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TRANSPORTATION SOLUTIONS LIMITED

Proposed Residential Development, 98 Farley Drive, Guelph, Transportation Impact Brief

Paradigm Transportation Solutions Limited

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10 July 2018
Project: 170283

Reid's Heritage Homes Ltd.
c/o Sarah Code, MCIP, RPP
GSP Group Inc.
72 Victoria Street South, Suite 201
Kitchener ON N2G 4Y9

Dear Ms. Code:

RE: TRANSPORTATION IMPACT BRIEF
PROPOSED RESIDENTIAL DEVELOPMENT, 98 FARLEY DRIVE, GUELPH, ON

Choice Properties REIT and Reid's Heritage Homes Ltd. retained **Paradigm Transportation Solutions Limited** by to prepare this Transportation Impact Brief for a proposed residential development located at 98 Farley Drive in Guelph, Ontario. This letter summarizes existing transportation conditions near the subject site, provides estimates of the trips generated by the proposed redevelopment, and identifies the potential impact of the site-generated traffic on the adjacent road network. **Figure 1** illustrates the subject site location.

Existing Transportation Conditions

Roadways

The roadways that form the study area are generally described as follows:

- **Farley Drive** is a two-lane, collector roadway with an urban cross-section. It has one (1) travel lane in each direction. Near the subject site, the speed limit is not posted and assumed to be 50 kilometres per hour. Sidewalks are provided on both sides of the roadway. South of Eugene Drive, parking is not permitted on either side of Farley Drive. Parking is permitted between Eugene Drive and Clairfields Drive East.
- **Eugene Drive** is a two-lane, local roadway with an urban cross-section. It has one (1) travel lane in each direction. The speed limit is not posted and assumed to be 50 kilometres per hour. Parking is permitted on both sides of the roadway and sidewalks are on the east side of the roadway.
- **Goodwin Drive** is a two-lane, collector roadway with an urban cross-section. It has one travel lane in each direction. The posted speed limit is 50 kilometres per hour. Parking is not permitted on the north side of the roadway. On the south side of Goodwin Drive, parking is not permitted west of Eugene Drive. Sidewalks are provided on both sides of the roadway.

- **Clair Road** is a four-lane, arterial roadway with an urban cross-section. It has two travel lanes in each direction. The posted speed limit is 60 kilometres per hour. Parking is not permitted on either side of the roadway. There are sidewalks provided on both sides of the roadway.

All study area roadways operate under the jurisdiction of the City of Guelph. **Figure 2** illustrates the existing lane configurations and traffic controls at the study area intersections.

Guelph Transit Service

Figure 3 illustrates the existing transit service in the study area. Guelph Transit currently operates four routes within walking distance (400 metres) of the subject site:

- **Route 5 Goodwin:** This route operates in a loop starting and ending at the Guelph University Bus Loop and services the southeastern part of the city. Weekday service operates on 20-minute headways from about 6:15 AM to 12:15 AM. Saturday service operates on 30-minute headways from about 6:15 AM to 12:15 AM. Sunday service operates on 30-minute headways from about 9:45 AM to 6:45 PM. Holiday service operates on 30-minute headways from about 10:15 AM to 6:15 PM;
- **Route 16 Southgate:** This route operates in a loop starting and ending at Clair Road and Gordon Street and services the Hanlon Industrial Park. Weekday service operates on 30-minute headways from about 6:00 AM to 12:30 AM. Saturday service operates on 30-minute headways from about 6:15 AM to 12:15 AM. Sunday service operates on 30-minute headways from about 9:45 AM to 6:45 PM. Holiday service operates on 60-minute headways from about 10:15 AM to 6:15 PM;
- **Route 56U Colonial:** This route operates in a loop starting and ending at the Guelph University Bus Loop and services the southeastern part of the city. This route only operates on weekdays between 7:30 AM and 12:30 AM with 20-minute headways.
- **Route 99 Mainline:** This route provides service through the centre of the City, from Woodlawn Road in the north and Clair Road in the south. Weekday service operates on 10-minute headways from about 5:45 AM to 12:45 AM. Saturday service operates on 15-minute headways from about 5:45 AM to 12:30 AM. Sunday service operates on 15-minute headways from about 9:15 AM to 6:45 PM. Holiday service operates on 30-minute headways from about 9:15 AM to 6:45 PM;

The closest transit stops to the site, are 45 metres north of Eugene Drive on Farley Drive. In addition, there are stops located on Gordon Street at Clairfields Drive.

GO Transit Service

In addition to Guelph Transit service, GO Transit also has two stops (one northbound and one southbound stop) located within walking distance of the subject site. These stops are located on Gordon Street at Clairfields Drive. The stops service the following bus routes:

- **Route 29 University of Guelph:** This route provides service from Guelph Central GO Station to Square One in Mississauga. Weekday service operates on 60-minute headways from approximately 5:30 AM to 1:15 AM. Saturday and Sunday service operates on 60-minute headways from approximately 7:00 AM to 1:00 AM.

- **Route 48 Guelph Hwy 407:** This route provides service from the University of Guelph to York University. Weekday service operates with inconsistent headways from approximately 5:00 AM to 11:00 PM. Saturday service is not provided by this route. Sunday service operates three times per day from 1:00 PM to 10:30 PM.

Traffic Volumes

Paradigm conducted AM and PM peak period traffic counts on November 14, 2017 at the study intersections. **Figure 4** summarizes the existing traffic volumes at the study intersections during the AM and PM peak hours. **Appendix A** contains the detailed count data.

Existing Traffic Operations

Intersection Level of Service (LOS) is a recognized method of quantifying the efficiency of traffic flow at intersections. It is based on the delay experienced by individual vehicles executing the various movements. The delay is related to the number of vehicles that desire to make a certain movement compared to the estimated capacity for that movement. The capacity is based on several criteria related to the opposing traffic flow. The highest possible rating is LOS A, under which the average total delay is equal to or less than 10 seconds per vehicle. When the average delay exceeds 50 seconds for unsignalized intersections, the movement is classified as LOS F and remedial measures are typically implemented, if they are feasible.

Under the City of Guelph Traffic Impact Study Guidelines, the following defines critical movements or intersections:

- For signalized intersections:
  - v/c ratios for overall intersection operation, though movements or shared/turning movements increasing to 0.85 or above;
  - v/c ratios for exclusive movements increasing to 0.90 or above; or
  - Queues for an individual movement projected to exceed available turning lane storage.
- For unsignalized intersections:
  - LOS based on average delay per vehicle, on individual movements exceeding LOS “E”; or
  - The estimated 95th percentile queue length for an individual movement exceeding the available queue storage.

The operations of the study intersections were evaluated using Synchro 9 with HCM 2000 procedures. The intersection analysis considered three separate measures of performance:

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

City-provided signal timings and phasing data and the observed traffic volumes formed the basis of the operations analysis. **Table 1** summarizes the existing intersection operations for the AM and PM peak hours. All intersections currently operate at acceptable levels of service during the AM and PM peak hours.

Appendix B contains the detailed Synchro reports.

TABLE 1: EXISTING TRAFFIC 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	1 - Eugene Drive & Farely Drive	TWSC	LOS					A		A	**A**		A	>	**A**	<	A		**A**	**0**
			Delay					10		10	**10**		0	>	**0**	<	0		**0**	
			V/C					0.01		0.01			0.10	>		<	0.00			
			Q					0		0			0	>		<	0			
			Ex					-		-			-	>		<	-			
			Avail.					-		-			-	>		<	-			
	2 - Goodwin Drive & Farley Drive	AWSC	LOS	A	A	>	**A**	<	B	>	**B**	A	A	>	**A**	A	A	>	**A**	**A**
			Delay	8	8	>	**8**	<	12	>	**12**	9	8	>	**9**	9	9	>	**9**	**10**
			V/C	0.02	0.10	>		<	0.36	>		0.15	0.10	>		0.12	0.21	>		
			Q	0	0	>		<	2	>		1	0	>		0	1	>		
			Ex	15	-	>		<	-	>		15	-	>		20	-	>		
			Avail.	15	-	>		<	-	>		15	-	>		20	-	>		
	3 - Clair Road & Farley Drive	TCS	LOS	A	A	>	**A**	A	A	>	**A**	D	C	>	**C**	<	C	>	**C**	**A**
			Delay	7	5	>	**5**	3	4	>	**4**	47	22	>	**34**	<	21	>	**21**	**8**
			V/C	0.19	0.15	>		0.02	0.29	>		0.32	0.12	>		<	0.66	>		
			Q	16	20	>		2	32	>		11	8	>		<	28	>		
			Ex	125	-	>		50	-	>		-	25	>		<	-	>		
			Avail.	109	-	>		48	-	>		-	17	>		<	-	>		
PM Peak Hour	1 - Eugene Drive & Farely Drive	TWSC	LOS					B		B	**B**		A	>	**A**	<	A		**A**	**1**
			Delay					11		11	**11**		0	>	**0**	<	0		**0**	
			V/C					0.02		0.02			0.15	>		<	0.01			
			Q					1		1			0	>		<	0			
			Ex					-		-			-	>		<	-			
			Avail.					-		-			-	>		<	-			
	2 - Goodwin Drive & Farley Drive	AWSC	LOS	A	B	>	**B**	<	B	>	**B**	B	B	>	**B**	B	A	>	**A**	**B**
			Delay	10	11	>	**10**	<	12	>	**12**	12	11	>	**12**	10	9	>	**10**	**11**
			V/C	0.11	0.28	>		<	0.30	>		0.36	0.38	>		0.17	0.16	>		
			Q	0	1	>		<	1	>		2	2	>		1	1	>		
			Ex	15	-	>		<	-	>		15	-	>		20	-	>		
			Avail.	15	-	>		<	-	>		13	-	>		19	-	>		
	3 - Clair Road & Farley Drive	TCS	LOS	B	A	>	**B**	A	A	>	**A**	E	C	>	**D**	<	D	>	**D**	**B**
			Delay	15	10	>	**11**	5	5	>	**5**	79	25	>	**53**	<	37	>	**37**	**18**
			V/C	0.46	0.39	>		0.08	0.18	>		0.84	0.31	>		<	0.75	>		
			Q	61	62	>		6	21	>		37	24	>		<	51	>		
			Ex	125	-	>		50	-	>		-	25	>		<	-	>		
			Avail.	64	-	>		44	-	>		-	1	>		<	-	>		

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

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

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

Proposed Development Description

The subject site is located at 98 Farley Drive in Guelph, Ontario. The total site area is 650 square metres (7,000 square feet) and is proposed to include a six (6) storey apartment building with 93 units and 126 surface level parking spaces. The anticipated full build-out year is 2020.

Vehicular access to the site will be provided via one all-moves driveway to Farley Drive opposite Eugene Drive.

Figure 5 illustrates the proposed site plan.

Site Trip Generation

The vehicle trips generated by the proposed development were estimated for the AM and PM peak hours using the ITE Trip Generation Manual[1]. The average trip generation rates for Land Use Code (LUC) 230 Residential Condominium/Townhouse were used since criteria for use of the regression equations were not met. **Table 1** shows the resulting trip generation estimates and indicates that the site is estimated to generate 49 trips in the AM peak hour and 69 trips in the PM peak hour.

TABLE 1: ESTIMATED TRIP GENERATION

ITE Land Use Code	Independent Variable	AM Peak Hour				PM Peak Hour			
		Rate	In	Out	Total	Rate	In	Out	Total
LUC 220 - Apartment	93 Units	FCE[1]	10	39	**49**	FCE[2]	45	24	**69**
Total Trip Generation			**10**	**39**	**49**		**45**	**24**	**69**

[1] T = 0.49(X) + 3.73 [2] T = 0.55(X) + 17.65

Due to the subject site's proximity to transit, walking and cycling facilities, it is anticipated that some trips to/from the development will not be vehicle trips, thus reducing the estimated total AM and PM peak hour trips. Typically, the results of the 2011 Transportation Tomorrow Survey (TTS) are reviewed to account for this mode share. However, in this case, for the subject site traffic zone, the number of responses received was too low and thus not representative of the actual conditions. Because of this, the base trip generation was not adjusted to account for mode share. Instead, the base generation was used as a conservative estimate of the anticipated site-generated traffic.

Site Trip Distribution and Assignment

The site-generated trips were assigned to the road network based on the existing distribution of traffic within the road network, which is summarized in **Table 2**. **Figure 6** displays the resulting assignment.

TABLE 2: TRIP DISTRIBUTION

Direction	Route	AM Peak		PM Peak Hour	
		Inbound	Outbound	Inbound	Outbound
North	Farley Drive	12%	10%	8%	11%
South	Farley Drive	3%	3%	9%	14%
East	Goodwin Drive	13%	6%	7%	11%
West	Goodwin Drive	4%	11%	9%	11%
East	Clair Road	43%	20%	20%	28%
West	Clair Road	25%	50%	47%	25%
Total		**100%**	**100%**	**100%**	**100%**

[1] Trip Generation 10th Edition, Institute of Transportation Engineers, Washington, D.C., 2017

2025 Horizon

2025 Background Traffic Volumes

The 2025 horizon year (five-years from full build-out/occupancy) was used for the analysis of the future background and future total traffic conditions. Pre-study consultation with the City identified one planned development within the vicinity of the subject site that would impact the background traffic forecasts. Consequently, the estimated AM and PM background traffic forecasts consists of two components:

- **General Background Traffic** – As directed by the City of Guelph, a growth rate of 2% per annum compounded for eight (8) years (total growth of 17.2%) was applied to existing traffic volumes to derive background traffic volumes for the 2025 horizon year; and
- **Traffic Generated by Other Approved Development** – City staff requested the estimated traffic generated by an addition to the commercial development directly south of the subject site, at 1750 Gordon Street, be added to the background traffic. This addition is expected to be a 17,084-square foot (1590 square metres) commercial development. **Figure 7** illustrates the forecast traffic for this development.

Figure 8 illustrates the 2025 AM and PM peak hour total background traffic volumes consisting of the general background traffic growth and the anticipated 1750 Gordon Street development traffic.

Appendix C details the trip generation, trip distribution and pass-by trips of the 1750 Gordon Street development traffic.

2025 Background Traffic Operating Conditions

Operational analysis was conducted using Synchro 9 (HCM 2000) to determine the AM and PM peak hour conditions for the study intersections. **Table 3** summarizes the estimated 2025 background traffic operations.

As expected, the increase in traffic has some impact on the study intersections. However, all study intersections are shown to operate at acceptable conditions for the AM and PM peak hours.

Appendix D contains the detailed Synchro 9 reports.

TABLE 3: 2025 BACKGROUND TRAFFIC OPERATIONS

Analysis Period	Intersection	Control Type	MOE	Direction / Movement / Approach																Overall
				Eastbound				Westbound				Northbound				Southbound				
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	1 - Eugene Drive & Farely Drive	TWSC	LOS					B		B	**B**		A	>	**A**	<	A		**A**	**0**
			Delay					10		10	**10**		0	>	**0**	<	0		**0**	
			V/C					0.02		0.02			0.11	>		<	0.00			
			Q					0		0			0	>		<	0			
			Ex					-		-			-	>		<	-			
			Avail.					-		-			-	>		<	-			
	2 - Goodwin Drive & Farley Drive	AWSC	LOS	A	A	>	**A**	<	B	>	**B**	B	A	>	**A**	A	A	>	**A**	**B**
			Delay	9	9	>	**9**	<	13	>	**13**	10	8	>	**10**	9	10	>	**10**	**11**
			V/C	0.03	0.14	>		<	0.44	>		0.20	0.12	>		0.14	0.27	>		
			Q	0	1	>		<	2	>		1	0	>		1	1	>		
			Ex	15	-	>		<	-	>		15	-	>		20	-	>		
			Avail.	15	-	>		<	-	>		14	-	>		20	-	>		
	3 - Clair Road & Farley Drive	TCS	LOS	A	A	>	**A**	A	A	>	**A**	D	B	>	**C**	<	C	>	**C**	**B**
			Delay	10	6	>	**7**	4	6	>	**6**	47	18	>	**33**	<	29	>	**29**	**10**
			V/C	0.27	0.19	>		0.02	0.36	>		0.37	0.10	>		<	0.74	>		
			Q	25	28	>		3	48	>		12	8	>		<	42	>		
			Ex	125	-	>		50	-	>		-	25	>		<	-	>		
			Avail.	101	-	>		47	-	>		-	17	>		<	-	>		
PM Peak Hour	1 - Eugene Drive & Farely Drive	TWSC	LOS					B		B	**B**		A	>	**A**	<	A		**A**	**1**
			Delay					11		11	**11**		0	>	**0**	<	0		**0**	
			V/C					0.03		0.03			0.18	>		<	0.01			
			Q					1		1			0	>		<	0			
			Ex					-		-			-	>		<	-			
			Avail.					-		-			-	>		<	-			
	2 - Goodwin Drive & Farley Drive	AWSC	LOS	B	B	>	**B**	<	B	>	**B**	C	B	>	**B**	B	B	>	**B**	**B**
			Delay	11	13	>	**13**	<	14	>	**14**	16	14	>	**15**	12	10	>	**11**	**15**
			V/C	0.15	0.40	>		<	0.38	>		0.49	0.48	>		0.21	0.20	>		
			Q	1	2	>		<	2	>		3	3	>		1	1	>		
			Ex	15	-	>		<	-	>		15	-	>		20	-	>		
			Avail.	15	-	>		<	-	>		12	-	>		19	-	>		
	3 - Clair Road & Farley Drive	TCS	LOS	D	C	>	**C**	B	B	>	**B**	C	B	>	**B**	<	D	>	**D**	**C**
			Delay	43	20	>	**26**	12	12	>	**12**	22	16	>	**19**	<	43	>	**43**	**24**
			V/C	0.81	0.60	>		0.16	0.27	>		0.39	0.20	>		<	0.82	>		
			Q	120	100	>		10	37	>		26	23	>		<	69	>		
			Ex	125	-	>		50	-	>		-	25	>		<	-	>		
			Avail.	5	-	>		40	-	>		-	2	>		<	-	>		

2025 Total Traffic Volumes

The estimated site-generated traffic was added to the 2025 background traffic to establish the 2025 total traffic. In addition, an eastbound approach was added to the intersection of Eugene Drive and Farley Drive. This is the location of the site driveway. **Figure 9** illustrates the estimated total 2025 traffic volumes.

2025 Total Traffic Operating Conditions

Operational analysis was conducted using Synchro 9 (HCM 2000) to determine the AM and PM peak hour conditions for the study intersections. Where appropriate, signal timing splits and cycle lengths were adjusted to account for the change in traffic volumes. **Table 4** summarizes the estimated 2025 total traffic operations.

TABLE 4: 2025 TOTAL TRAFFIC OPERATIONS

Analysis Period	Intersection	Control Type	MOE	Direction / Movement / Approach																Overall
				Eastbound				Westbound				Northbound				Southbound				
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	1 - Eugene Drive & Farely Drive	TWSC	LOS	<	B	>	**B**	<	B	>	**B**	<	A	>	**A**	<	A	>	**A**	
			Delay	<	10	>	**10**	<	11	>	**11**	<	0	>	**0**	<	0	>	**0**	**1**
			V/C	<	0.06	>		<	0.02	>		<	0.01	>		<	0.00	>		
			Q	<	1	>		<	1	>		<	0	>		<	0	>		
			Ex	<	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		<	-	>		
	2 - Goodwin Drive & Farley Drive	AWSC	LOS	A	A	>	**A**	<	B	>	**B**	B	A	>	**A**	A	B	>	**B**	**B**
			Delay	9	9	>	**9**	<	14	>	**14**	10	9	>	**10**	10	11	>	**10**	**11**
			V/C	0.03	0.14	>		<	0.45	>		0.21	0.14	>		0.15	0.33	>		
			Q	0	1	>		<	2	>		1	1	>		1	1	>		
			Ex	15	-	>		<	-	>		15	-	>		20	-	>		
			Avail.	15	-	>		<	-	>		14	-	>		20	-	>		
	3 - Clair Road & Farley Drive	TCS	LOS	B	A	>	**A**	A	A	>	**A**	D	B	>	**C**	<	C	>	**C**	**B**
			Delay	11	7	>	**8**	5	7	>	**7**	42	17	>	**30**	<	31	>	**31**	**12**
			V/C	0.29	0.19	>		0.02	0.37	>		0.34	0.09	>		<	0.77	>		
			Q	27	30	>		3	53	>		12	7	>		<	49	>		
			Ex	125	-	>		50	-	>		-	25	>		<	-	>		
			Avail.	98	-	>		47	-	>		-	18	>		<	-	>		
PM Peak Hour	1 - Eugene Drive & Farely Drive	TWSC	LOS	<	B	>	**B**	<	B	>	**B**	<	A	>	**A**	<	A	>	**A**	
			Delay	<	10	>	**10**	<	13	>	**13**	<	1	>	**1**	<	0	>	**0**	**2**
			V/C	<	0.04	>		<	0.03	>		<	0.03	>		<	0.01	>		
			Q	<	1	>		<	1	>		<	1	>		<	0	>		
			Ex	<	-	>		<	-	>		<	-	>		<	-	>		
			Avail.	<	-	>		<	-	>		<	-	>		<	-	>		
	2 - Goodwin Drive & Farley Drive	AWSC	LOS	B	B	>	**B**	<	C	>	**C**	C	C	>	**C**	B	B	>	**B**	**C**
			Delay	11	14	>	**13**	<	15	>	**15**	16	16	>	**16**	12	11	>	**11**	**16**
			V/C	0.16	0.41	>		<	0.41	>		0.50	0.56	>		0.22	0.25	>		
			Q	1	2	>		<	2	>		3	4	>		1	1	>		
			Ex	15	-	>		<	-	>		15	-	>		20	-	>		
			Avail.	14	-	>		<	-	>		12	-	>		19	-	>		
	3 - Clair Road & Farley Drive	TCS	LOS	C	C	>	**C**	B	C	>	**B**	C	B	>	**B**	<	D	>	**D**	**C**
			Delay	23	21	>	**22**	12	20	>	**20**	21	16	>	**18**	<	43	>	**43**	**24**
			V/C	0.68	0.61	>		0.16	0.40	>		0.39	0.20	>		<	0.83	>		
			Q	78	102	>		11	48	>		26	22	>		<	73	>		
			Ex	125	-	>		50	-	>		-	25	>		<	-	>		
			Avail.	47	-	>		39	-	>		-	3	>		<	-	>		

As shown, all study intersections are expected to operate at acceptable conditions for the AM and PM peak hours.

