Bay Length (m)	60.0		60.0	25.0		25.0	100.0		100.0		50.0
Base Capacity (vph)	405	547	647	357	422	465	191	1172	926	944	740
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	0.32	0.11	0.92	0.49	0.14	0.01	1.29	0.52	0.19	0.77	0.06

Intersection Summary

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

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	128	60	595	176	60	6	247	613	172	0	729	42
Future Volume (vph)	128	60	595	176	60	6	247	613	172	0	729	42
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	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	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	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00		1.00	1.00
Satd. Flow (prot)	1603	1634	1350	1413	1261	1226	1378	1756	1302		1773	1313
Flt Permitted	0.72	1.00	1.00	0.72	1.00	1.00	0.09	1.00	1.00		1.00	1.00
Satd. Flow (perm)	1212	1634	1350	1068	1261	1226	137	1756	1302		1773	1313
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)	128	60	595	176	60	6	247	613	172	0	729	42
RTOR Reduction (vph)	0	0	199	0	0	4	0	0	71	0	0	23
Lane Group Flow (vph)	128	60	396	176	60	2	247	613	101	0	729	19
Heavy Vehicles (%)	4%	15%	9%	18%	49%	20%	21%	7%	13%	0%	6%	12%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	26.2	26.2	26.2	26.2	26.2	26.2	50.5	50.5	50.5		38.4	38.4
Effective Green, g (s)	29.0	29.0	29.0	29.0	29.0	29.0	50.5	52.9	52.9		40.8	40.8
Actuated g/C Ratio	0.32	0.32	0.32	0.32	0.32	0.32	0.56	0.59	0.59		0.45	0.45
Clearance Time (s)	6.8	6.8	6.8	6.8	6.8	6.8	4.0	6.4	6.4		6.4	6.4
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	5.0	0.2	0.2		0.2	0.2
Lane Grp Cap (vph)	390	527	435	344	406	395	188	1033	766		804	595
v/s Ratio Prot		0.04			0.05		c0.12	0.35			0.41	
v/s Ratio Perm	0.11		c0.29	0.16		0.00	c0.62		0.08			0.01
v/c Ratio	0.33	0.11	0.91	0.51	0.15	0.00	1.31	0.59	0.13		0.91	0.03
Uniform Delay, d1	23.1	21.4	29.2	24.7	21.7	20.7	24.4	11.7	8.3		22.8	13.6
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	0.5	0.1	22.6	1.3	0.2	0.0	173.8	0.6	0.0		13.5	0.0
Delay (s)	23.6	21.5	51.8	26.0	21.8	20.7	198.2	12.3	8.3		36.3	13.6
Level of Service	C	C	D	C	C	C	F	B	A		D	B
Approach Delay (s/veh)		44.8			24.8			56.1			35.1	
Approach LOS		D			C			E			D	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	44.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.16		
Actuated Cycle Length (s)	89.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	98.8%	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)	1	2	4	4	1	12	2	88	1	4	151	1
Future Volume (vph)	1	2	4	4	1	12	2	88	1	4	151	1
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		0.923			0.905			0.999			0.999	
Flt Protected		0.993			0.988			0.999			0.999	
Satd. Flow (prot)	0	1229	0	0	1201	0	0	1431	0	0	1520	0
Flt Permitted		0.993			0.988			0.999			0.999	
Satd. Flow (perm)	0	1229	0	0	1201	0	0	1431	0	0	1520	0
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		1098.8			1503.1			836.4			884.7	
Travel Time (s)		65.9			90.2			50.2			53.1	
Confl. Peds. (#/hr)	8					8	2					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 (%)	100%	0%	0%	0%	0%	20%	0%	6%	100%	0%	0%	100%
Adj. Flow (vph)	1	2	4	4	1	12	2	88	1	4	151	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	7	0	0	17	0	0	91	0	0	156	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 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)	1	2	4	4	1	12	2	88	1	4	151	1
Future Volume (Veh/h)	1	2	4	4	1	12	2	88	1	4	151	1
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)	1	2	4	4	1	12	2	88	1	4	151	1
Pedestrians		2									8	
Lane Width (m)		3.5									3.5	
Walking Speed (m/s)		1.2									1.2	
Percent Blockage		0									1	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	275	255	154	257	255	97	154			89		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	275	255	154	257	255	97	154			89		
tC, single (s)	8.1	6.5	6.2	7.1	6.5	6.4	4.1			4.1		
tC, 2 stage (s)												
tF (s)	4.4	4.0	3.3	3.5	4.0	3.5	2.2			2.2		
p0 queue free %	100	100	100	99	100	99	100			100		
cM capacity (veh/h)	506	649	896	692	649	907	1436			1519		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	7	17	91	156
Volume Left	1	4	2	4
Volume Right	4	12	1	1
cSH	735	827	1436	1519
Volume to Capacity	0.01	0.02	0.00	0.00
Queue Length 95th (m)	0.2	0.5	0.0	0.1
Control Delay (s/veh)	9.9	9.4	0.2	0.2
Lane LOS	A	A	A	A
Approach Delay (s/veh)	9.9	9.4	0.2	0.2
Approach LOS	A	A		

Intersection Summary				
Average Delay	1.0			
Intersection Capacity Utilization	24.6%	ICU Level of Service	A	
Analysis Period (min)	15			

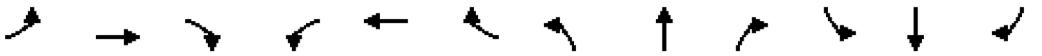
Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	2	4	4	1	12	2	88	1	4	151	1
Future Vol, veh/h	1	2	4	4	1	12	2	88	1	4	151	1
Conflicting Peds, #/hr	8	0	0	0	0	8	2	0	0	0	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	100	0	0	0	0	20	0	6	100	0	0	100
Mvmt Flow	1	2	4	4	1	12	2	88	1	4	151	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	262	255	154	253	255	97	154	0	0	89	0	0
Stage 1	162	162	-	93	93	-	-	-	-	-	-	-
Stage 2	101	93	-	160	162	-	-	-	-	-	-	-
Critical Hdwy	8.1	6.5	6.2	7.1	6.5	6.4	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	7.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	7.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	4.4	4	3.3	3.5	4	3.48	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	530	653	898	705	653	913	1439	-	-	1519	-	-
Stage 1	656	768	-	919	822	-	-	-	-	-	-	-
Stage 2	713	822	-	847	768	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	516	649	896	697	649	907	1437	-	-	1519	-	-
Mov Cap-2 Maneuver	516	649	-	697	649	-	-	-	-	-	-	-
Stage 1	653	765	-	918	821	-	-	-	-	-	-	-
Stage 2	697	821	-	838	764	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	9.92	9.43	0.17	0.19
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	39	-	-	738	829	46	-	-
HCM Lane V/C Ratio	0.001	-	-	0.009	0.021	0.003	-	-
HCM Ctrl Dly (s/v)	7.5	0	-	9.9	9.4	7.4	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.1	0	-	-

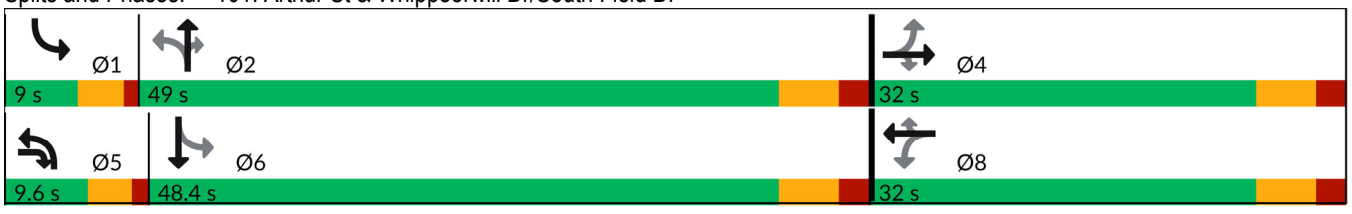


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	53	84	175	86	147	207	255	790	95	177	641	35
Future Volume (vph)	53	84	175	86	147	207	255	790	95	177	641	35
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1650	1650
Storage Length (m)	40.0		40.0	25.0		25.0	45.0		40.0	30.0		1.0
Storage Lanes	1		1	1		1	1		1	1		0
Taper Length (m)	50.0			50.0			40.0			60.0		
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	1.00		0.97	1.00	1.00	
Frt			0.850			0.850			0.850		0.992	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	1824	1471	1619	1879	1456	1668	1807	1428	1651	1544	0
Flt Permitted	0.618			0.702			0.239			0.173		
Satd. Flow (perm)	1080	1824	1471	1196	1879	1420	419	1807	1379	300	1544	0
Right Turn on Red			No			Yes			Yes			Yes
Satd. Flow (RTOR)						207			85		4	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		886.0			669.7			889.8			887.4	
Travel Time (s)		63.8			48.2			53.4			53.2	
Confl. Peds. (#/hr)	3					3	1		13	13		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%	3%	0%	3%	0%	1%	0%	4%	3%	1%	5%	0%
Adj. Flow (vph)	53	84	175	86	147	207	255	790	95	177	641	35
Shared Lane Traffic (%)												
Lane Group Flow (vph)	53	84	175	86	147	207	255	790	95	177	676	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.11	1.01	1.13	1.11	1.01	1.13	1.11	1.01	1.13	1.11	1.21	1.21
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	pm+ov	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4	5		8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		
Detector Phase	4	4	5	8	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	12.0	12.0	5.0	12.0	12.0	12.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	32.0	32.0	9.5	32.0	32.0	32.0	9.5	47.7	47.7	9.0	47.7	
Total Split (s)	32.0	32.0	9.6	32.0	32.0	32.0	9.6	49.0	49.0	9.0	48.4	
Total Split (%)	35.6%	35.6%	10.7%	35.6%	35.6%	35.6%	10.7%	54.4%	54.4%	10.0%	53.8%	
Maximum Green (s)	26.0	26.0	5.6	26.0	26.0	26.0	5.6	43.0	43.0	5.0	42.4	
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	2.0	2.0	1.0	2.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0	0.0	-2.0	-2.0	-2.0	0.0	-2.0	-2.0	-2.0	0.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	2.0	6.0	
Lead/Lag			Lead				Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?			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	Min	Min	None	Min	
Walk Time (s)	10.0	10.0		10.0	10.0	10.0		21.8	21.8		21.8	
Flash Don't Walk (s)	16.0	16.0		16.0	16.0	16.0		19.0	19.0		19.0	
Pedestrian Calls (#/hr)	0	0		0	0	0		0	0		0	
Act Effct Green (s)	15.1	15.1	24.8	15.1	15.1	15.1	45.1	39.5	39.5	48.0	36.8	
Actuated g/C Ratio	0.21	0.21	0.35	0.21	0.21	0.21	0.63	0.55	0.55	0.67	0.51	
v/c Ratio	0.23	0.22	0.34	0.34	0.37	0.45	0.71	0.80	0.12	0.53	0.85	
Control Delay (s/veh)	28.4	26.9	21.3	30.3	28.9	7.7	18.4	20.3	2.8	10.2	27.4	
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 (s/veh)	28.4	26.9	21.3	30.3	28.9	7.7	18.4	20.3	2.8	10.2	27.4	
LOS	C	C	C	C	C	A	B	C	A	B	C	
Approach Delay (s/veh)		24.0			19.2			18.4			23.9	
Approach LOS		C			B			B			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 71.8			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.85			
Intersection Signal Delay (s/veh): 20.9		Intersection LOS: C	
Intersection Capacity Utilization 92.5%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 101: Arthur St & Whippoorwill Dr/South Field Dr





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	53	84	175	86	147	207	255	790	95	177	676
v/c Ratio	0.23	0.22	0.34	0.34	0.37	0.45	0.71	0.80	0.12	0.53	0.85
Control Delay (s/veh)	28.4	26.9	21.3	30.3	28.9	7.7	18.4	20.3	2.8	10.2	27.4
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 (s/veh)	28.4	26.9	21.3	30.3	28.9	7.7	18.4	20.3	2.8	10.2	27.4
Queue Length 50th (m)	6.6	10.5	19.4	11.0	19.0	0.0	10.7	78.0	0.6	6.2	73.4
Queue Length 95th (m)	16.8	22.9	37.0	24.5	36.3	16.7	#30.3	144.7	6.9	15.5	#156.9
Internal Link Dist (m)		862.0			645.7			865.8			863.4
Turn Bay Length (m)	40.0		40.0	25.0		25.0	45.0		40.0	30.0	
Base Capacity (vph)	425	718	509	471	740	685	361	1144	904	333	923
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	0.12	0.12	0.34	0.18	0.20	0.30	0.71	0.69	0.11	0.53	0.73

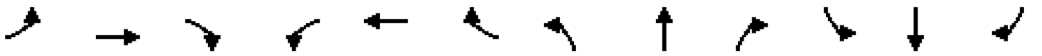
Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	53	84	175	86	147	207	255	790	95	177	641	35
Future Volume (vph)	53	84	175	86	147	207	255	790	95	177	641	35
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	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	2.0	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	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00	
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	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1662	1824	1471	1619	1879	1421	1667	1807	1384	1650	1544	
Flt Permitted	0.62	1.00	1.00	0.70	1.00	1.00	0.24	1.00	1.00	0.17	1.00	
Satd. Flow (perm)	1081	1824	1471	1197	1879	1421	419	1807	1384	300	1544	
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)	53	84	175	86	147	207	255	790	95	177	641	35
RTOR Reduction (vph)	0	0	0	0	0	163	0	0	38	0	2	0
Lane Group Flow (vph)	53	84	175	86	147	44	255	790	57	177	674	0
Confl. Peds. (#/hr)	3					3	1		13	13		1
Heavy Vehicles (%)	0%	3%	0%	3%	0%	1%	0%	4%	3%	1%	5%	0%
Turn Type	Perm	NA	pm+ov	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4	5		8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		
Actuated Green, G (s)	13.1	13.1	18.8	13.1	13.1	13.1	43.2	37.5	37.5	42.0	36.9	
Effective Green, g (s)	15.1	15.1	18.8	15.1	15.1	15.1	43.2	39.5	39.5	46.0	36.9	
Actuated g/C Ratio	0.21	0.21	0.26	0.21	0.21	0.21	0.60	0.55	0.55	0.64	0.51	
Clearance Time (s)	6.0	6.0	4.0	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	3.0	
Lane Grp Cap (vph)	227	384	385	252	395	299	351	995	762	326	794	
v/s Ratio Prot		0.05	c0.04		0.08		c0.06	c0.44		0.05	0.44	
v/s Ratio Perm	0.05		0.08	0.07		0.03	0.38		0.04	0.29		
v/c Ratio	0.23	0.22	0.45	0.34	0.37	0.15	0.73	0.79	0.07	0.54	0.85	
Uniform Delay, d1	23.5	23.4	22.2	24.1	24.2	23.0	9.3	12.9	7.5	9.3	15.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.5	0.3	0.9	0.8	0.6	0.2	7.3	4.4	0.0	1.8	8.4	
Delay (s)	24.0	23.7	23.0	24.9	24.8	23.3	16.6	17.3	7.6	11.1	23.4	
Level of Service	C	C	C	C	C	C	B	B	A	B	C	
Approach Delay (s/veh)		23.4			24.1			16.3			20.9	
Approach LOS		C			C			B			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	19.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	71.7	Sum of lost time (s)	14.0
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)	48	94	59	14	174	155	21	153	26	90	231	84
Future Volume (vph)	48	94	59	14	174	155	21	153	26	90	231	84
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1775	1650	1650	1775	1650	1650
Storage Length (m)	0.0		0.0	0.0		0.0	25.0		0.0	20.0		0.0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			40.0			25.0		
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		0.960			0.939			0.978			0.960	
Flt Protected		0.988			0.998		0.950			0.950		
Satd. Flow (prot)	0	1418	0	0	1379	0	1668	1344	0	1558	1498	0
Flt Permitted		0.988			0.998		0.950			0.950		
Satd. Flow (perm)	0	1418	0	0	1379	0	1668	1344	0	1558	1498	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		669.7			255.5			857.7			256.9	
Travel Time (s)		48.2			18.4			61.8			18.5	
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 (%)	8%	0%	2%	10%	2%	6%	0%	17%	29%	7%	4%	6%
Adj. Flow (vph)	48	94	59	14	174	155	21	153	26	90	231	84
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	201	0	0	343	0	21	179	0	90	315	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.31	1.31	1.31	1.31	1.31	1.31	1.11	1.21	1.21	1.11	1.21	1.21
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			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												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	48	94	59	14	174	155	21	153	26	90	231	84
Future Volume (vph)	48	94	59	14	174	155	21	153	26	90	231	84
Peak Hour Factor	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)	48	94	59	14	174	155	21	153	26	90	231	84

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	201	343	21	179	90	315
Volume Left (vph)	48	14	21	0	90	0
Volume Right (vph)	59	155	0	26	0	84
Hadj (s)	-0.09	-0.19	0.50	0.22	0.62	-0.11
Departure Headway (s)	6.4	6.0	7.6	7.3	7.3	6.6
Degree Utilization, x	0.36	0.57	0.04	0.36	0.18	0.57
Capacity (veh/h)	497	565	433	444	466	517
Control Delay (s/veh)	12.9	16.6	9.7	13.1	10.7	16.8
Approach Delay (s/veh)	12.9	16.6	12.7		15.5	
Approach LOS	B	C	B		C	

Intersection Summary				
Delay	14.9			
Level of Service	B			
Intersection Capacity Utilization	70.6%	ICU Level of Service	C	
Analysis Period (min)	15			

Intersection	
Intersection Delay, s/veh	15.9
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	48	94	59	14	174	155	21	153	26	90	231	84
Future Vol, veh/h	48	94	59	14	174	155	21	153	26	90	231	84
Peak Hour Factor	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, %	8	0	2	10	2	6	0	17	29	7	4	6
Mvmt Flow	48	94	59	14	174	155	21	153	26	90	231	84
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0

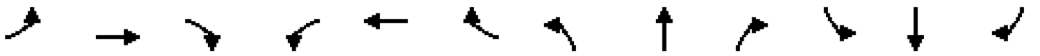
Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	1
HCM Control Delay, s/veh	13.5	17.7	13.7	16.6
HCM LOS	B	C	B	C

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	24%	4%	100%	0%
Vol Thru, %	0%	85%	47%	51%	0%	73%
Vol Right, %	0%	15%	29%	45%	0%	27%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	21	179	201	343	90	315
LT Vol	21	0	48	14	90	0
Through Vol	0	153	94	174	0	231
RT Vol	0	26	59	155	0	84
Lane Flow Rate	21	179	201	343	90	315
Geometry Grp	5	5	2	2	5	5
Degree of Util (X)	0.044	0.362	0.369	0.589	0.184	0.577
Departure Headway (Hd)	7.594	7.272	6.613	6.179	7.344	6.589
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	471	494	543	583	489	548
Service Time	5.348	5.027	4.667	4.221	5.091	4.335
HCM Lane V/C Ratio	0.045	0.362	0.37	0.588	0.184	0.575
HCM Control Delay, s/veh	10.7	14.1	13.5	17.7	11.8	18
HCM Lane LOS	B	B	B	C	B	C
HCM 95th-tile Q	0.1	1.6	1.7	3.8	0.7	3.6



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑			↑			↑			↑	
Traffic Volume (vph)	0	210	0	0	343	0	0	0	0	0	0	0
Future Volume (vph)	0	210	0	0	343	0	0	0	0	0	0	0
Ideal Flow (vphpl)	1000	1900	1000	1000	1900	1000	1000	1900	1000	1000	1900	1000
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	1842	0	0	1842	0	0	1842	0	0	1842	0
Flt Permitted												
Satd. Flow (perm)	0	1842	0	0	1842	0	0	1842	0	0	1842	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		255.5			1269.9			164.4			156.0	
Travel Time (s)		18.4			91.4			11.8			11.2	
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
Adj. Flow (vph)	0	210	0	0	343	0	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	210	0	0	343	0	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	2.20	1.01	2.20	2.20	1.01	2.20	2.20	1.01	2.20	2.20	1.01	2.20
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 21.4%		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	210	0	0	343	0	0	0	0	0	0	0
Future Volume (Veh/h)	0	210	0	0	343	0	0	0	0	0	0	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	210	0	0	343	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	172	0	0	105	0	0	0			0		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	172	0	0	105	0	0	0			0		
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	77	100	100	62	100	100			100		
cM capacity (veh/h)	556	896	1085	717	896	1085	1623			1623		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	210	343	0	0
Volume Left	0	0	0	0
Volume Right	0	0	0	0
cSH	896	896	1700	1700
Volume to Capacity	0.23	0.38	0.00	0.00
Queue Length 95th (m)	7.3	14.5	0.0	0.0
Control Delay (s/veh)	10.2	11.5	0.0	0.0
Lane LOS	B	B		
Approach Delay (s/veh)	10.2	11.5	0.0	0.0
Approach LOS	B	B		

Intersection Summary				
Average Delay	11.0			
Intersection Capacity Utilization	21.4%	ICU Level of Service	A	
Analysis Period (min)	15			

Intersection	
Int Delay, s/veh	11

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑			↑			↑			↑	
Traffic Vol, veh/h	0	210	0	0	343	0	0	0	0	0	0	0
Future Vol, veh/h	0	210	0	0	343	0	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	210	0	0	343	0	0	0	0	0	0	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	1	-	-	1	-	-	0	-	-	-	0
Stage 1	-	1	-	-	0	-	-	-	-	-	-	-
Stage 2	-	0	-	-	1	-	-	-	-	-	-	-
Critical Hdwy	-	6.52	-	-	6.52	-	-	-	-	-	-	-
Critical Hdwy Stg 1	-	5.52	-	-	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	5.52	-	-	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	-	4.018	-	-	4.018	-	-	-	-	-	-	-
Pot Cap-1 Maneuver	0	895	0	0	895	0	0	-	0	0	-	0
Stage 1	0	895	0	0	-	0	0	-	0	0	-	0
Stage 2	0	-	0	0	895	0	0	-	0	0	-	0
Platoon blocked, %								-			-	
Mov Cap-1 Maneuver	-	895	-	-	895	-	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	895	-	-	895	-	-	-	-	-	-	-
Stage 1	-	895	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	895	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	10.25	11.5	0	0
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBT	EBLn1	WBLn1	SBT
Capacity (veh/h)	-	895	895	-
HCM Lane V/C Ratio	-	0.235	0.383	-
HCM Ctrl Dly (s/v)	-	10.3	11.5	-
HCM Lane LOS	-	B	B	-
HCM 95th %tile Q(veh)	-	0.9	1.8	-



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	1421	1	1	1317
Future Volume (vph)	0	0	1421	1	1	1317
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)	1745	0	1539	0	0	1525
Flt Permitted						
Satd. Flow (perm)	1745	0	1539	0	0	1525
Link Speed (k/h)	60		80			80
Link Distance (m)	527.8		756.1			487.8
Travel Time (s)	31.7		34.0			22.0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	6%	0%	0%	7%
Adj. Flow (vph)	0	0	1421	1	1	1317
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	1422	0	0	1318
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.5		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.12	1.12	1.21	1.21	1.21	1.21
Turning Speed (k/h)	25	15		15	25	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 89.5%		ICU Level of Service E	
Analysis Period (min) 15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	1421	1	1	1317
Future Volume (Veh/h)	0	0	1421	1	1	1317
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	1421	1	1	1317
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	2741	1422			1422	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2741	1422			1422	
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)	23	169			485	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	0	1422	1318
Volume Left	0	0	1
Volume Right	0	1	0
cSH	1700	1700	485
Volume to Capacity	0.00	0.84	0.00
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s/veh)	0.0	0.0	0.1
Lane LOS	A		A
Approach Delay (s/veh)	0.0	0.0	0.1
Approach LOS	A		

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	89.5%	ICU Level of Service	E
Analysis Period (min)	15		

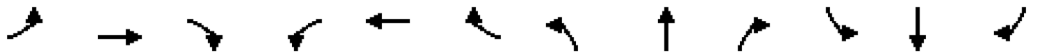
Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	1421	1	1	1317
Future Vol, veh/h	0	0	1421	1	1	1317
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	6	0	0	7
Mvmt Flow	0	0	1421	1	1	1317

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2741	1422	0	0	1422	0
Stage 1	1422	-	-	-	-	-
Stage 2	1319	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	23	169	-	-	485	-
Stage 1	225	-	-	-	-	-
Stage 2	252	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	22	169	-	-	485	-
Mov Cap-2 Maneuver	22	-	-	-	-	-
Stage 1	225	-	-	-	-	-
Stage 2	250	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	0	0	0.01
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	1	-
HCM Lane V/C Ratio	-	-	-	0.002	-
HCM Ctrl Dly (s/v)	-	-	0	12.4	0
HCM Lane LOS	-	-	A	B	A
HCM 95th %tile Q(veh)	-	-	-	0	-

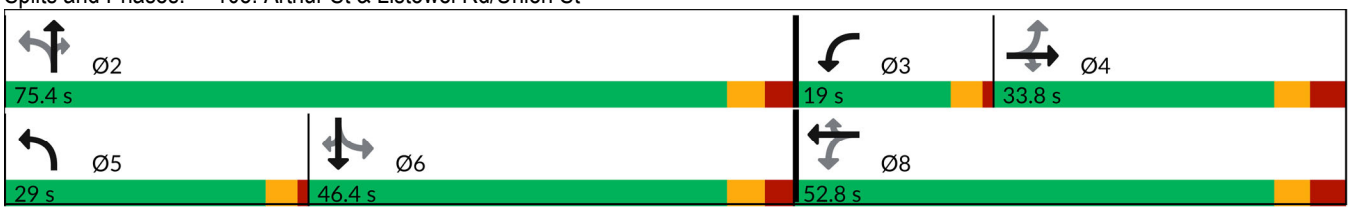


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	97	82	364	320	137	15	434	910	76	0	634	105
Future Volume (vph)	97	82	364	320	137	15	434	910	76	0	634	105
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1900	1750
Storage Length (m)	60.0		60.0	25.0		25.0	100.0		100.0	50.0		50.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	60.0			60.0			80.0			75.0		
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			0.850			0.850
Flt Protected	0.950			0.950			0.950					
Satd. Flow (prot)	1573	1342	1313	1619	1756	1279	1573	1842	1290	1755	1807	1414
Flt Permitted	0.669			0.538			0.091					
Satd. Flow (perm)	1108	1342	1313	917	1756	1279	151	1842	1290	1755	1807	1414
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			364			63			71			100
Link Speed (k/h)		50			50			60			50	
Link Distance (m)		1165.2			256.4			359.9			889.8	
Travel Time (s)		83.9			18.5			21.6			64.1	
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 (%)	6%	40%	12%	3%	7%	15%	6%	2%	14%	0%	4%	4%
Adj. Flow (vph)	97	82	364	320	137	15	434	910	76	0	634	105
Shared Lane Traffic (%)												
Lane Group Flow (vph)	97	82	364	320	137	15	434	910	76	0	634	105
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.11	1.01	1.13	1.11	1.01	1.13	1.11	1.01	1.13	1.11	1.01	1.13
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		4		3	8		5	2			6	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	4	4	4	3	8	8	5	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	7.0	10.0	10.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	33.8	33.8	33.8	11.5	33.8	33.8	11.5	46.4	46.4	46.4	46.4	46.4
Total Split (s)	33.8	33.8	33.8	19.0	52.8	52.8	29.0	75.4	75.4	46.4	46.4	46.4
Total Split (%)	26.4%	26.4%	26.4%	14.8%	41.2%	41.2%	22.6%	58.8%	58.8%	36.2%	36.2%	36.2%
Maximum Green (s)	27.0	27.0	27.0	15.0	46.0	46.0	25.0	69.0	69.0	40.0	40.0	40.0
Yellow Time (s)	3.3	3.3	3.3	3.0	3.3	3.3	3.0	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	3.5	3.5	3.5	1.0	3.5	3.5	1.0	2.7	2.7	2.7	2.7	2.7
Lost Time Adjust (s)	-2.8	-2.8	-2.8	0.0	-2.8	-2.8	0.0	-2.4	-2.4	-2.4	-2.4	-2.4
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lag	Lead			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	5.0	0.2	0.2	0.2	0.2	0.2
Recall Mode	None	None	None	None	None	None	None	Min	Min	Min	Min	Min
Walk Time (s)	7.0	7.0	7.0		7.0	7.0		20.0	20.0	20.0	20.0	20.0
Flash Don't Walk (s)	20.0	20.0	20.0		20.0	20.0		20.0	20.0	20.0	20.0	20.0
Pedestrian Calls (#/hr)	0	0	0		0	0		0	0	0	0	0
Act Effct Green (s)	18.8	18.8	18.8	37.8	37.8	37.8	71.6	71.6	71.6		42.5	42.5
Actuated g/C Ratio	0.16	0.16	0.16	0.32	0.32	0.32	0.61	0.61	0.61		0.36	0.36
v/c Ratio	0.55	0.38	0.71	0.83	0.24	0.03	1.10	0.81	0.09		0.97	0.18
Control Delay (s/veh)	57.1	48.9	12.5	53.7	30.1	0.1	108.0	26.0	3.3		66.5	6.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay (s/veh)	57.1	48.9	12.5	53.7	30.1	0.1	108.0	26.0	3.3		66.5	6.9
LOS	E	D	B	D	C	A	F	C	A		E	A
Approach Delay (s/veh)		25.9			45.1			49.9			58.0	
Approach LOS		C			D			D			E	

Intersection Summary			
Area Type:	Other		
Cycle Length: 128.2			
Actuated Cycle Length: 117.4			
Natural Cycle: 145			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.10			
Intersection Signal Delay (s/veh): 47.0		Intersection LOS: D	
Intersection Capacity Utilization 99.7%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 105: Arthur St & Listowel Rd/Union St



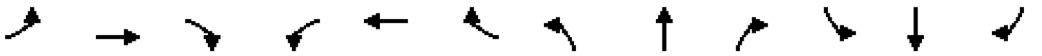


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	97	82	364	320	137	15	434	910	76	634	105
v/c Ratio	0.55	0.38	0.71	0.83	0.24	0.03	1.10	0.81	0.09	0.97	0.18
Control Delay (s/veh)	57.1	48.9	12.5	53.7	30.1	0.1	108.0	26.0	3.3	66.5	6.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	57.1	48.9	12.5	53.7	30.1	0.1	108.0	26.0	3.3	66.5	6.9
Queue Length 50th (m)	21.8	17.9	0.0	65.1	24.3	0.0	~102.6	156.8	0.5	148.1	0.8
Queue Length 95th (m)	40.1	33.7	29.6	#97.9	40.2	0.0	#186.7	#274.2	7.6	#251.8	13.8
Internal Link Dist (m)		1141.2			232.4			335.9		865.8	
Turn Bay Length (m)	60.0		60.0	25.0		25.0	100.0		100.0		50.0
Base Capacity (vph)	281	341	605	385	731	569	395	1122	814	654	575
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	0.35	0.24	0.60	0.83	0.19	0.03	1.10	0.81	0.09	0.97	0.18

Intersection Summary

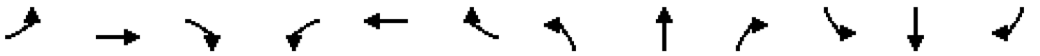
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	97	82	364	320	137	15	434	910	76	0	634	105
Future Volume (vph)	97	82	364	320	137	15	434	910	76	0	634	105
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	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	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	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00		1.00	1.00
Satd. Flow (prot)	1573	1342	1313	1619	1756	1279	1573	1842	1290		1807	1414
Flt Permitted	0.67	1.00	1.00	0.54	1.00	1.00	0.09	1.00	1.00		1.00	1.00
Satd. Flow (perm)	1109	1342	1313	917	1756	1279	150	1842	1290		1807	1414
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)	97	82	364	320	137	15	434	910	76	0	634	105
RTOR Reduction (vph)	0	0	306	0	0	10	0	0	28	0	0	64
Lane Group Flow (vph)	97	82	58	320	137	5	434	910	48	0	634	41
Heavy Vehicles (%)	6%	40%	12%	3%	7%	15%	6%	2%	14%	0%	4%	4%
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		4		3	8		5	2			6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	16.0	16.0	16.0	35.0	35.0	35.0	69.1	69.1	69.1		40.1	40.1
Effective Green, g (s)	18.8	18.8	18.8	35.0	37.8	37.8	69.1	71.5	71.5		42.5	42.5
Actuated g/C Ratio	0.16	0.16	0.16	0.30	0.32	0.32	0.59	0.61	0.61		0.36	0.36
Clearance Time (s)	6.8	6.8	6.8	4.0	6.8	6.8	4.0	6.4	6.4		6.4	6.4
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	5.0	0.2	0.2		0.2	0.2
Lane Grp Cap (vph)	177	215	210	363	565	412	391	1122	786		654	512
v/s Ratio Prot		0.06		c0.11	0.08		c0.24	0.49			0.35	
v/s Ratio Perm	0.09		0.04	c0.15		0.00	c0.42		0.04			0.03
v/c Ratio	0.55	0.38	0.28	0.88	0.24	0.01	1.11	0.81	0.06		0.97	0.08
Uniform Delay, d1	45.3	44.0	43.3	37.5	29.2	27.0	37.1	17.7	9.3		36.8	24.6
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	3.4	1.1	0.7	21.3	0.2	0.0	78.7	4.3	0.0		27.2	0.0
Delay (s)	48.8	45.2	44.0	58.8	29.4	27.1	115.8	22.0	9.3		64.0	24.6
Level of Service	D	D	D	E	C	C	F	C	A		E	C
Approach Delay (s/veh)		45.0			49.3			50.0			58.4	
Approach LOS		D			D			D			E	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	51.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	117.3	Sum of lost time (s)	16.0
Intersection Capacity Utilization	99.7%	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)	1	0	1	1	0	2	1	339	6	14	193	4
Future Volume (vph)	1	0	1	1	0	2	1	339	6	14	193	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		0.932			0.910			0.998			0.997	
Flt Protected		0.976			0.984						0.997	
Satd. Flow (prot)	0	1394	0	0	1363	0	0	1515	0	0	1504	0
Flt Permitted		0.976			0.984						0.997	
Satd. Flow (perm)	0	1394	0	0	1363	0	0	1515	0	0	1504	0
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		1098.4			1523.9			918.5			889.7	
Travel Time (s)		65.9			91.4			55.1			53.4	
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%	2%	0%	0%	0%	1%	0%	0%	0%	67%
Adj. Flow (vph)	1	0	1	1	0	2	1	339	6	14	193	4
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	2	0	0	3	0	0	346	0	0	211	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 35.8%		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)	1	0	1	1	0	2	1	339	6	14	193	4
Future Volume (Veh/h)	1	0	1	1	0	2	1	339	6	14	193	4
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)	1	0	1	1	0	2	1	339	6	14	193	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	569	570	195	568	569	342	197			345		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	569	570	195	568	569	342	197			345		
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			99		
cM capacity (veh/h)	431	429	851	429	429	705	1388			1225		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	2	3	346	211
Volume Left	1	1	1	14
Volume Right	1	2	6	4
cSH	572	581	1388	1225
Volume to Capacity	0.00	0.01	0.00	0.01
Queue Length 95th (m)	0.1	0.1	0.0	0.3
Control Delay (s/veh)	11.3	11.2	0.0	0.6
Lane LOS	B	B	A	A
Approach Delay (s/veh)	11.3	11.2	0.0	0.6
Approach LOS	B	B		

Intersection Summary				
Average Delay	0.4			
Intersection Capacity Utilization	35.8%	ICU Level of Service	A	
Analysis Period (min)	15			

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	1	0	1	1	0	2	1	339	6	14	193	4
Future Vol, veh/h	1	0	1	1	0	2	1	339	6	14	193	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	2	0	0	0	1	0	0	0	67
Mvmt Flow	1	0	1	1	0	2	1	339	6	14	193	4

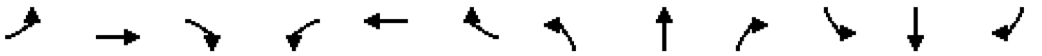
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	564	570	195	565	569	342	197	0	0	345	0	0
Stage 1	223	223	-	344	344	-	-	-	-	-	-	-
Stage 2	341	347	-	221	225	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.12	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.12	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.12	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.518	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	439	434	851	436	435	705	1388	-	-	1225	-	-
Stage 1	784	723	-	671	640	-	-	-	-	-	-	-
Stage 2	678	638	-	781	721	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	432	428	851	429	429	705	1388	-	-	1225	-	-
Mov Cap-2 Maneuver	432	428	-	429	429	-	-	-	-	-	-	-
Stage 1	774	713	-	671	640	-	-	-	-	-	-	-
Stage 2	676	638	-	771	712	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	11.3	11.23	0.02	0.53
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	5	-	-	573	581	119	-	-
HCM Lane V/C Ratio	0.001	-	-	0.003	0.005	0.011	-	-
HCM Ctrl Dly (s/v)	7.6	0	-	11.3	11.2	8	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

Appendix H

Total Operations Synchro Reports

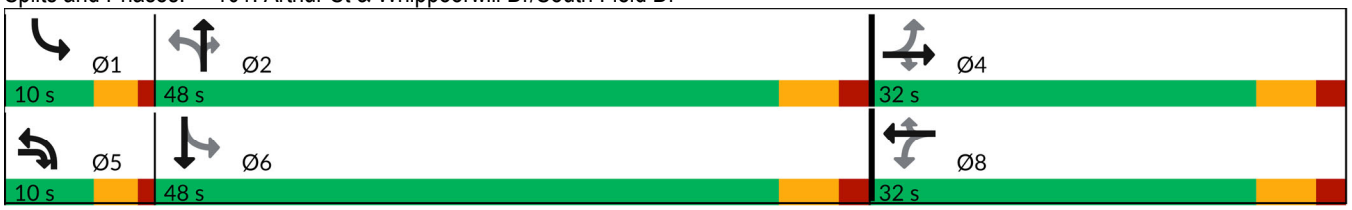


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	79	185	258	67	58	171	96	580	57	284	633	12
Future Volume (vph)	79	185	258	67	58	171	96	580	57	284	633	12
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1650	1650
Storage Length (m)	40.0		40.0	25.0		25.0	45.0		40.0	30.0		1.0
Storage Lanes	1		1	1		1	1		1	1		0
Taper Length (m)	50.0			50.0			40.0			60.0		
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	
Frt			0.850			0.850			0.850		0.997	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1619	1842	1456	1588	1789	1375	1603	1740	1302	1588	1521	0
Flt Permitted	0.719			0.623			0.235			0.286		
Satd. Flow (perm)	1221	1842	1456	1041	1789	1343	396	1740	1270	477	1521	0
Right Turn on Red			No			Yes			Yes			Yes
Satd. Flow (RTOR)						171			85		1	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		886.0			669.7			893.6			887.4	
Travel Time (s)		63.8			48.2			53.6			53.2	
Confl. Peds. (#/hr)	2					2	8		4	4		8
Peak Hour Factor	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 (%)	3%	2%	1%	5%	5%	7%	4%	8%	13%	5%	7%	0%
Adj. Flow (vph)	79	185	258	67	58	171	96	580	57	284	633	12
Shared Lane Traffic (%)												
Lane Group Flow (vph)	79	185	258	67	58	171	96	580	57	284	645	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.11	1.01	1.13	1.11	1.01	1.13	1.11	1.01	1.13	1.11	1.21	1.21
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	pm+ov	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4	5		8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		
Detector Phase	4	4	5	8	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	12.0	12.0	5.0	12.0	12.0	12.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	32.0	32.0	9.5	32.0	32.0	32.0	9.5	47.7	47.7	9.5	47.7	
Total Split (s)	32.0	32.0	10.0	32.0	32.0	32.0	10.0	48.0	48.0	10.0	48.0	
Total Split (%)	35.6%	35.6%	11.1%	35.6%	35.6%	35.6%	11.1%	53.3%	53.3%	11.1%	53.3%	
Maximum Green (s)	26.0	26.0	6.0	26.0	26.0	26.0	6.0	42.0	42.0	6.0	42.0	
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	2.0	2.0	1.0	2.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	
Lost Time Adjust (s)	-2.0	0.0	0.0	-2.0	-2.0	-2.0	0.0	-2.0	-2.0	0.0	-2.0	
Total Lost Time (s)	4.0	6.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag			Lead				Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?			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	Min	Min	None	Min	
Walk Time (s)	10.0	10.0		10.0	10.0	10.0		22.7	22.7		22.7	
Flash Don't Walk (s)	16.0	16.0		16.0	16.0	16.0		19.0	19.0		19.0	
Pedestrian Calls (#/hr)	0	0		0	0	0		0	0		0	
Act Effct Green (s)	16.0	14.0	26.1	16.0	16.0	16.0	42.1	36.1	36.1	42.2	36.1	
Actuated g/C Ratio	0.23	0.20	0.37	0.23	0.23	0.23	0.60	0.51	0.51	0.60	0.51	
v/c Ratio	0.29	0.51	0.48	0.28	0.14	0.39	0.28	0.65	0.08	0.74	0.83	
Control Delay (s/veh)	28.0	32.3	22.3	28.5	25.0	7.5	6.8	16.6	1.4	21.0	25.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	28.0	32.3	22.3	28.5	25.0	7.5	6.8	16.6	1.4	21.0	25.3	
LOS	C	C	C	C	C	A	A	B	A	C	C	
Approach Delay (s/veh)		26.7			15.7			14.1			24.0	
Approach LOS		C			B			B			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 70.4			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay (s/veh): 20.6		Intersection LOS: C	
Intersection Capacity Utilization 82.9%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 101: Arthur St & Whippoorwill Dr/South Field Dr

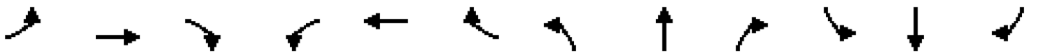




Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	79	185	258	67	58	171	96	580	57	284	645
v/c Ratio	0.29	0.51	0.48	0.28	0.14	0.39	0.28	0.65	0.08	0.74	0.83
Control Delay (s/veh)	28.0	32.3	22.3	28.5	25.0	7.5	6.8	16.6	1.4	21.0	25.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	28.0	32.3	22.3	28.5	25.0	7.5	6.8	16.6	1.4	21.0	25.3
Queue Length 50th (m)	9.4	23.8	27.9	8.0	6.7	0.0	3.8	52.0	0.0	13.0	66.8
Queue Length 95th (m)	22.6	46.2	54.5	20.2	17.0	15.1	10.2	95.9	2.9	#37.8	#136.2
Internal Link Dist (m)		862.0			645.7			869.6			863.4
Turn Bay Length (m)	40.0		40.0	25.0		25.0	45.0		40.0	30.0	
Base Capacity (vph)	494	693	541	421	724	645	341	1108	839	382	968
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	0.16	0.27	0.48	0.16	0.08	0.27	0.28	0.52	0.07	0.74	0.67

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	79	185	258	67	58	171	96	580	57	284	633	12
Future Volume (vph)	79	185	258	67	58	171	96	580	57	284	633	12
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1650	1650
Total Lost time (s)	4.0	6.0	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	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	
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	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1615	1842	1456	1588	1789	1344	1603	1740	1271	1588	1522	
Flt Permitted	0.72	1.00	1.00	0.62	1.00	1.00	0.23	1.00	1.00	0.29	1.00	
Satd. Flow (perm)	1223	1842	1456	1042	1789	1344	396	1740	1271	478	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)	79	185	258	67	58	171	96	580	57	284	633	12
RTOR Reduction (vph)	0	0	0	0	0	132	0	0	28	0	0	0
Lane Group Flow (vph)	79	185	258	67	58	39	96	580	29	284	645	0
Confl. Peds. (#/hr)	2					2	8		4	4		8
Heavy Vehicles (%)	3%	2%	1%	5%	5%	7%	4%	8%	13%	5%	7%	0%
Turn Type	Perm	NA	pm+ov	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4	5		8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		
Actuated Green, G (s)	14.0	14.0	20.1	14.0	14.0	14.0	40.2	34.1	34.1	40.2	34.1	
Effective Green, g (s)	16.0	14.0	20.1	16.0	16.0	16.0	40.2	36.1	36.1	40.2	36.1	
Actuated g/C Ratio	0.23	0.20	0.29	0.23	0.23	0.23	0.57	0.51	0.51	0.57	0.51	
Clearance Time (s)	6.0	6.0	4.0	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	3.0	
Lane Grp Cap (vph)	278	367	416	237	407	306	331	894	653	370	782	
v/s Ratio Prot		0.10	c0.05		0.03		0.03	0.33		c0.07	c0.42	
v/s Ratio Perm	0.06		0.12	0.06		0.03	0.14		0.02	0.37		
v/c Ratio	0.28	0.50	0.62	0.28	0.14	0.13	0.29	0.65	0.04	0.77	0.82	
Uniform Delay, d1	22.4	25.0	21.7	22.4	21.6	21.5	8.7	12.4	8.5	10.1	14.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.6	1.1	2.9	0.7	0.2	0.2	0.5	1.6	0.0	9.2	7.1	
Delay (s)	22.9	26.1	24.6	23.0	21.8	21.7	9.2	14.1	8.5	19.3	21.4	
Level of Service	C	C	C	C	C	C	A	B	A	B	C	
Approach Delay (s/veh)		24.9			22.0			13.0			20.8	
Approach LOS		C			C			B			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	19.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	70.2	Sum of lost time (s)	14.0
Intersection Capacity Utilization	82.9%	ICU Level of Service	E
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	277	20	82	78	64	14	167	311	97	137	35
Future Volume (vph)	28	277	20	82	78	64	14	167	311	97	137	35
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1775	1650	1650	1775	1650	1650
Storage Length (m)	0.0		0.0	0.0		0.0	25.0		0.0	20.0		0.0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			40.0			25.0		
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			0.961			0.902			0.969	
Flt Protected		0.996			0.982		0.950			0.950		
Satd. Flow (prot)	0	1420	0	0	1326	0	1544	1154	0	1619	1454	0
Flt Permitted		0.996			0.982		0.950			0.950		
Satd. Flow (perm)	0	1420	0	0	1326	0	1544	1154	0	1619	1454	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		669.7			258.4			884.2			256.9	
Travel Time (s)		48.2			18.6			63.7			18.5	
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 (%)	4%	7%	6%	8%	12%	7%	8%	8%	38%	3%	11%	0%
Adj. Flow (vph)	28	277	20	82	78	64	14	167	311	97	137	35
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	325	0	0	224	0	14	478	0	97	172	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.31	1.31	1.31	1.31	1.31	1.31	1.11	1.21	1.21	1.11	1.21	1.21
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 87.8%		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)	28	277	20	82	78	64	14	167	311	97	137	35
Future Volume (vph)	28	277	20	82	78	64	14	167	311	97	137	35
Peak Hour Factor	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	277	20	82	78	64	14	167	311	97	137	35

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	325	224	14	478	97	172
Volume Left (vph)	28	82	14	0	97	0
Volume Right (vph)	20	64	0	311	0	35
Hadj (s)	0.09	0.06	0.64	0.01	0.55	0.01
Departure Headway (s)	7.3	7.6	7.9	7.3	8.5	7.9
Degree Utilization, x	0.66	0.48	0.03	0.97	0.23	0.38
Capacity (veh/h)	478	449	443	478	407	436
Control Delay (s/veh)	23.5	17.4	10.0	58.8	12.8	14.4
Approach Delay (s/veh)	23.5	17.4	57.4		13.8	
Approach LOS	C	C	F		B	

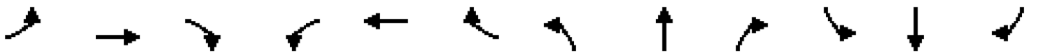
Intersection Summary				
Delay	33.2			
Level of Service	D			
Intersection Capacity Utilization	87.8%	ICU Level of Service	E	
Analysis Period (min)	15			

Intersection	
Intersection Delay, s/veh	29.8
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	28	277	20	82	78	64	14	167	311	97	137	35
Future Vol, veh/h	28	277	20	82	78	64	14	167	311	97	137	35
Peak Hour Factor	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	7	6	8	12	7	8	8	38	3	11	0
Mvmt Flow	28	277	20	82	78	64	14	167	311	97	137	35
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0

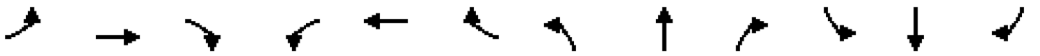
Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	1
HCM Control Delay, s/veh	23.3	17.4	47.9	14.7
HCM LOS	C	C	E	B

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	9%	37%	100%	0%
Vol Thru, %	0%	35%	85%	35%	0%	80%
Vol Right, %	0%	65%	6%	29%	0%	20%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	14	478	325	224	97	172
LT Vol	14	0	28	82	97	0
Through Vol	0	167	277	78	0	137
RT Vol	0	311	20	64	0	35
Lane Flow Rate	14	478	325	224	97	172
Geometry Grp	5	5	2	2	5	5
Degree of Util (X)	0.031	0.924	0.657	0.474	0.225	0.374
Departure Headway (Hd)	7.945	6.961	7.272	7.61	8.361	7.837
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	453	526	494	473	429	458
Service Time	5.645	4.661	5.337	5.683	6.131	5.606
HCM Lane V/C Ratio	0.031	0.909	0.658	0.474	0.226	0.376
HCM Control Delay, s/veh	10.9	49	23.3	17.4	13.6	15.3
HCM Lane LOS	B	E	C	C	B	C
HCM 95th-tile Q	0.1	11.2	4.7	2.5	0.9	1.7



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑			↑			↑			↑	
Traffic Volume (vph)	0	685	0	0	224	0	0	0	0	0	0	0
Future Volume (vph)	0	685	0	0	224	0	0	0	0	0	0	0
Ideal Flow (vphpl)	1000	1900	1000	1000	1900	1000	1000	1900	1000	1000	1900	1000
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	1842	0	0	1842	0	0	1842	0	0	1842	0
Flt Permitted												
Satd. Flow (perm)	0	1842	0	0	1842	0	0	1842	0	0	1842	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		258.4			134.3			175.3			172.7	
Travel Time (s)		18.6			9.7			12.6			12.4	
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
Adj. Flow (vph)	0	685	0	0	224	0	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	685	0	0	224	0	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	2.20	1.01	2.20	2.20	1.01	2.20	2.20	1.01	2.20	2.20	1.01	2.20
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 39.4%		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	685	0	0	224	0	0	0	0	0	0	0
Future Volume (Veh/h)	0	685	0	0	224	0	0	0	0	0	0	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	685	0	0	224	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	112	0	0	343	0	0	0			0		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	112	0	0	343	0	0	0			0		
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	24	100	100	75	100	100			100		
cM capacity (veh/h)	699	896	1085	227	896	1085	1623			1623		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	685	224	0	0
Volume Left	0	0	0	0
Volume Right	0	0	0	0
cSH	896	896	1700	1700
Volume to Capacity	0.76	0.25	0.00	0.00
Queue Length 95th (m)	60.5	7.9	0.0	0.0
Control Delay (s/veh)	20.8	10.4	0.0	0.0
Lane LOS	C	B		
Approach Delay (s/veh)	20.8	10.4	0.0	0.0
Approach LOS	C	B		

Intersection Summary				
Average Delay	18.2			
Intersection Capacity Utilization	39.4%	ICU Level of Service	A	
Analysis Period (min)	15			

Intersection	
Int Delay, s/veh	18.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑			↑			↑			↑	
Traffic Vol, veh/h	0	685	0	0	224	0	0	0	0	0	0	0
Future Vol, veh/h	0	685	0	0	224	0	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	685	0	0	224	0	0	0	0	0	0	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	1	-	-	1	-	-	0	-	-	-	0
Stage 1	-	1	-	-	0	-	-	-	-	-	-	-
Stage 2	-	0	-	-	1	-	-	-	-	-	-	-
Critical Hdwy	-	6.52	-	-	6.52	-	-	-	-	-	-	-
Critical Hdwy Stg 1	-	5.52	-	-	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	5.52	-	-	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	-	4.018	-	-	4.018	-	-	-	-	-	-	-
Pot Cap-1 Maneuver	0	895	0	0	895	0	0	-	0	0	-	0
Stage 1	0	895	0	0	-	0	0	-	0	0	-	0
Stage 2	0	-	0	0	895	0	0	-	0	0	-	0
Platoon blocked, %								-			-	
Mov Cap-1 Maneuver	-	895	-	-	895	-	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	895	-	-	895	-	-	-	-	-	-	-
Stage 1	-	895	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	895	-	-	-	-	-	-	-

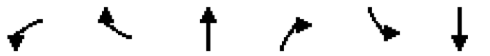
Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	20.83	10.36	0	0
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBT	EBLn1	WBLn1	SBT
Capacity (veh/h)	-	895	895	-
HCM Lane V/C Ratio	-	0.765	0.25	-
HCM Ctrl Dly (s/v)	-	20.8	10.4	-
HCM Lane LOS	-	C	B	-
HCM 95th %tile Q(veh)	-	7.6	1	-



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	1	4	1177	0	0	1528
Future Volume (vph)	1	4	1177	0	0	1528
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	0.892					
Flt Protected	0.990					
Satd. Flow (prot)	1284	0	1539	0	0	1525
Flt Permitted	0.990					
Satd. Flow (perm)	1284	0	1539	0	0	1525
Link Speed (k/h)	60		80			80
Link Distance (m)	527.8		756.1			487.8
Travel Time (s)	31.7		34.0			22.0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	100%	0%	6%	0%	0%	7%
Adj. Flow (vph)	1	4	1177	0	0	1528
Shared Lane Traffic (%)						
Lane Group Flow (vph)	5	0	1177	0	0	1528
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.5		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.12	1.12	1.21	1.21	1.21	1.21
Turning Speed (k/h)	25	15		15	25	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 102.6%		ICU Level of Service G	
Analysis Period (min) 15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	1	4	1177	0	0	1528
Future Volume (Veh/h)	1	4	1177	0	0	1528
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)	1	4	1177	0	0	1528
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	2705	1177			1177	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2705	1177			1177	
tC, single (s)	7.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	4.4	3.3			2.2	
p0 queue free %	91	98			100	
cM capacity (veh/h)	11	235			601	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	5	1177	1528
Volume Left	1	0	0
Volume Right	4	0	0
cSH	46	1700	601
Volume to Capacity	0.11	0.69	0.00
Queue Length 95th (m)	2.8	0.0	0.0
Control Delay (s/veh)	93.4	0.0	0.0
Lane LOS	F		
Approach Delay (s/veh)	93.4	0.0	0.0
Approach LOS	F		

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	102.6%	ICU Level of Service	G
Analysis Period (min)	15		

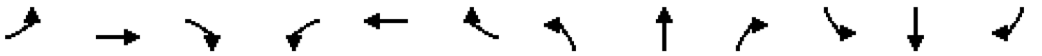
Intersection	
Int Delay, s/veh	0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	4	1177	0	0	1528
Future Vol, veh/h	1	4	1177	0	0	1528
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	100	0	6	0	0	7
Mvmt Flow	1	4	1177	0	0	1528

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2705	1177	0	0	1177	0
Stage 1	1177	-	-	-	-	-
Stage 2	1528	-	-	-	-	-
Critical Hdwy	7.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	6.4	-	-	-	-	-
Critical Hdwy Stg 2	6.4	-	-	-	-	-
Follow-up Hdwy	4.4	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	11	235	-	-	601	-
Stage 1	190	-	-	-	-	-
Stage 2	119	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	11	235	-	-	601	-
Mov Cap-2 Maneuver	11	-	-	-	-	-
Stage 1	190	-	-	-	-	-
Stage 2	119	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	93.39	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	46	601	-
HCM Lane V/C Ratio	-	-	0.11	-	-
HCM Ctrl Dly (s/v)	-	-	93.4	0	-
HCM Lane LOS	-	-	F	A	-
HCM 95th %tile Q(veh)	-	-	0.3	0	-

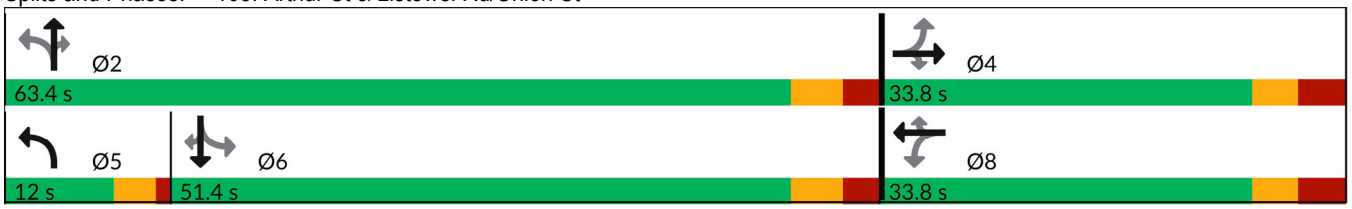


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	128	176	595	235	74	6	247	613	354	0	729	42
Future Volume (vph)	128	176	595	235	74	6	247	613	354	0	729	42
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1900	1750
Storage Length (m)	60.0		60.0	25.0		25.0	100.0		100.0	50.0		50.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	60.0			60.0			80.0			75.0		
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			0.850			0.850
Flt Protected	0.950			0.950			0.950					
Satd. Flow (prot)	1603	1634	1350	1413	1261	1226	1378	1756	1302	1755	1773	1313
Flt Permitted	0.709			0.588			0.094					
Satd. Flow (perm)	1197	1634	1350	875	1261	1226	136	1756	1302	1755	1773	1313
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			294			83			354			88
Link Speed (k/h)		50			50			60			50	
Link Distance (m)		1221.5			248.3			356.1			893.6	
Travel Time (s)		87.9			17.9			21.4			64.3	
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%	15%	9%	18%	49%	20%	21%	7%	13%	0%	6%	12%
Adj. Flow (vph)	128	176	595	235	74	6	247	613	354	0	729	42
Shared Lane Traffic (%)												
Lane Group Flow (vph)	128	176	595	235	74	6	247	613	354	0	729	42
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.11	1.01	1.13	1.11	1.01	1.13	1.11	1.01	1.13	1.11	1.01	1.13
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		4			8		5	2			6	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	4	4	4	8	8	8	5	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	33.8	33.8	33.8	33.8	33.8	33.8	11.5	51.4	51.4	51.4	51.4	51.4
Total Split (s)	33.8	33.8	33.8	33.8	33.8	33.8	12.0	63.4	63.4	51.4	51.4	51.4
Total Split (%)	34.8%	34.8%	34.8%	34.8%	34.8%	34.8%	12.3%	65.2%	65.2%	52.9%	52.9%	52.9%
Maximum Green (s)	27.0	27.0	27.0	27.0	27.0	27.0	8.0	57.0	57.0	45.0	45.0	45.0
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.0	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	1.0	2.7	2.7	2.7	2.7	2.7
Lost Time Adjust (s)	-2.8	-2.8	-2.8	-2.8	-2.8	-2.8	0.0	-2.4	-2.4	-2.4	-2.4	-2.4
Total Lost Time (s)	4.0	4.0	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	5.0	0.2	0.2	0.2	0.2	0.2
Recall Mode	None	None	None	None	None	None	None	Min	Min	Min	Min	Min
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0		25.0	25.0	25.0	25.0	25.0
Flash Don't Walk (s)	20.0	20.0	20.0	20.0	20.0	20.0		20.0	20.0	20.0	20.0	20.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0		0	0	0	0	0
Act Effct Green (s)	29.0	29.0	29.0	29.0	29.0	29.0	52.9	52.9	52.9		40.8	40.8
Actuated g/C Ratio	0.32	0.32	0.32	0.32	0.32	0.32	0.59	0.59	0.59		0.45	0.45
v/c Ratio	0.33	0.33	0.94	0.83	0.18	0.01	1.29	0.59	0.39		0.91	0.07
Control Delay (s/veh)	28.0	27.0	41.0	56.8	25.7	0.0	187.7	14.5	2.3		39.5	0.5
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 (s/veh)	28.0	27.0	41.0	56.8	25.7	0.0	187.7	14.5	2.3		39.5	0.5
LOS	C	C	D	E	C	A	F	B	A		D	A
Approach Delay (s/veh)		36.4			48.4			46.2			37.4	
Approach LOS		D			D			D			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 97.2			
Actuated Cycle Length: 90			
Natural Cycle: 100			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.29			
Intersection Signal Delay (s/veh): 41.5		Intersection LOS: D	
Intersection Capacity Utilization 102.3%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 105: Arthur St & Listowel Rd/Union St



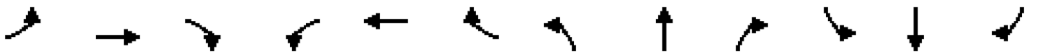


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	128	176	595	235	74	6	247	613	354	729	42
v/c Ratio	0.33	0.33	0.94	0.83	0.18	0.01	1.29	0.59	0.39	0.91	0.07
Control Delay (s/veh)	28.0	27.0	41.0	56.8	25.7	0.0	187.7	14.5	2.3	39.5	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	28.0	27.0	41.0	56.8	25.7	0.0	187.7	14.5	2.3	39.5	0.5
Queue Length 50th (m)	18.8	25.9	63.7	42.1	10.3	0.0	~47.8	66.6	0.0	120.6	0.0
Queue Length 95th (m)	36.2	45.8	#142.1	#89.1	22.2	0.0	#98.5	98.1	10.6	#193.4	0.8
Internal Link Dist (m)		1197.5			224.3			332.1		869.6	
Turn Bay Length (m)	60.0		60.0	25.0		25.0	100.0		100.0		50.0
Base Capacity (vph)	400	547	647	293	422	465	191	1172	987	944	740
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	0.32	0.32	0.92	0.80	0.18	0.01	1.29	0.52	0.36	0.77	0.06