Appendix E contains the detailed Synchro 9 reports.

Driveway Review

The intersection of the Site Driveway with Eugene Drive and Farley Drive was evaluated in terms of safety, sight distance, adequacy of storage capacity and adequacy of traffic control devices. The following subsections detail this evaluation.

Sight Distance

As confirmed from a site visit, a vehicle pulling out of the site driveway will have full sight lines to the adjacent upstream intersections of Farley Drive and Clairfields Drive East (to the north) and Farley Drive and Goodwin Drive (to the south). **Figure 10** shows the provided sight distance looking north

and south from the intersection. The Geometric Design Guide from Canadian Roads[2] (TAC), Chapter 9.9 (Sight Triangles), Section 9.9.2.3 (Intersection Control) states that *"The intersection sight distance in both directions should be equal to the distance traveled at the design speed of the major road during a period of time equal to the time gap".* The time gap refers to the time between subsequent vehicles on the major road that a vehicle on the minor road needs to turn onto the major road without causing the major-road vehicle to slow to less than 70% of their initial speed. TAC specifies that an intersection sight distance of 130 metres is required[3] for the proposed site driveway (using a design speed equal to 60 kilometres per hour, or 10 kilometres per hour over the posted speed limit). The previously mentioned upstream intersections are both over 130 metres away from the site driveway. This means that the provided sight distance is adequate.

Left-Turn Lane Warrant

A warrant for an northbound left-turn lane on Farley Drive was conducted using the left-turn lane warrant nomographs contained in the Geometric Design Guide for Ontario Highways.

The design speed was taken to be 60 km/h (10 km/h greater than the speed limit of 50 km/h). **Figure 11** shows the warrant nomograph for the 2025 total traffic horizon for the AM and PM peak hour. Both peak hour nomographs indicate that a northbound left-turn lane on Farley Drive is not warranted.

All-Way-Stop-Control Warrant

Through pre-study consultation with the City of Guelph, an all-way-stop-control (AWSC) warrant was requested to be conducted at the intersection of the Site Driveway/Eugene Drive and Farley Drive. The Ontario Traffic Manual (OTM), Book 5[4] provides minimum volume warrants for arterial and major roads, and minor roads. Since Farley Drive is classified as a collector road, the minor road volume warrants were utilized. OTM Book 5 states the following for use of AWSC on minor roads:

- The total vehicle volume on all intersection approaches should exceed 350 for the highest hour recorded; and
- The volume split should not exceed 65/35 for four-way control (volume is defined as vehicles only).

For the intersection in question, the highest hour volume is expected to exceed the 350-vehicle threshold at 553 vehicles (2025 total traffic, PM peak hour). However, the anticipated split is 90/10 (90% of the volume on Farley Drive) which is well over the split threshold recommended by OTM. Thus, an AWSC is not warranted at the intersection of the Site Driveway/Eugene Drive and Farley Drive. It should also be noted that if Farley Drive were considered a Major Road for the purposes of the warrant, a AWSC would still not be warranted under OTM Book 5.

[2] Transportation Association of Canada, Geometric Design Guide for Canadian Roads, June 2017.
[3] Table 9.9.4: Design Intersection Sight Distance – Case B1, Left Turn From Stop, Transportation Association of Canada, Geometric Design Guide for Canadian Roads, June 2017.
[4] Section 2: STOP Sign, Guidelines for Use, Ontario Traffic Manual, Book 5, Regulatory Signs.

TDM Review

There are several reasons why incorporating a TDM plan into a residential site is important:

- It reduces auto ownership levels, therefore reducing private vehicle trips and congestion;
- It creates safe and attractive environments that encourage travel by walking, cycling and transit over auto; and
- It supports the development of healthy communities.

The following section outlines potential TDM options available to the site. These measures will enhance the site's overall convenience, safety and traffic flow by reducing vehicles trips.

Walking

The accessibility of a development is essential in helping to ensure that those that can walk, do. Proper pedestrian connections from the community to the site should be available to ensure safety and to improve the pedestrian experience. This includes barrier free access to Farley Drive, Gordon Street, the City trail north of the site, and the commercial development south of the site. Additional measures that can be taken include providing adequate lighting throughout the site and overhead weather protection near the buildings' main entrances.

Cycling

The site is surrounded by excellent cycling infrastructure. There are bike lanes on both Gordon Street and Clair Road and a City trail is located directly north of the site. It is strongly recommended that the applicant follow the City's lead to encourage cycling by providing the appropriate infrastructure to facilitate this. The development should include visible, well-lit, short-term bicycle parking for visitors, and secure, indoor parking storage space for tenants. With these provisions, residents will be more likely to choose to travel to/from the development by cycling. Thus, reducing the overall impact of the proposed development on the road network.

Transit

The use of transit places less reliance on the use of personal automobiles for trips that can be completed by convenient and desirable transit options. As previously discussed, there is several transit routes that operate within walking distance of the site. Both local and regional transit connections are available. The closest stops are located directly across from the site on Farley Drive and on Gordon Street, near Clairfields Drive. It is recommended that bus routes and schedules for these stops be provided in the entrance or lobby of the development.

Parking

To further reduce vehicle reliance, the applicant should seek to provide less parking than outlined in the City's parking by-law. These reductions can usually be achieved though actions like improving and/or increasing bike storage/parking, improving transit accessibility (easily available schedules and improved transit-stop facilities) and providing good pedestrian connections. In addition, by selling parking spaces separately from the cost of a unit, residents are not forced to pay for parking they do not need. This is an important factor that supports reducing the parking supply as residents are

notified at the onset of the project that parking will be on a limited basis and will be provided as an additional cost in lieu of the price to purchase a unit. If residents are unwilling to change their travel behaviour, they will not purchase a unit.

Carshare

The applicant should also consider providing a car share service on-site or within walking distance of the site. Car share can reduce vehicle ownership, reducing the number of parking spaces the development needs. Additionally, car share can encourage and support trips by non-auto modes and save members significant money in transportation fees.

Carpooling

Carpooling or ride-share involves two or more people sharing a vehicle for a trip. The cost of the journey (fuel, tolls, parking, etc.) can be split between the driver and passengers, resulting in savings for all concerned. There are several tools available such as Car Pool World, which set up online ride sharing databases. These databases enable people to enter their daily journey so that the database can automatically search out residents whose journeys match. A less formal option would be installing notice boards in the lobby of the building for residents who may wish to organize informal carpools. These tools will help to reduce the number of vehicle trips made and site parking demand.

For high-density residential developments there are also car-share options that can involve a data-base for individuals to share their privately-owned vehicles, or involve a company (such as zipcar or Car2go) that provides the vehicles, to be shared between multiple people. Individuals can pre-book their trips and make use of the vehicle when they need it. This reduces the amount of time a vehicle is sitting unused in a parking lot and can also reduce the total number of vehicles on the road.

Summary

In summary, the traffic impacts of the proposed 93-unit apartment building at 98 Farley Drive fall well-within acceptable parameters. It is estimated that when using the ITE trip generation rates, 49 trips will be generated by the development in in the AM peak hour and 69 trips will be generated by the development in the PM peak hour.

Based on the foregoing, the following is concluded:

- The proposed Site Driveway at Farley Drive and Eugene Drive, with stop signs located on the it's eastbound and westbound approaches, is expected to operate at acceptable conditions;
- All other study intersections are expected to operate at acceptable conditions during the AM and PM peak hours with the addition of the subject site;
- At the Site Driveway, acceptable intersection sight distance is noted to be present in both the north and south directions for a 60-kilometre design speed; and
- The proposed site, with nearby connections to transit and bicycle facilities, has the potential to be a very accessible development. Further enhancing these elements inside and outside the boundaries of the development will ensure these opportunities do not go unused.

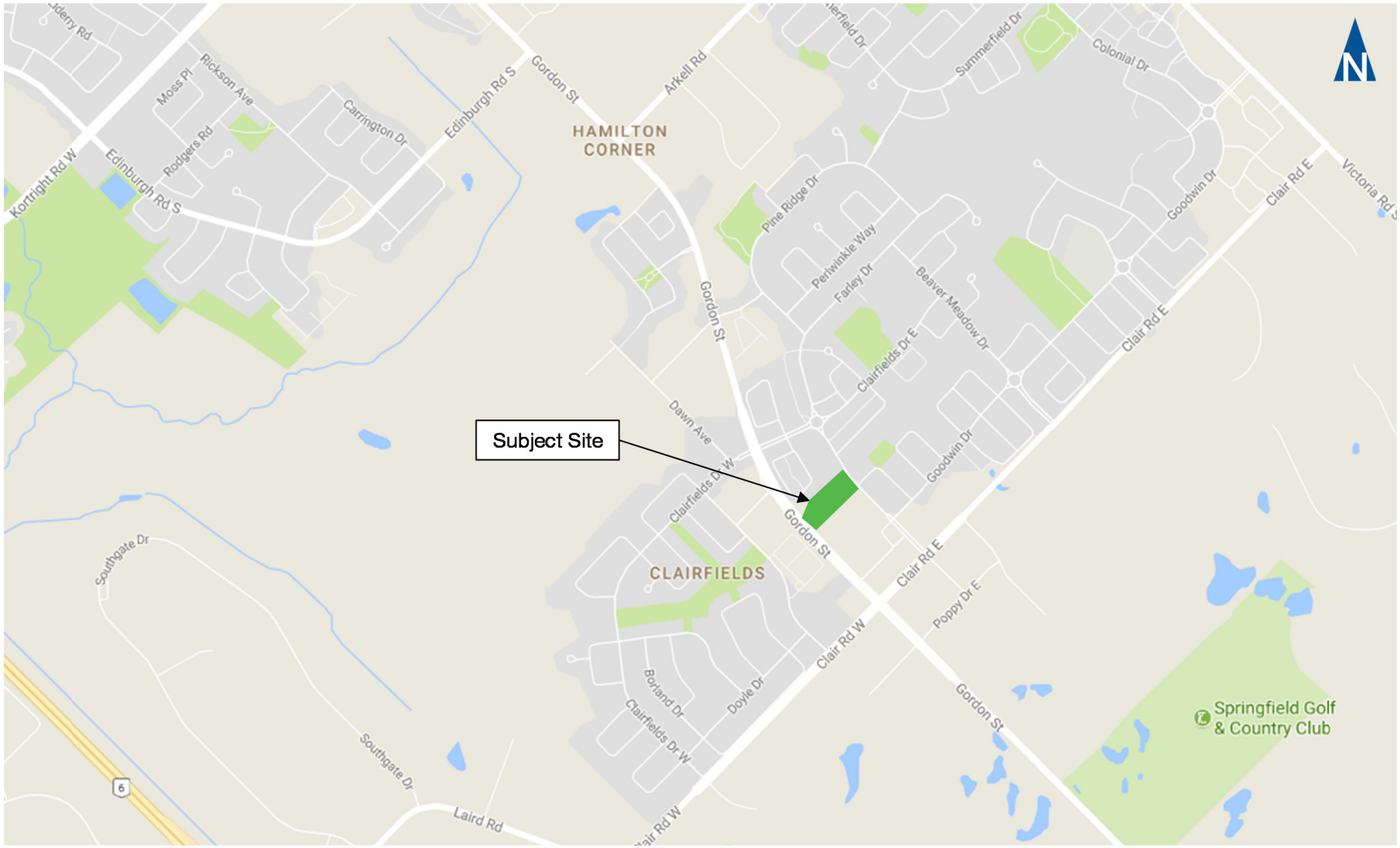
It is therefore recommended that the development plan be approved with no conditions related to off-site transportation improvements.

Please do not hesitate to contact me if you have any questions.

Yours very truly,

PARADIGM TRANSPORTATION SOLUTIONS LIMITED

Jim Mallett
M.A.Sc., P.Eng., PTOE
President



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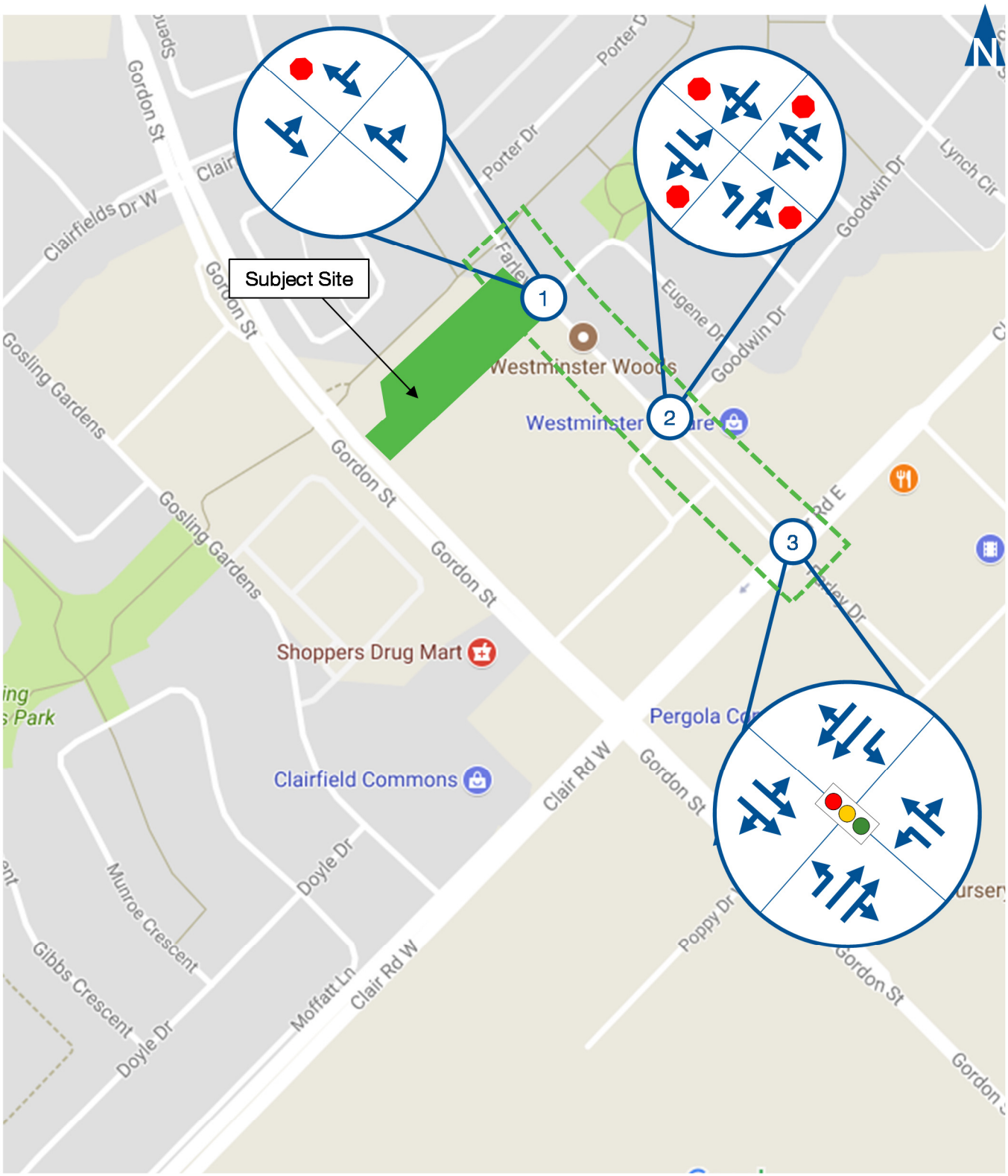
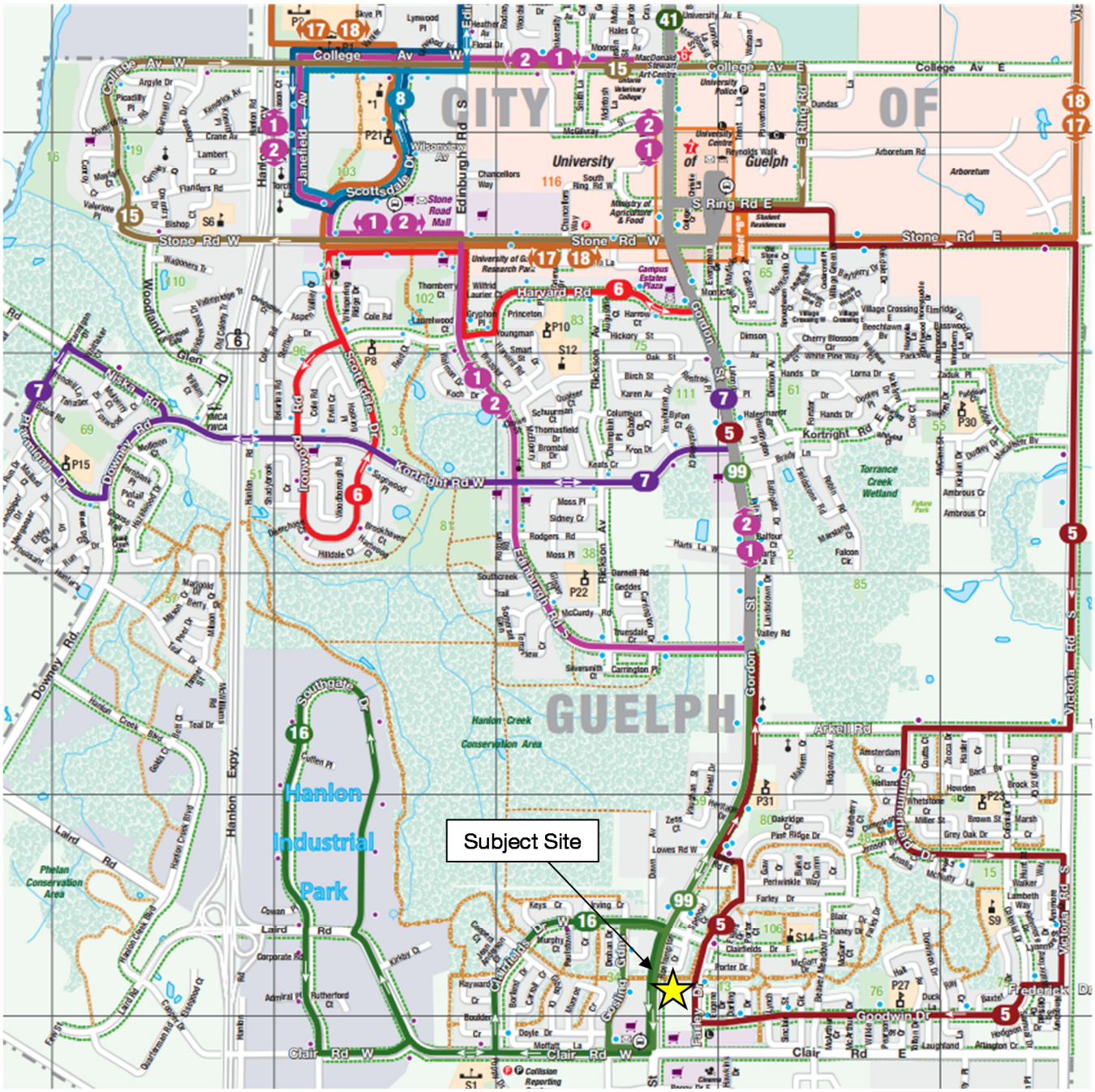
Development Location



Existing Lane Configurations and Traffic Control



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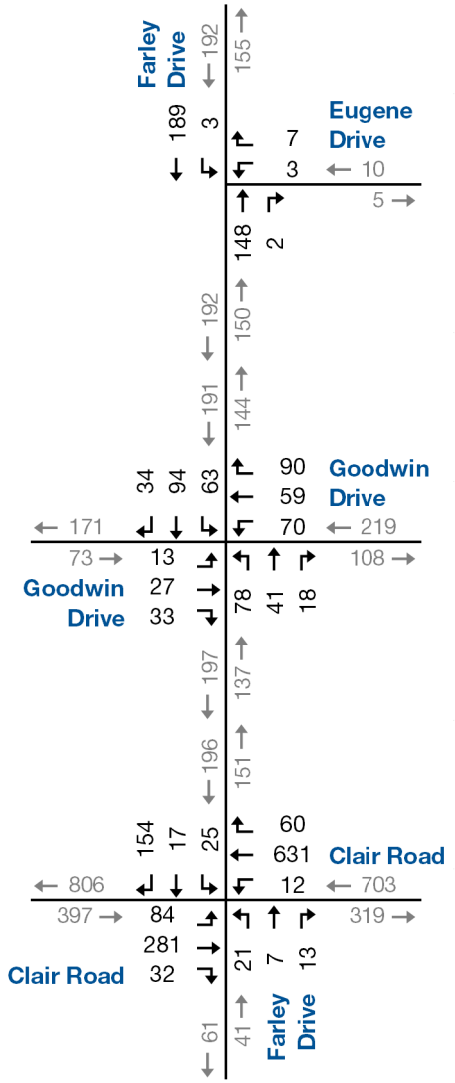
Existing Transit Network