Intersection Summary

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

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	128	176	595	235	74	6	247	613	354	0	729	42
Future Volume (vph)	128	176	595	235	74	6	247	613	354	0	729	42
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	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	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	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00		1.00	1.00
Satd. Flow (prot)	1603	1634	1350	1413	1261	1226	1378	1756	1302		1773	1313
Flt Permitted	0.71	1.00	1.00	0.59	1.00	1.00	0.09	1.00	1.00		1.00	1.00
Satd. Flow (perm)	1196	1634	1350	875	1261	1226	137	1756	1302		1773	1313
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)	128	176	595	235	74	6	247	613	354	0	729	42
RTOR Reduction (vph)	0	0	199	0	0	4	0	0	146	0	0	23
Lane Group Flow (vph)	128	176	396	235	74	2	247	613	208	0	729	19
Heavy Vehicles (%)	4%	15%	9%	18%	49%	20%	21%	7%	13%	0%	6%	12%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	26.2	26.2	26.2	26.2	26.2	26.2	50.5	50.5	50.5		38.4	38.4
Effective Green, g (s)	29.0	29.0	29.0	29.0	29.0	29.0	50.5	52.9	52.9		40.8	40.8
Actuated g/C Ratio	0.32	0.32	0.32	0.32	0.32	0.32	0.56	0.59	0.59		0.45	0.45
Clearance Time (s)	6.8	6.8	6.8	6.8	6.8	6.8	4.0	6.4	6.4		6.4	6.4
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	5.0	0.2	0.2		0.2	0.2
Lane Grp Cap (vph)	385	527	435	282	406	395	188	1033	766		804	595
v/s Ratio Prot		0.11			0.06		c0.12	0.35			0.41	
v/s Ratio Perm	0.11		c0.29	0.27		0.00	c0.62		0.16			0.01
v/c Ratio	0.33	0.33	0.91	0.83	0.18	0.00	1.31	0.59	0.27		0.91	0.03
Uniform Delay, d1	23.1	23.1	29.2	28.2	21.9	20.7	24.4	11.7	9.1		22.8	13.6
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	0.5	0.4	22.6	18.6	0.2	0.0	173.8	0.6	0.1		13.5	0.0
Delay (s)	23.6	23.5	51.8	46.8	22.1	20.7	198.2	12.3	9.1		36.3	13.6
Level of Service	C	C	D	D	C	C	F	B	A		D	B
Approach Delay (s/veh)		42.2			40.5			49.2			35.1	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	43.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.16		
Actuated Cycle Length (s)	89.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	102.3%	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)	1	2	4	4	1	18	2	104	1	4	157	1
Future Volume (vph)	1	2	4	4	1	18	2	104	1	4	157	1
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		0.923			0.894			0.999			0.999	
Flt Protected		0.993			0.991			0.999			0.999	
Satd. Flow (prot)	0	1229	0	0	1174	0	0	1433	0	0	1520	0
Flt Permitted		0.993			0.991			0.999			0.999	
Satd. Flow (perm)	0	1229	0	0	1174	0	0	1433	0	0	1520	0
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		1098.8			1503.1			836.4			884.7	
Travel Time (s)		65.9			90.2			50.2			53.1	
Confl. Peds. (#/hr)	8					8	2					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 (%)	100%	0%	0%	0%	0%	20%	0%	6%	100%	0%	0%	100%
Adj. Flow (vph)	1	2	4	4	1	18	2	104	1	4	157	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	7	0	0	23	0	0	107	0	0	162	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 25.1%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	2	4	4	1	18	2	104	1	4	157	1
Future Volume (Veh/h)	1	2	4	4	1	18	2	104	1	4	157	1
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)	1	2	4	4	1	18	2	104	1	4	157	1
Pedestrians		2									8	
Lane Width (m)		3.5									3.5	
Walking Speed (m/s)		1.2									1.2	
Percent Blockage		0									1	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	303	277	160	279	277	113	160			105		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	303	277	160	279	277	113	160			105		
tC, single (s)	8.1	6.5	6.2	7.1	6.5	6.4	4.1			4.1		
tC, 2 stage (s)												
tF (s)	4.4	4.0	3.3	3.5	4.0	3.5	2.2			2.2		
p0 queue free %	100	100	100	99	100	98	100			100		
cM capacity (veh/h)	479	631	890	670	631	888	1429			1499		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	7	23	107	162
Volume Left	1	4	2	4
Volume Right	4	18	1	1
cSH	718	827	1429	1499
Volume to Capacity	0.01	0.03	0.00	0.00
Queue Length 95th (m)	0.2	0.7	0.0	0.1
Control Delay (s/veh)	10.1	9.5	0.2	0.2
Lane LOS	B	A	A	A
Approach Delay (s/veh)	10.1	9.5	0.2	0.2
Approach LOS	B	A		

Intersection Summary				
Average Delay	1.1			
Intersection Capacity Utilization	25.1%	ICU Level of Service	A	
Analysis Period (min)	15			

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	2	4	4	1	18	2	104	1	4	157	1
Future Vol, veh/h	1	2	4	4	1	18	2	104	1	4	157	1
Conflicting Peds, #/hr	8	0	0	0	0	8	2	0	0	0	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	100	0	0	0	0	20	0	6	100	0	0	100
Mvmt Flow	1	2	4	4	1	18	2	104	1	4	157	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	284	277	160	275	277	113	160	0	0	105	0	0
Stage 1	168	168	-	109	109	-	-	-	-	-	-	-
Stage 2	117	109	-	166	168	-	-	-	-	-	-	-
Critical Hdwy	8.1	6.5	6.2	7.1	6.5	6.4	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	7.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	7.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	4.4	4	3.3	3.5	4	3.48	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	511	635	891	682	635	894	1432	-	-	1499	-	-
Stage 1	650	764	-	902	809	-	-	-	-	-	-	-
Stage 2	698	809	-	841	763	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	494	631	890	674	631	888	1429	-	-	1499	-	-
Mov Cap-2 Maneuver	494	631	-	674	631	-	-	-	-	-	-	-
Stage 1	647	760	-	900	808	-	-	-	-	-	-	-
Stage 2	677	808	-	832	760	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	10.03	9.47	0.14	0.18
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	34	-	-	722	828	44	-	-
HCM Lane V/C Ratio	0.001	-	-	0.01	0.028	0.003	-	-
HCM Ctrl Dly (s/v)	7.5	0	-	10	9.5	7.4	0	-
HCM Lane LOS	A	A	-	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.1	0	-	-



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	420	365	11	163	61	3
Future Volume (vph)	420	365	11	163	61	3
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	0.937				0.994	
Flt Protected				0.997	0.955	
Satd. Flow (prot)	1492	0	0	1594	1609	0
Flt Permitted				0.997	0.955	
Satd. Flow (perm)	1492	0	0	1594	1609	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	134.3			292.2	186.5	
Travel Time (s)	9.7			21.0	13.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	3%	3%	2%	3%	3%
Adj. Flow (vph)	420	365	11	163	61	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	785	0	0	174	64	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.21	1.21	1.21	1.21	1.12	1.12
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 61.6%		ICU Level of Service B	
Analysis Period (min) 15			



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	420	365	11	163	61	3
Future Volume (Veh/h)	420	365	11	163	61	3
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)	420	365	11	163	61	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			785		788	603
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			785		788	603
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		83	99
cM capacity (veh/h)			829		354	497

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	785	174	64
Volume Left	0	11	61
Volume Right	365	0	3
cSH	1700	829	359
Volume to Capacity	0.46	0.01	0.18
Queue Length 95th (m)	0.0	0.3	5.1
Control Delay (s/veh)	0.0	0.7	17.2
Lane LOS		A	C
Approach Delay (s/veh)	0.0	0.7	17.2
Approach LOS			C

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	61.6%	ICU Level of Service	B
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	1.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	420	365	11	163	61	3
Future Vol, veh/h	420	365	11	163	61	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	3	3	2	3	3
Mvmt Flow	420	365	11	163	61	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	785	0	788	603
Stage 1	-	-	-	-	603	-
Stage 2	-	-	-	-	185	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	829	-	359	497
Stage 1	-	-	-	-	545	-
Stage 2	-	-	-	-	844	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	829	-	354	497
Mov Cap-2 Maneuver	-	-	-	-	354	-
Stage 1	-	-	-	-	545	-
Stage 2	-	-	-	-	832	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0.59	17.21
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	358	-	-	114	-
HCM Lane V/C Ratio	0.179	-	-	0.013	-
HCM Ctrl Dly (s/v)	17.2	-	-	9.4	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.6	-	-	0	-



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	158	265	11	112	62	3
Future Volume (vph)	158	265	11	112	62	3
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	0.915				0.994	
Flt Protected				0.996	0.954	
Satd. Flow (prot)	1455	0	0	1592	1607	0
Flt Permitted				0.996	0.954	
Satd. Flow (perm)	1455	0	0	1592	1607	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	292.2			831.3	191.2	
Travel Time (s)	21.0			59.9	13.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	3%	3%	2%	3%	3%
Adj. Flow (vph)	158	265	11	112	62	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	423	0	0	123	65	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.21	1.21	1.21	1.21	1.12	1.12
Turning Speed (k/h)		15	25		25	15
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)	158	265	11	112	62	3
Future Volume (Veh/h)	158	265	11	112	62	3
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	265	11	112	62	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			423		425	291
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			423		425	291
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	100
cM capacity (veh/h)			1131		579	746

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	423	123	65
Volume Left	0	11	62
Volume Right	265	0	3
cSH	1700	1131	585
Volume to Capacity	0.25	0.01	0.11
Queue Length 95th (m)	0.0	0.2	3.0
Control Delay (s/veh)	0.0	0.8	11.9
Lane LOS		A	B
Approach Delay (s/veh)	0.0	0.8	11.9
Approach LOS			B

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	38.9%	ICU Level of Service	A
Analysis Period (min)	15		

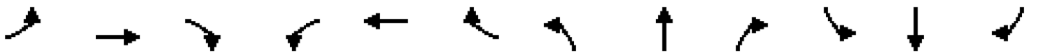
Intersection	
Int Delay, s/veh	1.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	158	265	11	112	62	3
Future Vol, veh/h	158	265	11	112	62	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	3	3	2	3	3
Mvmt Flow	158	265	11	112	62	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	423	0	425	291
Stage 1	-	-	-	-	291	-
Stage 2	-	-	-	-	134	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	1131	-	585	746
Stage 1	-	-	-	-	757	-
Stage 2	-	-	-	-	890	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1131	-	578	746
Mov Cap-2 Maneuver	-	-	-	-	578	-
Stage 1	-	-	-	-	757	-
Stage 2	-	-	-	-	881	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0.73	11.93
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	585	-	-	161	-
HCM Lane V/C Ratio	0.111	-	-	0.01	-
HCM Ctrl Dly (s/v)	11.9	-	-	8.2	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.4	-	-	0	-

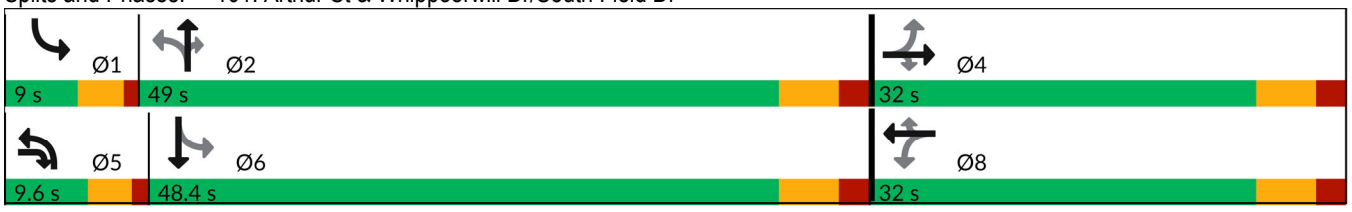


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	53	94	175	86	195	351	255	790	95	211	641	35
Future Volume (vph)	53	94	175	86	195	351	255	790	95	211	641	35
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1650	1650
Storage Length (m)	40.0		40.0	25.0		25.0	45.0		40.0	30.0		1.0
Storage Lanes	1		1	1		1	1		1	1		0
Taper Length (m)	50.0			50.0			40.0			60.0		
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	1.00		0.97	1.00	1.00	
Frt			0.850			0.850			0.850		0.992	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	1824	1471	1619	1879	1456	1668	1807	1428	1651	1544	0
Flt Permitted	0.532			0.696			0.222			0.153		
Satd. Flow (perm)	930	1824	1471	1186	1879	1420	390	1807	1379	265	1544	0
Right Turn on Red			No			Yes			Yes			Yes
Satd. Flow (RTOR)						228			85		4	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		886.0			669.7			889.8			887.4	
Travel Time (s)		63.8			48.2			53.4			53.2	
Confl. Peds. (#/hr)	3					3	1		13	13		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%	3%	0%	3%	0%	1%	0%	4%	3%	1%	5%	0%
Adj. Flow (vph)	53	94	175	86	195	351	255	790	95	211	641	35
Shared Lane Traffic (%)												
Lane Group Flow (vph)	53	94	175	86	195	351	255	790	95	211	676	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.11	1.01	1.13	1.11	1.01	1.13	1.11	1.01	1.13	1.11	1.21	1.21
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	pm+ov	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4	5		8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		
Detector Phase	4	4	5	8	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	12.0	12.0	5.0	12.0	12.0	12.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	32.0	32.0	9.5	32.0	32.0	32.0	9.5	47.7	47.7	9.0	47.7	
Total Split (s)	32.0	32.0	9.6	32.0	32.0	32.0	9.6	49.0	49.0	9.0	48.4	
Total Split (%)	35.6%	35.6%	10.7%	35.6%	35.6%	35.6%	10.7%	54.4%	54.4%	10.0%	53.8%	
Maximum Green (s)	26.0	26.0	5.6	26.0	26.0	26.0	5.6	43.0	43.0	5.0	42.4	
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	2.0	2.0	1.0	2.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0	0.0	-2.0	-2.0	-2.0	0.0	-2.0	-2.0	-2.0	0.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	2.0	6.0	
Lead/Lag			Lead				Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?			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	Min	Min	None	Min	
Walk Time (s)	10.0	10.0		10.0	10.0	10.0		21.8	21.8		21.8	
Flash Don't Walk (s)	16.0	16.0		16.0	16.0	16.0		19.0	19.0		19.0	
Pedestrian Calls (#/hr)	0	0		0	0	0		0	0		0	
Act Effct Green (s)	18.1	18.1	27.9	18.1	18.1	18.1	45.6	39.8	39.8	48.4	37.2	
Actuated g/C Ratio	0.24	0.24	0.37	0.24	0.24	0.24	0.61	0.53	0.53	0.64	0.49	
v/c Ratio	0.24	0.21	0.32	0.30	0.43	0.68	0.77	0.83	0.12	0.70	0.88	
Control Delay (s/veh)	27.1	25.3	19.9	27.7	28.3	17.3	26.5	24.9	3.7	22.4	33.4	
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 (s/veh)	27.1	25.3	19.9	27.7	28.3	17.3	26.5	24.9	3.7	22.4	33.4	
LOS	C	C	B	C	C	B	C	C	A	C	C	
Approach Delay (s/veh)		22.6			22.1			23.5			30.8	
Approach LOS		C			C			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 75.3			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.88			
Intersection Signal Delay (s/veh): 25.3		Intersection LOS: C	
Intersection Capacity Utilization 92.8%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 101: Arthur St & Whippoorwill Dr/South Field Dr

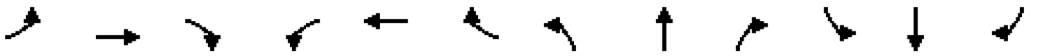




Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	53	94	175	86	195	351	255	790	95	211	676
v/c Ratio	0.24	0.21	0.32	0.30	0.43	0.68	0.77	0.83	0.12	0.70	0.88
Control Delay (s/veh)	27.1	25.3	19.9	27.7	28.3	17.3	26.5	24.9	3.7	22.4	33.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	27.1	25.3	19.9	27.7	28.3	17.3	26.5	24.9	3.7	22.4	33.4
Queue Length 50th (m)	6.8	12.0	19.8	11.2	26.4	16.3	11.5	81.9	0.6	8.2	76.5
Queue Length 95th (m)	16.5	24.3	36.0	23.7	45.5	45.5	#50.1	#199.7	8.5	#37.9	#187.0
Internal Link Dist (m)		862.0			645.7			865.8			863.4
Turn Bay Length (m)	40.0		40.0	25.0		25.0	45.0		40.0	30.0	
Base Capacity (vph)	352	692	544	450	713	680	333	1102	874	301	889
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	0.15	0.14	0.32	0.19	0.27	0.52	0.77	0.72	0.11	0.70	0.76

Intersection Summary

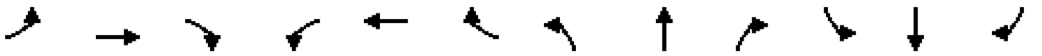
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	53	94	175	86	195	351	255	790	95	211	641	35
Future Volume (vph)	53	94	175	86	195	351	255	790	95	211	641	35
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	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	2.0	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	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00	
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	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1662	1824	1471	1619	1879	1421	1667	1807	1383	1650	1544	
Flt Permitted	0.53	1.00	1.00	0.70	1.00	1.00	0.22	1.00	1.00	0.15	1.00	
Satd. Flow (perm)	931	1824	1471	1186	1879	1421	389	1807	1383	266	1544	
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)	53	94	175	86	195	351	255	790	95	211	641	35
RTOR Reduction (vph)	0	0	0	0	0	173	0	0	40	0	2	0
Lane Group Flow (vph)	53	94	175	86	195	178	255	790	55	211	674	0
Confl. Peds. (#/hr)	3					3	1		13	13		1
Heavy Vehicles (%)	0%	3%	0%	3%	0%	1%	0%	4%	3%	1%	5%	0%
Turn Type	Perm	NA	pm+ov	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4	5		8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		
Actuated Green, G (s)	16.0	16.0	21.7	16.0	16.0	16.0	43.5	37.8	37.8	42.3	37.2	
Effective Green, g (s)	18.0	18.0	21.7	18.0	18.0	18.0	43.5	39.8	39.8	46.3	37.2	
Actuated g/C Ratio	0.24	0.24	0.29	0.24	0.24	0.24	0.58	0.53	0.53	0.62	0.50	
Clearance Time (s)	6.0	6.0	4.0	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	3.0	
Lane Grp Cap (vph)	223	438	426	285	451	341	323	960	734	295	766	
v/s Ratio Prot		0.05	0.03		0.10		0.06	c0.44		c0.07	0.44	
v/s Ratio Perm	0.06		0.09	0.07		c0.13	0.40		0.04	0.37		
v/c Ratio	0.24	0.21	0.41	0.30	0.43	0.52	0.79	0.82	0.08	0.72	0.88	
Uniform Delay, d1	22.9	22.8	21.4	23.3	24.1	24.7	10.9	14.6	8.6	11.5	16.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.6	0.2	0.6	0.6	0.7	1.4	12.1	5.8	0.0	8.0	11.3	
Delay (s)	23.5	23.0	22.1	23.9	24.8	26.1	22.9	20.4	8.6	19.5	28.1	
Level of Service	C	C	C	C	C	C	C	C	A	B	C	
Approach Delay (s/veh)		22.6			25.4			20.0			26.1	
Approach LOS		C			C			B			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	23.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	74.9	Sum of lost time (s)	14.0
Intersection Capacity Utilization	92.8%	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)	48	138	59	278	366	197	21	153	106	104	231	84
Future Volume (vph)	48	138	59	278	366	197	21	153	106	104	231	84
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1775	1650	1650	1775	1650	1650
Storage Length (m)	0.0		0.0	0.0		0.0	25.0		0.0	20.0		0.0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			40.0			25.0		
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		0.967			0.968			0.939			0.960	
Flt Protected		0.990			0.984		0.950			0.950		
Satd. Flow (prot)	0	1438	0	0	1383	0	1668	1257	0	1558	1498	0
Flt Permitted		0.990			0.984		0.950			0.950		
Satd. Flow (perm)	0	1438	0	0	1383	0	1668	1257	0	1558	1498	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		669.7			255.5			857.7			256.9	
Travel Time (s)		48.2			18.4			61.8			18.5	
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 (%)	8%	0%	2%	10%	2%	6%	0%	17%	29%	7%	4%	6%
Adj. Flow (vph)	48	138	59	278	366	197	21	153	106	104	231	84
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	245	0	0	841	0	21	259	0	104	315	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.31	1.31	1.31	1.31	1.31	1.31	1.11	1.21	1.21	1.11	1.21	1.21
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 110.3%		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)	48	138	59	278	366	197	21	153	106	104	231	84
Future Volume (vph)	48	138	59	278	366	197	21	153	106	104	231	84
Peak Hour Factor	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)	48	138	59	278	366	197	21	153	106	104	231	84

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	245	841	21	259	104	315
Volume Left (vph)	48	278	21	0	104	0
Volume Right (vph)	59	197	0	106	0	84
Hadj (s)	-0.07	0.02	0.50	0.09	0.62	-0.11
Departure Headway (s)	7.8	7.2	8.8	8.4	8.6	7.9
Degree Utilization, x	0.53	1.68	0.05	0.60	0.25	0.69
Capacity (veh/h)	432	510	395	412	405	441
Control Delay (s/veh)	19.3	331.4	11.0	22.0	13.3	25.7
Approach Delay (s/veh)	19.3	331.4	21.2		22.6	
Approach LOS	C	F	C		C	

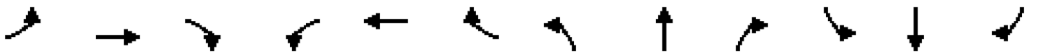
Intersection Summary				
Delay	167.4			
Level of Service	F			
Intersection Capacity Utilization	110.3%	ICU Level of Service	H	
Analysis Period (min)	15			

Intersection	
Intersection Delay, s/veh	180.5
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	48	138	59	278	366	197	21	153	106	104	231	84
Future Vol, veh/h	48	138	59	278	366	197	21	153	106	104	231	84
Peak Hour Factor	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, %	8	0	2	10	2	6	0	17	29	7	4	6
Mvmt Flow	48	138	59	278	366	197	21	153	106	104	231	84
Number of Lanes	0	1	0	0	1	0	1	1	0	1	1	0

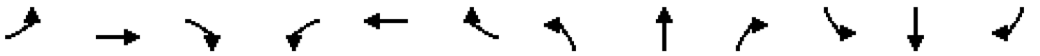
Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	1
HCM Control Delay, s/veh	23.7	353.5	26.1	28.2
HCM LOS	C	F	D	D

Lane	NBLn1	NBLn2	EBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	20%	33%	100%	0%
Vol Thru, %	0%	59%	56%	44%	0%	73%
Vol Right, %	0%	41%	24%	23%	0%	27%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	21	259	245	841	104	315
LT Vol	21	0	48	278	104	0
Through Vol	0	153	138	366	0	231
RT Vol	0	106	59	197	0	84
Lane Flow Rate	21	259	245	841	104	315
Geometry Grp	5	5	2	2	5	5
Degree of Util (X)	0.052	0.602	0.548	1.725	0.252	0.698
Departure Headway (Hd)	10.676	10.149	9.643	7.383	10.484	9.704
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	337	357	377	496	345	375
Service Time	8.376	7.849	7.643	5.433	8.184	7.404
HCM Lane V/C Ratio	0.062	0.725	0.65	1.696	0.301	0.84
HCM Control Delay, s/veh	14	27.1	23.7	353.5	16.7	32
HCM Lane LOS	B	D	C	F	C	D
HCM 95th-tile Q	0.2	3.7	3.2	50.1	1	5.1



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑			↑			↑			↑	
Traffic Volume (vph)	0	348	0	0	841	0	0	0	0	0	0	0
Future Volume (vph)	0	348	0	0	841	0	0	0	0	0	0	0
Ideal Flow (vphpl)	1000	1900	1000	1000	1900	1000	1000	1900	1000	1000	1900	1000
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	1842	0	0	1842	0	0	1842	0	0	1842	0
Flt Permitted												
Satd. Flow (perm)	0	1842	0	0	1842	0	0	1842	0	0	1842	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		255.5			145.4			164.4			156.0	
Travel Time (s)		18.4			10.5			11.8			11.2	
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
Adj. Flow (vph)	0	348	0	0	841	0	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	348	0	0	841	0	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	2.20	1.01	2.20	2.20	1.01	2.20	2.20	1.01	2.20	2.20	1.01	2.20
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 47.6%		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	348	0	0	841	0	0	0	0	0	0	0
Future Volume (Veh/h)	0	348	0	0	841	0	0	0	0	0	0	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	348	0	0	841	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	421	0	0	174	0	0	0			0		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	421	0	0	174	0	0	0			0		
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	61	100	100	6	100	100			100		
cM capacity (veh/h)	92	896	1085	550	896	1085	1623			1623		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	348	841	0	0
Volume Left	0	0	0	0
Volume Right	0	0	0	0
cSH	896	896	1700	1700
Volume to Capacity	0.39	0.94	0.00	0.00
Queue Length 95th (m)	14.8	117.2	0.0	0.0
Control Delay (s/veh)	11.5	38.7	0.0	0.0
Lane LOS	B	E		
Approach Delay (s/veh)	11.5	38.7	0.0	0.0
Approach LOS	B	E		

Intersection Summary				
Average Delay	30.7			
Intersection Capacity Utilization	47.6%	ICU Level of Service	A	
Analysis Period (min)	15			

Intersection	
Int Delay, s/veh	30.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑			↑			↑			↑	
Traffic Vol, veh/h	0	348	0	0	841	0	0	0	0	0	0	0
Future Vol, veh/h	0	348	0	0	841	0	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	348	0	0	841	0	0	0	0	0	0	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	1	-	-	1	-	-	0	-	-	-	0
Stage 1	-	1	-	-	0	-	-	-	-	-	-	-
Stage 2	-	0	-	-	1	-	-	-	-	-	-	-
Critical Hdwy	-	6.52	-	-	6.52	-	-	-	-	-	-	-
Critical Hdwy Stg 1	-	5.52	-	-	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	5.52	-	-	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	-	4.018	-	-	4.018	-	-	-	-	-	-	-
Pot Cap-1 Maneuver	0	895	0	0	895	0	0	-	0	0	-	0
Stage 1	0	895	0	0	-	0	0	-	0	0	-	0
Stage 2	0	-	0	0	895	0	0	-	0	0	-	0
Platoon blocked, %								-			-	
Mov Cap-1 Maneuver	-	895	-	-	895	-	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	895	-	-	895	-	-	-	-	-	-	-
Stage 1	-	895	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	895	-	-	-	-	-	-	-

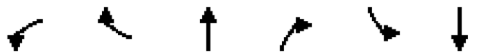
Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	11.56	38.9	0	0
HCM LOS	B	E		

Minor Lane/Major Mvmt	NBT	EBLn1	WBLn1	SBT
Capacity (veh/h)	-	895	895	-
HCM Lane V/C Ratio	-	0.389	0.94	-
HCM Ctrl Dly (s/v)	-	11.6	38.9	-
HCM Lane LOS	-	B	E	-
HCM 95th %tile Q(veh)	-	1.9	14.7	-



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	1481	1	1	1507
Future Volume (vph)	0	0	1481	1	1	1507
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)	1745	0	1539	0	0	1525
Flt Permitted						
Satd. Flow (perm)	1745	0	1539	0	0	1525
Link Speed (k/h)	60		80			80
Link Distance (m)	527.8		756.1			487.8
Travel Time (s)	31.7		34.0			22.0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	6%	0%	0%	7%
Adj. Flow (vph)	0	0	1481	1	1	1507
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	1482	0	0	1508
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.5		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.12	1.12	1.21	1.21	1.21	1.21
Turning Speed (k/h)	25	15		15	25	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 95.6%		ICU Level of Service F	
Analysis Period (min) 15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	1481	1	1	1507
Future Volume (Veh/h)	0	0	1481	1	1	1507
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	1481	1	1	1507
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	2991	1482			1482	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2991	1482			1482	
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)	15	155			460	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	0	1482	1508
Volume Left	0	0	1
Volume Right	0	1	0
cSH	1700	1700	460
Volume to Capacity	0.00	0.87	0.00
Queue Length 95th (m)	0.0	0.0	0.1
Control Delay (s/veh)	0.0	0.0	0.3
Lane LOS	A		A
Approach Delay (s/veh)	0.0	0.0	0.3
Approach LOS	A		

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	95.6%	ICU Level of Service	F
Analysis Period (min)	15		

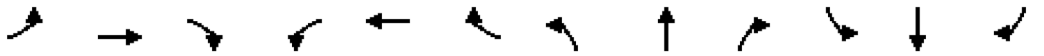
Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	1481	1	1	1507
Future Vol, veh/h	0	0	1481	1	1	1507
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	6	0	0	7
Mvmt Flow	0	0	1481	1	1	1507

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2991	1482	0	0	1482	0
Stage 1	1482	-	-	-	-	-
Stage 2	1509	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	16	155	-	-	460	-
Stage 1	210	-	-	-	-	-
Stage 2	204	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	15	155	-	-	460	-
Mov Cap-2 Maneuver	15	-	-	-	-	-
Stage 1	210	-	-	-	-	-
Stage 2	201	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	0	0	0.01
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	1	-
HCM Lane V/C Ratio	-	-	-	0.002	-
HCM Ctrl Dly (s/v)	-	-	0	12.8	0
HCM Lane LOS	-	-	A	B	A
HCM 95th %tile Q(veh)	-	-	-	0	-

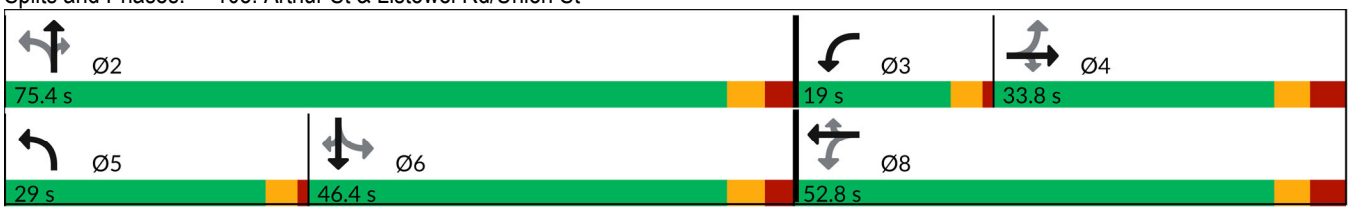


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	97	102	364	520	211	15	434	910	136	0	634	105
Future Volume (vph)	97	102	364	520	211	15	434	910	136	0	634	105
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1900	1750
Storage Length (m)	60.0		60.0	25.0		25.0	100.0		100.0	50.0		50.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	60.0			60.0			80.0			75.0		
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			0.850			0.850
Flt Protected	0.950			0.950			0.950					
Satd. Flow (prot)	1573	1342	1313	1619	1756	1279	1573	1842	1290	1755	1807	1414
Flt Permitted	0.626			0.493			0.091					
Satd. Flow (perm)	1037	1342	1313	840	1756	1279	151	1842	1290	1755	1807	1414
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			364			63			128			100
Link Speed (k/h)		50			50			60			50	
Link Distance (m)		1165.2			256.4			359.9			889.8	
Travel Time (s)		83.9			18.5			21.6			64.1	
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 (%)	6%	40%	12%	3%	7%	15%	6%	2%	14%	0%	4%	4%
Adj. Flow (vph)	97	102	364	520	211	15	434	910	136	0	634	105
Shared Lane Traffic (%)												
Lane Group Flow (vph)	97	102	364	520	211	15	434	910	136	0	634	105
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.11	1.01	1.13	1.11	1.01	1.13	1.11	1.01	1.13	1.11	1.01	1.13
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		4		3	8		5	2			6	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	4	4	4	3	8	8	5	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	7.0	10.0	10.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	33.8	33.8	33.8	11.5	33.8	33.8	11.5	46.4	46.4	46.4	46.4	46.4
Total Split (s)	33.8	33.8	33.8	19.0	52.8	52.8	29.0	75.4	75.4	46.4	46.4	46.4
Total Split (%)	26.4%	26.4%	26.4%	14.8%	41.2%	41.2%	22.6%	58.8%	58.8%	36.2%	36.2%	36.2%
Maximum Green (s)	27.0	27.0	27.0	15.0	46.0	46.0	25.0	69.0	69.0	40.0	40.0	40.0
Yellow Time (s)	3.3	3.3	3.3	3.0	3.3	3.3	3.0	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	3.5	3.5	3.5	1.0	3.5	3.5	1.0	2.7	2.7	2.7	2.7	2.7
Lost Time Adjust (s)	-2.8	-2.8	-2.8	0.0	-2.8	-2.8	0.0	-2.4	-2.4	-2.4	-2.4	-2.4
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lag	Lead			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	5.0	0.2	0.2	0.2	0.2	0.2
Recall Mode	None	None	None	None	None	None	None	Min	Min	Min	Min	Min
Walk Time (s)	7.0	7.0	7.0		7.0	7.0		20.0	20.0	20.0	20.0	20.0
Flash Don't Walk (s)	20.0	20.0	20.0		20.0	20.0		20.0	20.0	20.0	20.0	20.0
Pedestrian Calls (#/hr)	0	0	0		0	0		0	0	0	0	0
Act Effct Green (s)	19.5	19.5	19.5	38.5	38.5	38.5	71.5	71.5	71.5		42.5	42.5
Actuated g/C Ratio	0.17	0.17	0.17	0.33	0.33	0.33	0.61	0.61	0.61		0.36	0.36
v/c Ratio	0.57	0.46	0.70	1.39	0.37	0.03	1.11	0.82	0.16		0.98	0.18
Control Delay (s/veh)	58.3	51.0	12.1	224.0	32.2	0.1	110.7	26.8	2.9		68.4	7.0
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 (s/veh)	58.3	51.0	12.1	224.0	32.2	0.1	110.7	26.8	2.9		68.4	7.0
LOS	E	D	B	F	C	A	F	C	A		E	A
Approach Delay (s/veh)		27.1			165.2			49.2			59.7	
Approach LOS		C			F			D			E	

Intersection Summary			
Area Type:	Other		
Cycle Length: 128.2			
Actuated Cycle Length: 118.1			
Natural Cycle: 145			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.39			
Intersection Signal Delay (s/veh): 72.4		Intersection LOS: E	
Intersection Capacity Utilization 111.6%		ICU Level of Service H	
Analysis Period (min) 15			