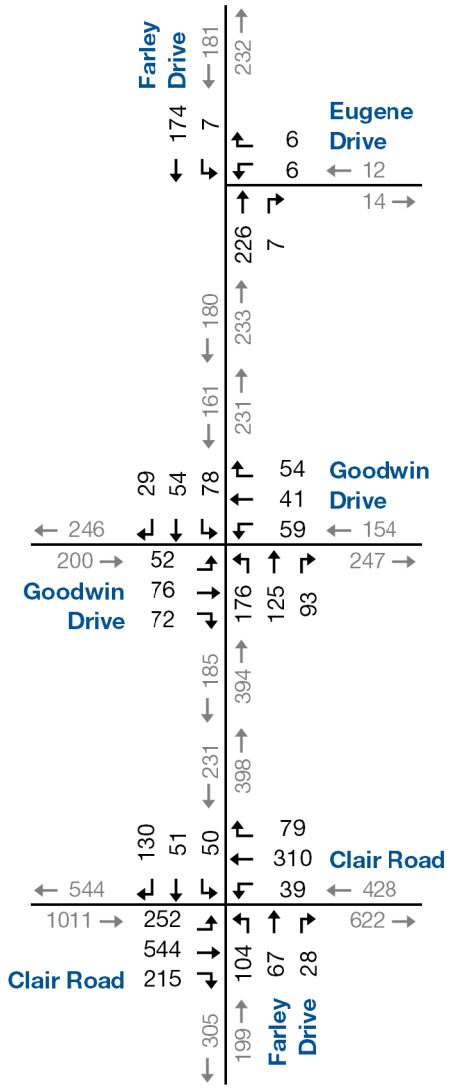
98 Farley Drive TRIS Brief
170283

Figure 3

AM Peak



PM Peak



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Existing Traffic Volumes

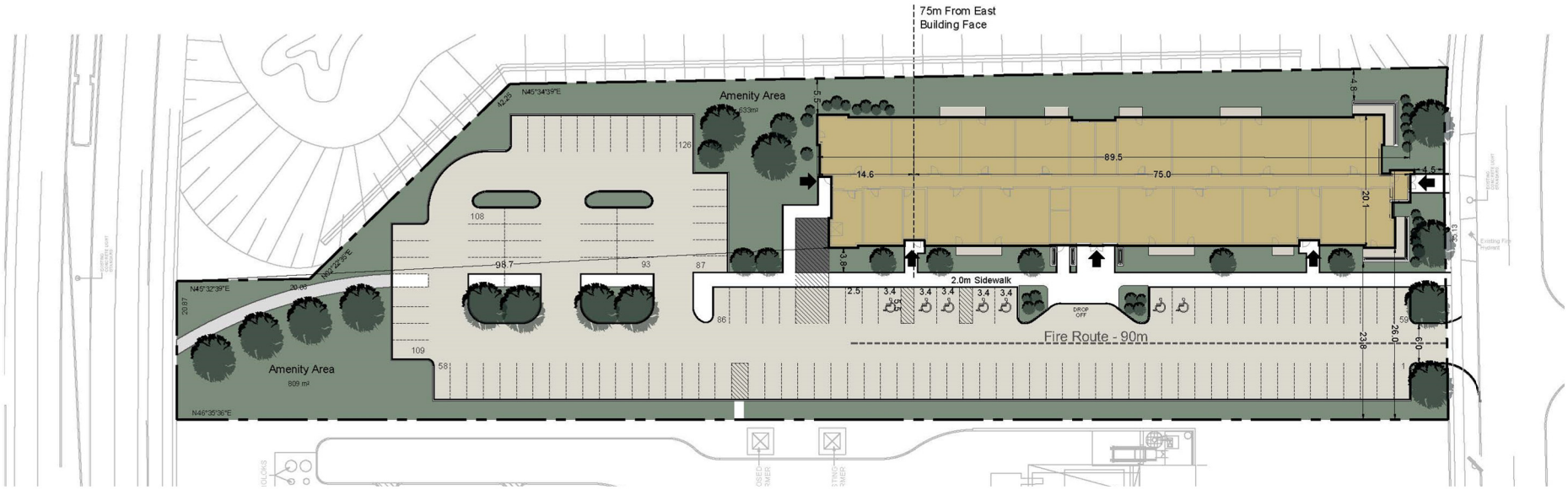
98 Farley Drive TRIS Brief
170283

Figure 4

R.4A Zone (Proposed)	Required	Provided
Site Area	650m²	8,858m²
Lot Frontage (min)	15m	21.0m (Gordon St)
Units	N/A	93
Density (max)	100upha	105upha+
Front Yard (min)	6m	4.5m+ (along Farley Dr)
Side Yard (min)	7.5m (½ height)	5.5m+
Side Yard to Habitable Windows (min)	7.5m	5.5m+
Building Height (max)	8 storeys	6 storeys

	Required	Provided
Angular Plane (max)		
To Street	45°	±50°*
To Park	40°	±75°*
Common Amenity Area (min)	2,060m²	1530m²+
Landscaped Open Space (min)	20%	42.8% (3,787.8m²)
Parking (min)	122 spaces	126 spaces
Accessible Spaces (min)	6 spaces	7 spaces
Floor Space Index	1.0	1.0

Notes:
* Angular plane based on estimated building height of 19.95m and must be confirmed using detailed building elevations
+ Special zoning regulations required



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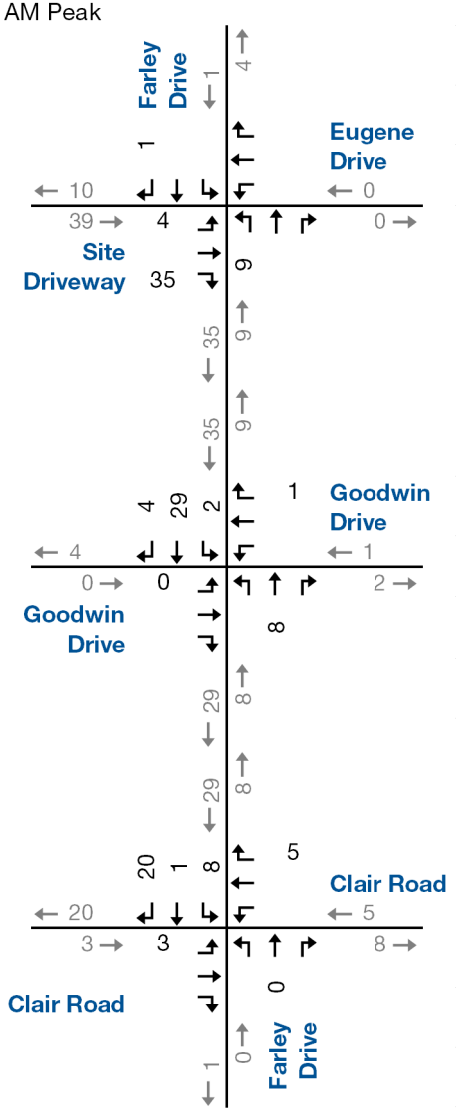
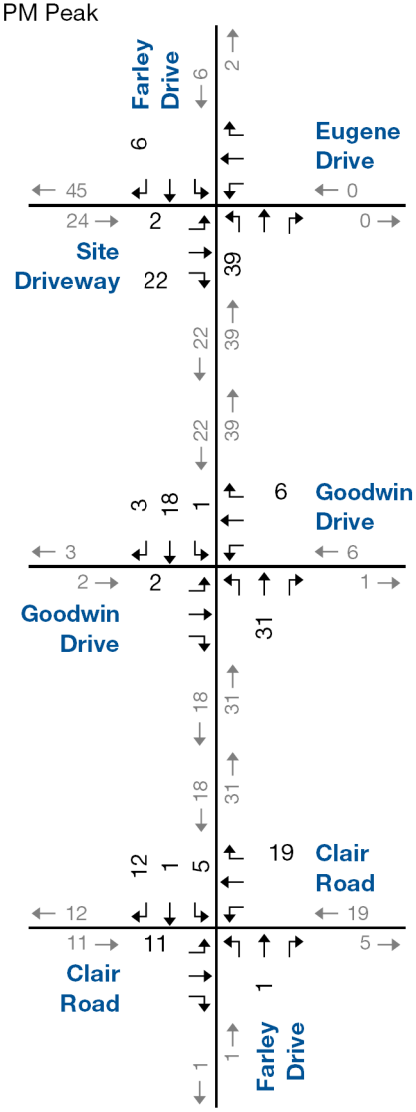
Proposed Site Plan

AM Peak



PM Peak



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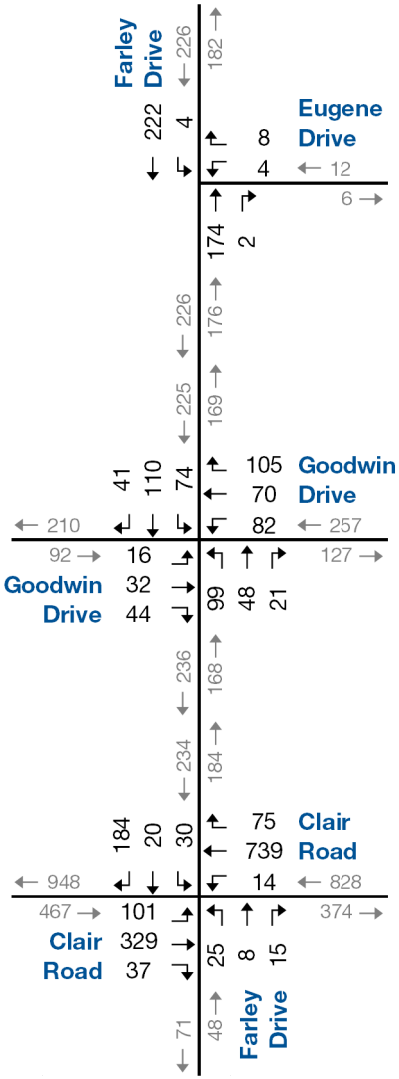
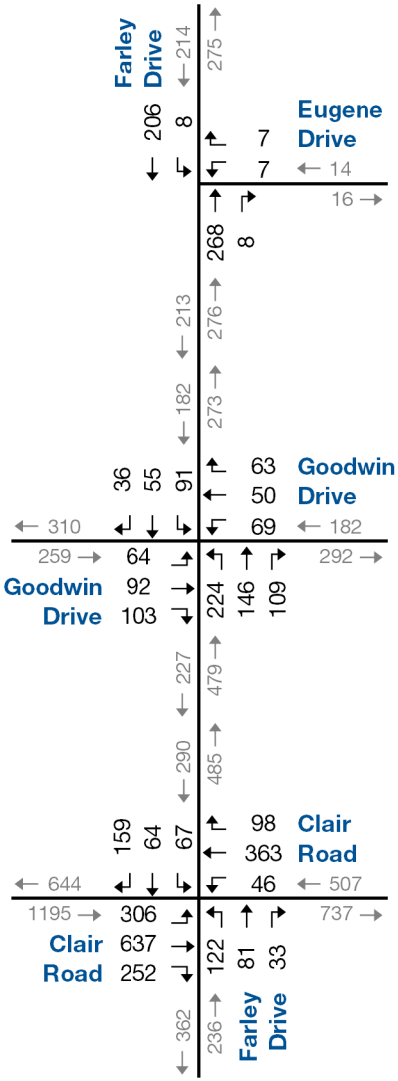
Site-Generated Traffic Forecasts

AM Peak



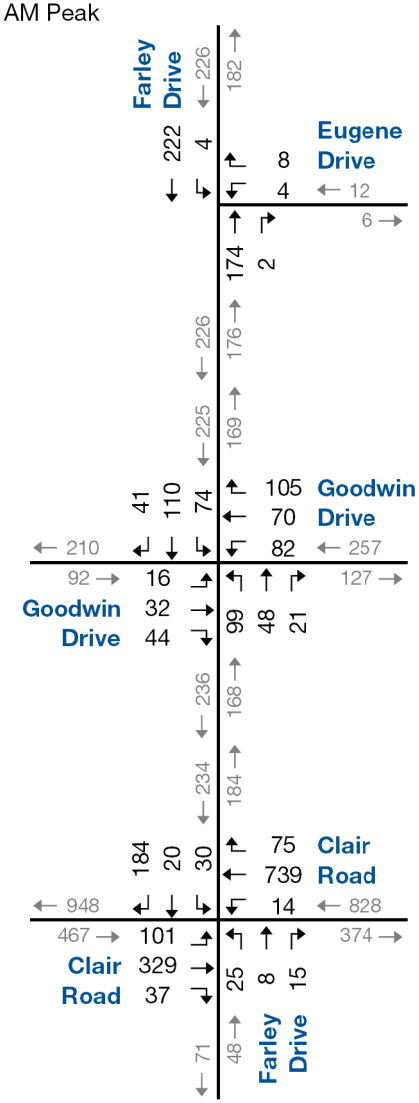
PM Peak



1750 Gordon Street Forecasts

Figure 7

AM Peak



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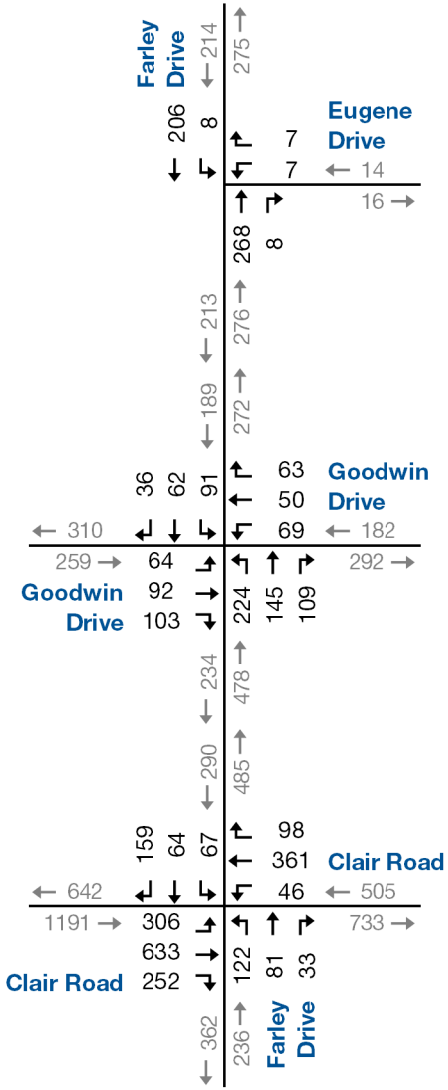

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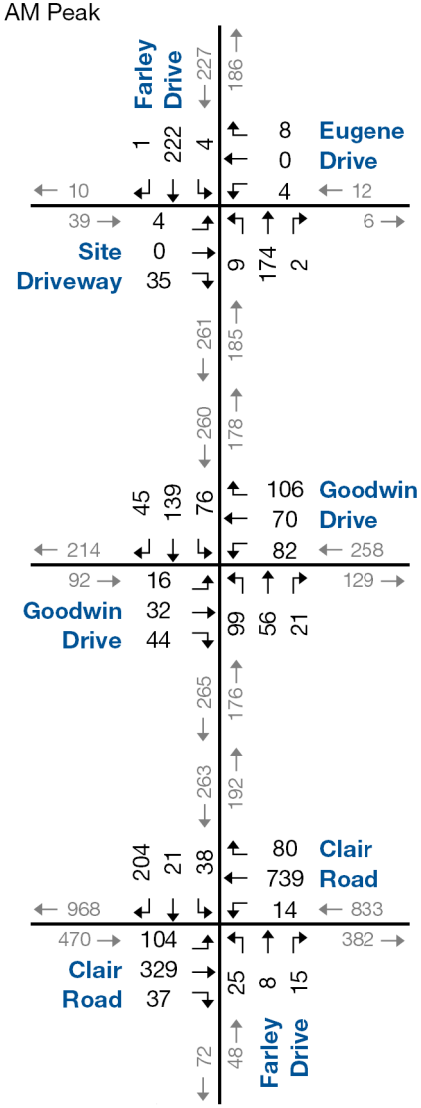
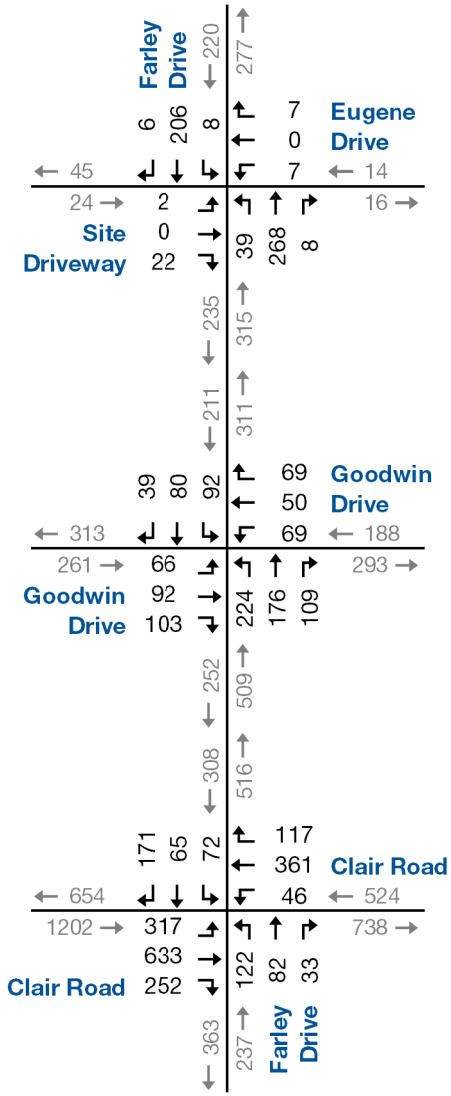
2025 Background Traffic Forecasts

AM Peak



PM Peak



2025 Total Traffic Forecasts

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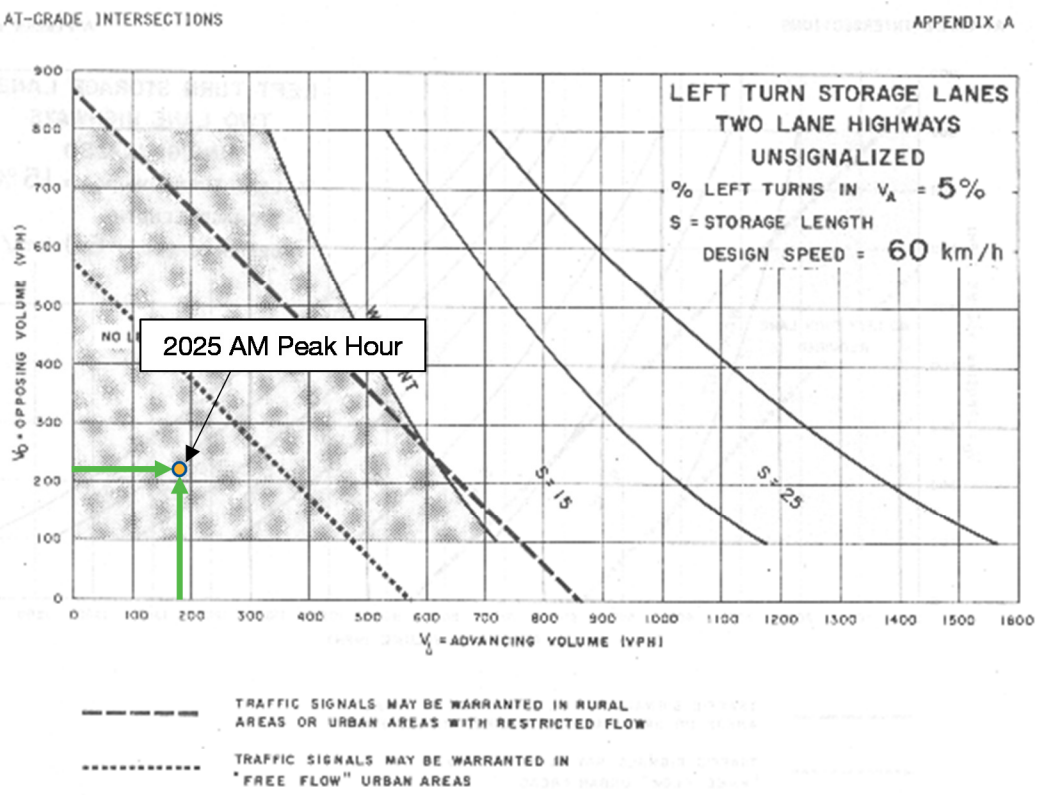
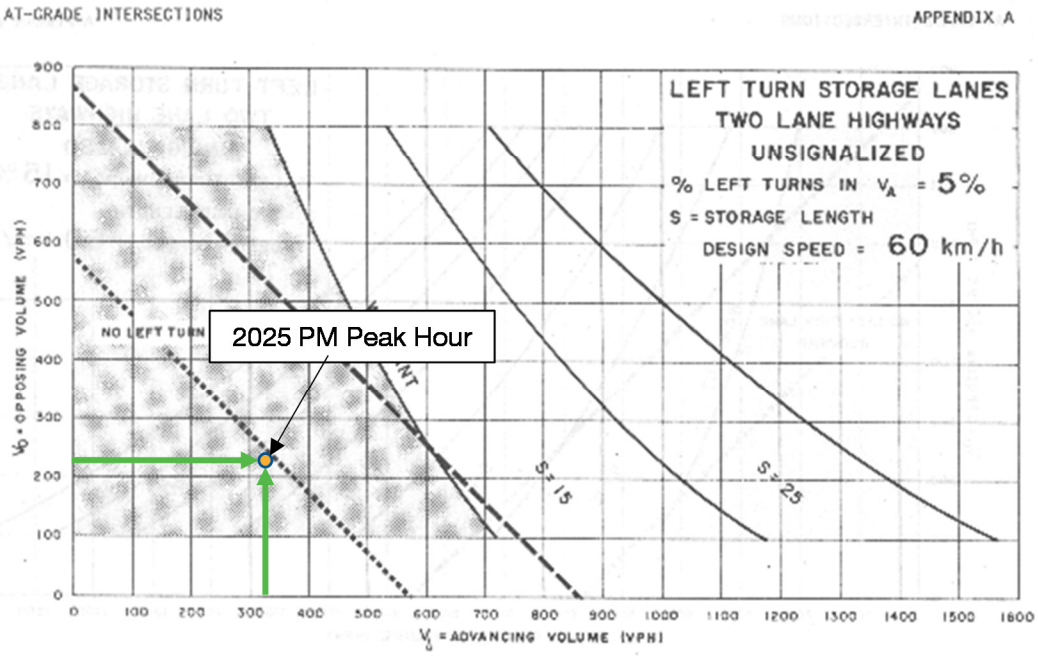
Intersection Sight Distance Views from Site Driveway