Splits and Phases: 105: Arthur St & Listowel Rd/Union St



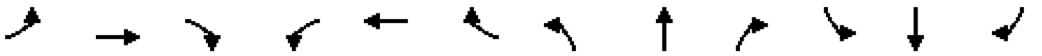


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	97	102	364	520	211	15	434	910	136	634	105
v/c Ratio	0.57	0.46	0.70	1.39	0.37	0.03	1.11	0.82	0.16	0.98	0.18
Control Delay (s/veh)	58.3	51.0	12.1	224.0	32.2	0.1	110.7	26.8	2.9	68.4	7.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	58.3	51.0	12.1	224.0	32.2	0.1	110.7	26.8	2.9	68.4	7.0
Queue Length 50th (m)	22.0	22.7	0.0	~168.6	39.1	0.0	~104.1	160.1	0.7	149.8	0.8
Queue Length 95th (m)	40.3	40.2	29.2	#243.2	60.0	0.0	#189.6	#295.4	10.2	#255.9	14.1
Internal Link Dist (m)		1141.2			232.4			335.9		865.8	
Turn Bay Length (m)	60.0		60.0	25.0		25.0	100.0		100.0		50.0
Base Capacity (vph)	262	339	603	373	726	566	392	1115	831	649	572
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	0.37	0.30	0.60	1.39	0.29	0.03	1.11	0.82	0.16	0.98	0.18

Intersection Summary

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

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



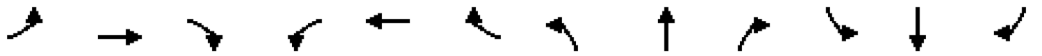
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	97	102	364	520	211	15	434	910	136	0	634	105
Future Volume (vph)	97	102	364	520	211	15	434	910	136	0	634	105
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1900	1750
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	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	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00		1.00	1.00
Satd. Flow (prot)	1573	1342	1313	1619	1756	1279	1573	1842	1290		1807	1414
Flt Permitted	0.63	1.00	1.00	0.49	1.00	1.00	0.09	1.00	1.00		1.00	1.00
Satd. Flow (perm)	1036	1342	1313	841	1756	1279	150	1842	1290		1807	1414
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)	97	102	364	520	211	15	434	910	136	0	634	105
RTOR Reduction (vph)	0	0	304	0	0	10	0	0	50	0	0	64
Lane Group Flow (vph)	97	102	60	520	211	5	434	910	86	0	634	41
Heavy Vehicles (%)	6%	40%	12%	3%	7%	15%	6%	2%	14%	0%	4%	4%
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		4		3	8		5	2			6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	16.7	16.7	16.7	35.7	35.7	35.7	69.2	69.2	69.2		40.1	40.1
Effective Green, g (s)	19.5	19.5	19.5	35.7	38.5	38.5	69.2	71.6	71.6		42.5	42.5
Actuated g/C Ratio	0.17	0.17	0.17	0.30	0.33	0.33	0.59	0.61	0.61		0.36	0.36
Clearance Time (s)	6.8	6.8	6.8	4.0	6.8	6.8	4.0	6.4	6.4		6.4	6.4
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	5.0	0.2	0.2		0.2	0.2
Lane Grp Cap (vph)	171	221	216	353	572	416	390	1116	782		650	508
v/s Ratio Prot		0.08		c0.19	0.12		c0.24	0.49			0.35	
v/s Ratio Perm	0.09		0.05	c0.26		0.00	c0.41		0.07			0.03
v/c Ratio	0.57	0.46	0.28	1.47	0.37	0.01	1.11	0.82	0.11		0.98	0.08
Uniform Delay, d1	45.4	44.6	43.1	39.5	30.5	26.9	37.4	18.1	9.8		37.3	24.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	4.3	1.5	0.7	227.7	0.4	0.0	79.8	4.4	0.0		28.8	0.0
Delay (s)	49.7	46.1	43.8	267.3	30.9	26.9	117.1	22.6	9.8		66.1	24.9
Level of Service	D	D	D	F	C	C	F	C	A		E	C
Approach Delay (s/veh)		45.3			195.6			49.1			60.3	
Approach LOS		D			F			D			E	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	81.8	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.24		
Actuated Cycle Length (s)	118.1	Sum of lost time (s)	16.0
Intersection Capacity Utilization	111.6%	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)	1	0	1	1	0	2	1	353	6	22	219	4
Future Volume (vph)	1	0	1	1	0	2	1	353	6	22	219	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		0.932			0.910			0.998			0.998	
Flt Protected		0.976			0.984						0.996	
Satd. Flow (prot)	0	1394	0	0	1363	0	0	1515	0	0	1507	0
Flt Permitted		0.976			0.984						0.996	
Satd. Flow (perm)	0	1394	0	0	1363	0	0	1515	0	0	1507	0
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		1098.4			1523.9			918.5			889.7	
Travel Time (s)		65.9			91.4			55.1			53.4	
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%	2%	0%	0%	0%	1%	0%	0%	0%	67%
Adj. Flow (vph)	1	0	1	1	0	2	1	353	6	22	219	4
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	2	0	0	3	0	0	360	0	0	245	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 45.3%		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)	1	0	1	1	0	2	1	353	6	22	219	4
Future Volume (Veh/h)	1	0	1	1	0	2	1	353	6	22	219	4
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)	1	0	1	1	0	2	1	353	6	22	219	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	625	626	221	624	625	356	223			359		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	625	626	221	624	625	356	223			359		
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			98		
cM capacity (veh/h)	393	396	824	392	396	693	1358			1211		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	2	3	360	245
Volume Left	1	1	1	22
Volume Right	1	2	6	4
cSH	532	551	1358	1211
Volume to Capacity	0.00	0.01	0.00	0.02
Queue Length 95th (m)	0.1	0.1	0.0	0.4
Control Delay (s/veh)	11.8	11.6	0.0	0.9
Lane LOS	B	B	A	A
Approach Delay (s/veh)	11.8	11.6	0.0	0.9
Approach LOS	B	B		

Intersection Summary				
Average Delay	0.5			
Intersection Capacity Utilization	45.3%	ICU Level of Service	A	
Analysis Period (min)	15			

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	1	0	1	1	0	2	1	353	6	22	219	4
Future Vol, veh/h	1	0	1	1	0	2	1	353	6	22	219	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	2	0	0	0	1	0	0	0	67
Mvmt Flow	1	0	1	1	0	2	1	353	6	22	219	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	620	626	221	621	625	356	223	0	0	359	0	0
Stage 1	265	265	-	358	358	-	-	-	-	-	-	-
Stage 2	355	361	-	263	267	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.12	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.12	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.12	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.518	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	403	403	824	400	404	693	1358	-	-	1211	-	-
Stage 1	745	693	-	660	631	-	-	-	-	-	-	-
Stage 2	666	629	-	742	692	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	393	395	824	391	395	693	1358	-	-	1211	-	-
Mov Cap-2 Maneuver	393	395	-	391	395	-	-	-	-	-	-	-
Stage 1	729	679	-	659	631	-	-	-	-	-	-	-
Stage 2	664	629	-	726	677	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	11.79	11.57	0.02	0.72
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	5	-	-	532	551	161	-	-
HCM Lane V/C Ratio	0.001	-	-	0.004	0.005	0.018	-	-
HCM Ctrl Dly (s/v)	7.7	0	-	11.8	11.6	8	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0.1	-	-



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	279	69	7	592	249	17
Future Volume (vph)	279	69	7	592	249	17
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	0.973				0.991	
Flt Protected				0.999	0.955	
Satd. Flow (prot)	1553	0	0	1598	1604	0
Flt Permitted				0.999	0.955	
Satd. Flow (perm)	1553	0	0	1598	1604	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	145.4			290.9	183.2	
Travel Time (s)	10.5			20.9	13.2	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	3%	3%	2%	3%	3%
Adj. Flow (vph)	279	69	7	592	249	17
Shared Lane Traffic (%)						
Lane Group Flow (vph)	348	0	0	599	266	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.21	1.21	1.21	1.21	1.12	1.12
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 64.9%		ICU Level of Service C	
Analysis Period (min) 15			



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	279	69	7	592	249	17
Future Volume (Veh/h)	279	69	7	592	249	17
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)	279	69	7	592	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			348		920	314
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			348		920	314
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		16	98
cM capacity (veh/h)			1205		298	724

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	348	599	266
Volume Left	0	7	249
Volume Right	69	0	17
cSH	1700	1205	310
Volume to Capacity	0.20	0.01	0.86
Queue Length 95th (m)	0.0	0.1	61.0
Control Delay (s/veh)	0.0	0.2	59.1
Lane LOS		A	F
Approach Delay (s/veh)	0.0	0.2	59.1
Approach LOS			F

Intersection Summary			
Average Delay	13.0		
Intersection Capacity Utilization	64.9%	ICU Level of Service	C
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	13.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	279	69	7	592	249	17
Future Vol, veh/h	279	69	7	592	249	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	3	3	2	3	3
Mvmt Flow	279	69	7	592	249	17

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	348	0	920	314
Stage 1	-	-	-	-	314	-
Stage 2	-	-	-	-	606	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	1205	-	300	724
Stage 1	-	-	-	-	739	-
Stage 2	-	-	-	-	543	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1205	-	297	724
Mov Cap-2 Maneuver	-	-	-	-	297	-
Stage 1	-	-	-	-	739	-
Stage 2	-	-	-	-	538	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0.09	59.62
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	309	-	-	21	-
HCM Lane V/C Ratio	0.862	-	-	0.006	-
HCM Ctrl Dly (s/v)	59.6	-	-	8	0
HCM Lane LOS	F	-	-	A	A
HCM 95th %tile Q(veh)	7.7	-	-	0	-



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	227	69	7	350	249	17
Future Volume (vph)	227	69	7	350	249	17
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	0.969				0.991	
Flt Protected				0.999	0.955	
Satd. Flow (prot)	1547	0	0	1598	1604	0
Flt Permitted				0.999	0.955	
Satd. Flow (perm)	1547	0	0	1598	1604	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	290.9			833.6	206.9	
Travel Time (s)	20.9			60.0	14.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	3%	3%	2%	3%	3%
Adj. Flow (vph)	227	69	7	350	249	17
Shared Lane Traffic (%)						
Lane Group Flow (vph)	296	0	0	357	266	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.5	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.21	1.21	1.21	1.21	1.12	1.12
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 50.3%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	227	69	7	350	249	17
Future Volume (Veh/h)	227	69	7	350	249	17
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)	227	69	7	350	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			296		626	262
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			296		626	262
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		44	98
cM capacity (veh/h)			1260		444	775

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	296	357	266
Volume Left	0	7	249
Volume Right	69	0	17
cSH	1700	1260	457
Volume to Capacity	0.17	0.01	0.58
Queue Length 95th (m)	0.0	0.1	29.1
Control Delay (s/veh)	0.0	0.2	23.3
Lane LOS		A	C
Approach Delay (s/veh)	0.0	0.2	23.3
Approach LOS			C

Intersection Summary			
Average Delay	6.8		
Intersection Capacity Utilization	50.3%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	6.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	227	69	7	350	249	17
Future Vol, veh/h	227	69	7	350	249	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	3	3	2	3	3
Mvmt Flow	227	69	7	350	249	17

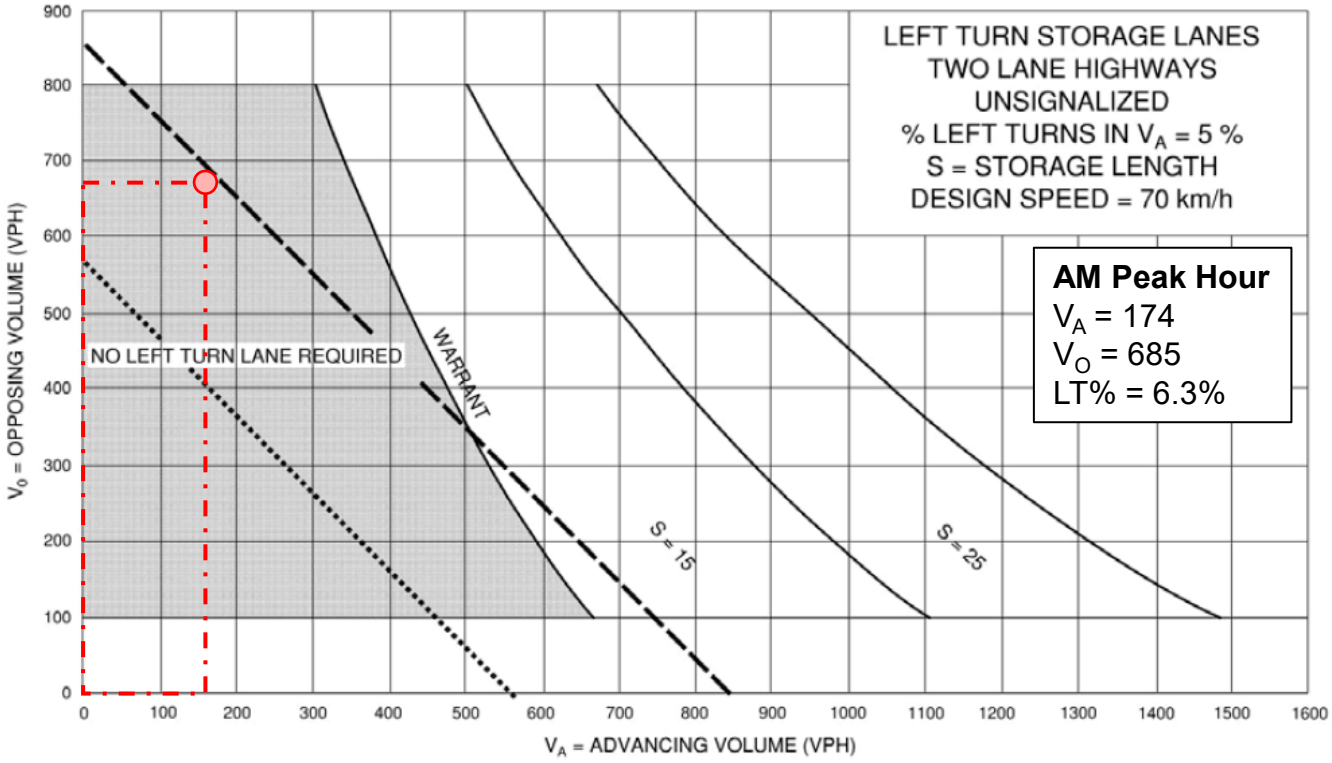
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	296	0	626	262
Stage 1	-	-	-	-	262	-
Stage 2	-	-	-	-	364	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	1260	-	447	775
Stage 1	-	-	-	-	780	-
Stage 2	-	-	-	-	701	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1260	-	444	775
Mov Cap-2 Maneuver	-	-	-	-	444	-
Stage 1	-	-	-	-	780	-
Stage 2	-	-	-	-	696	-

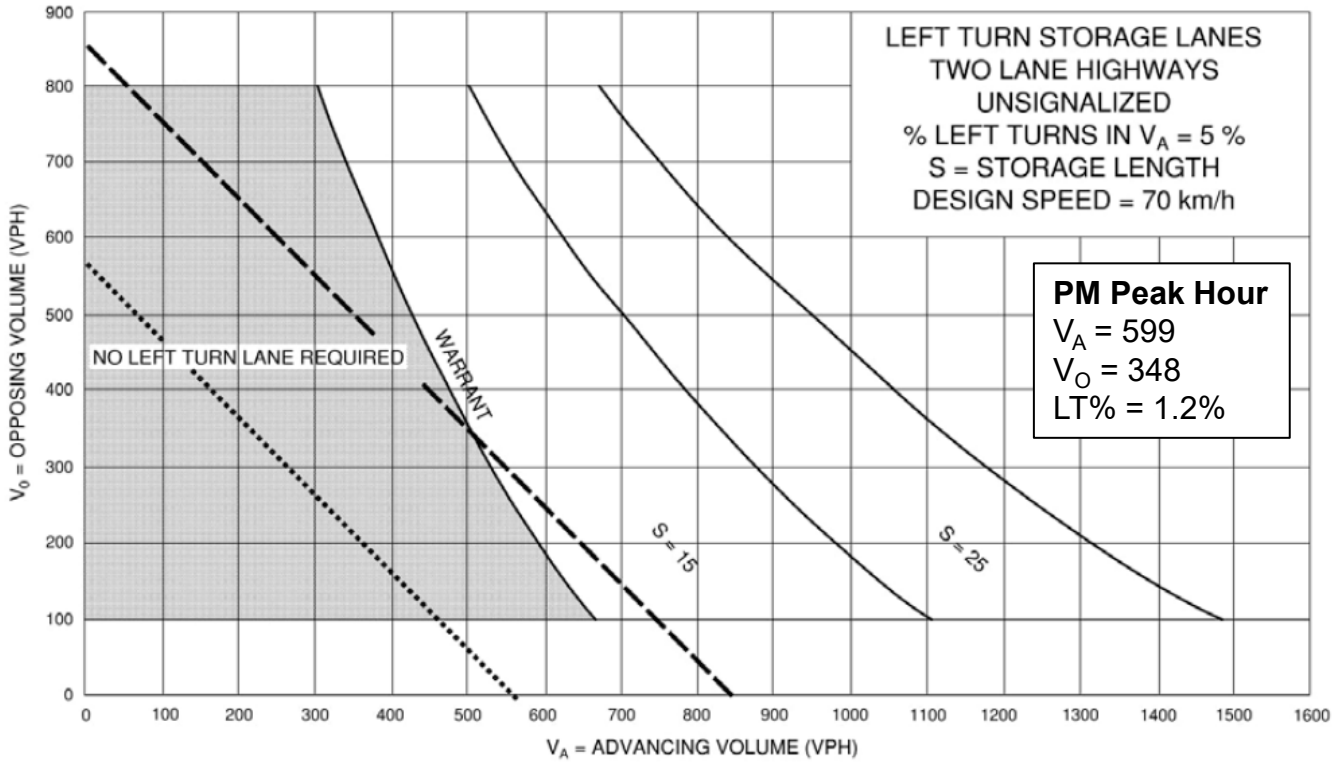
Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0.15	23.36
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	456	-	-	35	-
HCM Lane V/C Ratio	0.583	-	-	0.006	-
HCM Ctrl Dly (s/v)	23.4	-	-	7.9	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	3.6	-	-	0	-