Source: Geometric Design Guide for Ontario Highways

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Left-turn Lane Warrants for Site Driveway

APPENDICES

APPENDIX A
TURNING MOVEMENT COUNT DATA

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

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

Count Name: Clair Road & Farley Drive
Site Code:
Start Date: 11/21/2017

Turning Movement Data

Start Time	Clair Road Eastbound						Clair Road Westbound						Plaza Driveway Northbound						Farley Drive 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	4	36	5	0	0	45	2	91	11	0	1	104	5	3	1	0	0	9	5	2	34	0	0	41	199
7:15 AM	9	41	3	0	0	53	2	128	6	0	0	136	4	1	0	0	0	5	4	2	45	0	0	51	245
7:30 AM	10	58	4	0	1	72	3	150	17	0	1	170	6	1	1	0	0	8	13	3	41	0	2	57	307
7:45 AM	15	68	6	0	0	89	1	175	19	0	0	195	4	1	4	0	1	9	9	3	41	0	1	53	346
Hourly Total	38	203	18	0	1	259	8	544	53	0	2	605	19	6	6	0	1	31	31	10	161	0	3	202	1097
8:00 AM	15	82	4	0	3	101	0	111	8	0	0	119	5	0	1	0	2	6	7	3	29	0	1	39	265
8:15 AM	27	62	12	0	1	101	5	143	13	0	0	161	7	3	4	0	0	14	2	6	33	0	2	41	317
8:30 AM	27	69	10	0	2	106	6	202	20	0	0	228	5	3	4	0	0	12	7	5	51	0	2	63	409
8:45 AM	35	75	16	0	4	126	7	125	19	0	1	151	9	1	3	0	0	13	9	4	41	0	1	54	344
Hourly Total	104	288	42	0	10	434	18	581	60	0	1	659	26	7	12	0	2	45	25	18	154	0	6	197	1335
9:00 AM	18	35	12	1	0	66	7	85	16	0	1	108	3	6	1	0	0	10	4	6	26	0	1	36	220
9:15 AM	17	28	12	0	1	57	6	69	29	0	2	104	6	6	2	0	0	14	8	5	16	0	4	29	204
9:30 AM	13	48	13	0	3	74	4	70	11	0	0	85	8	10	6	0	0	24	8	5	25	0	0	38	221
9:45 AM	29	46	22	0	2	97	5	73	15	0	1	93	13	8	2	0	1	23	8	6	23	0	2	37	250
Hourly Total	77	157	59	1	6	294	22	297	71	0	4	390	30	30	11	0	1	71	28	22	90	0	7	140	895
10:00 AM	24	49	14	0	2	87	7	63	10	0	0	80	18	7	4	0	1	29	9	9	27	0	1	45	241
10:15 AM	37	48	10	1	6	96	6	52	22	0	3	80	24	8	2	0	0	34	3	4	42	0	1	49	259
10:30 AM	15	45	17	0	1	77	4	59	14	0	4	77	20	10	4	0	0	34	12	12	35	0	0	59	247
10:45 AM	24	36	26	0	2	86	2	55	25	0	4	82	23	9	3	0	1	35	10	4	28	0	1	42	245
Hourly Total	100	178	67	1	11	346	19	229	71	0	11	319	85	34	13	0	2	132	34	29	132	0	3	195	992
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	43	137	29	0	0	209	2	83	20	0	8	105	26	17	5	0	0	48	15	8	31	0	4	54	416
3:15 PM	45	95	28	0	0	168	4	98	15	0	4	117	23	7	7	0	0	37	22	8	29	0	2	59	381
3:30 PM	49	131	26	0	1	206	2	79	10	0	1	91	26	13	3	0	1	42	16	11	34	0	3	61	400
3:45 PM	43	107	27	0	6	177	8	94	11	0	1	113	25	15	4	0	0	44	14	19	41	0	4	74	408
Hourly Total	180	470	110	0	7	760	16	354	56	0	14	426	100	52	19	0	1	171	67	46	135	0	13	248	1605
4:00 PM	41	119	42	0	0	202	5	67	22	0	1	94	26	11	5	0	1	42	11	13	36	0	1	60	398
4:15 PM	55	141	35	0	1	231	4	93	23	0	3	120	26	19	4	0	3	49	14	9	40	0	1	63	463
4:30 PM	55	153	44	0	4	252	7	70	22	0	6	99	27	11	3	0	1	41	17	8	29	0	4	54	446
4:45 PM	51	121	39	0	6	211	7	83	17	0	4	107	24	18	6	0	0	48	11	15	35	0	6	61	427
Hourly Total	202	534	160	0	11	896	23	313	84	0	14	420	103	59	18	0	5	180	53	45	140	0	12	238	1734
5:00 PM	54	153	51	0	3	258	6	79	20	0	2	105	21	21	11	0	5	53	12	10	32	1	2	55	471
5:15 PM	68	153	70	0	3	291	8	81	23	0	1	112	19	15	7	0	1	41	11	15	29	0	2	55	499
5:30 PM	70	128	45	0	1	243	9	73	22	0	1	104	29	13	5	0	0	47	16	9	37	0	2	62	456
5:45 PM	60	110	49	1	7	220	16	77	14	0	5	107	35	18	5	0	2	58	11	17	32	0	3	60	445

Hourly Total	252	544	215	1	14	1012	39	310	79	0	9	428	104	67	28	0	8	199	50	51	130	1	9	232	1871
6:00 PM	63	121	75	0	7	259	10	67	18	0	1	95	24	14	11	0	0	49	15	14	24	0	8	53	456
6:15 PM	39	126	66	0	3	231	12	79	11	0	2	102	29	14	11	0	0	54	13	19	32	0	0	64	451
6:30 PM	45	93	57	0	1	195	13	75	10	0	3	98	44	21	10	0	1	75	17	15	31	0	6	63	431
6:45 PM	44	81	58	0	3	183	7	72	22	0	1	101	41	21	7	0	1	69	11	17	33	0	3	61	414
Hourly Total	191	421	256	0	14	868	42	293	61	0	7	396	138	70	39	0	2	247	56	65	120	0	17	241	1752
7:00 PM	0	0	1	0	0	1	0	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	3
Grand Total	1144	2795	928	3	74	4870	187	2922	536	0	62	3645	605	325	146	0	22	1076	344	286	1062	1	70	1693	11284
Approach %	23.5	57.4	19.1	0.1	-	-	5.1	80.2	14.7	0.0	-	-	56.2	30.2	13.6	0.0	-	-	20.3	16.9	62.7	0.1	-	-	-
Total %	10.1	24.8	8.2	0.0	-	43.2	1.7	25.9	4.8	0.0	-	32.3	5.4	2.9	1.3	0.0	-	9.5	3.0	2.5	9.4	0.0	-	15.0	-
Lights	1123	2600	915	3	-	4641	187	2719	526	0	-	3432	592	319	145	0	-	1056	321	283	1047	1	-	1652	10781
% Lights	98.2	93.0	98.6	100.0	-	95.3	100.0	93.1	98.1	-	-	94.2	97.9	98.2	99.3	-	-	98.1	93.3	99.0	98.6	100.0	-	97.6	95.5
Mediums	20	101	12	0	-	133	0	121	10	0	-	131	9	5	1	0	-	15	21	0	14	0	-	35	314
% Mediums	1.7	3.6	1.3	0.0	-	2.7	0.0	4.1	1.9	-	-	3.6	1.5	1.5	0.7	-	-	1.4	6.1	0.0	1.3	0.0	-	2.1	2.8
Articulated Trucks	1	94	1	0	-	96	0	82	0	0	-	82	3	0	0	0	-	3	1	0	1	0	-	2	183
% Articulated Trucks	0.1	3.4	0.1	0.0	-	2.0	0.0	2.8	0.0	-	-	2.2	0.5	0.0	0.0	-	-	0.3	0.3	0.0	0.1	0.0	-	0.1	1.6
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	1	1	0	0	-	2	1	3	0	0	-	4	6
% Bicycles on Road	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.2	0.3	0.0	-	-	0.2	0.3	1.0	0.0	0.0	-	0.2	0.1
Bicycles on Crosswalk	-	-	-	-	4	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	-	-	5.4	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	1.4	-	-
Pedestrians	-	-	-	-	70	-	-	-	-	-	62	-	-	-	-	-	22	-	-	-	-	-	69	-	-
% Pedestrians	-	-	-	-	94.6	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	98.6	-	-

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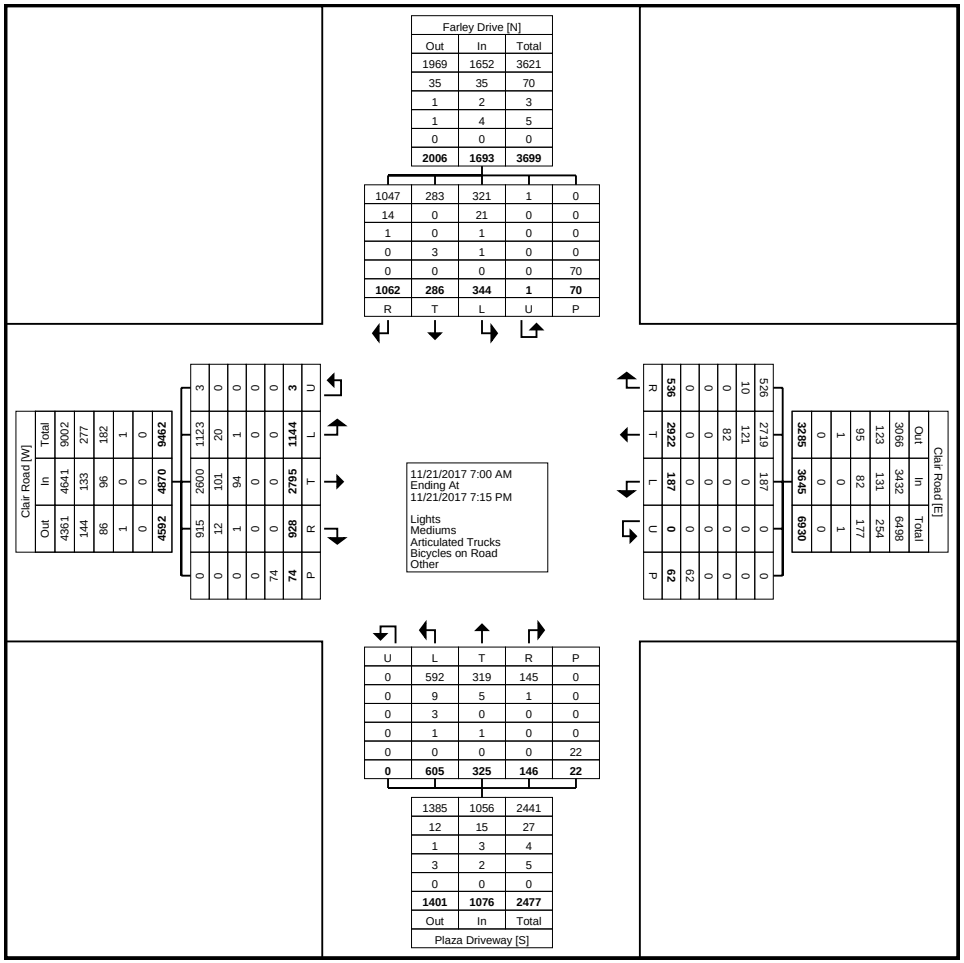
Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Clair Road & Farley Drive
Site Code:
Start Date: 11/21/2017



Turning Movement Data Plot

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

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

Count Name: Clair Road & Farley Drive
Site Code:
Start Date: 11/21/2017

Turning Movement Peak Hour Data (7:45 AM)

Start Time	Clair Road Eastbound						Clair Road Westbound						Plaza Driveway Northbound						Farley Drive 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	15	68	6	0	0	89	1	175	19	0	0	195	4	1	4	0	1	9	9	3	41	0	1	53	346
8:00 AM	15	82	4	0	3	101	0	111	8	0	0	119	5	0	1	0	2	6	7	3	29	0	1	39	265
8:15 AM	27	62	12	0	1	101	5	143	13	0	0	161	7	3	4	0	0	14	2	6	33	0	2	41	317
8:30 AM	27	69	10	0	2	106	6	202	20	0	0	228	5	3	4	0	0	12	7	5	51	0	2	63	409
Total	84	281	32	0	6	397	12	631	60	0	0	703	21	7	13	0	3	41	25	17	154	0	6	196	1337
Approach %	21.2	70.8	8.1	0.0	-	-	1.7	89.8	8.5	0.0	-	-	51.2	17.1	31.7	0.0	-	-	12.8	8.7	78.6	0.0	-	-	-
Total %	6.3	21.0	2.4	0.0	-	29.7	0.9	47.2	4.5	0.0	-	52.6	1.6	0.5	1.0	0.0	-	3.1	1.9	1.3	11.5	0.0	-	14.7	-
PHF	0.778	0.857	0.667	0.000	-	0.936	0.500	0.781	0.750	0.000	-	0.771	0.750	0.583	0.813	0.000	-	0.732	0.694	0.708	0.755	0.000	-	0.778	0.817
Lights	79	235	30	0	-	344	12	604	57	0	-	673	18	6	13	0	-	37	22	17	152	0	-	191	1245
% Lights	94.0	83.6	93.8	-	-	86.6	100.0	95.7	95.0	-	-	95.7	85.7	85.7	100.0	-	-	90.2	88.0	100.0	98.7	-	-	97.4	93.1
Mediums	5	27	2	0	-	34	0	19	3	0	-	22	2	1	0	0	-	3	3	0	2	0	-	5	64
% Mediums	6.0	9.6	6.3	-	-	8.6	0.0	3.0	5.0	-	-	3.1	9.5	14.3	0.0	-	-	7.3	12.0	0.0	1.3	-	-	2.6	4.8
Articulated Trucks	0	19	0	0	-	19	0	8	0	0	-	8	1	0	0	0	-	1	0	0	0	0	-	0	28
% Articulated Trucks	0.0	6.8	0.0	-	-	4.8	0.0	1.3	0.0	-	-	1.1	4.8	0.0	0.0	-	-	2.4	0.0	0.0	0.0	-	-	0.0	2.1
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	16.7	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	5	-	-	-	-	-	0	-	-	-	-	-	3	-	-	-	-	-	6	-	-
% Pedestrians	-	-	-	-	83.3	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

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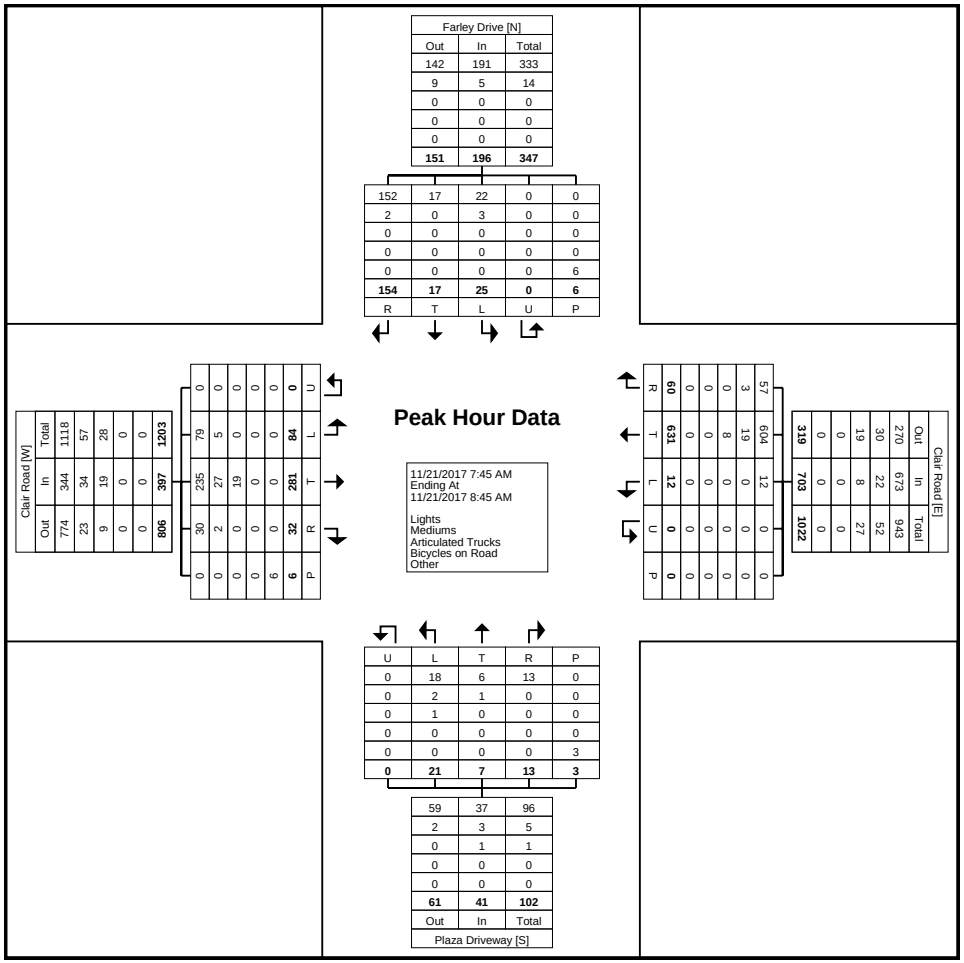
Start Date: 11/21/2017



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

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

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

Count Name: Clair Road & Farley Drive
Site Code:
Start Date: 11/21/2017

Turning Movement Peak Hour Data (5:00 PM)

Start Time	Clair Road Eastbound						Clair Road Westbound						Plaza Driveway Northbound						Farley Drive 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
5:00 PM	54	153	51	0	3	258	6	79	20	0	2	105	21	21	11	0	5	53	12	10	32	1	2	55	471
5:15 PM	68	153	70	0	3	291	8	81	23	0	1	112	19	15	7	0	1	41	11	15	29	0	2	55	499
5:30 PM	70	128	45	0	1	243	9	73	22	0	1	104	29	13	5	0	0	47	16	9	37	0	2	62	456
5:45 PM	60	110	49	1	7	220	16	77	14	0	5	107	35	18	5	0	2	58	11	17	32	0	3	60	445
Total	252	544	215	1	14	1012	39	310	79	0	9	428	104	67	28	0	8	199	50	51	130	1	9	232	1871
Approach %	24.9	53.8	21.2	0.1	-	-	9.1	72.4	18.5	0.0	-	-	52.3	33.7	14.1	0.0	-	-	21.6	22.0	56.0	0.4	-	-	-
Total %	13.5	29.1	11.5	0.1	-	54.1	2.1	16.6	4.2	0.0	-	22.9	5.6	3.6	1.5	0.0	-	10.6	2.7	2.7	6.9	0.1	-	12.4	-
PHF	0.900	0.889	0.768	0.250	-	0.869	0.609	0.957	0.859	0.000	-	0.955	0.743	0.798	0.636	0.000	-	0.858	0.781	0.750	0.878	0.250	-	0.935	0.937
Lights	252	531	215	1	-	999	39	300	79	0	-	418	104	65	28	0	-	197	47	51	130	1	-	229	1843
% Lights	100.0	97.6	100.0	100.0	-	98.7	100.0	96.8	100.0	-	-	97.7	100.0	97.0	100.0	-	-	99.0	94.0	100.0	100.0	100.0	-	98.7	98.5
Mediums	0	5	0	0	-	5	0	5	0	0	-	5	0	1	0	0	-	1	3	0	0	0	-	3	14
% Mediums	0.0	0.9	0.0	0.0	-	0.5	0.0	1.6	0.0	-	-	1.2	0.0	1.5	0.0	-	-	0.5	6.0	0.0	0.0	0.0	-	1.3	0.7
Articulated Trucks	0	8	0	0	-	8	0	5	0	0	-	5	0	0	0	0	-	0	0	0	0	0	-	0	13
% Articulated Trucks	0.0	1.5	0.0	0.0	-	0.8	0.0	1.6	0.0	-	-	1.2	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.7
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	1
% Bicycles on Road	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	1.5	0.0	-	-	0.5	0.0	0.0	0.0	0.0	-	0.0	0.1
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	7.1	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	13	-	-	-	-	-	9	-	-	-	-	-	8	-	-	-	-	-	9	-	-
% Pedestrians	-	-	-	-	92.9	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

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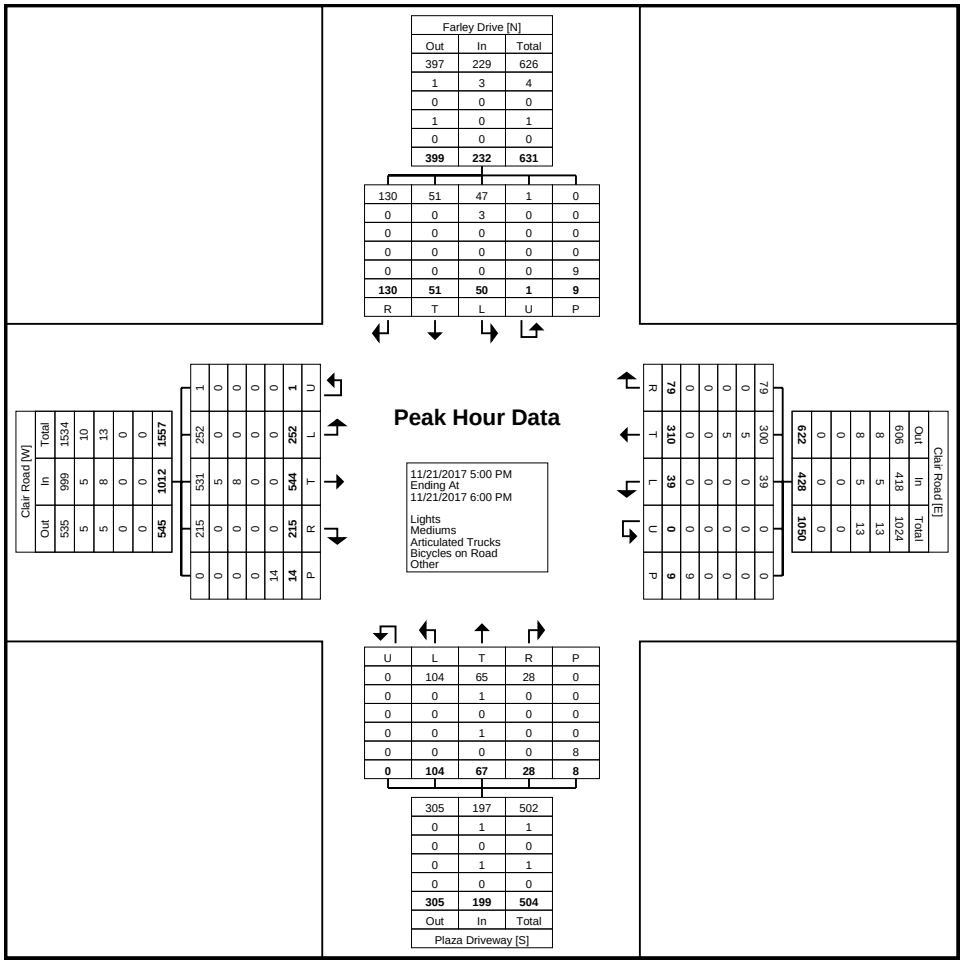

Turning Movement Peak Hour Data Plot (5:00 PM)

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519-896-3163 cbowness@ptsl.com

Count Name: Clair Road & Farley Drive
Site Code:
Start Date: 11/21/2017

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22 King Street South, Suite 300

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

Count Name: Farley Dr & Eugene Dr
Site Code:
Start Date: 11/14/2017

Turning Movement Data

Start Time	Driveway Eastbound						Eugene Drive Westbound						Farley Drive Northbound						Farley Drive 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	0	0	0	2	0	1	0	0	0	0	1	0	12	1	0	0	13	0	27	0	0	0	27	41
7:15 AM	0	0	0	0	0	0	1	0	1	0	0	2	0	14	0	0	0	14	0	32	0	0	3	32	48
7:30 AM	0	0	0	0	2	0	2	0	2	0	1	4	0	20	0	0	0	20	1	35	0	0	0	36	60
7:45 AM	0	0	0	0	2	0	1	0	3	0	1	4	1	24	0	0	0	25	0	40	0	0	1	40	69
Hourly Total	0	0	0	0	6	0	5	0	6	0	2	11	1	70	1	0	0	72	1	134	0	0	4	135	218
8:00 AM	0	0	0	0	3	0	0	0	2	0	0	2	0	29	0	0	0	29	0	32	0	0	0	32	63
8:15 AM	0	0	0	0	2	0	2	0	1	0	2	3	0	37	1	0	1	38	0	45	0	0	0	45	86
8:30 AM	1	0	1	0	4	2	0	0	3	0	2	3	0	39	1	0	1	40	0	57	1	0	0	58	103
8:45 AM	0	0	0	0	7	0	1	0	1	0	3	2	0	43	0	1	0	44	3	55	0	0	0	58	104
Hourly Total	1	0	1	0	16	2	3	0	7	0	7	10	0	148	2	1	2	151	3	189	1	0	0	193	356
9:00 AM	0	0	0	0	3	0	1	0	0	0	0	1	0	23	0	0	0	23	0	24	0	0	0	24	48
9:15 AM	0	0	0	0	9	0	0	0	0	0	1	0	0	28	0	0	4	28	0	28	0	0	0	28	56
9:30 AM	0	0	0	0	4	0	0	0	2	0	0	2	0	9	0	0	4	9	0	24	1	0	0	25	36
9:45 AM	0	0	0	0	2	0	0	0	1	0	2	1	0	20	2	0	1	22	0	18	0	0	0	18	41
Hourly Total	0	0	0	0	18	0	1	0	3	0	3	4	0	80	2	0	9	82	0	94	1	0	0	95	181
10:00 AM	0	0	0	0	5	0	2	0	1	0	2	3	0	25	1	1	0	27	0	31	0	0	0	31	61
10:15 AM	0	0	1	0	5	1	0	0	0	0	3	0	1	19	1	0	0	21	1	23	0	0	0	24	46
10:30 AM	0	0	1	0	6	1	0	0	0	0	4	0	1	25	1	0	2	27	0	14	0	0	0	14	42
10:45 AM	0	0	0	0	3	0	0	0	1	0	5	1	0	16	0	0	0	16	1	26	0	0	0	27	44
Hourly Total	0	0	2	0	19	2	2	0	2	0	14	4	2	85	3	1	2	91	2	94	0	0	0	96	193
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:00 PM	0	0	0	0	1	0	0	0	0	0	2	0	0	53	0	0	1	53	0	24	0	0	0	24	77
3:15 PM	0	0	0	0	23	0	1	0	1	0	8	2	0	53	2	0	2	55	0	44	0	0	3	44	101
3:30 PM	0	0	0	0	5	0	0	0	1	0	4	1	0	47	1	1	0	49	1	33	0	0	0	34	84
3:45 PM	0	0	0	0	3	0	2	0	0	0	7	2	0	33	1	0	3	34	3	39	0	0	0	42	78
Hourly Total	0	0	0	0	32	0	3	0	2	0	21	5	0	186	4	1	6	191	4	140	0	0	3	144	340
4:00 PM	0	0	0	0	6	0	1	0	1	0	1	2	0	39	1	0	3	40	5	42	0	1	1	48	90
4:15 PM	1	0	1	0	10	2	0	0	1	0	2	1	0	61	1	0	1	62	0	43	0	0	0	43	108
4:30 PM	0	0	0	0	8	0	1	0	1	0	7	2	0	50	2	0	1	52	3	29	0	0	0	32	86
4:45 PM	0	0	1	0	5	1	3	0	3	0	2	6	0	52	1	0	0	53	2	44	0	0	0	46	106
Hourly Total	1	0	2	0	29	3	5	0	6	0	12	11	0	202	5	0	5	207	10	158	0	1	1	169	390
5:00 PM	0	0	0	0	9	0	2	0	2	0	3	4	0	51	2	0	3	53	0	44	0	0	1	44	101
5:15 PM	0	0	0	0	4	0	1	0	1	0	4	2	0	67	3	0	3	70	3	44	0	0	0	47	119
5:30 PM	0	0	0	0	5	0	0	0	0	0	3	0	0	56	1	0	2	57	2	42	0	0	1	44	101
5:45 PM	0	0	1	0	11	1	0	0	2	0	0	2	0	46	2	0	0	48	0	29	0	0	1	29	80
Hourly Total	0	0	1	0	29	1	3	0	5	0	10	8	0	220	8	0	8	228	5	159	0	0	3	164	401
6:00 PM	0	0	0	0	6	0	1	0	0	0	6	1	0	47	1	0	3	48	1	36	0	0	0	37	86

6:15 PM	0	0	0	0	3	0	0	0	1	0	5	1	0	42	3	0	2	45	1	35	0	0	1	36	82
6:30 PM	0	0	0	0	6	0	0	0	1	0	4	1	0	38	0	0	3	38	0	23	0	0	0	23	62
6:45 PM	0	0	1	0	1	1	1	0	0	0	5	1	0	33	1	0	3	34	3	37	0	0	0	40	76
Hourly Total	0	0	1	0	16	1	2	0	2	0	20	4	0	160	5	0	11	165	5	131	0	0	1	136	306
Grand Total	2	0	7	0	165	9	24	0	33	0	89	57	3	1151	30	3	43	1187	30	1099	2	1	12	1132	2385
Approach %	22.2	0.0	77.8	0.0	-	-	42.1	0.0	57.9	0.0	-	-	0.3	97.0	2.5	0.3	-	-	2.7	97.1	0.2	0.1	-	-	-
Total %	0.1	0.0	0.3	0.0	-	0.4	1.0	0.0	1.4	0.0	-	2.4	0.1	48.3	1.3	0.1	-	49.8	1.3	46.1	0.1	0.0	-	47.5	-
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	2	0	5	0	-	7	23	0	29	0	-	52	2	1033	26	3	-	1064	27	1002	2	1	-	1032	2155
% Cars	100.0	-	71.4	-	-	77.8	95.8	-	87.9	-	-	91.2	66.7	89.7	86.7	100.0	-	89.6	90.0	91.2	100.0	100.0	-	91.2	90.4
Light Goods Vehicles	0	0	1	0	-	1	1	0	2	0	-	3	0	74	4	0	-	78	2	61	0	0	-	63	145
% Light Goods Vehicles	0.0	-	14.3	-	-	11.1	4.2	-	6.1	-	-	5.3	0.0	6.4	13.3	0.0	-	6.6	6.7	5.6	0.0	0.0	-	5.6	6.1
Buses	0	0	0	0	-	0	0	0	1	0	-	1	0	35	0	0	-	35	0	30	0	0	-	30	66
% Buses	0.0	-	0.0	-	-	0.0	0.0	-	3.0	-	-	1.8	0.0	3.0	0.0	0.0	-	2.9	0.0	2.7	0.0	0.0	-	2.7	2.8
Single-Unit Trucks	0	0	1	0	-	1	0	0	0	0	-	0	1	6	0	0	-	7	1	2	0	0	-	3	11
% Single-Unit Trucks	0.0	-	14.3	-	-	11.1	0.0	-	0.0	-	-	0.0	33.3	0.5	0.0	0.0	-	0.6	3.3	0.2	0.0	0.0	-	0.3	0.5
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Articulated Trucks	0.0	-	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Road	0	0	0	0	-	0	0	0	1	0	-	1	0	3	0	0	-	3	0	4	0	0	-	4	8
% Bicycles on Road	0.0	-	0.0	-	-	0.0	0.0	-	3.0	-	-	1.8	0.0	0.3	0.0	0.0	-	0.3	0.0	0.4	0.0	0.0	-	0.4	0.3
Bicycles on Crosswalk	-	-	-	-	4	-	-	-	-	-	3	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	2.4	-	-	-	-	-	3.4	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	161	-	-	-	-	-	86	-	-	-	-	-	43	-	-	-	-	-	12	-	-
% Pedestrians	-	-	-	-	97.6	-	-	-	-	-	96.6	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

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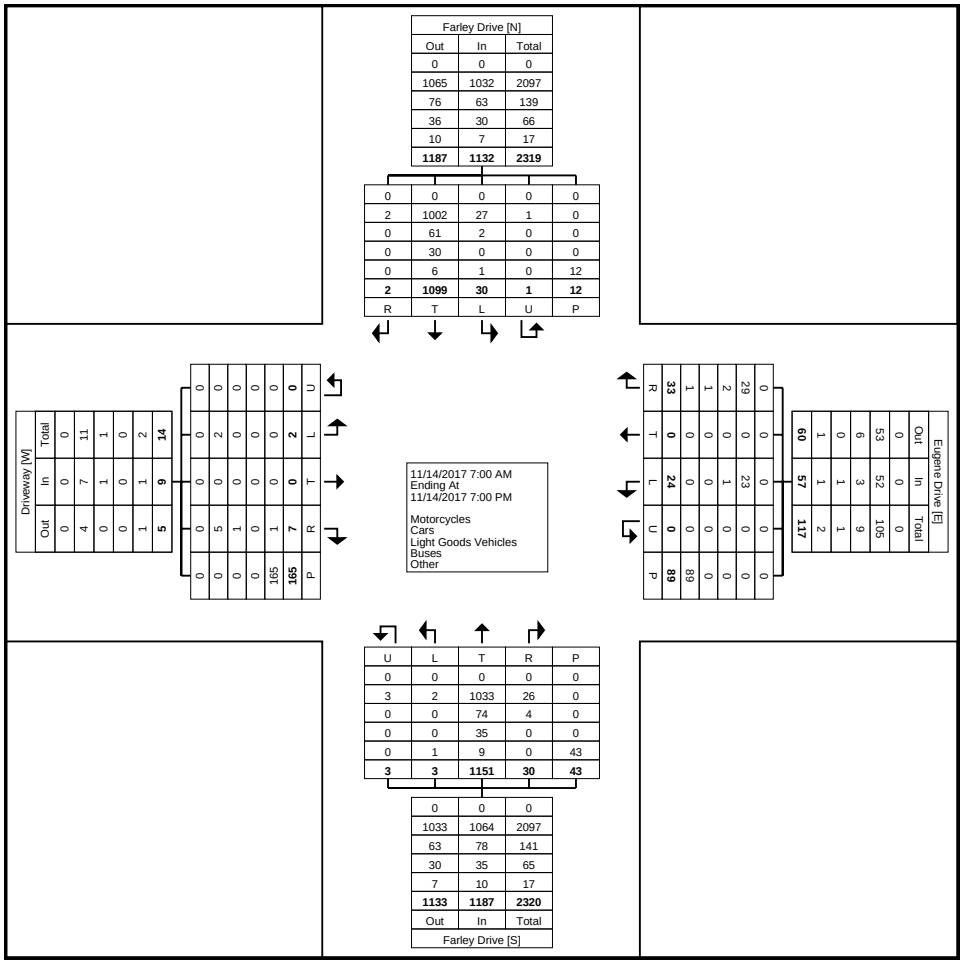
Waterloo, Ontario, Canada N2J 1N8
519-896-3163 cbowness@ptsl.com

Count Name: Farley Dr & Eugene Dr
Site Code:
Start Date: 11/14/2017



Turning Movement Data Plot

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

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

Count Name: Farley Dr & Eugene Dr
Site Code:
Start Date: 11/14/2017

Turning Movement Peak Hour Data (8:00 AM)

Start Time	Driveway Eastbound						Eugene Drive Westbound						Farley Drive Northbound						Farley Drive Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
8:00 AM	0	0	0	0	3	0	0	0	2	0	0	2	0	29	0	0	0	29	0	32	0	0	0	32	63
8:15 AM	0	0	0	0	2	0	2	0	1	0	2	3	0	37	1	0	1	38	0	45	0	0	0	45	86
8:30 AM	1	0	1	0	4	2	0	0	3	0	2	3	0	39	1	0	1	40	0	57	1	0	0	58	103
8:45 AM	0	0	0	0	7	0	1	0	1	0	3	2	0	43	0	1	0	44	3	55	0	0	0	58	104
Total	1	0	1	0	16	2	3	0	7	0	7	10	0	148	2	1	2	151	3	189	1	0	0	193	356
Approach %	50.0	0.0	50.0	0.0	-	-	30.0	0.0	70.0	0.0	-	-	0.0	98.0	1.3	0.7	-	-	1.6	97.9	0.5	0.0	-	-	-
Total %	0.3	0.0	0.3	0.0	-	0.6	0.8	0.0	2.0	0.0	-	2.8	0.0	41.6	0.6	0.3	-	42.4	0.8	53.1	0.3	0.0	-	54.2	-
PHF	0.250	0.000	0.250	0.000	-	0.250	0.375	0.000	0.583	0.000	-	0.833	0.000	0.860	0.500	0.250	-	0.858	0.250	0.829	0.250	0.000	-	0.832	0.856
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	1	0	1	0	-	2	3	0	6	0	-	9	0	134	2	1	-	137	2	175	1	0	-	178	326
% Cars	100.0	-	100.0	-	-	100.0	100.0	-	85.7	-	-	90.0	-	90.5	100.0	100.0	-	90.7	66.7	92.6	100.0	-	-	92.2	91.6
Light Goods Vehicles	0	0	0	0	-	0	0	0	1	0	-	1	0	4	0	0	-	4	0	10	0	0	-	10	15
% Light Goods Vehicles	0.0	-	0.0	-	-	0.0	0.0	-	14.3	-	-	10.0	-	2.7	0.0	0.0	-	2.6	0.0	5.3	0.0	-	-	5.2	4.2
Buses	0	0	0	0	-	0	0	0	0	0	-	0	0	8	0	0	-	8	0	4	0	0	-	4	12
% Buses	0.0	-	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	-	5.4	0.0	0.0	-	5.3	0.0	2.1	0.0	-	-	2.1	3.4
Single-Unit Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	2	0	0	-	2	1	0	0	0	-	1	3
% Single-Unit Trucks	0.0	-	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	-	1.4	0.0	0.0	-	1.3	33.3	0.0	0.0	-	-	0.5	0.8
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	0	0	-	0	0
% Bicycles on Road	0.0	-	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	-	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	16	-	-	-	-	-	7	-	-	-	-	-	2	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-

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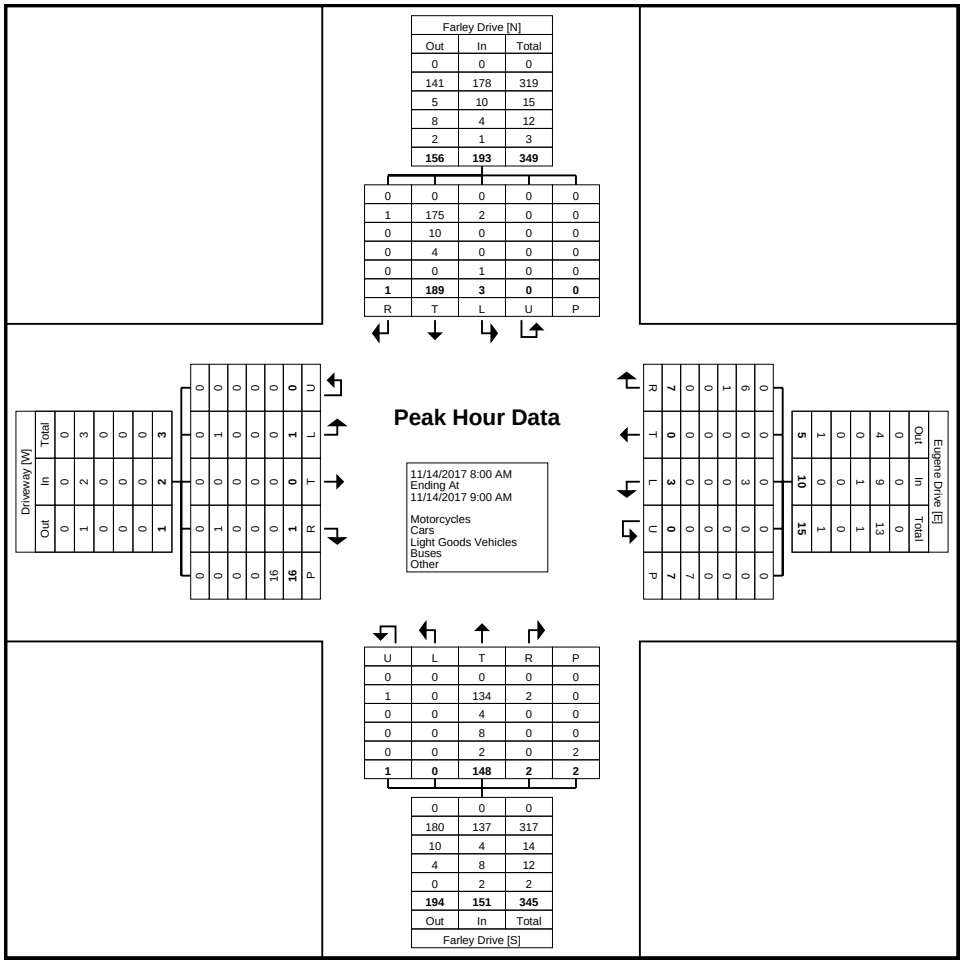
Count Name: Farley Dr & Eugene Dr
Site Code:
Start Date: 11/14/2017



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

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

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

Count Name: Farley Dr & Eugene Dr
Site Code:
Start Date: 11/14/2017

Turning Movement Peak Hour Data (4:45 PM)