Appendix I

Left-Turn Lane Warrant Nomographs

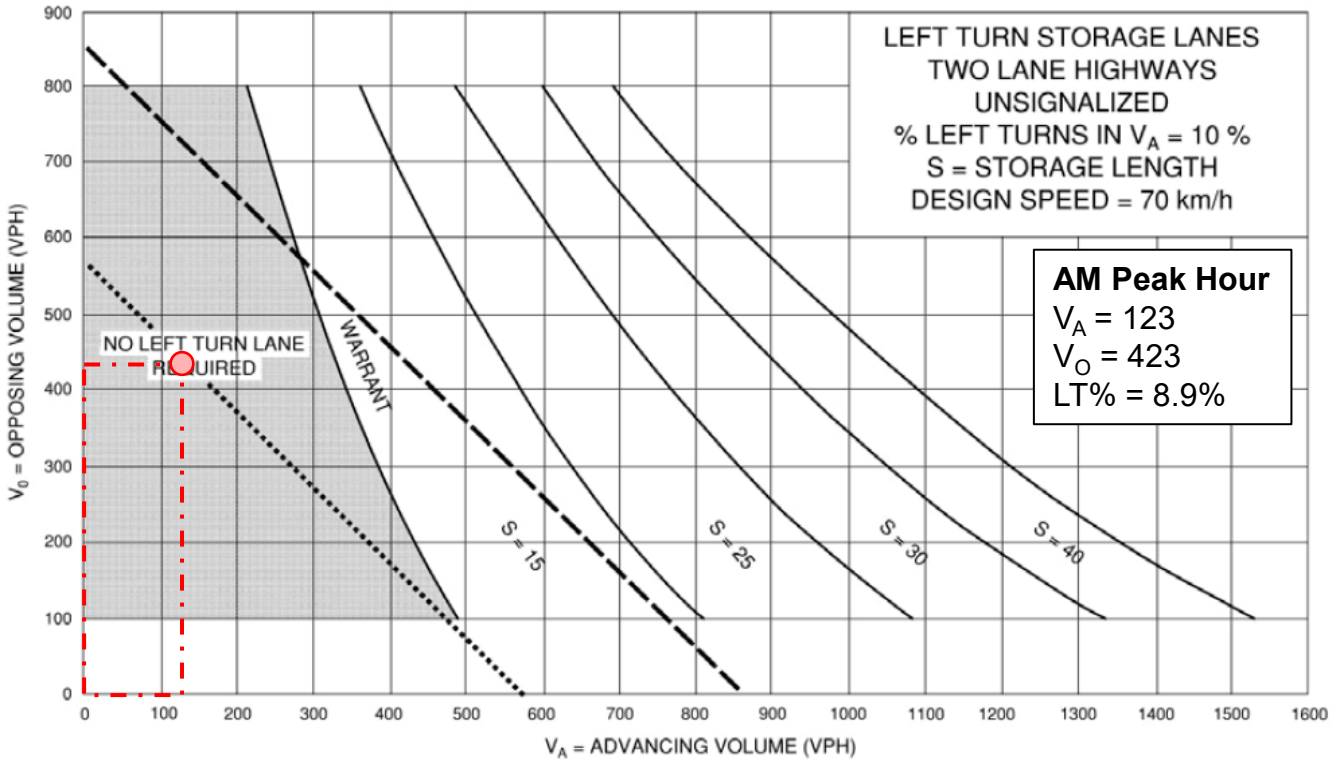


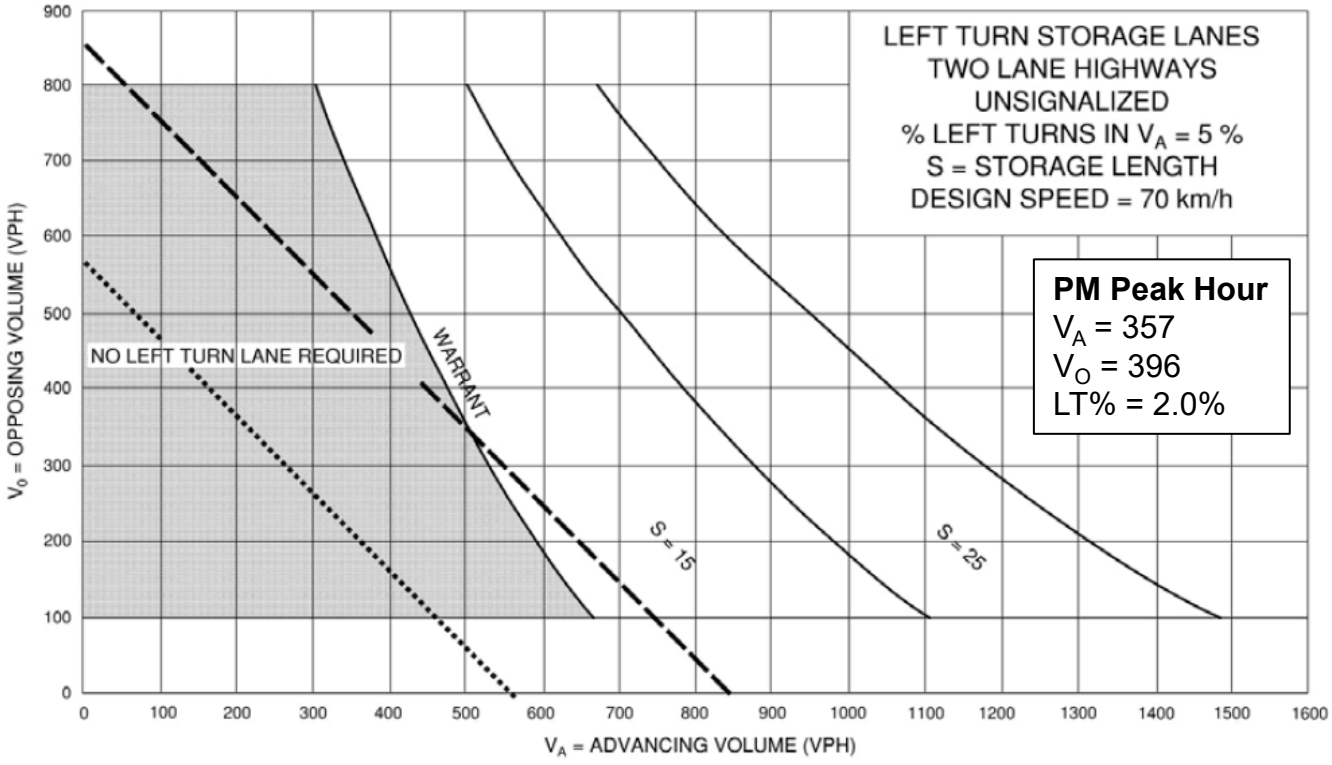


Westbound Left-Turn Lane Warrant
South Field Drive at Street A (West)
Total 2032

1665 Scotch Line Road, Woolwich
240259

Figure 1

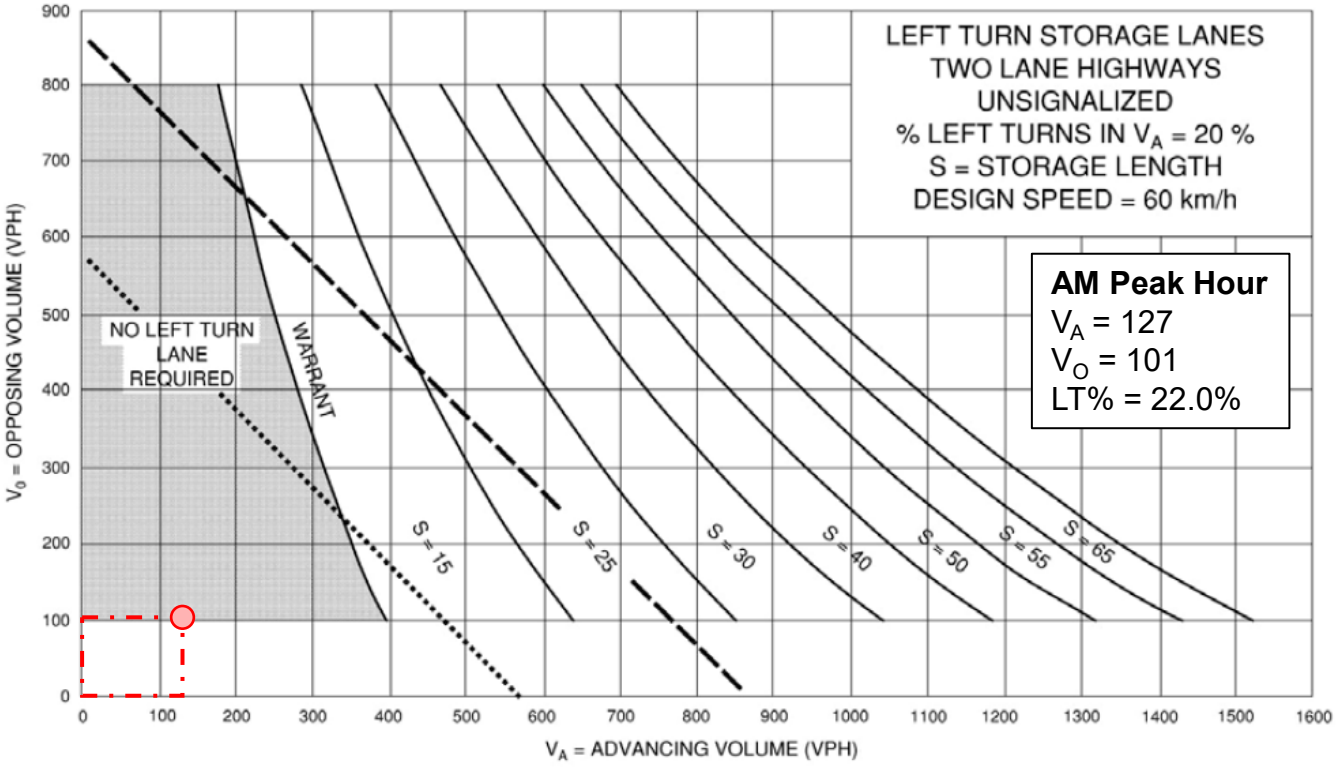


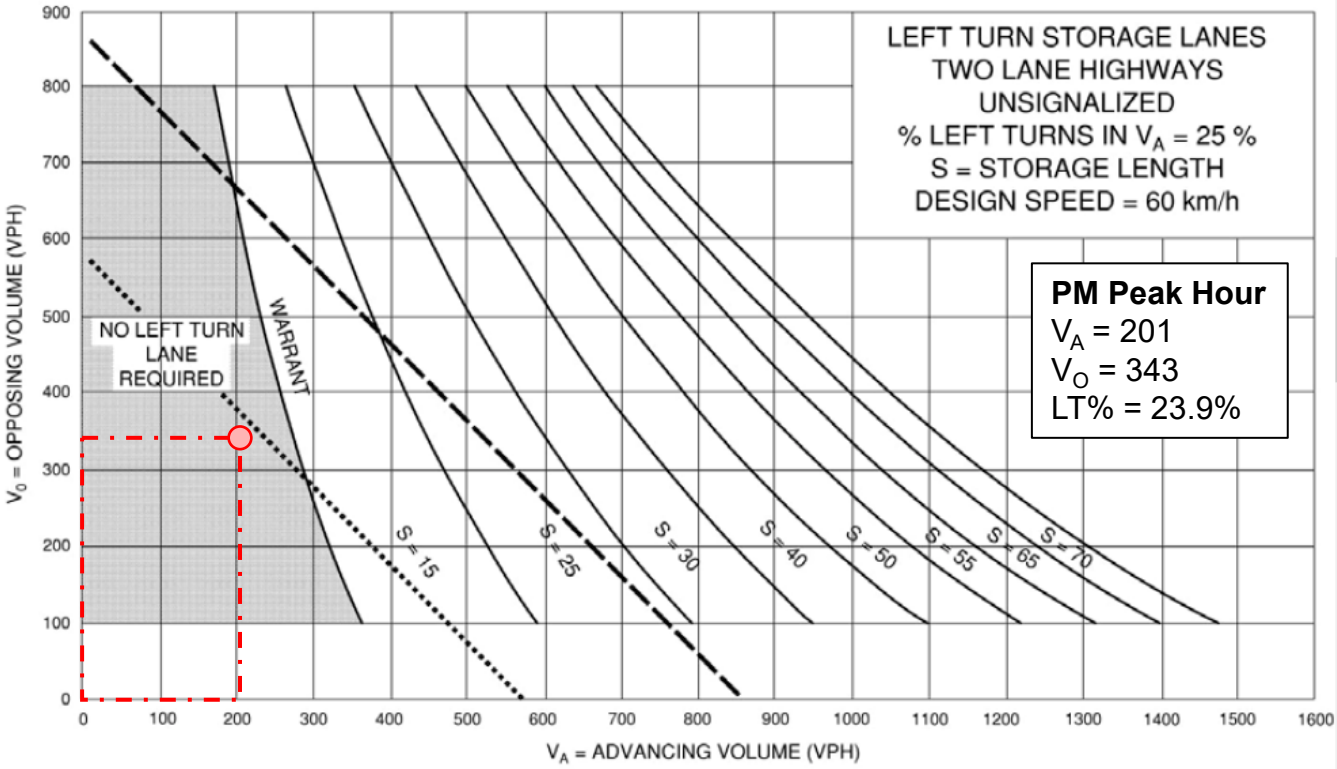


Westbound Left-Turn Lane Warrant
South Field Drive at Street A (East)
Total 2032

1665 Scotch Line Road, Woolwich
240259

Figure 2

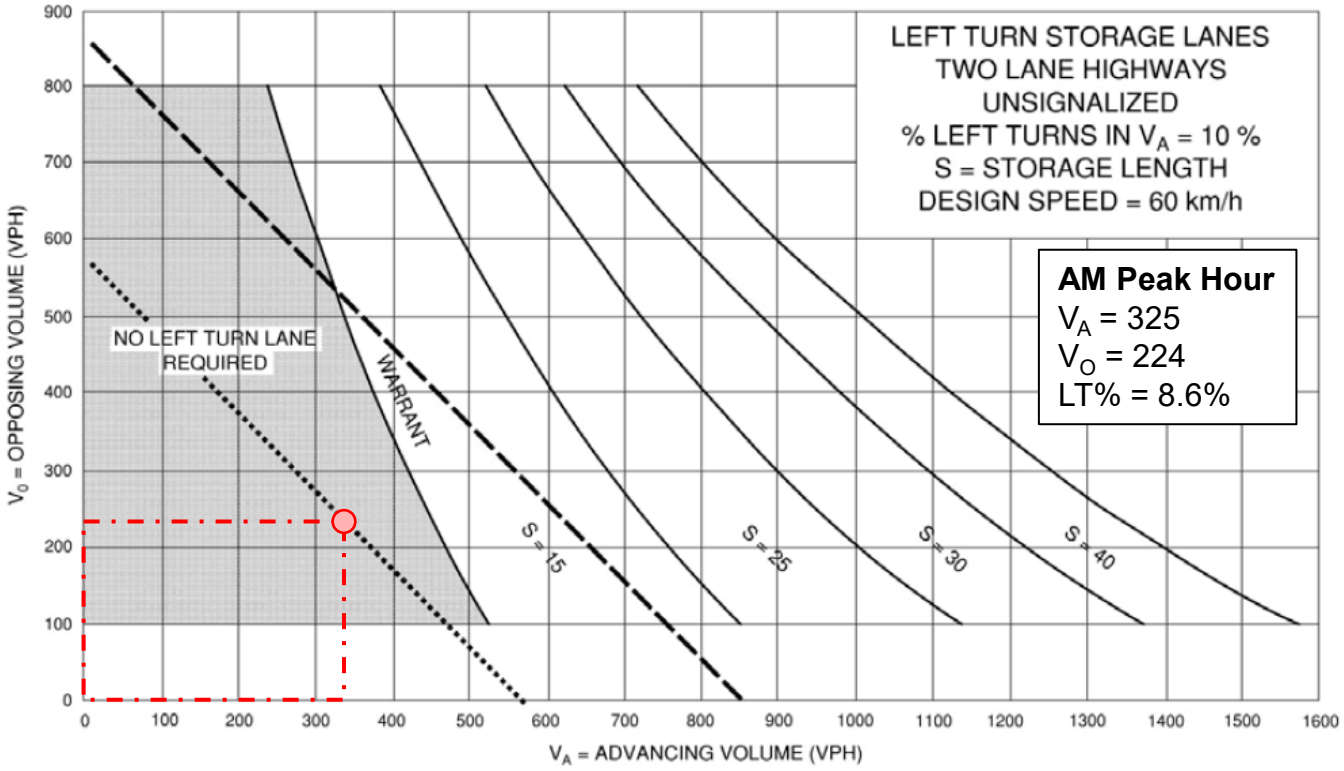


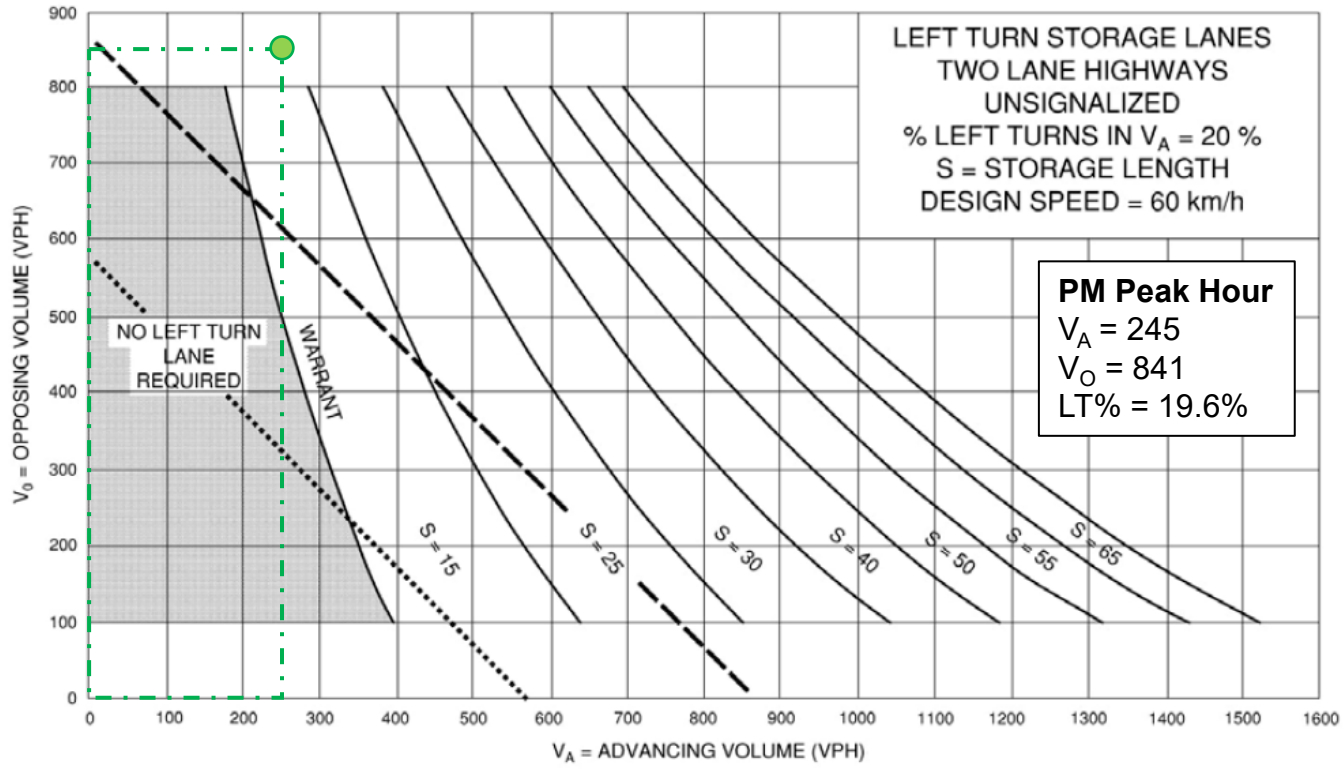


Eastbound Left-Turn Lane Warrant
South Field Drive at Union Street
Background 2032

1665 Scotch Line Road, Woolwich
240259

Figure 3

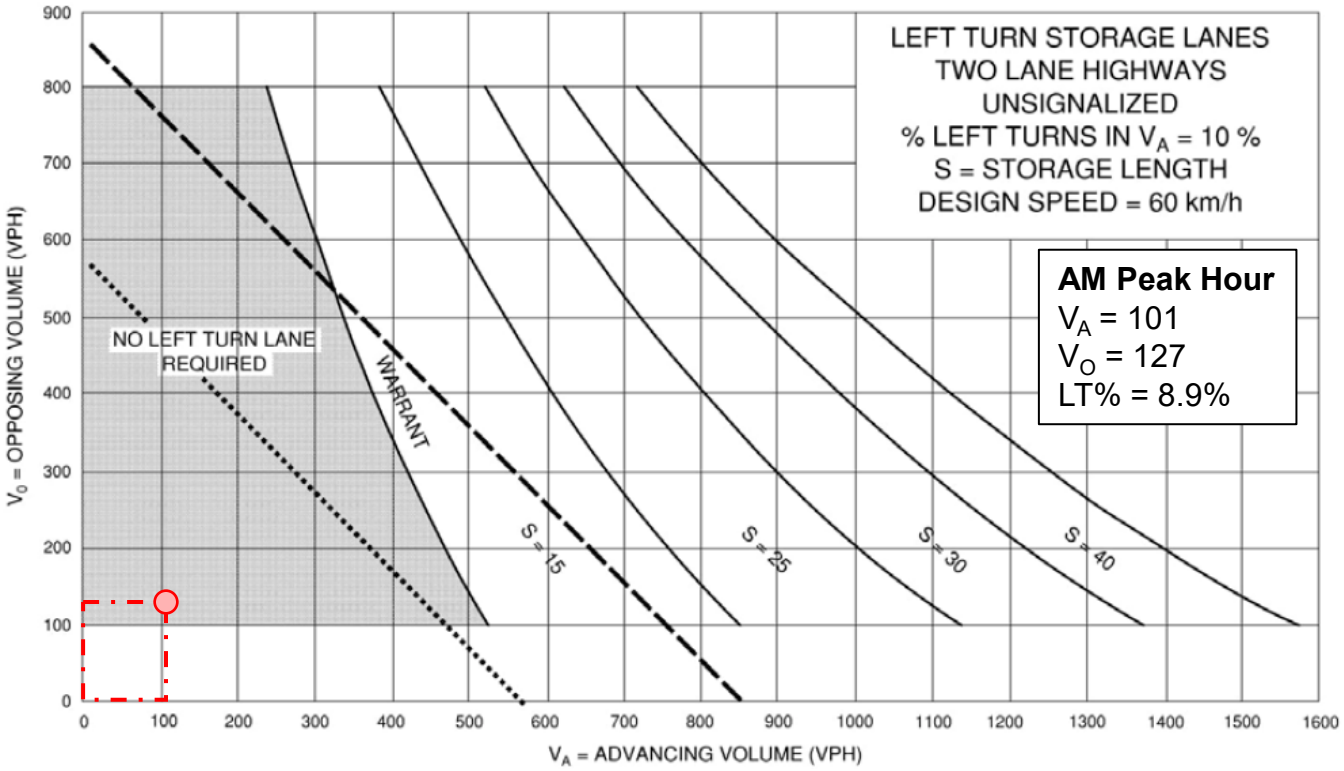


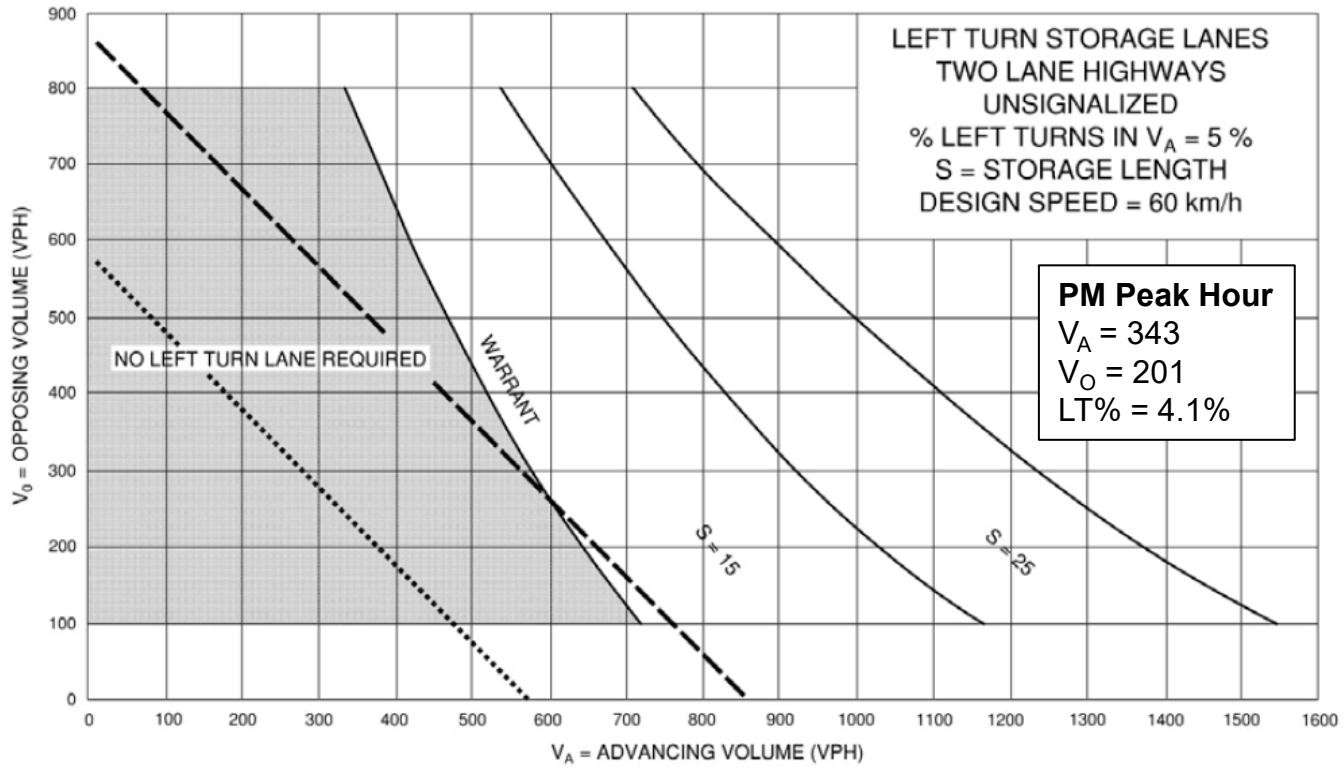


Eastbound Left-Turn Lane Warrant
South Field Drive at Union Street
Total 2032

1665 Scotch Line Road, Woolwich
240259

Figure 4

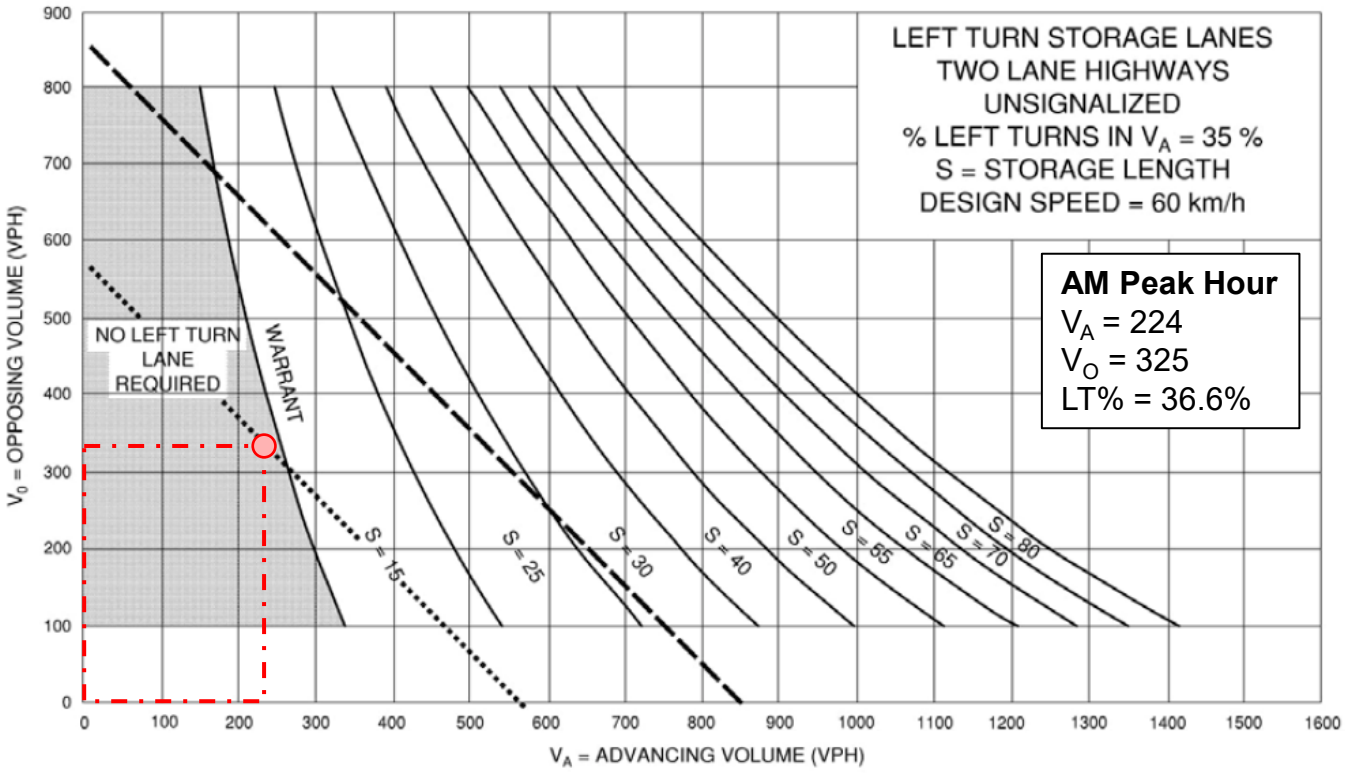


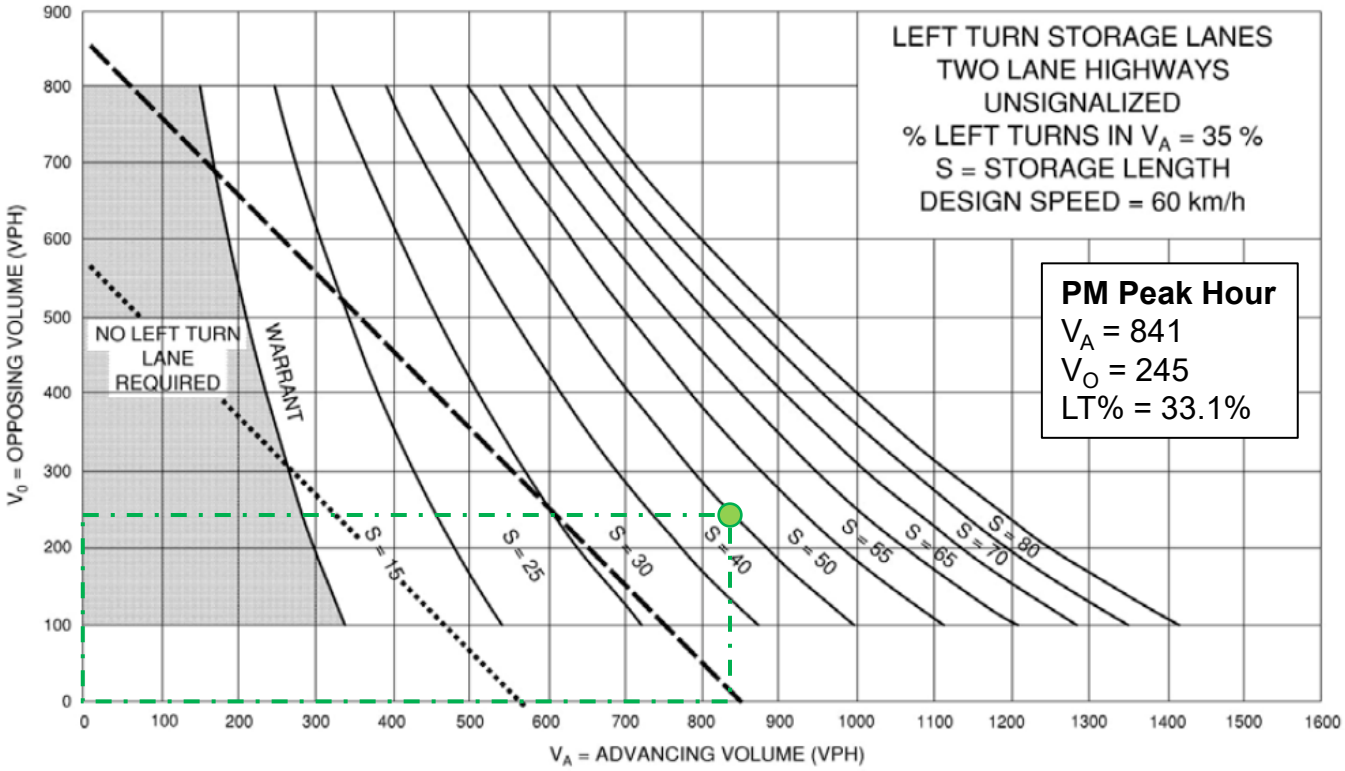


Westbound Left-Turn Lane Warrant
South Field Drive at Union Street
Background 2032

1665 Scotch Line Road, Woolwich
240259

Figure 5





Westbound Left-Turn Lane Warrant
South Field Drive at Union Street
Total 2032

1665 Scotch Line Road, Woolwich
240259

Figure 5

Appendix J

OTM Book 12 Justification 7 Traffic Control Signal Warrants

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

Horizon Year: Background - 2032
Municipality: Elmira, Woolwich, Waterloo

Project number: 240259

Major Street: South Field Drive
Minor Street: Union Street

North/South?: N

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

PM Forecast Only? N

Justification Result		
200% Satisfied	No	Case 1: Signal is undoubtedly warranted
100% Satisfied	No	Case 2: Signal might be warranted
< 100 % Satisfied		Case 3: Signal warrant is unlikely

	Major Street						Minor Street						
	South Field Drive						Union Street						
	Eastbound			Westbound			Northbound			Southbound			Peds
Time Period	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	Crossing
AM Peak Hour	28	79	20	9	38	54	14	157	13	63	137	35	10
PM Peak Hour	48	94	59	14	174	155	21	153	26	90	231	84	10
verage Hourly Volun	19	43	20	6	53	52	9	78	10	38	92	30	5

Warrant	AHV
1A - All	449
1B - Minor	256
2A - Major	193
2B - Cross	144

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	449
					% Fulfilled	62.4%

	Approach Lanes	1		2 or more		Average Hourly Volume
1B	Flow Conditions	Free	Restricted	Free	Restricted	
			X			
	Minor Street Approaches	120	170	120	170	256
					% Fulfilled	150.6%

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	193
					% Fulfilled	26.8%

	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	144
					% Fulfilled	192.0%

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

Horizon Year: Total - 2032
Municipality: Elmira, Woolwich, Waterloo

Project number: 240259

Major Street: South Field Drive
Minor Street: Union Street

North/South?: N

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

PM Forecast Only? N

Justification Result		
200% Satisfied	No	Case 1: Signal is undoubtedly warranted
100% Satisfied	Yes	Case 2: Signal might be warranted
< 100 % Satisfied		Case 3: Signal warrant is unlikely

	Major Street						Minor Street						
	South Field Drive						Union Street						
	Eastbound			Westbound			Northbound			Southbound			Peds
Time Period	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	Crossing
AM Peak Hour	28	277	20	82	78	64	14	167	311	97	137	35	10
PM Peak Hour	48	138	59	278	366	197	21	153	106	104	231	84	10
verage Hourly Volun	19	104	20	90	111	65	9	80	104	50	92	30	5

Warrant	AHV
1A - All	774
1B - Minor	365
2A - Major	409
2B - Cross	156

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	774
					% Fulfilled	107.5%

	Approach Lanes	1		2 or more		Average Hourly Volume
1B	Flow Conditions	Free	Restricted	Free	Restricted	
			X			
	Minor Street Approaches	120	170	120	170	365
					% Fulfilled	214.7%

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	409
					% Fulfilled	56.8%

	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	156
					% Fulfilled	208.0%

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

Horizon Year: Total - 2032
Municipality: Elmira, Woolwich, Waterloo

Project number: 240259

Major Street: South Field Drive
Minor Street: Street A (West)

North/South?: N

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

PM Forecast Only? N

Justification Result		
200% Satisfied	No	Case 1: Signal is undoubtedly warranted
100% Satisfied	No	Case 2: Signal might be warranted
< 100 % Satisfied		Case 3: Signal warrant is unlikely

	Major Street						Minor Street						
	South Field Drive						Street A (West)						
	Eastbound			Westbound			Northbound			Southbound			Peds
Time Period	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	Crossing
AM Peak Hour		420	265	11	163		61		3				0
PM Peak Hour		279	69	7	592		249		17				0
verage Hourly Volun	0	175	84	5	189	0	78	0	5	0	0	0	0

Warrant	AHV
1A - All	534
1B - Minor	83
2A - Major	452
2B - Cross	78

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	534
					% Fulfilled	74.2%

	Approach Lanes	1		2 or more		Average Hourly Volume
1B	Flow Conditions	Free	Restricted	Free	Restricted	
			X			
	Minor Street Approaches	180	255	180	255	83
					% Fulfilled	32.4%

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	452
					% Fulfilled	62.7%

	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	78
					% Fulfilled	103.3%

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

Horizon Year: Total - 2032
Municipality: Elmira, Woolwich, Waterloo

Project number: 240259

Major Street: South Field Drive
Minor Street: Street A (East)

North/South?: N

Number of Approach Lanes: 1
Tee Intersection? Y
Flow Conditions: Free

PM Forecast Only? N

Justification Result		
200% Satisfied	No	Case 1: Signal is undoubtedly warranted
100% Satisfied	No	Case 2: Signal might be warranted
< 100 % Satisfied		Case 3: Signal warrant is unlikely

	Major Street						Minor Street						
	South Field Drive						Street A (East)						
	Eastbound			Westbound			Northbound			Southbound			Peds
Time Period	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	Crossing
AM Peak Hour		158	265	11	112		62		3				0
PM Peak Hour		227	69	7	350		249		17				0
verage Hourly Volun	0	96	84	5	116	0	78	0	5	0	0	0	0

Warrant	AHV
1A - All	383
1B - Minor	83
2A - Major	300
2B - Cross	78

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	383
					% Fulfilled	79.7%

	Approach Lanes	1		2 or more		Average Hourly Volume
1B	Flow Conditions	Free	Restricted	Free	Restricted	
		X				
	Minor Street Approaches	180	255	180	255	83
					% Fulfilled	46.0%

Warrant 2 - Delay To Cross Traffic

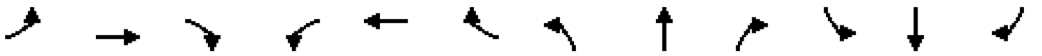
	Approach Lanes	1		2 or more		Average Hourly Volume
2A	Flow Conditions	Free	Restricted	Free	Restricted	
		X				
	Major Street Approaches	480	720	600	900	300
					% Fulfilled	62.4%

	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	78
					% Fulfilled	155.5%

Appendix K

Total with Improvements Operations Synchro Reports



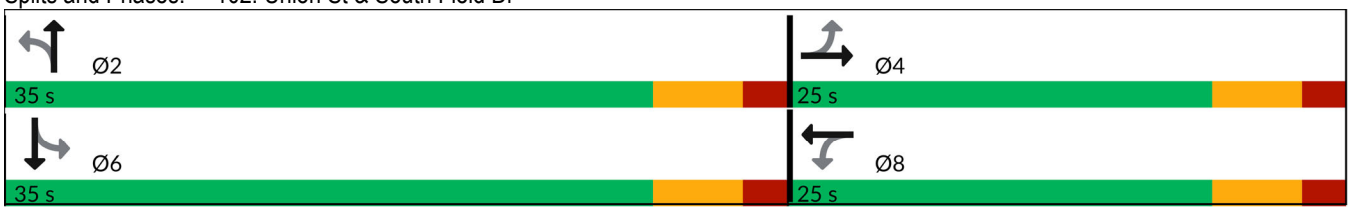


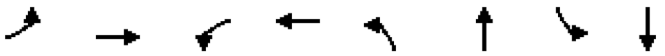
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	277	20	82	78	64	14	167	311	97	137	35
Future Volume (vph)	28	277	20	82	78	64	14	167	311	97	137	35
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1775	1650	1650	1775	1650	1650
Storage Length (m)	15.0		0.0	50.0		0.0	25.0		0.0	20.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	40.0			40.0			40.0			25.0		
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			0.932			0.902			0.969	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1400	1419	0	1348	1302	0	1544	1154	0	1619	1454	0
Flt Permitted	0.666			0.533			0.649			0.369		
Satd. Flow (perm)	982	1419	0	756	1302	0	1055	1154	0	629	1454	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7			64			231			32	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		669.7			258.4			884.2			256.9	
Travel Time (s)		48.2			18.6			63.7			18.5	
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 (%)	4%	7%	6%	8%	12%	7%	8%	8%	38%	3%	11%	0%
Adj. Flow (vph)	28	277	20	82	78	64	14	167	311	97	137	35
Shared Lane Traffic (%)												
Lane Group Flow (vph)	28	297	0	82	142	0	14	478	0	97	172	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.31	1.31	1.31	1.31	1.31	1.31	1.11	1.21	1.21	1.11	1.21	1.21
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
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)	24.0	24.0		24.0	24.0		24.0	24.0		24.0	24.0	
Total Split (s)	25.0	25.0		25.0	25.0		35.0	35.0		35.0	35.0	
Total Split (%)	41.7%	41.7%		41.7%	41.7%		58.3%	58.3%		58.3%	58.3%	
Maximum Green (s)	19.0	19.0		19.0	19.0		29.0	29.0		29.0	29.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0		-2.0	-2.0		-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	
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	Min	Min		Min	Min		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Don't 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)	15.9	15.9		15.9	15.9		18.8	18.8		18.8	18.8	
Actuated g/C Ratio	0.37	0.37		0.37	0.37		0.43	0.43		0.43	0.43	
v/c Ratio	0.08	0.57		0.30	0.27		0.03	0.76		0.36	0.27	
Control Delay (s/veh)	12.5	17.7		15.9	9.2		7.5	14.4		12.8	7.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	12.5	17.7		15.9	9.2		7.5	14.4		12.8	7.8	
LOS	B	B		B	A		A	B		B	A	
Approach Delay (s/veh)		17.3			11.6			14.2			9.6	
Approach LOS		B			B			B			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 43.5			
Natural Cycle: 55			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay (s/veh): 13.6		Intersection LOS: B	
Intersection Capacity Utilization 76.1%		ICU Level of Service D	
Analysis Period (min) 15			

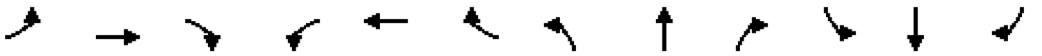
Splits and Phases: 102: Union St & South Field Dr





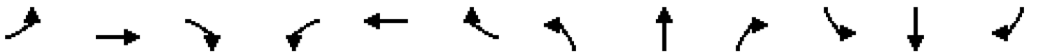
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	28	297	82	142	14	478	97	172
v/c Ratio	0.08	0.57	0.30	0.27	0.03	0.76	0.36	0.27
Control Delay (s/veh)	12.5	17.7	15.9	9.2	7.5	14.4	12.8	7.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	12.5	17.7	15.9	9.2	7.5	14.4	12.8	7.8
Queue Length 50th (m)	1.3	17.0	4.3	3.9	0.6	12.4	4.5	6.1
Queue Length 95th (m)	6.9	49.9	17.0	17.5	3.1	48.7	15.0	17.2
Internal Link Dist (m)		645.7		234.4		860.2		232.9
Turn Bay Length (m)	15.0		50.0		25.0		20.0	
Base Capacity (vph)	522	759	402	723	786	918	468	1091
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.39	0.20	0.20	0.02	0.52	0.21	0.16

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	277	20	82	78	64	14	167	311	97	137	35
Future Volume (vph)	28	277	20	82	78	64	14	167	311	97	137	35
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1775	1650	1650	1775	1650	1650
Total Lost time (s)	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	
Frt	1.00	0.99		1.00	0.93		1.00	0.90		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1400	1419		1348	1302		1544	1155		1619	1454	
Flt Permitted	0.67	1.00		0.53	1.00		0.65	1.00		0.37	1.00	
Satd. Flow (perm)	982	1419		757	1302		1054	1155		629	1454	
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)	28	277	20	82	78	64	14	167	311	97	137	35
RTOR Reduction (vph)	0	4	0	0	40	0	0	130	0	0	18	0
Lane Group Flow (vph)	28	293	0	82	102	0	14	348	0	97	154	0
Heavy Vehicles (%)	4%	7%	6%	8%	12%	7%	8%	8%	38%	3%	11%	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)	13.7	13.7		13.7	13.7		16.5	16.5		16.5	16.5	
Effective Green, g (s)	15.7	15.7		15.7	15.7		18.5	18.5		18.5	18.5	
Actuated g/C Ratio	0.37	0.37		0.37	0.37		0.44	0.44		0.44	0.44	
Clearance Time (s)	6.0	6.0		6.0	6.0		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	
Lane Grp Cap (vph)	365	527		281	484		462	506		275	637	
v/s Ratio Prot		c0.21			0.08			c0.30			0.11	
v/s Ratio Perm	0.03			0.11			0.01			0.15		
v/c Ratio	0.08	0.56		0.29	0.21		0.03	0.69		0.35	0.24	
Uniform Delay, d1	8.6	10.5		9.3	9.0		6.7	9.5		7.9	7.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	1.3		0.6	0.2		0.0	3.9		0.8	0.2	
Delay (s)	8.7	11.8		9.9	9.2		6.8	13.4		8.7	7.6	
Level of Service	A	B		A	A		A	B		A	A	
Approach Delay (s/veh)		11.5			9.5			13.2			8.0	
Approach LOS		B			A			B			A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	11.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	42.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	76.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

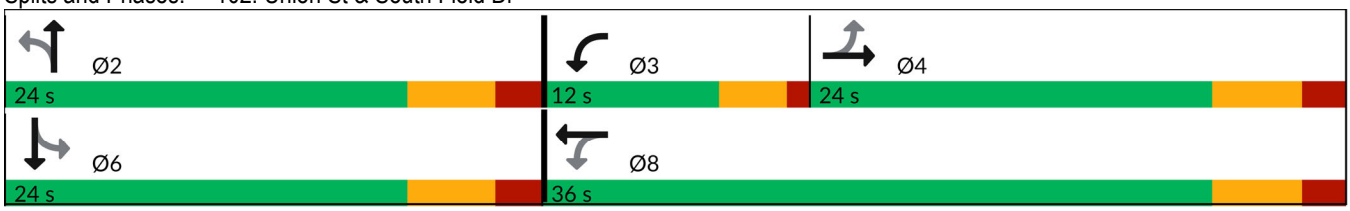


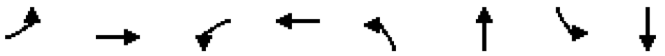
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	48	138	59	278	366	197	21	153	106	104	231	84
Future Volume (vph)	48	138	59	278	366	197	21	153	106	104	231	84
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1775	1650	1650	1775	1650	1650
Storage Length (m)	15.0		0.0	50.0		0.0	25.0		0.0	20.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	40.0			40.0			40.0			25.0		
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		0.955			0.948			0.939			0.960	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1348	1455	0	1324	1405	0	1668	1257	0	1558	1498	0
Flt Permitted	0.453			0.461			0.452			0.533		
Satd. Flow (perm)	643	1455	0	642	1405	0	793	1257	0	874	1498	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		38			69			62			33	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		669.7			255.5			857.7			256.9	
Travel Time (s)		48.2			18.4			61.8			18.5	
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 (%)	8%	0%	2%	10%	2%	6%	0%	17%	29%	7%	4%	6%
Adj. Flow (vph)	48	138	59	278	366	197	21	153	106	104	231	84
Shared Lane Traffic (%)												
Lane Group Flow (vph)	48	197	0	278	563	0	21	259	0	104	315	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.31	1.31	1.31	1.31	1.31	1.31	1.11	1.21	1.21	1.11	1.21	1.21
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		4		3	8			2			6	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8			2			6		
Detector Phase	4	4		3	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)	24.0	24.0		9.5	24.0		24.0	24.0		24.0	24.0	
Total Split (s)	24.0	24.0		12.0	36.0		24.0	24.0		24.0	24.0	
Total Split (%)	40.0%	40.0%		20.0%	60.0%		40.0%	40.0%		40.0%	40.0%	
Maximum Green (s)	18.0	18.0		8.0	30.0		18.0	18.0		18.0	18.0	
Yellow Time (s)	4.0	4.0		3.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		1.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0		0.0	-2.0		-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag	Lag	Lag		Lead								
Lead-Lag Optimize?	Yes	Yes		Yes								
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Min	Min		None	Min		None	None		None	None	
Walk Time (s)	7.0	7.0			7.0		7.0	7.0		7.0	7.0	
Flash Don't 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)	14.0	14.0		26.2	26.2		15.8	15.8		15.8	15.8	
Actuated g/C Ratio	0.28	0.28		0.52	0.52		0.31	0.31		0.31	0.31	
v/c Ratio	0.27	0.46		0.63	0.74		0.08	0.59		0.38	0.64	
Control Delay (s/veh)	19.1	16.2		15.9	15.9		14.5	18.1		19.3	20.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	19.1	16.2		15.9	15.9		14.5	18.1		19.3	20.7	
LOS	B	B		B	B		B	B		B	C	
Approach Delay (s/veh)		16.8			15.9			17.8			20.4	
Approach LOS		B			B			B			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 50.3			
Natural Cycle: 60			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.74			
Intersection Signal Delay (s/veh): 17.4		Intersection LOS: B	
Intersection Capacity Utilization 79.9%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 102: Union St & South Field Dr

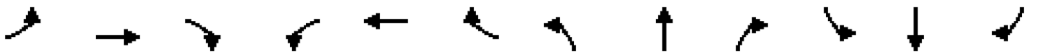




Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	48	197	278	563	21	259	104	315
v/c Ratio	0.27	0.46	0.63	0.74	0.08	0.59	0.38	0.64
Control Delay (s/veh)	19.1	16.2	15.9	15.9	14.5	18.1	19.3	20.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	19.1	16.2	15.9	15.9	14.5	18.1	19.3	20.7
Queue Length 50th (m)	3.6	12.2	14.7	32.9	1.3	14.4	7.3	21.5
Queue Length 95th (m)	11.4	28.9	#33.6	76.0	5.9	39.1	21.0	50.2
Internal Link Dist (m)		645.7		231.5		833.7		232.9
Turn Bay Length (m)	15.0		50.0		25.0		20.0	
Base Capacity (vph)	264	622	446	949	326	554	360	636
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.32	0.62	0.59	0.06	0.47	0.29	0.50

Intersection Summary

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

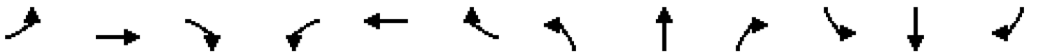


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	48	138	59	278	366	197	21	153	106	104	231	84
Future Volume (vph)	48	138	59	278	366	197	21	153	106	104	231	84
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1775	1650	1650	1775	1650	1650
Total Lost time (s)	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	
Frt	1.00	0.96		1.00	0.95		1.00	0.94		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1348	1455		1324	1405		1668	1256		1558	1498	
Flt Permitted	0.45	1.00		0.46	1.00		0.45	1.00		0.53	1.00	
Satd. Flow (perm)	643	1455		643	1405		793	1256		874	1498	
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)	48	138	59	278	366	197	21	153	106	104	231	84
RTOR Reduction (vph)	0	27	0	0	33	0	0	42	0	0	23	0
Lane Group Flow (vph)	48	170	0	278	530	0	21	217	0	104	292	0
Heavy Vehicles (%)	8%	0%	2%	10%	2%	6%	0%	17%	29%	7%	4%	6%
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		4		3	8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	12.1	12.1		24.1	24.1		13.7	13.7		13.7	13.7	
Effective Green, g (s)	14.1	14.1		24.1	26.1		15.7	15.7		15.7	15.7	
Actuated g/C Ratio	0.28	0.28		0.48	0.52		0.32	0.32		0.32	0.32	
Clearance Time (s)	6.0	6.0		4.0	6.0		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	
Lane Grp Cap (vph)	182	411		420	736		250	395		275	472	
v/s Ratio Prot		0.12		0.11	c0.38			0.17			c0.20	
v/s Ratio Perm	0.07			0.21			0.03			0.12		
v/c Ratio	0.26	0.41		0.66	0.72		0.08	0.55		0.38	0.62	
Uniform Delay, d1	13.8	14.5		8.7	9.1		12.0	14.1		13.3	14.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.8	0.7		3.9	3.5		0.1	1.6		0.9	2.4	
Delay (s)	14.6	15.2		12.6	12.5		12.1	15.7		14.1	16.9	
Level of Service	B	B		B	B		B	B		B	B	
Approach Delay (s/veh)		15.1			12.6			15.4			16.2	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	14.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	49.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	79.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Appendix L

Sensitivity Analysis Operations Synchro Reports and Signal Warrants

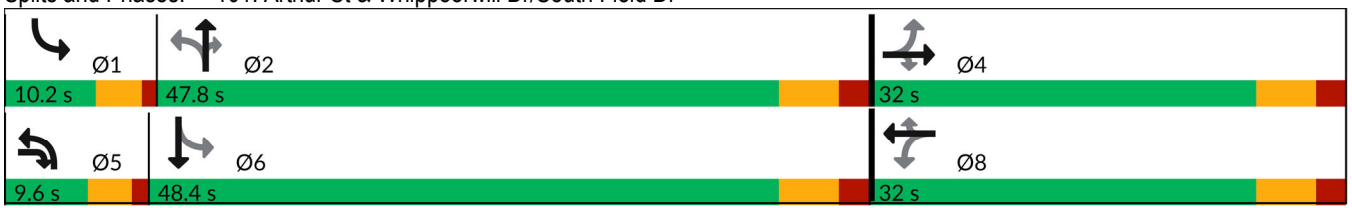


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	79	255	258	67	64	207	96	580	57	424	633	12
Future Volume (vph)	79	255	258	67	64	207	96	580	57	424	633	12
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1650	1650
Storage Length (m)	40.0		40.0	25.0		25.0	45.0		40.0	30.0		1.0
Storage Lanes	1		1	1		1	1		1	1		0
Taper Length (m)	50.0			50.0			40.0			60.0		
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	
Frt			0.850			0.850			0.850		0.997	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1619	1842	1456	1588	1789	1375	1603	1740	1302	1588	1521	0
Flt Permitted	0.715			0.494			0.226			0.264		
Satd. Flow (perm)	1215	1842	1456	826	1789	1343	380	1740	1270	441	1521	0
Right Turn on Red			No			Yes			Yes			Yes
Satd. Flow (RTOR)						207			85		1	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		886.0			669.7			893.6			887.4	
Travel Time (s)		63.8			48.2			53.6			53.2	
Confl. Peds. (#/hr)	2					2	8		4	4		8
Peak Hour Factor	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 (%)	3%	2%	1%	5%	5%	7%	4%	8%	13%	5%	7%	0%
Adj. Flow (vph)	79	255	258	67	64	207	96	580	57	424	633	12
Shared Lane Traffic (%)												
Lane Group Flow (vph)	79	255	258	67	64	207	96	580	57	424	645	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.11	1.01	1.13	1.11	1.01	1.13	1.11	1.01	1.13	1.11	1.21	1.21
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	pm+ov	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4	5		8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		
Detector Phase	4	4	5	8	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	12.0	12.0	5.0	12.0	12.0	12.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	32.0	32.0	9.5	32.0	32.0	32.0	9.5	47.7	47.7	9.5	47.7	
Total Split (s)	32.0	32.0	9.6	32.0	32.0	32.0	9.6	47.8	47.8	10.2	48.4	
Total Split (%)	35.6%	35.6%	10.7%	35.6%	35.6%	35.6%	10.7%	53.1%	53.1%	11.3%	53.8%	
Maximum Green (s)	26.0	26.0	5.6	26.0	26.0	26.0	5.6	41.8	41.8	6.2	42.4	
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	2.0	2.0	1.0	2.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	
Lost Time Adjust (s)	-2.0	0.0	0.0	-2.0	-2.0	-2.0	0.0	-2.0	-2.0	0.0	-2.0	
Total Lost Time (s)	4.0	6.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lead/Lag			Lead				Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?			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	Min	Min	None	Min	
Walk Time (s)	10.0	10.0		10.0	10.0	10.0		22.7	22.7		22.7	
Flash Don't Walk (s)	16.0	16.0		16.0	16.0	16.0		19.0	19.0		19.0	
Pedestrian Calls (#/hr)	0	0		0	0	0		0	0		0	
Act Effct Green (s)	18.4	16.4	28.3	18.4	18.4	18.4	41.7	36.0	36.0	43.0	36.6	
Actuated g/C Ratio	0.25	0.22	0.39	0.25	0.25	0.25	0.57	0.49	0.49	0.59	0.50	
v/c Ratio	0.26	0.62	0.46	0.32	0.14	0.42	0.31	0.68	0.09	1.18	0.85	
Control Delay (s/veh)	26.3	34.1	21.4	29.2	23.9	6.8	8.5	19.1	1.6	124.0	28.6	
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 (s/veh)	26.3	34.1	21.4	29.2	23.9	6.8	8.5	19.1	1.6	124.0	28.6	
LOS	C	C	C	C	C	A	A	B	A	F	C	
Approach Delay (s/veh)		27.5			14.5			16.4			66.4	
Approach LOS		C			B			B			E	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 73.1			
Natural Cycle: 100			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.18			
Intersection Signal Delay (s/veh): 38.1		Intersection LOS: D	
Intersection Capacity Utilization 94.6%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 101: Arthur St & Whippoorwill Dr/South Field Dr



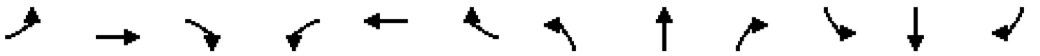


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	79	255	258	67	64	207	96	580	57	424	645
v/c Ratio	0.26	0.62	0.46	0.32	0.14	0.42	0.31	0.68	0.09	1.18	0.85
Control Delay (s/veh)	26.3	34.1	21.4	29.2	23.9	6.8	8.5	19.1	1.6	124.0	28.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	26.3	34.1	21.4	29.2	23.9	6.8	8.5	19.1	1.6	124.0	28.6
Queue Length 50th (m)	9.6	35.1	29.0	8.3	7.6	0.0	4.6	58.6	0.0	~36.7	73.8
Queue Length 95th (m)	22.3	62.2	54.0	20.8	18.0	15.8	12.2	109.6	3.3	#114.4	#160.7
Internal Link Dist (m)		862.0			645.7			869.6			863.4
Turn Bay Length (m)	40.0		40.0	25.0		25.0	45.0		40.0	30.0	
Base Capacity (vph)	477	672	563	324	703	653	313	1070	813	358	949
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	0.17	0.38	0.46	0.21	0.09	0.32	0.31	0.54	0.07	1.18	0.68

Intersection Summary

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

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	79	255	258	67	64	207	96	580	57	424	633	12
Future Volume (vph)	79	255	258	67	64	207	96	580	57	424	633	12
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1650	1650
Total Lost time (s)	4.0	6.0	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	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	
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	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1615	1842	1456	1588	1789	1343	1603	1740	1271	1588	1522	
Flt Permitted	0.72	1.00	1.00	0.49	1.00	1.00	0.23	1.00	1.00	0.26	1.00	
Satd. Flow (perm)	1216	1842	1456	825	1789	1343	382	1740	1271	441	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)	79	255	258	67	64	207	96	580	57	424	633	12
RTOR Reduction (vph)	0	0	0	0	0	155	0	0	29	0	0	0
Lane Group Flow (vph)	79	255	258	67	64	52	96	580	28	424	645	0
Confl. Peds. (#/hr)	2					2	8		4	4		8
Heavy Vehicles (%)	3%	2%	1%	5%	5%	7%	4%	8%	13%	5%	7%	0%
Turn Type	Perm	NA	pm+ov	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4	5		8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		
Actuated Green, G (s)	16.4	16.4	22.2	16.4	16.4	16.4	39.7	33.9	33.9	40.9	34.5	
Effective Green, g (s)	18.4	16.4	22.2	18.4	18.4	18.4	39.7	35.9	35.9	40.9	36.5	
Actuated g/C Ratio	0.25	0.23	0.31	0.25	0.25	0.25	0.55	0.49	0.49	0.56	0.50	
Clearance Time (s)	6.0	6.0	4.0	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	3.0	
Lane Grp Cap (vph)	307	415	444	208	452	339	306	859	627	349	764	
v/s Ratio Prot		c0.14	0.05		0.04		0.03	0.33		c0.11	0.42	
v/s Ratio Perm	0.06		0.13	0.08		0.04	0.15		0.02	c0.58		
v/c Ratio	0.26	0.61	0.58	0.32	0.14	0.15	0.31	0.68	0.04	1.21	0.84	
Uniform Delay, d1	21.7	25.3	21.3	22.1	21.0	21.1	9.9	14.0	9.5	15.1	15.6	
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	0.4	2.7	1.9	0.9	0.1	0.2	0.6	2.1	0.0	120.2	8.4	
Delay (s)	22.1	28.0	23.3	23.0	21.2	21.3	10.5	16.1	9.6	135.3	24.1	
Level of Service	C	C	C	C	C	C	B	B	A	F	C	
Approach Delay (s/veh)		25.2			21.6			14.8			68.2	
Approach LOS		C			C			B			E	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	38.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	72.7	Sum of lost time (s)	14.0
Intersection Capacity Utilization	94.6%	ICU Level of Service	F
Analysis Period (min)	15		

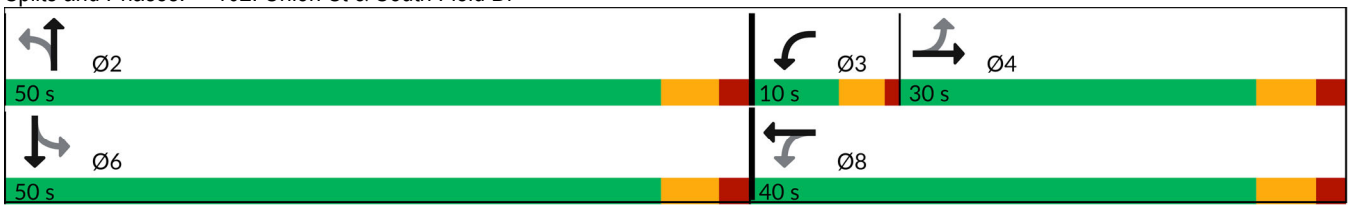
c Critical Lane Group

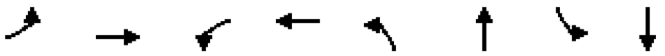
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	475	20	155	118	74	14	167	609	133	37	35
Future Volume (vph)	28	475	20	155	118	74	14	167	609	133	37	35
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1775	1650	1650	1775	1650	1650
Storage Length (m)	40.0		0.0	40.0		0.0	25.0		0.0	20.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	40.0			40.0			40.0			25.0		
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		0.994			0.942			0.882			0.927	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1400	1424	0	1348	1312	0	1544	1094	0	1619	1432	0
Flt Permitted	0.637			0.143			0.710			0.135		
Satd. Flow (perm)	939	1424	0	203	1312	0	1154	1094	0	230	1432	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			42			298			35	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		669.7			258.4			884.2			256.9	
Travel Time (s)		48.2			18.6			63.7			18.5	
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 (%)	4%	7%	6%	8%	12%	7%	8%	8%	38%	3%	11%	0%
Adj. Flow (vph)	28	475	20	155	118	74	14	167	609	133	37	35
Shared Lane Traffic (%)												
Lane Group Flow (vph)	28	495	0	155	192	0	14	776	0	133	72	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.31	1.31	1.31	1.31	1.31	1.31	1.11	1.21	1.21	1.11	1.21	1.21
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		4		3	8			2			6	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8			2			6		
Detector Phase	4	4		3	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)	24.0	24.0		9.5	24.0		24.0	24.0		24.0	24.0	
Total Split (s)	30.0	30.0		10.0	40.0		50.0	50.0		50.0	50.0	
Total Split (%)	33.3%	33.3%		11.1%	44.4%		55.6%	55.6%		55.6%	55.6%	
Maximum Green (s)	24.0	24.0		6.0	34.0		44.0	44.0		44.0	44.0	
Yellow Time (s)	4.0	4.0		3.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		1.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0		0.0	-2.0		-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag	Lag	Lag		Lead								
Lead-Lag Optimize?	Yes	Yes		Yes								
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Min	Min		None	Min		None	None		None	None	
Walk Time (s)	7.0	7.0			7.0		7.0	7.0		7.0	7.0	
Flash Don't 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)	26.0	26.0		36.0	36.0		46.0	46.0		46.0	46.0	
Actuated g/C Ratio	0.29	0.29		0.40	0.40		0.51	0.51		0.51	0.51	
v/c Ratio	0.10	1.20		0.99	0.35		0.02	1.10		1.14	0.10	
Control Delay (s/veh)	24.9	142.8		94.8	16.7		11.1	82.0		152.1	7.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	24.9	142.8		94.8	16.7		11.1	82.0		152.1	7.1	
LOS	C	F		F	B		B	F		F	A	
Approach Delay (s/veh)		136.5			51.6			80.7			101.2	
Approach LOS		F			D			F			F	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Natural Cycle: 60			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.20			
Intersection Signal Delay (s/veh): 93.2		Intersection LOS: F	
Intersection Capacity Utilization 117.2%		ICU Level of Service H	
Analysis Period (min) 15			

Splits and Phases: 102: Union St & South Field Dr





Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	28	495	155	192	14	776	133	72
v/c Ratio	0.10	1.20	0.99	0.35	0.02	1.10	1.14	0.10
Control Delay (s/veh)	24.9	142.8	94.8	16.7	11.1	82.0	152.1	7.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	24.9	142.8	94.8	16.7	11.1	82.0	152.1	7.1
Queue Length 50th (m)	3.7	~110.8	18.7	18.1	1.2	~133.5	~28.4	3.2
Queue Length 95th (m)	10.5	#172.6	#55.5	35.3	4.3	#205.1	#64.7	10.0
Internal Link Dist (m)		645.7		234.4		860.2		232.9
Turn Bay Length (m)	40.0		40.0		25.0		20.0	
Base Capacity (vph)	271	412	157	550	589	704	117	749
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.10	1.20	0.99	0.35	0.02	1.10	1.14	0.10

Intersection Summary

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	475	20	155	118	74	14	167	609	133	37	35
Future Volume (vph)	28	475	20	155	118	74	14	167	609	133	37	35
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1775	1650	1650	1775	1650	1650
Total Lost time (s)	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	
Frt	1.00	0.99		1.00	0.94		1.00	0.88		1.00	0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1400	1424		1348	1312		1544	1094		1619	1432	
Flt Permitted	0.64	1.00		0.14	1.00		0.71	1.00		0.13	1.00	
Satd. Flow (perm)	939	1424		203	1312		1154	1094		229	1432	
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)	28	475	20	155	118	74	14	167	609	133	37	35
RTOR Reduction (vph)	0	1	0	0	25	0	0	146	0	0	17	0
Lane Group Flow (vph)	28	494	0	155	167	0	14	630	0	133	55	0
Heavy Vehicles (%)	4%	7%	6%	8%	12%	7%	8%	8%	38%	3%	11%	0%
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		4		3	8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	24.0	24.0		34.0	34.0		44.0	44.0		44.0	44.0	
Effective Green, g (s)	26.0	26.0		34.0	36.0		46.0	46.0		46.0	46.0	
Actuated g/C Ratio	0.29	0.29		0.38	0.40		0.51	0.51		0.51	0.51	
Clearance Time (s)	6.0	6.0		4.0	6.0		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	
Lane Grp Cap (vph)	271	411		153	524		589	559		117	731	
v/s Ratio Prot		c0.35		c0.07	0.13			0.58			0.04	
v/s Ratio Perm	0.03			0.32			0.01			c0.58		
v/c Ratio	0.10	1.20		1.01	0.32		0.02	1.13		1.14	0.08	
Uniform Delay, d1	23.5	32.0		26.0	18.6		10.9	22.0		22.0	11.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	111.6		76.2	0.4		0.0	78.3		124.7	0.0	
Delay (s)	23.6	143.6		102.2	18.9		10.9	100.3		146.7	11.2	
Level of Service	C	F		F	B		B	F		F	B	
Approach Delay (s/veh)		137.2			56.1			98.7			99.1	
Approach LOS		F			E			F			F	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	101.6	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.15		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	117.2%	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)	0	1217	0	0	347	0	0	0	0	0	0	0
Future Volume (vph)	0	1217	0	0	347	0	0	0	0	0	0	0
Ideal Flow (vphpl)	1000	1900	1000	1000	1900	1000	1000	1900	1000	1000	1900	1000
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	1842	0	0	1842	0	0	1842	0	0	1842	0
Flt Permitted												
Satd. Flow (perm)	0	1842	0	0	1842	0	0	1842	0	0	1842	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		258.4			134.3			175.3			172.7	
Travel Time (s)		18.6			9.7			12.6			12.4	
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
Adj. Flow (vph)	0	1217	0	0	347	0	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1217	0	0	347	0	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	2.20	1.01	2.20	2.20	1.01	2.20	2.20	1.01	2.20	2.20	1.01	2.20
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 67.4%		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)	0	1217	0	0	347	0	0	0	0	0	0	0
Future Volume (Veh/h)	0	1217	0	0	347	0	0	0	0	0	0	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	1217	0	0	347	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	174	0	0	609	0	0	0			0		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	174	0	0	609	0	0	0			0		
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	0	100	0	61	100	100			100		
cM capacity (veh/h)	551	896	1085	0	896	1085	1623			1623		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	1217	347	0	0
Volume Left	0	0	0	0
Volume Right	0	0	0	0
cSH	896	896	1700	1700
Volume to Capacity	1.36	0.39	0.00	0.00
Queue Length 95th (m)	395.0	14.8	0.0	0.0
Control Delay (s/veh)	184.3	11.5	0.0	0.0
Lane LOS	F	B		
Approach Delay (s/veh)	184.3	11.5	0.0	0.0
Approach LOS	F	B		

Intersection Summary			
Average Delay	145.9		
Intersection Capacity Utilization	67.4%	ICU Level of Service	C
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	146.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑			↑			↑			↑	
Traffic Vol, veh/h	0	1217	0	0	347	0	0	0	0	0	0	0
Future Vol, veh/h	0	1217	0	0	347	0	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	1217	0	0	347	0	0	0	0	0	0	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	1	-	-	1	-	-	0	-	-	-	0
Stage 1	-	1	-	-	0	-	-	-	-	-	-	-
Stage 2	-	0	-	-	1	-	-	-	-	-	-	-
Critical Hdwy	-	6.52	-	-	6.52	-	-	-	-	-	-	-
Critical Hdwy Stg 1	-	5.52	-	-	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	5.52	-	-	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	-	4.018	-	-	4.018	-	-	-	-	-	-	-
Pot Cap-1 Maneuver	0	~ 895	0	0	895	0	0	-	0	0	-	0
Stage 1	0	~ 895	0	0	-	0	0	-	0	0	-	0
Stage 2	0	-	0	0	895	0	0	-	0	0	-	0
Platoon blocked, %								-			-	
Mov Cap-1 Maneuver	-	~ 895	-	-	895	-	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	~ 895	-	-	895	-	-	-	-	-	-	-
Stage 1	-	~ 895	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	895	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	185.02	11.55	0	0
HCM LOS	F	B		

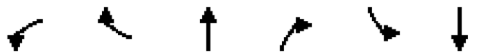
Minor Lane/Major Mvmt	NBT	EBLn1	WBLn1	SBT
Capacity (veh/h)	-	895	895	-
HCM Lane V/C Ratio	-	1.36	0.388	-
HCM Ctrl Dly (s/v)	-	185	11.5	-
HCM Lane LOS	-	F	B	-
HCM 95th %tile Q(veh)	-	49.5	1.9	-

Notes	
~: Volume exceeds capacity	$: Delay exceeds 300s
+: Computation Not Defined	*: All major volume in platoon



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	1	4	1359	0	0	1587
Future Volume (vph)	1	4	1359	0	0	1587
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	0.892					
Flt Protected	0.990					
Satd. Flow (prot)	1284	0	1539	0	0	1525
Flt Permitted	0.990					
Satd. Flow (perm)	1284	0	1539	0	0	1525
Link Speed (k/h)	60		80			80
Link Distance (m)	527.8		756.1			487.8
Travel Time (s)	31.7		34.0			22.0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	100%	0%	6%	0%	0%	7%
Adj. Flow (vph)	1	4	1359	0	0	1587
Shared Lane Traffic (%)						
Lane Group Flow (vph)	5	0	1359	0	0	1587
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.5		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.12	1.12	1.21	1.21	1.21	1.21
Turning Speed (k/h)	25	15		15	25	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 106.2%		ICU Level of Service G	
Analysis Period (min) 15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	1	4	1359	0	0	1587
Future Volume (Veh/h)	1	4	1359	0	0	1587
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)	1	4	1359	0	0	1587
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	2946	1359			1359	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2946	1359			1359	
tC, single (s)	7.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	4.4	3.3			2.2	
p0 queue free %	86	98			100	
cM capacity (veh/h)	7	184			512	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	5	1359	1587
Volume Left	1	0	0
Volume Right	4	0	0
cSH	31	1700	512
Volume to Capacity	0.16	0.80	0.00
Queue Length 95th (m)	4.0	0.0	0.0
Control Delay (s/veh)	143.6	0.0	0.0
Lane LOS	F		
Approach Delay (s/veh)	143.6	0.0	0.0
Approach LOS	F		

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	106.2%	ICU Level of Service	G
Analysis Period (min)	15		

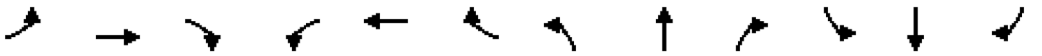
Intersection	
Int Delay, s/veh	0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	4	1359	0	0	1587
Future Vol, veh/h	1	4	1359	0	0	1587
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	100	0	6	0	0	7
Mvmt Flow	1	4	1359	0	0	1587

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	2946	1359	0	0	1359	0
Stage 1	1359	-	-	-	-	-
Stage 2	1587	-	-	-	-	-
Critical Hdwy	7.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	6.4	-	-	-	-	-
Critical Hdwy Stg 2	6.4	-	-	-	-	-
Follow-up Hdwy	4.4	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	7	184	-	-	512	-
Stage 1	150	-	-	-	-	-
Stage 2	110	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	7	184	-	-	512	-
Mov Cap-2 Maneuver	7	-	-	-	-	-
Stage 1	150	-	-	-	-	-
Stage 2	110	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	143.58	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	31	512	-
HCM Lane V/C Ratio	-	-	0.163	-	-
HCM Ctrl Dly (s/v)	-	-	143.6	0	-
HCM Lane LOS	-	-	F	A	-
HCM 95th %tile Q(veh)	-	-	0.5	0	-