Start Time	Driveway Eastbound						Eugene Drive Westbound						Farley Drive Northbound						Farley Drive Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
4:45 PM	0	0	1	0	5	1	3	0	3	0	2	6	0	52	1	0	0	53	2	44	0	0	0	46	106
5:00 PM	0	0	0	0	9	0	2	0	2	0	3	4	0	51	2	0	3	53	0	44	0	0	1	44	101
5:15 PM	0	0	0	0	4	0	1	0	1	0	4	2	0	67	3	0	3	70	3	44	0	0	0	47	119
5:30 PM	0	0	0	0	5	0	0	0	0	0	3	0	0	56	1	0	2	57	2	42	0	0	1	44	101
Total	0	0	1	0	23	1	6	0	6	0	12	12	0	226	7	0	8	233	7	174	0	0	2	181	427
Approach %	0.0	0.0	100.0	0.0	-	-	50.0	0.0	50.0	0.0	-	-	0.0	97.0	3.0	0.0	-	-	3.9	96.1	0.0	0.0	-	-	-
Total %	0.0	0.0	0.2	0.0	-	0.2	1.4	0.0	1.4	0.0	-	2.8	0.0	52.9	1.6	0.0	-	54.6	1.6	40.7	0.0	0.0	-	42.4	-
PHF	0.000	0.000	0.250	0.000	-	0.250	0.500	0.000	0.500	0.000	-	0.500	0.000	0.843	0.583	0.000	-	0.832	0.583	0.989	0.000	0.000	-	0.963	0.897
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
Cars	0	0	1	0	-	1	6	0	6	0	-	12	0	202	6	0	-	208	7	159	0	0	-	166	387
% Cars	-	-	100.0	-	-	100.0	100.0	-	100.0	-	-	100.0	-	89.4	85.7	-	-	89.3	100.0	91.4	-	-	-	91.7	90.6
Light Goods Vehicles	0	0	0	0	-	0	0	0	0	0	-	0	0	21	1	0	-	22	0	12	0	0	-	12	34
% Light Goods Vehicles	-	-	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	-	9.3	14.3	-	-	9.4	0.0	6.9	-	-	-	6.6	8.0
Buses	0	0	0	0	-	0	0	0	0	0	-	0	0	2	0	0	-	2	0	3	0	0	-	3	5
% Buses	-	-	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	-	0.9	0.0	-	-	0.9	0.0	1.7	-	-	-	1.7	1.2
Single-Unit Trucks	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	-	0.0	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
% 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
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	1
% Bicycles on Road	-	-	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	-	0.4	0.0	-	-	0.4	0.0	0.0	-	-	-	0.0	0.2
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	4.3	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	22	-	-	-	-	-	12	-	-	-	-	-	8	-	-	-	-	-	2	-	-
% Pedestrians	-	-	-	-	95.7	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

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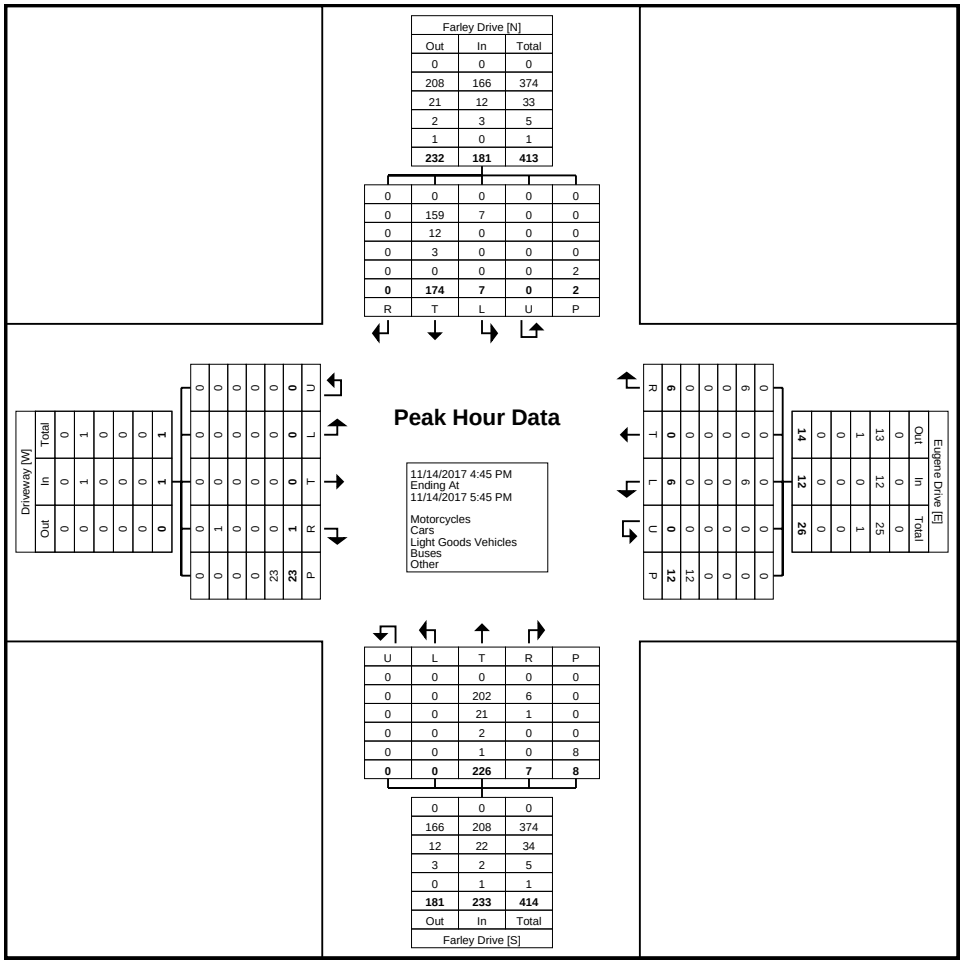
519-896-3163 cbowness@ptsl.com

Count Name: Farley Dr & Eugene Dr
Site Code:
Start Date: 11/14/2017



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

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

Count Name: Farley Dr & Eugene Dr
Site Code:
Start Date: 11/14/2017

Paradigm Transportation Solutions Limited
22 King Street South, Suite 300

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

Count Name: Farley Dr & Goodwin Dr
Site Code:
Start Date: 11/14/2017

Turning Movement Data

Start Time	Drieway Eastbound						Goodwin Drive Westbound						Farley Drive Northbound						Farley Drive Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:00 AM	3	3	5	0	3	11	18	8	7	0	1	33	11	5	2	0	0	18	2	22	4	0	1	28	90
7:15 AM	1	6	5	0	1	12	22	9	9	0	0	40	14	4	1	0	0	19	5	20	9	0	1	34	105
7:30 AM	3	8	8	0	1	19	21	15	14	0	1	50	19	2	4	0	1	25	9	20	8	0	1	37	131
7:45 AM	4	5	5	0	3	14	21	14	13	0	0	48	19	7	4	0	0	30	10	24	6	0	1	40	132
Hourly Total	11	22	23	0	8	56	82	46	43	0	2	171	63	18	11	0	1	92	26	86	27	0	4	139	458
8:00 AM	2	5	4	0	1	11	11	5	20	0	0	36	12	7	2	0	1	21	8	17	4	0	1	29	97
8:15 AM	1	4	7	0	3	12	19	15	25	0	0	59	20	12	3	2	4	37	23	23	2	0	4	48	156
8:30 AM	4	5	5	0	3	14	23	18	24	0	1	65	20	11	4	0	2	35	17	26	14	0	8	57	171
8:45 AM	6	11	13	0	1	30	14	17	29	0	6	60	21	9	6	0	5	36	17	30	11	0	2	58	184
Hourly Total	13	25	29	0	8	67	67	55	98	0	7	220	73	39	15	2	12	129	65	96	31	0	15	192	608
9:00 AM	2	7	8	0	0	17	14	9	12	0	0	35	17	9	5	1	1	32	6	15	7	0	0	28	112
9:15 AM	3	4	13	0	0	20	10	13	16	0	0	39	23	9	6	2	0	40	8	12	8	0	3	28	127
9:30 AM	1	8	14	0	4	23	14	6	7	0	7	27	12	1	4	7	1	24	7	15	3	0	2	25	99
9:45 AM	2	9	9	0	3	20	12	4	10	0	3	26	25	10	4	3	2	42	7	4	7	0	2	18	106
Hourly Total	8	28	44	0	7	80	50	32	45	0	10	127	77	29	19	13	4	138	28	46	25	0	7	99	444
10:00 AM	4	5	7	0	2	16	11	11	10	0	2	32	23	12	6	3	0	44	11	15	9	0	0	35	127
10:15 AM	2	10	11	0	1	23	11	10	10	0	5	31	24	10	6	6	3	46	10	6	5	0	0	21	121
10:30 AM	4	7	11	0	3	22	12	13	13	0	4	38	30	9	0	2	0	41	7	5	5	0	3	17	118
10:45 AM	3	15	11	0	2	29	12	5	8	0	1	25	22	5	3	3	3	33	14	10	7	0	4	31	118
Hourly Total	13	37	40	0	8	90	46	39	41	0	12	126	99	36	15	14	6	164	42	36	26	0	7	104	484
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:00 PM	9	10	14	0	4	33	19	14	17	0	3	50	36	29	12	3	1	80	10	9	6	0	4	25	188
3:15 PM	10	8	14	0	5	32	13	11	19	0	3	43	38	25	11	2	3	76	15	16	9	0	0	40	191
3:30 PM	11	12	18	0	4	41	26	10	21	0	3	57	30	15	20	1	2	66	17	14	4	0	11	35	199
3:45 PM	5	11	21	0	0	37	18	9	10	0	3	37	26	20	15	2	1	63	15	18	7	0	0	40	177
Hourly Total	35	41	67	0	13	143	76	44	67	0	12	187	130	89	58	8	7	285	57	57	26	0	15	140	755
4:00 PM	11	15	14	0	4	40	15	11	11	0	3	37	37	19	9	3	6	68	21	19	5	0	5	45	190
4:15 PM	7	11	19	0	4	37	12	12	16	0	6	40	47	37	17	4	3	105	23	11	4	0	5	38	220
4:30 PM	10	22	19	0	2	51	13	9	13	0	2	35	37	29	24	3	0	93	20	9	5	0	3	34	213
4:45 PM	5	14	13	0	7	32	13	11	16	0	2	40	37	32	13	3	1	85	14	21	10	0	3	45	202
Hourly Total	33	62	65	0	17	160	53	43	56	0	13	152	158	117	63	13	10	351	78	60	24	0	16	162	825
5:00 PM	13	19	18	0	1	50	15	9	16	0	1	40	36	25	22	2	6	85	26	13	6	0	3	45	220
5:15 PM	16	16	13	0	2	45	15	9	14	0	0	38	44	39	22	1	1	106	19	14	11	0	3	44	233
5:30 PM	13	29	25	0	3	67	17	13	16	0	4	46	48	30	22	0	16	100	20	12	11	0	5	43	256
5:45 PM	10	12	16	0	6	38	12	10	8	0	2	30	48	31	27	1	3	107	13	15	1	0	5	29	204
Hourly Total	52	76	72	0	12	200	59	41	54	0	7	154	176	125	93	4	26	398	78	54	29	0	16	161	913
6:00 PM	8	13	22	0	2	43	15	8	9	0	3	32	34	30	18	1	1	83	16	15	6	0	11	37	195

6:15 PM	9	18	20	0	1	47	9	13	11	0	4	33	38	25	20	0	0	83	14	17	4	0	1	35	198
6:30 PM	5	12	18	0	2	35	15	5	17	0	2	37	25	15	19	3	3	62	3	11	5	0	0	19	153
6:45 PM	9	21	23	0	1	53	14	13	9	0	3	36	27	18	15	5	1	65	11	17	10	0	9	38	192
Hourly Total	31	64	83	0	6	178	53	39	46	0	12	138	124	88	72	9	5	293	44	60	25	0	21	129	738
Grand Total	196	355	423	0	79	974	486	339	450	0	75	1275	900	541	346	63	71	1850	418	495	213	0	101	1126	5225
Approach %	20.1	36.4	43.4	0.0	-	-	38.1	26.6	35.3	0.0	-	-	48.6	29.2	18.7	3.4	-	-	37.1	44.0	18.9	0.0	-	-	-
Total %	3.8	6.8	8.1	0.0	-	18.6	9.3	6.5	8.6	0.0	-	24.4	17.2	10.4	6.6	1.2	-	35.4	8.0	9.5	4.1	0.0	-	21.6	-
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	1	0	0	0	-	1	0	1	0	0	-	1	2
% Motorcycles	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.1	0.0	0.0	0.0	-	0.1	0.0	0.2	0.0	-	-	0.1	0.0
Cars	180	331	360	0	-	871	457	304	404	0	-	1165	780	486	316	60	-	1642	394	442	192	0	-	1028	4706
% Cars	91.8	93.2	85.1	-	-	89.4	94.0	89.7	89.8	-	-	91.4	86.7	89.8	91.3	95.2	-	88.8	94.3	89.3	90.1	-	-	91.3	90.1
Light Goods Vehicles	15	20	55	0	-	90	25	32	14	0	-	71	100	45	23	3	-	171	20	26	16	0	-	62	394
% Light Goods Vehicles	7.7	5.6	13.0	-	-	9.2	5.1	9.4	3.1	-	-	5.6	11.1	8.3	6.6	4.8	-	9.2	4.8	5.3	7.5	-	-	5.5	7.5
Buses	0	1	0	0	-	1	2	1	29	0	-	32	1	5	5	0	-	11	4	24	0	0	-	28	72
% Buses	0.0	0.3	0.0	-	-	0.1	0.4	0.3	6.4	-	-	2.5	0.1	0.9	1.4	0.0	-	0.6	1.0	4.8	0.0	-	-	2.5	1.4
Single-Unit Trucks	0	3	8	0	-	11	2	2	3	0	-	7	14	4	2	0	-	20	0	1	2	0	-	3	41
% Single-Unit Trucks	0.0	0.8	1.9	-	-	1.1	0.4	0.6	0.7	-	-	0.5	1.6	0.7	0.6	0.0	-	1.1	0.0	0.2	0.9	-	-	0.3	0.8
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	3	0	0	0	-	3	0	0	0	0	-	0	3
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.3	0.0	0.0	0.0	-	0.2	0.0	0.0	0.0	-	-	0.0	0.1
Bicycles on Road	1	0	0	0	-	1	0	0	0	0	-	0	1	1	0	0	-	2	0	1	3	0	-	4	7
% Bicycles on Road	0.5	0.0	0.0	-	-	0.1	0.0	0.0	0.0	-	-	0.0	0.1	0.2	0.0	0.0	-	0.1	0.0	0.2	1.4	-	-	0.4	0.1
Bicycles on Crosswalk	-	-	-	-	2	-	-	-	-	-	3	-	-	-	-	-	5	-	-	-	-	-	4	-	-
% Bicycles on Crosswalk	-	-	-	-	2.5	-	-	-	-	-	4.0	-	-	-	-	-	7.0	-	-	-	-	-	4.0	-	-
Pedestrians	-	-	-	-	77	-	-	-	-	-	72	-	-	-	-	-	66	-	-	-	-	-	97	-	-
% Pedestrians	-	-	-	-	97.5	-	-	-	-	-	96.0	-	-	-	-	-	93.0	-	-	-	-	-	96.0	-	-

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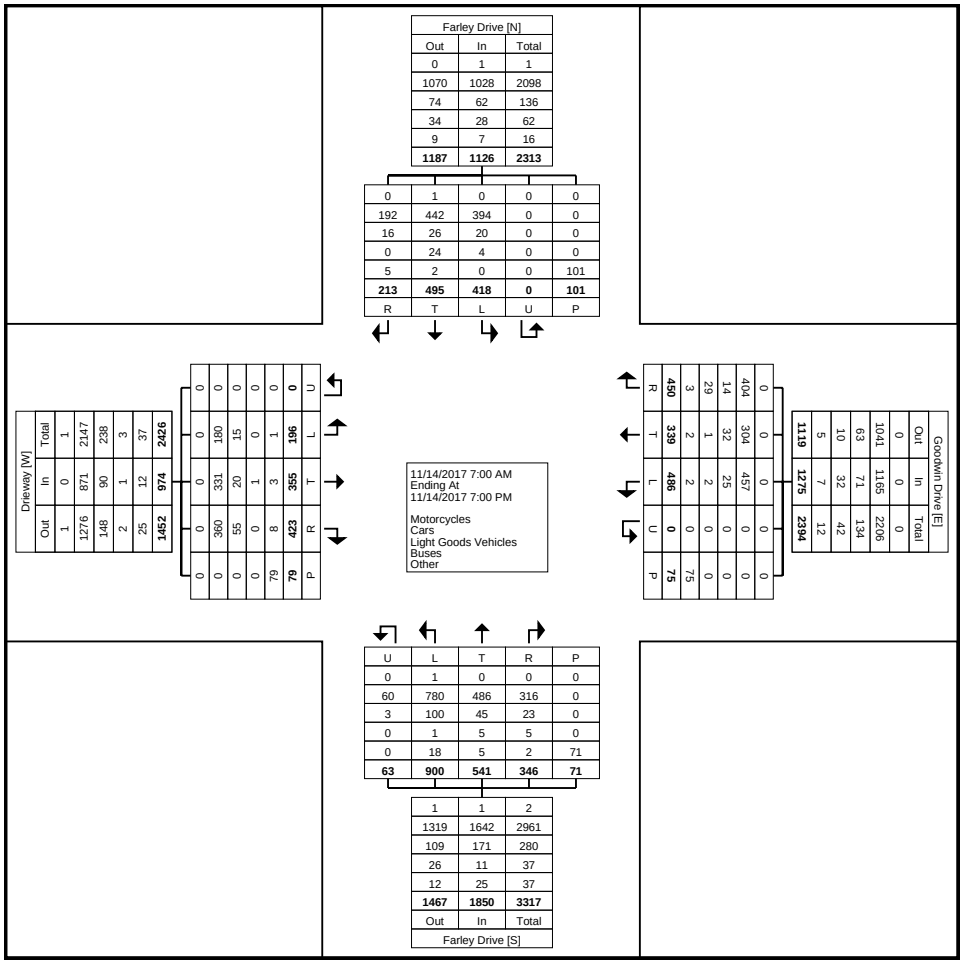

Turning Movement Data Plot

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Count Name: Farley Dr & Goodwin Dr
Site Code:
Start Date: 11/14/2017

Turning Movement Peak Hour Data (8:15 AM)

Start Time	Drieway Eastbound						Goodwin Drive Westbound						Farley Drive Northbound						Farley Drive Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
8:15 AM	1	4	7	0	3	12	19	15	25	0	0	59	20	12	3	2	4	37	23	23	2	0	4	48	156
8:30 AM	4	5	5	0	3	14	23	18	24	0	1	65	20	11	4	0	2	35	17	26	14	0	8	57	171
8:45 AM	6	11	13	0	1	30	14	17	29	0	6	60	21	9	6	0	5	36	17	30	11	0	2	58	184
9:00 AM	2	7	8	0	0	17	14	9	12	0	0	35	17	9	5	1	1	32	6	15	7	0	0	28	112
Total	13	27	33	0	7	73	70	59	90	0	7	219	78	41	18	3	12	140	63	94	34	0	14	191	623
Approach %	17.8	37.0	45.2	0.0	-	-	32.0	26.9	41.1	0.0	-	-	55.7	29.3	12.9	2.1	-	-	33.0	49.2	17.8	0.0	-	-	-
Total %	2.1	4.3	5.3	0.0	-	11.7	11.2	9.5	14.4	0.0	-	35.2	12.5	6.6	2.9	0.5	-	22.5	10.1	15.1	5.5	0.0	-	30.7	-
PHF	0.542	0.614	0.635	0.000	-	0.608	0.761	0.819	0.776	0.000	-	0.842	0.929	0.854	0.750	0.375	-	0.946	0.685	0.783	0.607	0.000	-	0.823	0.846
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	13	27	24	0	-	64	66	55	82	0	-	203	65	38	18	2	-	123	59	87	32	0	-	178	568
% Cars	100.0	100.0	72.7	-	-	87.7	94.3	93.2	91.1	-	-	92.7	83.3	92.7	100.0	66.7	-	87.9	93.7	92.6	94.1	-	-	93.2	91.2
Light Goods Vehicles	0	0	7	0	-	7	3	3	2	0	-	8	10	1	0	1	-	12	4	4	2	0	-	10	37
% Light Goods Vehicles	0.0	0.0	21.2	-	-	9.6	4.3	5.1	2.2	-	-	3.7	12.8	2.4	0.0	33.3	-	8.6	6.3	4.3	5.9	-	-	5.2	5.9
Buses	0	0	0	0	-	0	1	1	5	0	-	7	0	1	0	0	-	1	0	3	0	0	-	3	11
% Buses	0.0	0.0	0.0	-	-	0.0	1.4	1.7	5.6	-	-	3.2	0.0	2.4	0.0	0.0	-	0.7	0.0	3.2	0.0	-	-	1.6	1.8
Single-Unit Trucks	0	0	2	0	-	2	0	0	1	0	-	1	3	1	0	0	-	4	0	0	0	0	-	0	7
% Single-Unit Trucks	0.0	0.0	6.1	-	-	2.7	0.0	0.0	1.1	-	-	0.5	3.8	2.4	0.0	0.0	-	2.9	0.0	0.0	0.0	-	-	0.0	1.1
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
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	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	7	-	-	-	-	-	7	-	-	-	-	-	12	-	-	-	-	-	14	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

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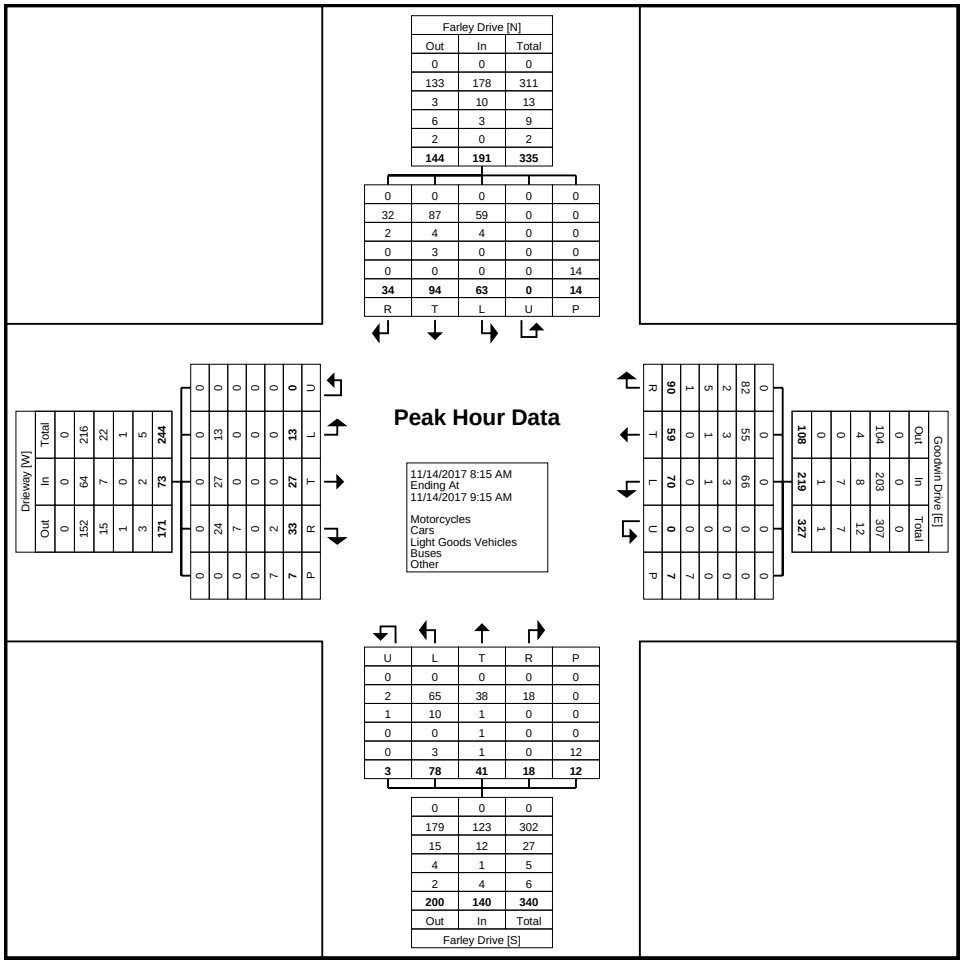

Turning Movement Peak Hour Data Plot (8:15 AM)

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Start Date: 11/14/2017

Turning Movement Peak Hour Data (5:00 PM)

Start Time	Drieway Eastbound						Goodwin Drive Westbound						Farley Drive Northbound						Farley Drive 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
5:00 PM	13	19	18	0	1	50	15	9	16	0	1	40	36	25	22	2	6	85	26	13	6	0	3	45	220
5:15 PM	16	16	13	0	2	45	15	9	14	0	0	38	44	39	22	1	1	106	19	14	11	0	3	44	233
5:30 PM	13	29	25	0	3	67	17	13	16	0	4	46	48	30	22	0	16	100	20	12	11	0	5	43	256
5:45 PM	10	12	16	0	6	38	12	10	8	0	2	30	48	31	27	1	3	107	13	15	1	0	5	29	204
Total	52	76	72	0	12	200	59	41	54	0	7	154	176	125	93	4	26	398	78	54	29	0	16	161	913
Approach %	26.0	38.0	36.0	0.0	-	-	38.3	26.6	35.1	0.0	-	-	44.2	31.4	23.4	1.0	-	-	48.4	33.5	18.0	0.0	-	-	-
Total %	5.7	8.3	7.9	0.0	-	21.9	6.5	4.5	5.9	0.0	-	16.9	19.3	13.7	10.2	0.4	-	43.6	8.5	5.9	3.2	0.0	-	17.6	-
PHF	0.813	0.655	0.720	0.000	-	0.746	0.868	0.788	0.844	0.000	-	0.837	0.917	0.801	0.861	0.500	-	0.930	0.750	0.900	0.659	0.000	-	0.894	0.892
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	1	0	0	0	-	1	0	0	0	0	-	0	1
% Motorcycles	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.6	0.0	0.0	0.0	-	0.3	0.0	0.0	0.0	-	-	0.0	0.1
Cars	48	71	61	0	-	180	54	37	48	0	-	139	155	114	89	4	-	362	71	50	27	0	-	148	829
% Cars	92.3	93.4	84.7	-	-	90.0	91.5	90.2	88.9	-	-	90.3	88.1	91.2	95.7	100.0	-	91.0	91.0	92.6	93.1	-	-	91.9	90.8
Light Goods Vehicles	4	5	11	0	-	20	5	4	3	0	-	12	18	10	4	0	-	32	7	1	2	0	-	10	74
% Light Goods Vehicles	7.7	6.6	15.3	-	-	10.0	8.5	9.8	5.6	-	-	7.8	10.2	8.0	4.3	0.0	-	8.0	9.0	1.9	6.9	-	-	6.2	8.1
Buses	0	0	0	0	-	0	0	0	3	0	-	3	0	0	0	0	-	0	0	3	0	0	-	3	6
% Buses	0.0	0.0	0.0	-	-	0.0	0.0	0.0	5.6	-	-	1.9	0.0	0.0	0.0	0.0	-	0.0	0.0	5.6	0.0	-	-	1.9	0.7
Single-Unit Trucks	0	0	0	0	-	0	0	0	0	0	-	0	2	0	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	-	-	0.0	1.1	0.0	0.0	0.0	-	0.5	0.0	0.0	0.0	-	-	0.0	0.2
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	1
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.8	0.0	0.0	-	0.3	0.0	0.0	0.0	-	-	0.0	0.1
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	3	-	-	-	-	-	2	-	-
% Bicycles on Crosswalk	-	-	-	-	8.3	-	-	-	-	-	0.0	-	-	-	-	-	11.5	-	-	-	-	-	12.5	-	-
Pedestrians	-	-	-	-	11	-	-	-	-	-	7	-	-	-	-	-	23	-	-	-	-	-	14	-	-
% Pedestrians	-	-	-	-	91.7	-	-	-	-	-	100.0	-	-	-	-	-	88.5	-	-	-	-	-	87.5	-	-

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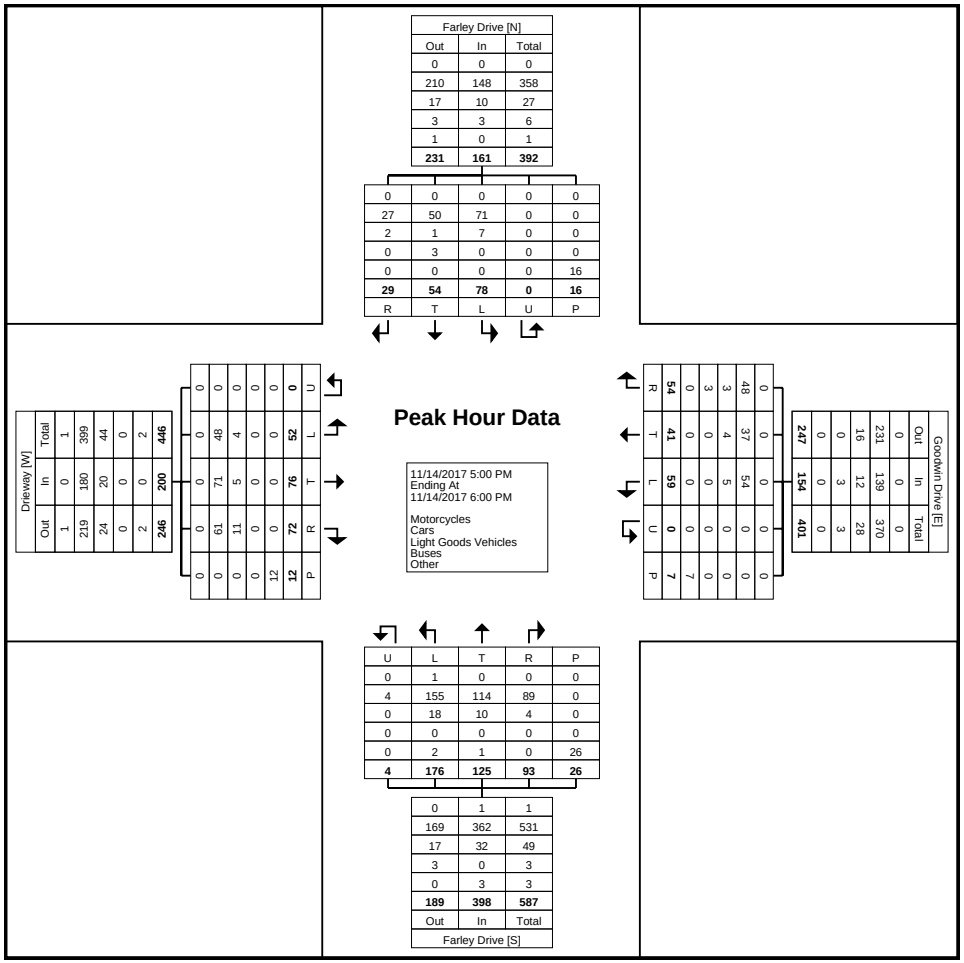

Turning Movement Peak Hour Data Plot (5:00 PM)

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APPENDIX B
EXISTING TRAFFIC OPERATIONS REPORTS

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	3	7	148	2	3	189
Future Volume (vph)	3	7	148	2	3	189
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.902		0.998			
Flt Protected	0.987					0.999
Satd. Flow (prot)	1535	0	1824	0	0	1801
Flt Permitted	0.987					0.999
Satd. Flow (perm)	1535	0	1824	0	0	1801
Link Speed (k/h)	50		50			50
Link Distance (m)	71.3		157.6			174.9
Travel Time (s)	5.1		11.3			12.6
Confl. Peds. (#/hr)	2			7	7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	14%	4%	0%	33%	5%
Adj. Flow (vph)	3	8	161	2	3	205
Shared Lane Traffic (%)						
Lane Group Flow (vph)	11	0	163	0	0	208
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 22.3%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	3	7	148	2	3	189
Future Volume (Veh/h)	3	7	148	2	3	189
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	8	161	2	3	205
Pedestrians	7		2			
Lane Width (m)	3.6		3.6			
Walking Speed (m/s)	1.2		1.2			
Percent Blockage	1		0			
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	382	169			170	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	382	169			170	
tC, single (s)	6.4	6.3			4.4	
tC, 2 stage (s)						
tF (s)	3.5	3.4			2.5	
p0 queue free %	100	99			100	
cM capacity (veh/h)	618	840			1233	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	11	163	208
Volume Left	3	0	3
Volume Right	8	2	0
cSH	765	1700	1233
Volume to Capacity	0.01	0.10	0.00
Queue Length 95th (m)	0.3	0.0	0.1
Control Delay (s)	9.8	0.0	0.1
Lane LOS	A		A
Approach Delay (s)	9.8	0.0	0.1
Approach LOS	A		

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	22.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	27	33	70	59	90	78	41	18	63	94	34
Future Volume (vph)	13	27	33	70	59	90	78	41	18	63	94	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	15.0		0.0	0.0		0.0	15.0		0.0	20.0		0.0
Storage Lanes	1		0	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	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		0.917			0.944			0.954			0.960	
Flt Protected	0.950				0.984		0.950			0.950		
Satd. Flow (prot)	1805	1516	0	0	1699	0	1543	1764	0	1703	1745	0
Flt Permitted	0.950				0.984		0.950			0.950		
Satd. Flow (perm)	1805	1516	0	0	1699	0	1543	1764	0	1703	1745	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		63.3			76.6			158.0			157.6	
Travel Time (s)		4.6			5.5			11.4			11.3	
Confl. Peds. (#/hr)	14		12	12		14	7		7	7		7
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	27%	4%	5%	3%	17%	4%	0%	6%	4%	6%
Adj. Flow (vph)	14	29	36	76	64	98	85	45	20	68	102	37
Shared Lane Traffic (%)												
Lane Group Flow (vph)	14	65	0	0	238	0	85	65	0	68	139	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	42.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	13	27	33	70	59	90	78	41	18	63	94	34
Future Volume (vph)	13	27	33	70	59	90	78	41	18	63	94	34
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	14	29	36	76	64	98	85	45	20	68	102	37

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	14	65	238	85	65	68	139
Volume Left (vph)	14	0	76	85	0	68	0
Volume Right (vph)	0	36	98	0	20	0	37
Hadj (s)	0.50	-0.13	-0.12	0.79	-0.17	0.60	-0.11
Departure Headway (s)	6.3	5.6	5.4	6.5	5.5	6.2	5.5
Degree Utilization, x	0.02	0.10	0.36	0.15	0.10	0.12	0.21
Capacity (veh/h)	530	590	629	528	615	548	621
Control Delay (s)	8.2	8.1	11.5	9.4	7.9	8.8	8.7
Approach Delay (s)	8.1		11.5	8.7		8.8	
Approach LOS	A		B	A		A	

Intersection Summary					
Delay	9.6				
Level of Service	A				
Intersection Capacity Utilization	42.5%	ICU Level of Service		A	
Analysis Period (min)	15				

Intersection	
Intersection Delay, s/veh	10.3
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	13	27	33	70	59	90	78	41	18	63	94	34
Future Vol, veh/h	13	27	33	70	59	90	78	41	18	63	94	34
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	0	0	27	4	5	3	17	4	0	6	4	6
Mvmt Flow	14	29	36	76	64	98	85	45	20	68	102	37
Number of Lanes	1	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	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	2
HCM Control Delay	8.8	11.6	9.7	9.7
HCM LOS	A	B	A	A

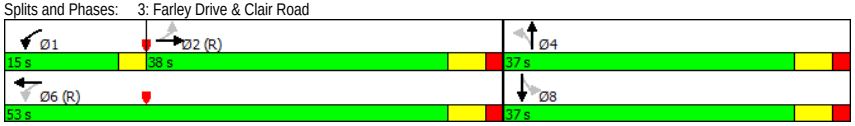
Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	100%	0%	32%	100%	0%
Vol Thru, %	0%	69%	0%	45%	27%	0%	73%
Vol Right, %	0%	31%	0%	55%	41%	0%	27%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	78	59	13	60	219	63	128
LT Vol	78	0	13	0	70	63	0
Through Vol	0	41	0	27	59	0	94
RT Vol	0	18	0	33	90	0	34
Lane Flow Rate	85	64	14	65	238	68	139
Geometry Grp	7	7	7	7	6	7	7
Degree of Util (X)	0.151	0.097	0.025	0.097	0.359	0.117	0.21
Departure Headway (Hd)	6.401	5.456	6.253	5.359	5.432	6.149	5.423
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	555	650	567	661	657	578	655
Service Time	4.197	3.252	4.052	3.158	3.51	3.938	3.211
HCM Lane V/C Ratio	0.153	0.098	0.025	0.098	0.362	0.118	0.212
HCM Control Delay	10.3	8.8	9.2	8.7	11.6	9.8	9.7
HCM Lane LOS	B	A	A	A	B	A	A
HCM 95th-tile Q	0.5	0.3	0.1	0.3	1.6	0.4	0.8

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	84	281	32	12	631	60	21	7	13	25	17	154
Future Volume (vph)	84	281	32	12	631	60	21	7	13	25	17	154
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	125.0		0.0	50.0		0.0	0.0		25.0	0.0		10.0
Storage Lanes	1		0	1		0	1		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00		1.00	1.00		1.00				0.99	
Frt		0.985			0.987			0.905			0.894	
Flt Protected	0.950			0.950			0.950				0.994	
Satd. Flow (prot)	1703	3038	0	1805	3415	0	1570	1636	0	0	1627	0
Flt Permitted	0.367			0.523			0.408				0.951	
Satd. Flow (perm)	656	3038	0	991	3415	0	671	1636	0	0	1556	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		15			16			14			167	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		373.0			336.9			82.7			158.0	
Travel Time (s)		26.9			24.3			6.0			11.4	
Confl. Peds. (#/hr)	6		3	3		6	6					6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	6%	18%	6%	0%	4%	5%	15%	14%	0%	12%	0%	1%
Adj. Flow (vph)	91	305	35	13	686	65	23	8	14	27	18	167
Shared Lane Traffic (%)												
Lane Group Flow (vph)	91	340	0	13	751	0	23	22	0	0	212	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		1	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		7.0	10.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	35.0	35.0		10.0	35.0		32.0	32.0		32.0	32.0	
Total Split (s)	38.0	38.0		15.0	53.0		37.0	37.0		37.0	37.0	
Total Split (%)	42.2%	42.2%		16.7%	58.9%		41.1%	41.1%		41.1%	41.1%	
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		0.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Lost Time (s)	6.0	6.0		3.0	6.0		6.0	6.0			6.0	
Lead/Lag	Lag	Lag		Lead								
Lead-Lag Optimize?	Yes	Yes		Yes								
Recall Mode	C-Max	C-Max		None	C-Max		None	None		None	None	
Act Effct Green (s)	66.2	66.2		71.2	68.2		9.8	9.8			9.8	
Actuated g/C Ratio	0.74	0.74		0.79	0.76		0.11	0.11			0.11	
v/c Ratio	0.19	0.15		0.02	0.29		0.32	0.12			0.66	
Control Delay	6.7	4.6		2.8	4.0		46.5	21.8			20.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Delay	6.7	4.6		2.8	4.0		46.5	21.8			20.7	
LOS	A	A		A	A		D	C			C	
Approach Delay		5.0			4.0			34.4			20.7	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		A			A			C			C	
Queue Length 50th (m)	3.4	6.0		0.3	15.6		4.0	1.4			7.8	
Queue Length 95th (m)	16.3	20.3		2.0	31.8		11.1	7.8			27.9	
Internal Link Dist (m)		349.0			312.9			58.7			134.0	
Turn Bay Length (m)	125.0			50.0								
Base Capacity (vph)	482	2237		892	2590		231	572			645	
Starvation Cap Reductn	0	0		0	0		0	0			0	
Spillback Cap Reductn	0	0		0	0		0	0			0	
Storage Cap Reductn	0	0		0	0		0	0			0	
Reduced v/c Ratio	0.19	0.15		0.01	0.29		0.10	0.04			0.33	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 43 (48%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.66			
Intersection Signal Delay: 7.7		Intersection LOS: A	
Intersection Capacity Utilization 66.9%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 3: Farley Drive & Clair Road



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	6	6	226	7	7	174
Future Volume (vph)	6	6	226	7	7	174
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.932		0.996			
Flt Protected	0.976					0.998
Satd. Flow (prot)	1728	0	1734	0	0	1777
Flt Permitted	0.976					0.998
Satd. Flow (perm)	1728	0	1734	0	0	1777
Link Speed (k/h)	50		50			50
Link Distance (m)	71.3		157.6			174.9
Travel Time (s)	5.1		11.3			12.6
Confl. Peds. (#/hr)	8	2		12	12	
Confl. Bikes (#/hr)				1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	9%	14%	0%	7%
Adj. Flow (vph)	7	7	246	8	8	189
Shared Lane Traffic (%)						
Lane Group Flow (vph)	14	0	254	0	0	197
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	25.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	6	6	226	7	7	174
Future Volume (Veh/h)	6	6	226	7	7	174
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	7	246	8	8	189
Pedestrians	12		8			2
Lane Width (m)	3.6		3.6			3.6
Walking Speed (m/s)	1.2		1.2			1.2
Percent Blockage	1		1			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	475	264			266	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	475	264			266	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	99			99	
cM capacity (veh/h)	539	770			1296	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	14	254	197
Volume Left	7	0	8
Volume Right	7	8	0
cSH	635	1700	1296
Volume to Capacity	0.02	0.15	0.01
Queue Length 95th (m)	0.5	0.0	0.1
Control Delay (s)	10.8	0.0	0.4
Lane LOS	B		A
Approach Delay (s)	10.8	0.0	0.4
Approach LOS	B		

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	25.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	52	76	72	59	41	54	176	125	93	78	54	29
Future Volume (vph)	52	76	72	59	41	54	176	125	93	78	54	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	15.0		0.0	0.0		0.0	15.0		0.0	20.0		0.0
Storage Lanes	1		0	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	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		0.927			0.953			0.936			0.947	
Flt Protected	0.950				0.981		0.950			0.950		
Satd. Flow (prot)	1671	1589	0	0	1641	0	1626	1673	0	1656	1734	0
Flt Permitted	0.950				0.981		0.950			0.950		
Satd. Flow (perm)	1671	1589	0	0	1641	0	1626	1673	0	1656	1734	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		63.3			76.6			158.0			157.6	
Travel Time (s)		4.6			5.5			11.4			11.3	
Confl. Peds. (#/hr)	16		26	26		16	12		7	7		12
Confl. Bikes (#/hr)									1			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	8%	7%	15%	9%	10%	6%	11%	8%	4%	9%	2%	7%
Adj. Flow (vph)	57	83	78	64	45	59	191	136	101	85	59	32
Shared Lane Traffic (%)												
Lane Group Flow (vph)	57	161	0	0	168	0	191	237	0	85	91	0
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)	52	76	72	59	41	54	176	125	93	78	54	29
Future Volume (vph)	52	76	72	59	41	54	176	125	93	78	54	29
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	57	83	78	64	45	59	191	136	101	85	59	32