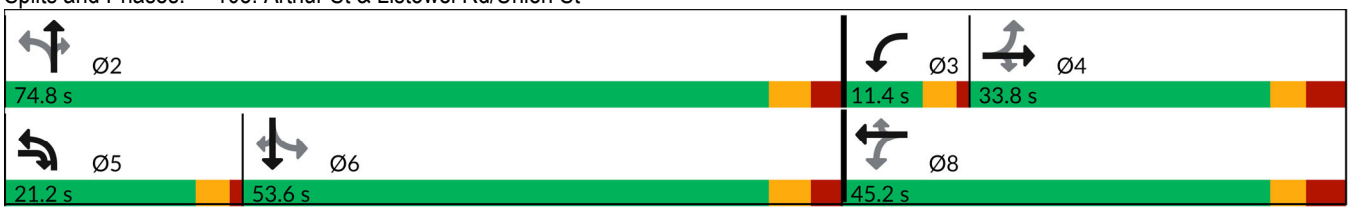


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	128	292	595	294	89	6	247	613	536	0	729	42
Future Volume (vph)	128	292	595	294	89	6	247	613	536	0	729	42
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1900	1750
Storage Length (m)	60.0		60.0	25.0		25.0	100.0		100.0	50.0		50.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	60.0			60.0			80.0			75.0		
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			0.850			0.850
Flt Protected	0.950			0.950			0.950					
Satd. Flow (prot)	1603	1634	1350	1413	1261	1226	1378	1756	1302	1755	1773	1313
Flt Permitted	0.699			0.216			0.078					
Satd. Flow (perm)	1180	1634	1350	321	1261	1226	113	1756	1302	1755	1773	1313
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			97			67			419			107
Link Speed (k/h)		50			50			60			50	
Link Distance (m)		1221.5			248.3			356.1			893.6	
Travel Time (s)		87.9			17.9			21.4			64.3	
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%	15%	9%	18%	49%	20%	21%	7%	13%	0%	6%	12%
Adj. Flow (vph)	128	292	595	294	89	6	247	613	536	0	729	42
Shared Lane Traffic (%)												
Lane Group Flow (vph)	128	292	595	294	89	6	247	613	536	0	729	42
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.11	1.01	1.13	1.11	1.01	1.13	1.11	1.01	1.13	1.11	1.01	1.13
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	pm+ov	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		4	5	3	8		5	2			6	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	4	4	5	3	8	8	5	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0	7.0	5.0	10.0	10.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	33.8	33.8	11.5	9.5	33.8	33.8	11.5	51.4	51.4	51.4	51.4	51.4
Total Split (s)	33.8	33.8	21.2	11.4	45.2	45.2	21.2	74.8	74.8	53.6	53.6	53.6
Total Split (%)	28.2%	28.2%	17.7%	9.5%	37.7%	37.7%	17.7%	62.3%	62.3%	44.7%	44.7%	44.7%
Maximum Green (s)	27.0	27.0	17.2	7.4	38.4	38.4	17.2	68.4	68.4	47.2	47.2	47.2
Yellow Time (s)	3.3	3.3	3.0	3.0	3.3	3.3	3.0	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	3.5	3.5	1.0	1.0	3.5	3.5	1.0	2.7	2.7	2.7	2.7	2.7
Lost Time Adjust (s)	-2.8	-2.8	-2.8	0.0	-2.8	-2.8	0.0	-2.4	-2.4	-2.4	-2.4	-2.4
Total Lost Time (s)	4.0	4.0	1.2	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lead	Lead			Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes			Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	5.0	3.0	3.0	3.0	5.0	0.2	0.2	0.2	0.2	0.2
Recall Mode	None	None	None	None	None	None	None	Min	Min	Min	Min	Min
Walk Time (s)	7.0	7.0			7.0	7.0		25.0	25.0	25.0	25.0	25.0
Flash Don't Walk (s)	20.0	20.0			20.0	20.0		20.0	20.0	20.0	20.0	20.0
Pedestrian Calls (#/hr)	0	0			0	0		0	0	0	0	0
Act Effct Green (s)	26.6	26.6	50.6	38.0	38.0	38.0	70.9	70.9	70.9		49.7	49.7
Actuated g/C Ratio	0.23	0.23	0.43	0.33	0.33	0.33	0.61	0.61	0.61		0.43	0.43
v/c Ratio	0.48	0.79	0.93	1.70	0.22	0.01	0.97	0.58	0.56		0.97	0.07
Control Delay (s/veh)	45.4	58.3	49.2	364.3	29.9	0.0	83.2	17.2	5.5		60.2	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay (s/veh)	45.4	58.3	49.2	364.3	29.9	0.0	83.2	17.2	5.5		60.2	0.2
LOS	D	E	D	F	C	A	F	B	A		E	A
Approach Delay (s/veh)		51.3			282.1			24.4			56.9	
Approach LOS		D			F			C			E	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 116.9			
Natural Cycle: 130			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 1.70			
Intersection Signal Delay (s/veh): 67.1		Intersection LOS: E	
Intersection Capacity Utilization 105.8%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 105: Arthur St & Listowel Rd/Union St



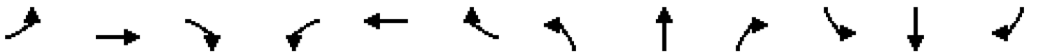


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	128	292	595	294	89	6	247	613	536	729	42
v/c Ratio	0.48	0.79	0.93	1.70	0.22	0.01	0.97	0.58	0.56	0.97	0.07
Control Delay (s/veh)	45.4	58.3	49.2	364.3	29.9	0.0	83.2	17.2	5.5	60.2	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	45.4	58.3	49.2	364.3	29.9	0.0	83.2	17.2	5.5	60.2	0.2
Queue Length 50th (m)	26.9	66.6	116.8	~96.4	15.5	0.0	47.9	89.2	12.2	175.7	0.0
Queue Length 95th (m)	46.9	99.5	#195.1	#162.1	29.1	0.0	#104.0	126.4	38.5	#262.3	0.0
Internal Link Dist (m)		1197.5			224.3			332.1		869.6	
Turn Bay Length (m)	60.0		60.0	25.0		25.0	100.0		100.0		50.0
Base Capacity (vph)	301	416	639	173	444	475	254	1065	954	752	619
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	0.43	0.70	0.93	1.70	0.20	0.01	0.97	0.58	0.56	0.97	0.07

Intersection Summary

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

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	128	292	595	294	89	6	247	613	536	0	729	42
Future Volume (vph)	128	292	595	294	89	6	247	613	536	0	729	42
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1900	1750
Total Lost time (s)	4.0	4.0	1.2	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	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00		1.00	1.00
Satd. Flow (prot)	1603	1634	1350	1413	1261	1226	1378	1756	1302		1773	1313
Flt Permitted	0.70	1.00	1.00	0.22	1.00	1.00	0.08	1.00	1.00		1.00	1.00
Satd. Flow (perm)	1180	1634	1350	321	1261	1226	113	1756	1302		1773	1313
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)	128	292	595	294	89	6	247	613	536	0	729	42
RTOR Reduction (vph)	0	0	58	0	0	4	0	0	165	0	0	24
Lane Group Flow (vph)	128	292	537	294	89	2	247	613	371	0	729	18
Heavy Vehicles (%)	4%	15%	9%	18%	49%	20%	21%	7%	13%	0%	6%	12%
Turn Type	Perm	NA	pm+ov	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm
Protected Phases		4	5	3	8		5	2			6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	23.8	23.8	41.0	35.2	35.2	35.2	68.5	68.5	68.5		47.3	47.3
Effective Green, g (s)	26.6	26.6	46.6	35.2	38.0	38.0	68.5	70.9	70.9		49.7	49.7
Actuated g/C Ratio	0.23	0.23	0.40	0.30	0.33	0.33	0.59	0.61	0.61		0.43	0.43
Clearance Time (s)	6.8	6.8	4.0	4.0	6.8	6.8	4.0	6.4	6.4		6.4	6.4
Vehicle Extension (s)	3.0	3.0	5.0	3.0	3.0	3.0	5.0	0.2	0.2		0.2	0.2
Lane Grp Cap (vph)	268	371	538	165	409	398	252	1065	789		753	558
v/s Ratio Prot		0.18	c0.17	c0.11	0.07		0.14	0.35			0.41	
v/s Ratio Perm	0.11		0.23	c0.42		0.00	c0.43		0.29			0.01
v/c Ratio	0.48	0.79	1.00	1.78	0.22	0.00	0.98	0.58	0.47		0.97	0.03
Uniform Delay, d1	39.1	42.5	35.1	39.0	28.7	26.7	37.7	13.9	12.7		32.8	19.6
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	1.3	10.5	38.0	375.1	0.3	0.0	51.3	0.5	0.2		24.7	0.0
Delay (s)	40.5	53.0	73.1	414.1	28.9	26.7	88.9	14.4	12.8		57.6	19.6
Level of Service	D	D	E	F	C	C	F	B	B		E	B
Approach Delay (s/veh)		63.2			320.0			27.0			55.5	
Approach LOS		E			F			C			E	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	75.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.27		
Actuated Cycle Length (s)	116.9	Sum of lost time (s)	16.0
Intersection Capacity Utilization	105.8%	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)	1	2	4	4	1	24	2	120	1	4	163	1
Future Volume (vph)	1	2	4	4	1	24	2	120	1	4	163	1
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		0.923			0.888			0.999			0.999	
Flt Protected		0.993			0.993			0.999			0.999	
Satd. Flow (prot)	0	1229	0	0	1160	0	0	1434	0	0	1521	0
Flt Permitted		0.993			0.993			0.999			0.999	
Satd. Flow (perm)	0	1229	0	0	1160	0	0	1434	0	0	1521	0
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		1098.8			1503.1			836.4			884.7	
Travel Time (s)		65.9			90.2			50.2			53.1	
Confl. Peds. (#/hr)	8					8	2					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 (%)	100%	0%	0%	0%	0%	20%	0%	6%	100%	0%	0%	100%
Adj. Flow (vph)	1	2	4	4	1	24	2	120	1	4	163	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	7	0	0	29	0	0	123	0	0	168	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 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)	1	2	4	4	1	24	2	120	1	4	163	1
Future Volume (Veh/h)	1	2	4	4	1	24	2	120	1	4	163	1
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)	1	2	4	4	1	24	2	120	1	4	163	1
Pedestrians		2									8	
Lane Width (m)		3.5									3.5	
Walking Speed (m/s)		1.2									1.2	
Percent Blockage		0									1	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	331	299	166	301	299	129	166			121		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	331	299	166	301	299	129	166			121		
tC, single (s)	8.1	6.5	6.2	7.1	6.5	6.4	4.1			4.1		
tC, 2 stage (s)												
tF (s)	4.4	4.0	3.3	3.5	4.0	3.5	2.2			2.2		
p0 queue free %	100	100	100	99	100	97	100			100		
cM capacity (veh/h)	453	613	883	648	613	870	1422			1479		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	7	29	123	168
Volume Left	1	4	2	4
Volume Right	4	24	1	1
cSH	700	819	1422	1479
Volume to Capacity	0.01	0.04	0.00	0.00
Queue Length 95th (m)	0.2	0.9	0.0	0.1
Control Delay (s/veh)	10.2	9.6	0.1	0.2
Lane LOS	B	A	A	A
Approach Delay (s/veh)	10.2	9.6	0.1	0.2
Approach LOS	B	A		

Intersection Summary				
Average Delay	1.2			
Intersection Capacity Utilization	25.8%	ICU Level of Service	A	
Analysis Period (min)	15			

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	2	4	4	1	24	2	120	1	4	163	1
Future Vol, veh/h	1	2	4	4	1	24	2	120	1	4	163	1
Conflicting Peds, #/hr	8	0	0	0	0	8	2	0	0	0	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	100	0	0	0	0	20	0	6	100	0	0	100
Mvmt Flow	1	2	4	4	1	24	2	120	1	4	163	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	306	299	166	297	299	129	166	0	0	121	0	0
Stage 1	174	174	-	125	125	-	-	-	-	-	-	-
Stage 2	133	125	-	172	174	-	-	-	-	-	-	-
Critical Hdwy	8.1	6.5	6.2	7.1	6.5	6.4	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	7.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	7.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	4.4	4	3.3	3.5	4	3.48	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	493	617	884	660	617	875	1424	-	-	1479	-	-
Stage 1	645	759	-	884	797	-	-	-	-	-	-	-
Stage 2	682	796	-	835	759	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	472	613	883	652	613	870	1422	-	-	1479	-	-
Mov Cap-2 Maneuver	472	613	-	652	613	-	-	-	-	-	-	-
Stage 1	642	756	-	883	796	-	-	-	-	-	-	-
Stage 2	658	795	-	826	755	-	-	-	-	-	-	-

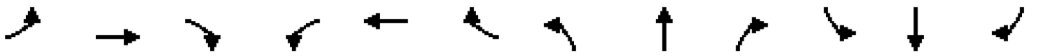
Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	10.15	9.55	0.12	0.18
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	29	-	-	706	820	43	-	-
HCM Lane V/C Ratio	0.001	-	-	0.01	0.035	0.003	-	-
HCM Ctrl Dly (s/v)	7.5	0	-	10.1	9.5	7.4	0	-
HCM Lane LOS	A	A	-	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.1	0	-	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	265	685	265	11	225	11	61	0	3	3	0	61
Future Volume (vph)	265	685	265	11	225	11	61	0	3	3	0	61
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		0.971			0.994			0.994			0.871	
Flt Protected		0.989			0.998			0.955			0.998	
Satd. Flow (prot)	0	1440	0	0	1490	0	0	1413	0	0	1306	0
Flt Permitted		0.989			0.998			0.955			0.998	
Satd. Flow (perm)	0	1440	0	0	1490	0	0	1413	0	0	1306	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		134.3			292.2			186.5			190.6	
Travel Time (s)		9.7			21.0			13.4			13.7	
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 (%)	2%	2%	3%	3%	2%	2%	3%	2%	3%	2%	2%	2%
Adj. Flow (vph)	265	685	265	11	225	11	61	0	3	3	0	61
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1215	0	0	247	0	0	64	0	0	64	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 119.0%		ICU Level of Service H	
Analysis Period (min) 15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	265	685	265	11	225	11	61	0	3	3	0	61
Future Volume (Veh/h)	265	685	265	11	225	11	61	0	3	3	0	61
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)	265	685	265	11	225	11	61	0	3	3	0	61
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	236			950			1661	1606	818	1603	1733	231
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	236			950			1661	1606	818	1603	1733	231
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 %	80			98			0	100	99	96	100	92
cM capacity (veh/h)	1331			719			60	83	375	71	69	809

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	1215	247	64	64
Volume Left	265	11	61	3
Volume Right	265	11	3	61
cSH	1331	719	62	543
Volume to Capacity	0.20	0.02	1.03	0.12
Queue Length 95th (m)	5.9	0.4	40.2	3.2
Control Delay (s/veh)	4.8	0.6	234.1	12.5
Lane LOS	A	A	F	B
Approach Delay (s/veh)	4.8	0.6	234.1	12.5
Approach LOS			F	B

Intersection Summary				
Average Delay	13.7			
Intersection Capacity Utilization	119.0%	ICU Level of Service	H	
Analysis Period (min)	15			

Intersection	
Int Delay, s/veh	19.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	265	685	265	11	225	11	61	0	3	3	0	61
Future Vol, veh/h	265	685	265	11	225	11	61	0	3	3	0	61
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	3	3	2	2	3	2	3	2	2	2
Mvmt Flow	265	685	265	11	225	11	61	0	3	3	0	61

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	236	0	0	950	0	0	1595	1606	818	1468	1733	231
Stage 1	-	-	-	-	-	-	1348	1348	-	253	253	-
Stage 2	-	-	-	-	-	-	247	258	-	1215	1480	-
Critical Hdwy	4.12	-	-	4.13	-	-	7.13	6.52	6.23	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.227	-	-	3.527	4.018	3.327	3.518	4.018	3.318
Pot Cap-1 Maneuver	1331	-	-	719	-	-	86	105	375	106	88	809
Stage 1	-	-	-	-	-	-	185	219	-	752	698	-
Stage 2	-	-	-	-	-	-	755	694	-	222	189	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1331	-	-	719	-	-	~ 43	57	375	57	48	809
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 43	57	-	57	48	-
Stage 1	-	-	-	-	-	-	102	121	-	738	686	-
Stage 2	-	-	-	-	-	-	685	682	-	121	104	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	1.83	0.45	$ 429.79	13.28
HCM LOS			F	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	45	372	-	-	79	-	-	499
HCM Lane V/C Ratio	1.431	0.199	-	-	0.015	-	-	0.128
HCM Ctrl Dly (s/v)	$ 429.8	8.4	0	-	10.1	0	-	13.3
HCM Lane LOS	F	A	A	-	B	A	-	B
HCM 95th %tile Q(veh)	6.2	0.7	-	-	0	-	-	0.4

Notes	
~: Volume exceeds capacity	$: Delay exceeds 300s
+: Computation Not Defined	*: All major volume in platoon



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	265	161	265	11	123	11	62	0	3	3	0	62
Future Volume (vph)	265	161	265	11	123	11	62	0	3	3	0	62
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		0.948			0.990			0.994			0.871	
Flt Protected		0.981			0.996			0.954			0.998	
Satd. Flow (prot)	0	1392	0	0	1481	0	0	1411	0	0	1306	0
Flt Permitted		0.981			0.996			0.954			0.998	
Satd. Flow (perm)	0	1392	0	0	1481	0	0	1411	0	0	1306	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		292.2			831.3			191.2			221.5	
Travel Time (s)		21.0			59.9			13.8			15.9	
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 (%)	2%	2%	3%	3%	2%	2%	3%	2%	3%	2%	2%	2%
Adj. Flow (vph)	265	161	265	11	123	11	62	0	3	3	0	62
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	691	0	0	145	0	0	65	0	0	65	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 78.8%		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)	265	161	265	11	123	11	62	0	3	3	0	62
Future Volume (Veh/h)	265	161	265	11	123	11	62	0	3	3	0	62
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)	265	161	265	11	123	11	62	0	3	3	0	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	134			426			1036	980	294	977	1107	129
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	134			426			1036	980	294	977	1107	129
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 %	82			99			63	100	100	98	100	93
cM capacity (veh/h)	1451			1128			166	202	743	196	170	921

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	691	145	65	65
Volume Left	265	11	62	3
Volume Right	265	11	3	62
cSH	1451	1128	172	787
Volume to Capacity	0.18	0.01	0.38	0.08
Queue Length 95th (m)	5.3	0.2	13.0	2.2
Control Delay (s/veh)	4.3	0.7	38.0	10.0
Lane LOS	A	A	E	A
Approach Delay (s/veh)	4.3	0.7	38.0	10.0
Approach LOS			E	A

Intersection Summary			
Average Delay	6.4		
Intersection Capacity Utilization	78.8%	ICU Level of Service	D
Analysis Period (min)	15		

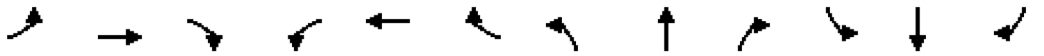
Intersection	
Int Delay, s/veh	5.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	265	161	265	11	123	11	62	0	3	3	0	62
Future Vol, veh/h	265	161	265	11	123	11	62	0	3	3	0	62
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	3	3	2	2	3	2	3	2	2	2
Mvmt Flow	265	161	265	11	123	11	62	0	3	3	0	62

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	134	0	0	426	0	0	969	980	294	842	1107	129
Stage 1	-	-	-	-	-	-	824	824	-	151	151	-
Stage 2	-	-	-	-	-	-	145	156	-	691	956	-
Critical Hdwy	4.12	-	-	4.13	-	-	7.13	6.52	6.23	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.227	-	-	3.527	4.018	3.327	3.518	4.018	3.318
Pot Cap-1 Maneuver	1451	-	-	1128	-	-	232	250	743	284	210	921
Stage 1	-	-	-	-	-	-	366	388	-	852	773	-
Stage 2	-	-	-	-	-	-	855	769	-	435	336	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1451	-	-	1128	-	-	161	186	743	210	156	921
Mov Cap-2 Maneuver	-	-	-	-	-	-	161	186	-	210	156	-
Stage 1	-	-	-	-	-	-	275	291	-	843	765	-
Stage 2	-	-	-	-	-	-	789	760	-	325	253	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	3.08	0.62	39.69	9.92
HCM LOS			E	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	167	614	-	-	134	-	-	797
HCM Lane V/C Ratio	0.389	0.183	-	-	0.01	-	-	0.082
HCM Ctrl Dly (s/v)	39.7	8	0	-	8.2	0	-	9.9
HCM Lane LOS	E	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	1.7	0.7	-	-	0	-	-	0.3

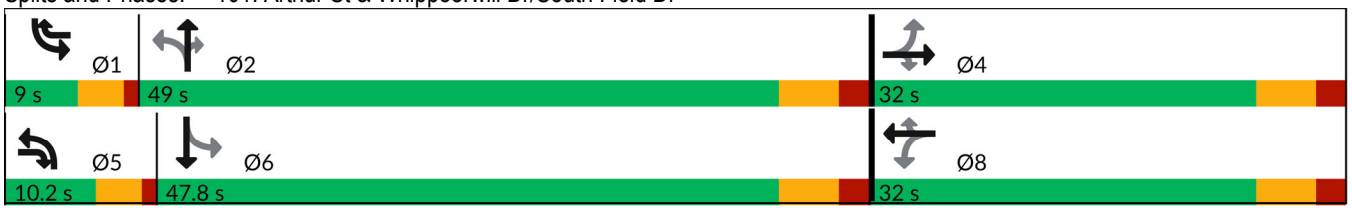


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	53	104	175	86	243	495	255	790	95	245	641	35
Future Volume (vph)	53	104	175	86	243	495	255	790	95	245	641	35
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1650	1650
Storage Length (m)	40.0		40.0	25.0		25.0	45.0		40.0	30.0		1.0
Storage Lanes	1		1	1		1	1		1	1		0
Taper Length (m)	50.0			50.0			40.0			60.0		
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	1.00		0.97	1.00	1.00	
Frt			0.850			0.850			0.850		0.992	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1668	1824	1471	1619	1879	1456	1668	1807	1428	1651	1544	0
Flt Permitted	0.434			0.690			0.219			0.164		
Satd. Flow (perm)	759	1824	1471	1176	1879	1420	384	1807	1379	284	1544	0
Right Turn on Red			No			Yes			Yes			Yes
Satd. Flow (RTOR)						126			85		4	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		886.0			669.7			889.8			887.4	
Travel Time (s)		63.8			48.2			53.4			53.2	
Confl. Peds. (#/hr)	3					3	1		13	13		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%	3%	0%	3%	0%	1%	0%	4%	3%	1%	5%	0%
Adj. Flow (vph)	53	104	175	86	243	495	255	790	95	245	641	35
Shared Lane Traffic (%)												
Lane Group Flow (vph)	53	104	175	86	243	495	255	790	95	245	676	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.11	1.01	1.13	1.11	1.01	1.13	1.11	1.01	1.13	1.11	1.21	1.21
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA	pm+ov	Perm	NA	pm+ov	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4	5		8	1	5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		
Detector Phase	4	4	5	8	8	1	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	12.0	12.0	5.0	12.0	12.0	5.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	32.0	32.0	9.5	32.0	32.0	9.0	9.5	47.7	47.7	9.0	47.7	
Total Split (s)	32.0	32.0	10.2	32.0	32.0	9.0	10.2	49.0	49.0	9.0	47.8	
Total Split (%)	35.6%	35.6%	11.3%	35.6%	35.6%	10.0%	11.3%	54.4%	54.4%	10.0%	53.1%	
Maximum Green (s)	26.0	26.0	6.2	26.0	26.0	5.0	6.2	43.0	43.0	5.0	41.8	
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0	3.0	3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	2.0	2.0	1.0	2.0	2.0	1.0	1.0	2.0	2.0	1.0	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	0.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	2.0	4.0	4.0	4.0	2.0	6.0	
Lead/Lag			Lead			Lead	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?			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	Min	Min	None	Min	
Walk Time (s)	10.0	10.0		10.0	10.0			21.8	21.8		21.8	
Flash Don't Walk (s)	16.0	16.0		16.0	16.0			19.0	19.0		19.0	
Pedestrian Calls (#/hr)	0	0		0	0			0	0		0	
Act Effct Green (s)	17.8	17.8	28.2	17.8	17.8	27.0	47.4	41.1	41.1	49.0	37.9	
Actuated g/C Ratio	0.23	0.23	0.37	0.23	0.23	0.35	0.62	0.54	0.54	0.64	0.50	
v/c Ratio	0.30	0.24	0.32	0.31	0.55	0.84	0.74	0.81	0.12	0.79	0.88	
Control Delay (s/veh)	30.2	26.3	20.1	28.7	31.7	31.4	22.6	23.2	3.4	29.4	32.6	
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 (s/veh)	30.2	26.3	20.1	28.7	31.7	31.4	22.6	23.2	3.4	29.4	32.6	
LOS	C	C	C	C	C	C	C	C	A	C	C	
Approach Delay (s/veh)		23.6			31.2			21.4			31.7	
Approach LOS		C			C			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 76.2			
Natural Cycle: 90			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.88			
Intersection Signal Delay (s/veh): 27.1		Intersection LOS: C	
Intersection Capacity Utilization 95.2%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 101: Arthur St & Whippoorwill Dr/South Field Dr





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	53	104	175	86	243	495	255	790	95	245	676
v/c Ratio	0.30	0.24	0.32	0.31	0.55	0.84	0.74	0.81	0.12	0.79	0.88
Control Delay (s/veh)	30.2	26.3	20.1	28.7	31.7	31.4	22.6	23.2	3.4	29.4	32.6
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 (s/veh)	30.2	26.3	20.1	28.7	31.7	31.4	22.6	23.2	3.4	29.4	32.6
Queue Length 50th (m)	7.1	13.7	20.2	11.5	34.8	53.4	12.9	88.4	0.6	11.1	83.7
Queue Length 95th (m)	17.4	26.7	35.8	24.2	57.0	#107.1	#40.6	#184.1	7.8	#41.9	#175.1
Internal Link Dist (m)		862.0			645.7			865.8			863.4
Turn Bay Length (m)	40.0		40.0	25.0		25.0	45.0		40.0	30.0	
Base Capacity (vph)	282	679	544	438	699	587	344	1081	859	309	860
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	0.19	0.15	0.32	0.20	0.35	0.84	0.74	0.73	0.11	0.79	0.79

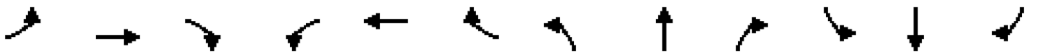
Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	53	104	175	86	243	495	255	790	95	245	641	35
Future Volume (vph)	53	104	175	86	243	495	255	790	95	245	641	35
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1650	1650
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	2.0	4.0	4.0	4.0	2.0	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	1.00	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.98	1.00	1.00	0.97	1.00	1.00	
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	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1663	1824	1471	1619	1879	1431	1667	1807	1383	1650	1544	
Flt Permitted	0.43	1.00	1.00	0.69	1.00	1.00	0.22	1.00	1.00	0.16	1.00	
Satd. Flow (perm)	760	1824	1471	1176	1879	1431	384	1807	1383	284	1544	
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)	53	104	175	86	243	495	255	790	95	245	641	35
RTOR Reduction (vph)	0	0	0	0	0	85	0	0	39	0	2	0
Lane Group Flow (vph)	53	104	175	86	243	410	255	790	56	245	674	0
Confl. Peds. (#/hr)	3					3	1		13	13		1
Heavy Vehicles (%)	0%	3%	0%	3%	0%	1%	0%	4%	3%	1%	5%	0%
Turn Type	Perm	NA	pm+ov	Perm	NA	pm+ov	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases		4	5		8	1	5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		
Actuated Green, G (s)	15.8	15.8	22.1	15.8	15.8	20.9	45.4	39.1	39.1	43.0	37.9	
Effective Green, g (s)	17.8	17.8	22.1	17.8	17.8	24.9	45.4	41.1	41.1	47.0	37.9	
Actuated g/C Ratio	0.23	0.23	0.29	0.23	0.23	0.33	0.60	0.54	0.54	0.62	0.50	
Clearance Time (s)	6.0	6.0	4.0	6.0	6.0	4.0	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	3.0	
Lane Grp Cap (vph)	178	427	427	275	440	468	335	977	747	303	769	
v/s Ratio Prot		0.06	0.03		0.13	c0.08	0.06	c0.44		0.08	0.44	
v/s Ratio Perm	0.07		0.09	0.07		0.20	0.39		0.04	0.42		
v/c Ratio	0.30	0.24	0.41	0.31	0.55	0.88	0.76	0.81	0.07	0.81	0.88	
Uniform Delay, d1	24.0	23.6	21.7	24.0	25.6	24.1	10.6	14.2	8.4	11.7	17.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.9	0.3	0.6	0.7	1.5	16.7	9.8	5.0	0.0	14.6	11.0	
Delay (s)	24.9	23.9	22.3	24.7	27.1	40.8	20.4	19.2	8.4	26.3	27.9	
Level of Service	C	C	C	C	C	D	C	B	A	C	C	
Approach Delay (s/veh)		23.2			35.1			18.6			27.5	
Approach LOS		C			D			B			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	25.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	76.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	95.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

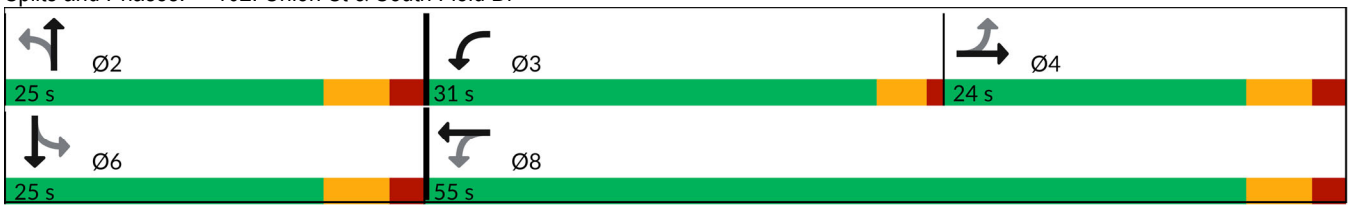


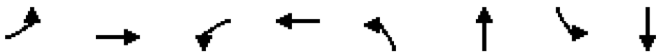
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	48	182	59	542	558	239	21	153	186	118	231	84
Future Volume (vph)	48	182	59	542	558	239	21	153	186	118	231	84
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1775	1650	1650	1775	1650	1650
Storage Length (m)	40.0		0.0	40.0		0.0	25.0		0.0	20.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	40.0			40.0			40.0			25.0		
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		0.963			0.955			0.918			0.960	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1348	1469	0	1324	1418	0	1668	1212	0	1558	1498	0
Flt Permitted	0.364			0.324			0.359			0.322		
Satd. Flow (perm)	517	1469	0	451	1418	0	630	1212	0	528	1498	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		19			53			74			22	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		669.7			255.5			857.7			256.9	
Travel Time (s)		48.2			18.4			61.8			18.5	
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 (%)	8%	0%	2%	10%	2%	6%	0%	17%	29%	7%	4%	6%
Adj. Flow (vph)	48	182	59	542	558	239	21	153	186	118	231	84
Shared Lane Traffic (%)												
Lane Group Flow (vph)	48	241	0	542	797	0	21	339	0	118	315	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.31	1.31	1.31	1.31	1.31	1.31	1.11	1.21	1.21	1.11	1.21	1.21
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		4		3	8			2			6	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8			2			6		
Detector Phase	4	4		3	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)	24.0	24.0		9.5	24.0		24.0	24.0		24.0	24.0	
Total Split (s)	24.0	24.0		31.0	55.0		25.0	25.0		25.0	25.0	
Total Split (%)	30.0%	30.0%		38.8%	68.8%		31.3%	31.3%		31.3%	31.3%	
Maximum Green (s)	18.0	18.0		27.0	49.0		19.0	19.0		19.0	19.0	
Yellow Time (s)	4.0	4.0		3.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		1.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0		0.0	-2.0		-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lead/Lag	Lag	Lag		Lead								
Lead-Lag Optimize?	Yes	Yes		Yes								
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Min	Min		None	Min		None	None		None	None	
Walk Time (s)	7.0	7.0			7.0		7.0	7.0		7.0	7.0	
Flash Don't 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)	17.2	17.2		46.7	46.7		20.6	20.6		20.6	20.6	
Actuated g/C Ratio	0.23	0.23		0.62	0.62		0.27	0.27		0.27	0.27	
v/c Ratio	0.41	0.69		0.94	0.89		0.12	0.88		0.82	0.74	
Control Delay (s/veh)	37.0	36.1		41.1	25.4		24.8	48.5		71.8	37.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	37.0	36.1		41.1	25.4		24.8	48.5		71.8	37.2	
LOS	D	D		D	C		C	D		E	D	
Approach Delay (s/veh)		36.3			31.7			47.1			46.6	
Approach LOS		D			C			D			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 75.4			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.94			
Intersection Signal Delay (s/veh): 37.2		Intersection LOS: D	
Intersection Capacity Utilization 100.7%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 102: Union St & South Field Dr

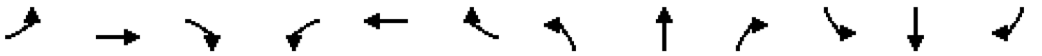




Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	48	241	542	797	21	339	118	315
v/c Ratio	0.41	0.69	0.94	0.89	0.12	0.88	0.82	0.74
Control Delay (s/veh)	37.0	36.1	41.1	25.4	24.8	48.5	71.8	37.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	37.0	36.1	41.1	25.4	24.8	48.5	71.8	37.2
Queue Length 50th (m)	6.4	31.6	55.2	85.4	2.6	42.0	17.9	43.4
Queue Length 95th (m)	17.2	56.2	#121.8	#178.6	8.5	#93.3	#48.9	#83.9
Internal Link Dist (m)		645.7		231.5		833.7		232.9
Turn Bay Length (m)	40.0		40.0		25.0		20.0	
Base Capacity (vph)	138	407	595	985	177	394	148	437
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.35	0.59	0.91	0.81	0.12	0.86	0.80	0.72

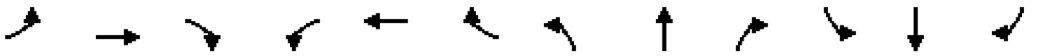
Intersection Summary

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



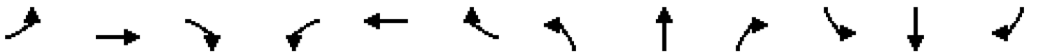
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	48	182	59	542	558	239	21	153	186	118	231	84
Future Volume (vph)	48	182	59	542	558	239	21	153	186	118	231	84
Ideal Flow (vphpl)	1550	1550	1550	1550	1550	1550	1775	1650	1650	1775	1650	1650
Total Lost time (s)	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	
Frt	1.00	0.96		1.00	0.96		1.00	0.92		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1348	1469		1324	1418		1668	1212		1558	1498	
Flt Permitted	0.36	1.00		0.32	1.00		0.36	1.00		0.32	1.00	
Satd. Flow (perm)	517	1469		452	1418		630	1212		528	1498	
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)	48	182	59	542	558	239	21	153	186	118	231	84
RTOR Reduction (vph)	0	15	0	0	20	0	0	54	0	0	16	0
Lane Group Flow (vph)	48	226	0	542	777	0	21	285	0	118	299	0
Heavy Vehicles (%)	8%	0%	2%	10%	2%	6%	0%	17%	29%	7%	4%	6%
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		4		3	8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	15.2	15.2		44.7	44.7		18.6	18.6		18.6	18.6	
Effective Green, g (s)	17.2	17.2		44.7	46.7		20.6	20.6		20.6	20.6	
Actuated g/C Ratio	0.23	0.23		0.59	0.62		0.27	0.27		0.27	0.27	
Clearance Time (s)	6.0	6.0		4.0	6.0		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	
Lane Grp Cap (vph)	118	335		563	879		172	331		144	409	
v/s Ratio Prot		0.15		c0.33	c0.55			c0.24			0.20	
v/s Ratio Perm	0.09			0.25			0.03			0.22		
v/c Ratio	0.41	0.68		0.96	0.88		0.12	0.86		0.82	0.73	
Uniform Delay, d1	24.7	26.5		14.1	12.0		20.6	26.0		25.6	24.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.3	5.3		28.6	10.5		0.3	19.9		29.1	6.6	
Delay (s)	27.0	31.8		42.7	22.5		20.9	45.9		54.7	31.4	
Level of Service	C	C		D	C		C	D		D	C	
Approach Delay (s/veh)		31.0			30.7			44.5			37.8	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	34.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	75.3	Sum of lost time (s)	12.0
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)	0	486	0	0	1339	0	0	0	0	0	0	0
Future Volume (vph)	0	486	0	0	1339	0	0	0	0	0	0	0
Ideal Flow (vphpl)	1000	1900	1000	1000	1900	1000	1000	1900	1000	1000	1900	1000
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	1842	0	0	1842	0	0	1842	0	0	1842	0
Flt Permitted												
Satd. Flow (perm)	0	1842	0	0	1842	0	0	1842	0	0	1842	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		255.5			145.4			164.4			156.0	
Travel Time (s)		18.4			10.5			11.8			11.2	
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
Adj. Flow (vph)	0	486	0	0	1339	0	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	486	0	0	1339	0	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	2.20	1.01	2.20	2.20	1.01	2.20	2.20	1.01	2.20	2.20	1.01	2.20
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 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)	0	486	0	0	1339	0	0	0	0	0	0	0
Future Volume (Veh/h)	0	486	0	0	1339	0	0	0	0	0	0	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	486	0	0	1339	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	670	0	0	243	0	0	0			0		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	670	0	0	243	0	0	0			0		
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 %	0	46	100	100	0	100	100			100		
cM capacity (veh/h)	0	896	1085	406	896	1085	1623			1623		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	486	1339	0	0
Volume Left	0	0	0	0
Volume Right	0	0	0	0
cSH	896	896	1700	1700
Volume to Capacity	0.54	1.49	0.00	0.00
Queue Length 95th (m)	26.7	506.5	0.0	0.0
Control Delay (s/veh)	13.7	243.1	0.0	0.0
Lane LOS	B	F		
Approach Delay (s/veh)	13.7	243.1	0.0	0.0
Approach LOS	B	F		

Intersection Summary				
Average Delay	182.0			
Intersection Capacity Utilization	73.8%	ICU Level of Service	D	
Analysis Period (min)	15			

Intersection	
Int Delay, s/veh	182.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑			↑			↑			↑	
Traffic Vol, veh/h	0	486	0	0	1339	0	0	0	0	0	0	0
Future Vol, veh/h	0	486	0	0	1339	0	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	486	0	0	1339	0	0	0	0	0	0	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	1	-	-	1	-	-	0	-	-	-	0
Stage 1	-	1	-	-	0	-	-	-	-	-	-	-
Stage 2	-	0	-	-	1	-	-	-	-	-	-	-
Critical Hdwy	-	6.52	-	-	6.52	-	-	-	-	-	-	-
Critical Hdwy Stg 1	-	5.52	-	-	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	5.52	-	-	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	-	4.018	-	-	4.018	-	-	-	-	-	-	-
Pot Cap-1 Maneuver	0	895	0	0	~ 895	0	0	-	0	0	-	0
Stage 1	0	895	0	0	-	0	0	-	0	0	-	0
Stage 2	0	-	0	0	~ 895	0	0	-	0	0	-	0
Platoon blocked, %								-			-	
Mov Cap-1 Maneuver	-	895	-	-	~ 895	-	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	895	-	-	~ 895	-	-	-	-	-	-	-
Stage 1	-	895	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	~ 895	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	13.7	243.91	0	0
HCM LOS	B	F		

Minor Lane/Major Mvmt	NBT	EBLn1	WBLn1	SBT
Capacity (veh/h)	-	895	895	-
HCM Lane V/C Ratio	-	0.543	1.496	-
HCM Ctrl Dly (s/v)	-	13.7	243.9	-
HCM Lane LOS	-	B	F	-
HCM 95th %tile Q(veh)	-	3.3	63.4	-

Notes	
~: Volume exceeds capacity	$: Delay exceeds 300s
+: Computation Not Defined	*: All major volume in platoon



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	1541	1	1	1697
Future Volume (vph)	0	0	1541	1	1	1697
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)	1745	0	1539	0	0	1525
Flt Permitted						
Satd. Flow (perm)	1745	0	1539	0	0	1525
Link Speed (k/h)	60		80			80
Link Distance (m)	527.8		756.1			487.8
Travel Time (s)	31.7		34.0			22.0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	6%	0%	0%	7%
Adj. Flow (vph)	0	0	1541	1	1	1697
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	1542	0	0	1698
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.5		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.12	1.12	1.21	1.21	1.21	1.21
Turning Speed (k/h)	25	15		15	25	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 107.1%		ICU Level of Service G	
Analysis Period (min) 15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	1541	1	1	1697
Future Volume (Veh/h)	0	0	1541	1	1	1697
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	1541	1	1	1697
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	3241	1542			1542	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	3241	1542			1542	
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)	11	143			436	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	0	1542	1698
Volume Left	0	0	1
Volume Right	0	1	0
cSH	1700	1700	436
Volume to Capacity	0.00	0.91	0.00
Queue Length 95th (m)	0.0	0.0	0.1
Control Delay (s/veh)	0.0	0.0	13.3
Lane LOS	A		B
Approach Delay (s/veh)	0.0	0.0	13.3
Approach LOS	A		

Intersection Summary			
Average Delay	7.0		
Intersection Capacity Utilization	107.1%	ICU Level of Service	G
Analysis Period (min)	15		

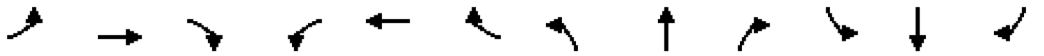
Intersection	
Int Delay, s/veh	0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	1541	1	1	1697
Future Vol, veh/h	0	0	1541	1	1	1697
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	0	0	6	0	0	7
Mvmt Flow	0	0	1541	1	1	1697

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	3241	1542	0	0	1542	0
Stage 1	1542	-	-	-	-	-
Stage 2	1699	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	11	143	-	-	436	-
Stage 1	197	-	-	-	-	-
Stage 2	164	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	10	143	-	-	436	-
Mov Cap-2 Maneuver	10	-	-	-	-	-
Stage 1	197	-	-	-	-	-
Stage 2	158	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	0	0	0.01
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	1	-
HCM Lane V/C Ratio	-	-	-	0.002	-
HCM Ctrl Dly (s/v)	-	-	0	13.3	0
HCM Lane LOS	-	-	A	B	A
HCM 95th %tile Q(veh)	-	-	-	0	-

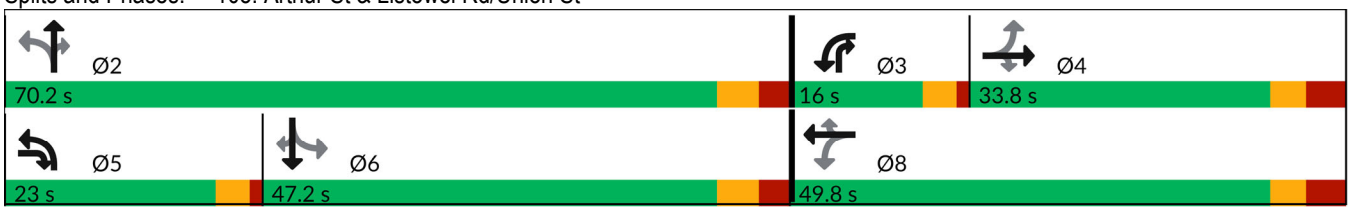


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	97	122	364	700	285	15	434	910	196	0	634	105
Future Volume (vph)	97	122	364	700	285	15	434	910	196	0	634	105
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1900	1750
Storage Length (m)	60.0		60.0	25.0		25.0	100.0		100.0	50.0		50.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	60.0			60.0			80.0			75.0		
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			0.850			0.850
Flt Protected	0.950			0.950			0.950					
Satd. Flow (prot)	1573	1342	1313	1619	1756	1279	1573	1842	1290	1755	1807	1414
Flt Permitted	0.585			0.464			0.092					
Satd. Flow (perm)	969	1342	1313	791	1756	1279	152	1842	1290	1755	1807	1414
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			86			67			196			107
Link Speed (k/h)		50			50			60			50	
Link Distance (m)		1165.2			256.4			359.9			889.8	
Travel Time (s)		83.9			18.5			21.6			64.1	
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 (%)	6%	40%	12%	3%	7%	15%	6%	2%	14%	0%	4%	4%
Adj. Flow (vph)	97	122	364	700	285	15	434	910	196	0	634	105
Shared Lane Traffic (%)												
Lane Group Flow (vph)	97	122	364	700	285	15	434	910	196	0	634	105
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.11	1.01	1.13	1.11	1.01	1.13	1.11	1.01	1.13	1.11	1.01	1.13
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	pm+ov	pm+pt	NA	Perm	pm+pt	NA	pm+ov	Perm	NA	Perm
Protected Phases		4	5	3	8		5	2	3		6	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	4	4	5	3	8	8	5	2	3	6	6	6
Switch Phase												
Minimum Initial (s)	10.0	10.0	7.0	7.0	10.0	10.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	33.8	33.8	11.5	11.5	33.8	33.8	11.5	46.4	11.5	46.4	46.4	46.4
Total Split (s)	33.8	33.8	23.0	16.0	49.8	49.8	23.0	70.2	16.0	47.2	47.2	47.2
Total Split (%)	28.2%	28.2%	19.2%	13.3%	41.5%	41.5%	19.2%	58.5%	13.3%	39.3%	39.3%	39.3%
Maximum Green (s)	27.0	27.0	19.0	12.0	43.0	43.0	19.0	63.8	12.0	40.8	40.8	40.8
Yellow Time (s)	3.3	3.3	3.0	3.0	3.3	3.3	3.0	3.7	3.0	3.7	3.7	3.7
All-Red Time (s)	3.5	3.5	1.0	1.0	3.5	3.5	1.0	2.7	1.0	2.7	2.7	2.7
Lost Time Adjust (s)	-2.8	-2.8	-2.8	0.0	-2.8	-2.8	0.0	-2.4	-2.4	-2.4	-2.4	-2.4
Total Lost Time (s)	4.0	4.0	1.2	4.0	4.0	4.0	4.0	4.0	1.6	4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lead	Lead			Lead		Lead	Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes		Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	5.0	3.0	3.0	3.0	5.0	0.2	3.0	0.2	0.2	0.2
Recall Mode	None	None	None	None	None	None	None	Min	None	Min	Min	Min
Walk Time (s)	7.0	7.0			7.0	7.0		20.0		20.0	20.0	20.0
Flash Don't Walk (s)	20.0	20.0			20.0	20.0		20.0		20.0	20.0	20.0
Pedestrian Calls (#/hr)	0	0			0	0		0		0	0	0
Act Effct Green (s)	19.3	19.3	45.2	35.4	35.4	35.4	65.1	65.1	83.6		42.0	42.0
Actuated g/C Ratio	0.18	0.18	0.42	0.33	0.33	0.33	0.60	0.60	0.77		0.39	0.39
v/c Ratio	0.56	0.51	0.61	2.01	0.50	0.03	1.27	0.82	0.19		0.91	0.17
Control Delay (s/veh)	54.1	48.3	23.4	485.4	32.8	0.1	173.2	26.2	1.1		50.6	5.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
Total Delay (s/veh)	54.1	48.3	23.4	485.4	32.8	0.1	173.2	26.2	1.1		50.6	5.2
LOS	D	D	C	F	C	A	F	C	A		D	A
Approach Delay (s/veh)		33.7			349.1			64.4			44.2	
Approach LOS		C			F			E			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 108.5			
Natural Cycle: 145			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 2.01			
Intersection Signal Delay (s/veh): 129.6		Intersection LOS: F	
Intersection Capacity Utilization 122.3%		ICU Level of Service H	
Analysis Period (min) 15			

Splits and Phases: 105: Arthur St & Listowel Rd/Union St



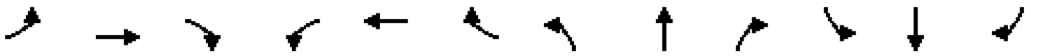


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	97	122	364	700	285	15	434	910	196	634	105
v/c Ratio	0.56	0.51	0.61	2.01	0.50	0.03	1.27	0.82	0.19	0.91	0.17
Control Delay (s/veh)	54.1	48.3	23.4	485.4	32.8	0.1	173.2	26.2	1.1	50.6	5.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	54.1	48.3	23.4	485.4	32.8	0.1	173.2	26.2	1.1	50.6	5.2
Queue Length 50th (m)	20.2	25.1	48.3	~246.7	51.6	0.0	~108.3	147.5	0.0	130.1	0.0
Queue Length 95th (m)	37.8	44.0	79.7	#333.5	77.0	0.0	#191.5	#279.4	6.3	#226.9	11.5
Internal Link Dist (m)		1141.2			232.4			335.9		865.8	
Turn Bay Length (m)	60.0		60.0	25.0		25.0	100.0		100.0		50.0
Base Capacity (vph)	267	370	597	349	744	580	341	1128	1038	722	629
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	0.36	0.33	0.61	2.01	0.38	0.03	1.27	0.81	0.19	0.88	0.17

Intersection Summary

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

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



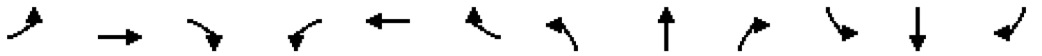
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	97	122	364	700	285	15	434	910	196	0	634	105
Future Volume (vph)	97	122	364	700	285	15	434	910	196	0	634	105
Ideal Flow (vphpl)	1775	1900	1750	1775	1900	1750	1775	1900	1750	1775	1900	1750
Total Lost time (s)	4.0	4.0	1.2	4.0	4.0	4.0	4.0	4.0	1.6		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	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00		1.00	1.00
Satd. Flow (prot)	1573	1342	1313	1619	1756	1279	1573	1842	1290		1807	1414
Flt Permitted	0.59	1.00	1.00	0.46	1.00	1.00	0.09	1.00	1.00		1.00	1.00
Satd. Flow (perm)	969	1342	1313	791	1756	1279	152	1842	1290		1807	1414
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)	97	122	364	700	285	15	434	910	196	0	634	105
RTOR Reduction (vph)	0	0	53	0	0	10	0	0	52	0	0	64
Lane Group Flow (vph)	97	122	311	700	285	5	434	910	144	0	634	41
Heavy Vehicles (%)	6%	40%	12%	3%	7%	15%	6%	2%	14%	0%	4%	4%
Turn Type	Perm	NA	pm+ov	pm+pt	NA	Perm	pm+pt	NA	pm+ov	Perm	NA	Perm
Protected Phases		4	5	3	8		5	2	3		6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	16.5	16.5	35.6	32.6	32.6	32.6	62.7	62.7	74.8		39.6	39.6
Effective Green, g (s)	19.3	19.3	41.2	32.6	35.4	35.4	62.7	65.1	79.6		42.0	42.0
Actuated g/C Ratio	0.18	0.18	0.38	0.30	0.33	0.33	0.58	0.60	0.73		0.39	0.39
Clearance Time (s)	6.8	6.8	4.0	4.0	6.8	6.8	4.0	6.4	4.0		6.4	6.4
Vehicle Extension (s)	3.0	3.0	5.0	3.0	3.0	3.0	5.0	0.2	3.0		0.2	0.2
Lane Grp Cap (vph)	172	238	498	330	572	417	337	1105	946		699	547
v/s Ratio Prot		0.09	0.13	c0.24	0.16		c0.23	0.49	0.02		0.35	
v/s Ratio Perm	0.10		0.11	c0.40		0.00	c0.52		0.09			0.03
v/c Ratio	0.56	0.51	0.62	2.12	0.50	0.01	1.29	0.82	0.15		0.91	0.07
Uniform Delay, d1	40.8	40.3	27.4	36.6	29.4	24.7	34.0	17.2	4.3		31.4	21.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	4.2	1.9	3.4	514.7	0.7	0.0	150.1	4.8	0.1		15.1	0.0
Delay (s)	44.9	42.2	30.8	551.2	30.1	24.7	184.1	22.0	4.4		46.5	21.0
Level of Service	D	D	C	F	C	C	F	C	A		D	C
Approach Delay (s/veh)		35.5			394.8			65.4			42.9	
Approach LOS		D			F			E			D	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	141.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.58		
Actuated Cycle Length (s)	108.5	Sum of lost time (s)	16.0
Intersection Capacity Utilization	122.3%	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)	1	0	1	1	0	2	1	367	6	30	245	4
Future Volume (vph)	1	0	1	1	0	2	1	367	6	30	245	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		0.932			0.910			0.998			0.998	
Flt Protected		0.976			0.984						0.995	
Satd. Flow (prot)	0	1394	0	0	1363	0	0	1515	0	0	1508	0
Flt Permitted		0.976			0.984						0.995	
Satd. Flow (perm)	0	1394	0	0	1363	0	0	1515	0	0	1508	0
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		1098.4			1523.9			918.5			889.7	
Travel Time (s)		65.9			91.4			55.1			53.4	
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%	2%	0%	0%	0%	1%	0%	0%	0%	67%
Adj. Flow (vph)	1	0	1	1	0	2	1	367	6	30	245	4
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	2	0	0	3	0	0	374	0	0	279	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 54.9%		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)	1	0	1	1	0	2	1	367	6	30	245	4
Future Volume (Veh/h)	1	0	1	1	0	2	1	367	6	30	245	4
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)	1	0	1	1	0	2	1	367	6	30	245	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	681	682	247	680	681	370	249			373		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	681	682	247	680	681	370	249			373		
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			97		
cM capacity (veh/h)	359	365	797	357	365	680	1328			1197		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	2	3	374	279
Volume Left	1	1	1	30
Volume Right	1	2	6	4
cSH	495	523	1328	1197
Volume to Capacity	0.00	0.01	0.00	0.03
Queue Length 95th (m)	0.1	0.1	0.0	0.6
Control Delay (s/veh)	12.3	11.9	0.0	1.1
Lane LOS	B	B	A	A
Approach Delay (s/veh)	12.3	11.9	0.0	1.1
Approach LOS	B	B		

Intersection Summary				
Average Delay	0.6			
Intersection Capacity Utilization	54.9%	ICU Level of Service	A	
Analysis Period (min)	15			

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	1	0	1	1	0	2	1	367	6	30	245	4
Future Vol, veh/h	1	0	1	1	0	2	1	367	6	30	245	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	0	0	0	2	0	0	0	1	0	0	0	67
Mvmt Flow	1	0	1	1	0	2	1	367	6	30	245	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	676	682	247	677	681	370	249	0	0	373	0	0
Stage 1	307	307	-	372	372	-	-	-	-	-	-	-
Stage 2	369	375	-	305	309	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.12	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.12	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.12	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.518	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	370	375	797	367	375	680	1328	-	-	1197	-	-
Stage 1	707	665	-	648	622	-	-	-	-	-	-	-
Stage 2	655	621	-	705	663	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	358	363	797	355	364	680	1328	-	-	1197	-	-
Mov Cap-2 Maneuver	358	363	-	355	364	-	-	-	-	-	-	-
Stage 1	687	645	-	648	622	-	-	-	-	-	-	-
Stage 2	652	620	-	683	644	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	12.32	11.95	0.02	0.87
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	5	-	-	494	521	193	-	-
HCM Lane V/C Ratio	0.001	-	-	0.004	0.006	0.025	-	-
HCM Ctrl Dly (s/v)	7.7	0	-	12.3	11.9	8.1	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0.1	-	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	69	348	69	7	841	7	249	0	17	17	0	249
Future Volume (vph)	69	348	69	7	841	7	249	0	17	17	0	249
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		0.981			0.999			0.991			0.874	
Flt Protected		0.993						0.955			0.997	
Satd. Flow (prot)	0	1462	0	0	1501	0	0	1408	0	0	1309	0
Flt Permitted		0.993						0.955			0.997	
Satd. Flow (perm)	0	1462	0	0	1501	0	0	1408	0	0	1309	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		145.4			290.9			183.2			197.1	
Travel Time (s)		10.5			20.9			13.2			14.2	
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%	2%	3%	3%	2%	2%	3%	2%	3%	2%	2%	2%
Adj. Flow (vph)	69	348	69	7	841	7	249	0	17	17	0	249
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	486	0	0	855	0	0	266	0	0	266	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 136.1%		ICU Level of Service H	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	69	348	69	7	841	7	249	0	17	17	0	249
Future Volume (Veh/h)	69	348	69	7	841	7	249	0	17	17	0	249
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)	69	348	69	7	841	7	249	0	17	17	0	249
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	848			417			1628	1383	383	1396	1414	845
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	848			417			1628	1383	383	1396	1414	845
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 %	91			99			0	100	97	84	100	31
cM capacity (veh/h)	790			1137			24	130	663	107	125	363

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	486	855	266	266
Volume Left	69	7	249	17
Volume Right	69	7	17	249
cSH	790	1137	25	315
Volume to Capacity	0.09	0.01	10.53	0.84
Queue Length 95th (m)	2.3	0.1	Err	59.1
Control Delay (s/veh)	2.4	0.2	Err	56.0
Lane LOS	A	A	F	F
Approach Delay (s/veh)	2.4	0.2	Err	56.0
Approach LOS			F	F

Intersection Summary				
Average Delay	1428.7			
Intersection Capacity Utilization	136.1%	ICU Level of Service	H	
Analysis Period (min)	15			

Intersection	
Int Delay, s/veh	452.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	69	348	69	7	841	7	249	0	17	17	0	249
Future Vol, veh/h	69	348	69	7	841	7	249	0	17	17	0	249
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	3	3	2	2	3	2	3	2	2	2
Mvmt Flow	69	348	69	7	841	7	249	0	17	17	0	249

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	848	0	0	417	0	0	1376	1383	383	1345	1414	845
Stage 1	-	-	-	-	-	-	521	521	-	859	859	-
Stage 2	-	-	-	-	-	-	855	862	-	486	555	-
Critical Hdwy	4.12	-	-	4.13	-	-	7.13	6.52	6.23	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.227	-	-	3.527	4.018	3.327	3.518	4.018	3.318
Pot Cap-1 Maneuver	790	-	-	1137	-	-	~ 122	144	663	129	138	363
Stage 1	-	-	-	-	-	-	537	532	-	351	373	-
Stage 2	-	-	-	-	-	-	351	372	-	563	513	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	790	-	-	1137	-	-	~ 33	126	663	110	120	363
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 33	126	-	110	120	-
Stage 1	-	-	-	-	-	-	475	471	-	347	369	-
Stage 2	-	-	-	-	-	-	~ 109	368	-	485	454	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	1.42	0.07	$ 3126.48	55.35
HCM LOS			F	F

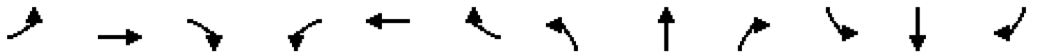
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	36	247	-	-	15	-	-	316
HCM Lane V/C Ratio	7.463	0.087	-	-	0.006	-	-	0.841
HCM Ctrl Dly (s/v)	$ 3126.5	10	0	-	8.2	0	-	55.4
HCM Lane LOS	F	A	A	-	A	A	-	F
HCM 95th %tile Q(veh)	31.9	0.3	-	-	0	-	-	7.3

Notes	
~: Volume exceeds capacity	$: Delay exceeds 300s
+: Computation Not Defined	*: All major volume in platoon



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	69	244	69	7	357	7	249	0	17	17	0	249
Future Volume (vph)	69	244	69	7	357	7	249	0	17	17	0	249
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		0.976			0.997			0.991			0.874	
Flt Protected		0.991			0.999			0.955			0.997	
Satd. Flow (prot)	0	1451	0	0	1496	0	0	1408	0	0	1309	0
Flt Permitted		0.991			0.999			0.955			0.997	
Satd. Flow (perm)	0	1451	0	0	1496	0	0	1408	0	0	1309	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		290.9			833.6			206.9			213.7	
Travel Time (s)		20.9			60.0			14.9			15.4	
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 (%)	2%	2%	3%	3%	2%	2%	3%	2%	3%	2%	2%	2%
Adj. Flow (vph)	69	244	69	7	357	7	249	0	17	17	0	249
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	382	0	0	371	0	0	266	0	0	266	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 101.1%		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)	69	244	69	7	357	7	249	0	17	17	0	249
Future Volume (Veh/h)	69	244	69	7	357	7	249	0	17	17	0	249
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)	69	244	69	7	357	7	249	0	17	17	0	249
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	364			313			1040	795	279	808	826	361
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	364			313			1040	795	279	808	826	361
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 %	94			99			0	100	98	94	100	64
cM capacity (veh/h)	1195			1242			126	300	758	279	288	684

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	382	371	266	266
Volume Left	69	7	249	17
Volume Right	69	7	17	249
cSH	1195	1242	133	626
Volume to Capacity	0.06	0.01	2.01	0.43
Queue Length 95th (m)	1.5	0.1	170.7	16.9
Control Delay (s/veh)	2.0	0.2	533.3	14.9
Lane LOS	A	A	F	B
Approach Delay (s/veh)	2.0	0.2	533.3	14.9
Approach LOS			F	B

Intersection Summary				
Average Delay	114.1			
Intersection Capacity Utilization	101.1%	ICU Level of Service	G	
Analysis Period (min)	15			

Intersection	
Int Delay, s/veh	56.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	69	244	69	7	357	7	249	0	17	17	0	249
Future Vol, veh/h	69	244	69	7	357	7	249	0	17	17	0	249
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	3	3	2	2	3	2	3	2	2	2
Mvmt Flow	69	244	69	7	357	7	249	0	17	17	0	249

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	364	0	0	313	0	0	788	795	279	757	826	361
Stage 1	-	-	-	-	-	-	417	417	-	375	375	-
Stage 2	-	-	-	-	-	-	371	378	-	382	451	-
Critical Hdwy	4.12	-	-	4.13	-	-	7.13	6.52	6.23	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.227	-	-	3.527	4.018	3.327	3.518	4.018	3.318
Pot Cap-1 Maneuver	1195	-	-	1242	-	-	308	320	758	324	307	684
Stage 1	-	-	-	-	-	-	612	592	-	646	617	-
Stage 2	-	-	-	-	-	-	647	615	-	640	571	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1195	-	-	1242	-	-	~ 181	296	758	293	284	684
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 181	296	-	293	284	-
Stage 1	-	-	-	-	-	-	568	550	-	642	613	-
Stage 2	-	-	-	-	-	-	409	611	-	582	531	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	1.48	0.15	255.72	14.82
HCM LOS			F	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	190	311	-	-	34	-	-	630
HCM Lane V/C Ratio	1.401	0.058	-	-	0.006	-	-	0.422
HCM Ctrl Dly (s/v)	255.7	8.2	0	-	7.9	0	-	14.8
HCM Lane LOS	F	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	15.8	0.2	-	-	0	-	-	2.1

Notes	
~: Volume exceeds capacity	$: Delay exceeds 300s
+: Computation Not Defined	*: All major volume in platoon

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

Horizon Year: Total - 2032
Municipality: Elmira, Woolwich, Waterloo

Project number: 240259

Major Street: South Field Drive
Minor Street: Street A (West)/Street X

North/South?: N

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

PM Forecast Only? N

Justification Result		
200% Satisfied	No	Case 1: Signal is undoubtedly warranted
100% Satisfied	No	Case 2: Signal might be warranted
< 100 % Satisfied		Case 3: Signal warrant is unlikely

	Major Street						Minor Street						
	South Field Drive						Street A (West)/Street X						
	Eastbound			Westbound			Northbound			Southbound			Peds
Time Period	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	Crossing
AM Peak Hour	265	685	265	11	225	11	61	0	3	3	0	61	0
PM Peak Hour	69	348	69	7	841	7	249	0	17	17	0	249	0
verage Hourly Volun	84	258	84	5	267	5	78	0	5	5	0	78	0

Warrant	AHV
1A - All	866
1B - Minor	165
2A - Major	701
2B - Cross	83

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	866
					% Fulfilled	120.2%

	Approach Lanes	1		2 or more		Average Hourly Volume
1B	Flow Conditions	Free	Restricted	Free	Restricted	
			X			
	Minor Street Approaches	180	255	180	255	165
					% Fulfilled	64.7%

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	701
					% Fulfilled	97.3%

	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	83
					% Fulfilled	110.0%

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

Horizon Year: Total - 2032
Municipality: Elmira, Woolwich, Waterloo

Project number: 240259

Major Street: South Field Drive
Minor Street: Street A (East)/Street Y

North/South?: N

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

PM Forecast Only? N

Justification Result		
200% Satisfied	No	Case 1: Signal is undoubtedly warranted
100% Satisfied	No	Case 2: Signal might be warranted
< 100 % Satisfied		Case 3: Signal warrant is unlikely

	Major Street						Minor Street						
	South Field Drive						Street A (East)/Street Y						
	Eastbound			Westbound			Northbound			Southbound			Peds
Time Period	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right	Crossing
AM Peak Hour	265	161	265	11	123	11	62	0	3	3	0	62	0
PM Peak Hour	69	244	69	7	357	7	249	0	17	17	0	249	0
verage Hourly Volun	84	101	84	5	120	5	78	0	5	5	0	78	0

Warrant	AHV
1A - All	563
1B - Minor	166
2A - Major	397
2B - Cross	83

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	563
					% Fulfilled	78.2%

	Approach Lanes	1		2 or more		Average Hourly Volume
1B	Flow Conditions	Free	Restricted	Free	Restricted	
			X			
	Minor Street Approaches	180	255	180	255	166
					% Fulfilled	64.9%

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	397
					% Fulfilled	55.2%

	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	83
					% Fulfilled	110.3%