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	57	161	168	191	237	85	91
Volume Left (vph)	57	0	64	191	0	85	0
Volume Right (vph)	0	78	59	0	101	0	32
Hadj (s)	0.64	-0.15	0.01	0.69	-0.19	0.65	-0.18
Departure Headway (s)	7.1	6.3	6.5	6.7	5.8	7.0	6.2
Degree Utilization, x	0.11	0.28	0.30	0.36	0.38	0.17	0.16
Capacity (veh/h)	472	533	521	518	593	478	540
Control Delay (s)	9.8	10.6	12.2	12.2	11.2	10.2	9.1
Approach Delay (s)	10.4		12.2	11.6		9.7	
Approach LOS	B		B	B		A	

Intersection Summary					
Delay	11.1				
Level of Service	B				
Intersection Capacity Utilization	53.6%	ICU Level of Service		A	
Analysis Period (min)	15				

Intersection	
Intersection Delay, s/veh	12
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	52	76	72	59	41	54	176	125	93	78	54	29
Future Vol, veh/h	52	76	72	59	41	54	176	125	93	78	54	29
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	8	7	15	9	10	6	11	8	4	9	2	7
Mvmt Flow	57	83	78	64	45	59	191	136	101	85	59	32
Number of Lanes	1	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	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	2
HCM Control Delay	11.3	12.6	12.7	10.7
HCM LOS	B	B	B	B

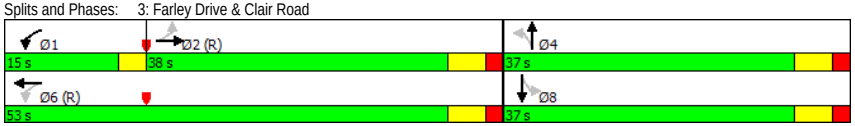
Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	100%	0%	38%	100%	0%
Vol Thru, %	0%	57%	0%	51%	27%	0%	65%
Vol Right, %	0%	43%	0%	49%	35%	0%	35%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	176	218	52	148	154	78	83
LT Vol	176	0	52	0	59	78	0
Through Vol	0	125	0	76	41	0	54
RT Vol	0	93	0	72	54	0	29
Lane Flow Rate	191	237	57	161	167	85	90
Geometry Grp	7	7	7	7	6	7	7
Degree of Util (X)	0.357	0.386	0.113	0.281	0.307	0.167	0.155
Departure Headway (Hd)	6.727	5.865	7.167	6.297	6.6	7.077	6.198
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	534	611	499	569	542	505	576
Service Time	4.478	3.615	4.927	4.056	4.659	4.84	3.96
HCM Lane V/C Ratio	0.358	0.388	0.114	0.283	0.308	0.168	0.156
HCM Control Delay	13.2	12.3	10.8	11.5	12.6	11.3	10.1
HCM Lane LOS	B	B	B	B	B	B	B
HCM 95th-tile Q	1.6	1.8	0.4	1.1	1.3	0.6	0.5

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	252	544	215	39	310	79	104	67	28	50	51	130
Future Volume (vph)	252	544	215	39	310	79	104	67	28	50	51	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	125.0		0.0	50.0		0.0	0.0		25.0	0.0		10.0
Storage Lanes	1		0	1		0	1		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	0.99		1.00	0.99		0.99	0.99			0.98	
Frt		0.957			0.970			0.956			0.924	
Flt Protected	0.950			0.950			0.950				0.989	
Satd. Flow (prot)	1805	3351	0	1805	3370	0	1805	1780	0	0	1689	0
Flt Permitted	0.505			0.293			0.408				0.896	
Satd. Flow (perm)	952	3351	0	555	3370	0	768	1780	0	0	1527	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		73			53			25			79	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		373.0			336.9			82.7			158.0	
Travel Time (s)		26.9			24.3			6.0			11.4	
Confl. Peds. (#/hr)	9		8	8		9	14		9	9		14
Confl. Bikes (#/hr)									1			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	3%	0%	0%	4%	0%	0%	2%	0%	6%	0%	0%
Adj. Flow (vph)	274	591	234	42	337	86	113	73	30	54	55	141
Shared Lane Traffic (%)												
Lane Group Flow (vph)	274	825	0	42	423	0	113	103	0	0	250	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		1	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		7.0	10.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	35.0	35.0		10.0	35.0		32.0	32.0		32.0	32.0	
Total Split (s)	38.0	38.0		15.0	53.0		37.0	37.0		37.0	37.0	
Total Split (%)	42.2%	42.2%		16.7%	58.9%		41.1%	41.1%		41.1%	41.1%	
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		0.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Lost Time (s)	6.0	6.0		3.0	6.0		6.0	6.0			6.0	
Lead/Lag	Lag	Lag		Lead								
Lead-Lag Optimize?	Yes	Yes		Yes								
Recall Mode	C-Max	C-Max		None	C-Max		None	None		None	None	
Act Effct Green (s)	56.1	56.1		65.2	62.2		15.8	15.8			15.8	
Actuated g/C Ratio	0.62	0.62		0.72	0.69		0.18	0.18			0.18	
v/c Ratio	0.46	0.39		0.08	0.18		0.84	0.31			0.75	
Control Delay	15.3	10.0		5.2	5.2		78.7	25.0			37.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Delay	15.3	10.0		5.2	5.2		78.7	25.0			37.3	
LOS	B	A		A	A		E	C			D	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		11.3			5.2			53.1			37.3	
Approach LOS		B			A			D			D	
Queue Length 50th (m)	27.2	36.4		1.8	10.5		20.1	12.4			29.7	
Queue Length 95th (m)	61.4	62.0		6.1	21.3		#37.0	24.1			50.9	
Internal Link Dist (m)		349.0			312.9			58.7			134.0	
Turn Bay Length (m)	125.0			50.0								
Base Capacity (vph)	593	2117		568	2345		264	629			577	
Starvation Cap Reductn	0	0		0	0		0	0			0	
Spillback Cap Reductn	0	0		0	0		0	0			0	
Storage Cap Reductn	0	0		0	0		0	0			0	
Reduced v/c Ratio	0.46	0.39		0.07	0.18		0.43	0.16			0.43	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 7 (8%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay: 17.6		Intersection LOS: B	
Intersection Capacity Utilization 74.3%		ICU Level of Service D	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 3: Farley Drive & Clair Road



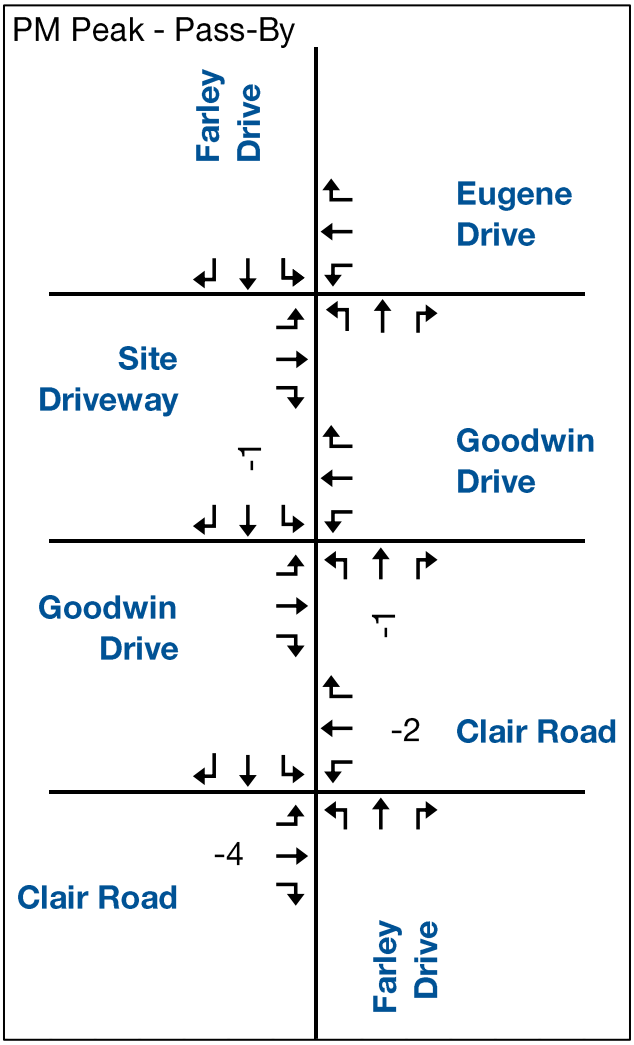
APPENDIX C
1750 GORDON STREET DEVELOPMENT TRAFFIC 0.0.1

Background development - 1750 Gordon St.

ITE Land Use Code	Independent Variable	AM Peak Hour				PM Peak Hour			
		Rate	In	Out	Total	Rate	In	Out	Total
LUC 820 - Shopping Centre	17 x 1000 ft^2	0.96	10	6	16	3.71	30	33	63
	Pass-by	-	-	-	-	*26%*	*-8*	*-8*	*-16*
Total Trip Generation			10	6	16		22	25	47

Background traffic distribution

Direction	Route	AM Peak		PM Peak Hour	
		Inbound	Outbound	Inbound	Outbound
North	Farley Drive	12%	11%	9%	11%
South	Farley Drive	3%	4%	10%	16%
East	Goodwin Drive	14%	7%	8%	13%
East	Clair Road	45%	22%	22%	32%
West	Clair Road	26%	56%	51%	28%
Total		100%	100%	100%	100%



APPENDIX D
2025 BACKGROUND TRAFFIC OPERATIONS REPORTS

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	4	8	174	2	4	222
Future Volume (vph)	4	8	174	2	4	222
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.907		0.999			
Flt Protected	0.985					0.999
Satd. Flow (prot)	1547	0	1826	0	0	1800
Flt Permitted	0.985					0.999
Satd. Flow (perm)	1547	0	1826	0	0	1800
Link Speed (k/h)	50		50			50
Link Distance (m)	71.3		157.6			174.9
Travel Time (s)	5.1		11.3			12.6
Confl. Peds. (#/hr)	2			7	7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	14%	4%	0%	33%	5%
Adj. Flow (vph)	4	9	189	2	4	241
Shared Lane Traffic (%)						
Lane Group Flow (vph)	13	0	191	0	0	245
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 24.9%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	4	8	174	2	4	222
Future Volume (Veh/h)	4	8	174	2	4	222
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	9	189	2	4	241
Pedestrians	7		2			
Lane Width (m)	3.6		3.6			
Walking Speed (m/s)	1.2		1.2			
Percent Blockage	1		0			
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	448	197			198	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	448	197			198	
tC, single (s)	6.4	6.3			4.4	
tC, 2 stage (s)						
tF (s)	3.5	3.4			2.5	
p0 queue free %	99	99			100	
cM capacity (veh/h)	566	810			1202	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	13	191	245
Volume Left	4	0	4
Volume Right	9	2	0
cSH	715	1700	1202
Volume to Capacity	0.02	0.11	0.00
Queue Length 95th (m)	0.4	0.0	0.1
Control Delay (s)	10.1	0.0	0.2
Lane LOS	B		A
Approach Delay (s)	10.1	0.0	0.2
Approach LOS	B		

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	24.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	32	44	82	70	105	99	48	21	74	110	41
Future Volume (vph)	16	32	44	82	70	105	99	48	21	74	110	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	15.0		0.0	0.0		0.0	15.0		0.0	20.0		0.0
Storage Lanes	1		0	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	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		0.913			0.945			0.954			0.959	
Flt Protected	0.950				0.984		0.950			0.950		
Satd. Flow (prot)	1805	1500	0	0	1701	0	1543	1764	0	1703	1743	0
Flt Permitted	0.950				0.984		0.950			0.950		
Satd. Flow (perm)	1805	1500	0	0	1701	0	1543	1764	0	1703	1743	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		63.3			76.6			158.0			157.6	
Travel Time (s)		4.6			5.5			11.4			11.3	
Confl. Peds. (#/hr)	14		12	12		14	7		7	7		7
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	27%	4%	5%	3%	17%	4%	0%	6%	4%	6%
Adj. Flow (vph)	17	35	48	89	76	114	108	52	23	80	120	45
Shared Lane Traffic (%)												
Lane Group Flow (vph)	17	83	0	0	279	0	108	75	0	80	165	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 46.9%		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)	16	32	44	82	70	105	99	48	21	74	110	41
Future Volume (vph)	16	32	44	82	70	105	99	48	21	74	110	41
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	17	35	48	89	76	114	108	52	23	80	120	45

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	17	83	279	108	75	80	165
Volume Left (vph)	17	0	89	108	0	80	0
Volume Right (vph)	0	48	114	0	23	0	45
Hadj (s)	0.50	-0.14	-0.12	0.79	-0.17	0.60	-0.11
Departure Headway (s)	6.6	6.0	5.7	6.8	5.8	6.5	5.8
Degree Utilization, x	0.03	0.14	0.44	0.20	0.12	0.14	0.27
Capacity (veh/h)	499	553	601	501	578	521	587
Control Delay (s)	8.7	8.8	13.2	10.3	8.4	9.4	9.7
Approach Delay (s)	8.7		13.2	9.5		9.6	
Approach LOS	A		B	A		A	

Intersection Summary				
Delay	10.7			
Level of Service	B			
Intersection Capacity Utilization	46.9%	ICU Level of Service	A	
Analysis Period (min)	15			

Intersection	
Intersection Delay, s/veh	11.4
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	16	32	44	82	70	105	99	48	21	74	110	41
Future Vol, veh/h	16	32	44	82	70	105	99	48	21	74	110	41
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	0	0	27	4	5	3	17	4	0	6	4	6
Mvmt Flow	17	35	48	89	76	114	108	52	23	80	120	45
Number of Lanes	1	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	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	2
HCM Control Delay	9.5	13.5	10.5	10.5
HCM LOS	A	B	B	B

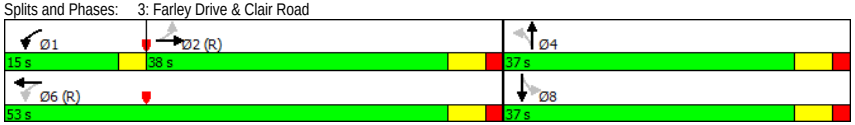
Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	100%	0%	32%	100%	0%
Vol Thru, %	0%	70%	0%	42%	27%	0%	73%
Vol Right, %	0%	30%	0%	58%	41%	0%	27%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	99	69	16	76	257	74	151
LT Vol	99	0	16	0	82	74	0
Through Vol	0	48	0	32	70	0	110
RT Vol	0	21	0	44	105	0	41
Lane Flow Rate	108	75	17	83	279	80	164
Geometry Grp	7	7	7	7	6	7	7
Degree of Util (X)	0.204	0.122	0.032	0.133	0.449	0.146	0.265
Departure Headway (Hd)	6.811	5.863	6.695	5.777	5.782	6.542	5.808
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	527	611	535	620	623	549	619
Service Time	4.547	3.599	4.437	3.518	3.814	4.276	3.542
HCM Lane V/C Ratio	0.205	0.123	0.032	0.134	0.448	0.146	0.265
HCM Control Delay	11.3	9.4	9.7	9.4	13.5	10.4	10.6
HCM Lane LOS	B	A	A	A	B	B	B
HCM 95th-tile Q	0.8	0.4	0.1	0.5	2.3	0.5	1.1

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	101	329	37	14	739	75	25	8	15	30	20	184
Future Volume (vph)	101	329	37	14	739	75	25	8	15	30	20	184
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	125.0		0.0	50.0		0.0	0.0		25.0	0.0		10.0
Storage Lanes	1		0	1		0	1		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00		1.00	1.00		1.00				0.99	
Frt		0.985			0.986			0.904			0.894	
Flt Protected	0.950			0.950			0.950				0.994	
Satd. Flow (prot)	1703	3037	0	1805	3410	0	1570	1635	0	0	1626	0
Flt Permitted	0.321			0.493			0.305				0.950	
Satd. Flow (perm)	574	3037	0	934	3410	0	502	1635	0	0	1554	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		15			18			16			140	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		373.0			336.9			82.7			158.0	
Travel Time (s)		26.9			24.3			6.0			11.4	
Confl. Peds. (#/hr)	6		3	3		6	6					6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	6%	18%	6%	0%	4%	5%	15%	14%	0%	12%	0%	1%
Adj. Flow (vph)	110	358	40	15	803	82	27	9	16	33	22	200
Shared Lane Traffic (%)												
Lane Group Flow (vph)	110	398	0	15	885	0	27	25	0	0	255	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		1	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		7.0	10.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	35.0	35.0		10.0	35.0		32.0	32.0		32.0	32.0	
Total Split (s)	38.0	38.0		15.0	53.0		37.0	37.0		37.0	37.0	
Total Split (%)	42.2%	42.2%		16.7%	58.9%		41.1%	41.1%		41.1%	41.1%	
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		0.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Lost Time (s)	6.0	6.0		3.0	6.0		6.0	6.0			6.0	
Lead/Lag	Lag	Lag		Lead								
Lead-Lag Optimize?	Yes	Yes		Yes								
Recall Mode	C-Max	C-Max		None	C-Max		None	None		None	None	
Act Effct Green (s)	62.9	62.9		67.9	64.9		13.1	13.1			13.1	
Actuated g/C Ratio	0.70	0.70		0.75	0.72		0.15	0.15			0.15	
v/c Ratio	0.27	0.19		0.02	0.36		0.37	0.10			0.74	
Control Delay	10.0	6.1		4.1	5.7		46.8	18.4			29.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Delay	10.0	6.1		4.1	5.7		46.8	18.4			29.1	
LOS	A	A		A	A		D	B			C	
Approach Delay		7.0			5.7			33.1			29.1	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		A			A			C			C	
Queue Length 50th (m)	5.7	9.5		0.5	25.3		4.5	1.5			19.7	
Queue Length 95th (m)	24.5	27.5		2.7	48.1		12.0	7.7			42.0	
Internal Link Dist (m)		349.0			312.9			58.7			134.0	
Turn Bay Length (m)	125.0			50.0								
Base Capacity (vph)	401	2127		820	2463		172	573			627	
Starvation Cap Reductn	0	0		0	0		0	0			0	
Spillback Cap Reductn	0	0		0	0		0	0			0	
Storage Cap Reductn	0	0		0	0		0	0			0	
Reduced v/c Ratio	0.27	0.19		0.02	0.36		0.16	0.04			0.41	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 43 (48%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.74			
Intersection Signal Delay: 10.4		Intersection LOS: B	
Intersection Capacity Utilization 68.8%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 3: Farley Drive & Clair Road



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	7	7	268	8	8	206
Future Volume (vph)	7	7	268	8	8	206
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.932		0.996			
Flt Protected	0.976					0.998
Satd. Flow (prot)	1728	0	1734	0	0	1777
Flt Permitted	0.976					0.998
Satd. Flow (perm)	1728	0	1734	0	0	1777
Link Speed (k/h)	50		50			50
Link Distance (m)	71.3		157.6			174.9
Travel Time (s)	5.1		11.3			12.6
Confl. Peds. (#/hr)	8	2		12	12	
Confl. Bikes (#/hr)				1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	9%	14%	0%	7%
Adj. Flow (vph)	8	8	291	9	9	224
Shared Lane Traffic (%)						
Lane Group Flow (vph)	16	0	300	0	0	233
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	28.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	7	7	268	8	8	206
Future Volume (Veh/h)	7	7	268	8	8	206
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	8	8	291	9	9	224
Pedestrians	12		8			2
Lane Width (m)	3.6		3.6			3.6
Walking Speed (m/s)	1.2		1.2			1.2
Percent Blockage	1		1			0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	558	310			312	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	558	310			312	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	99			99	
cM capacity (veh/h)	483	727			1247	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	16	300	233
Volume Left	8	0	9
Volume Right	8	9	0
cSH	580	1700	1247
Volume to Capacity	0.03	0.18	0.01
Queue Length 95th (m)	0.7	0.0	0.2
Control Delay (s)	11.4	0.0	0.4
Lane LOS	B		A
Approach Delay (s)	11.4	0.0	0.4
Approach LOS	B		

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	28.0%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	64	92	103	69	50	63	224	145	109	91	62	36
Future Volume (vph)	64	92	103	69	50	63	224	145	109	91	62	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	15.0		0.0	0.0		0.0	15.0		0.0	20.0		0.0
Storage Lanes	1		0	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	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		0.921			0.953			0.936			0.945	
Flt Protected	0.950				0.981		0.950			0.950		
Satd. Flow (prot)	1671	1573	0	0	1641	0	1626	1673	0	1656	1729	0
Flt Permitted	0.950				0.981		0.950			0.950		
Satd. Flow (perm)	1671	1573	0	0	1641	0	1626	1673	0	1656	1729	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		63.3			76.6			158.0			157.6	
Travel Time (s)		4.6			5.5			11.4			11.3	
Confl. Peds. (#/hr)	16		26	26		16	12		7	7		12
Confl. Bikes (#/hr)									1			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	8%	7%	15%	9%	10%	6%	11%	8%	4%	9%	2%	7%
Adj. Flow (vph)	70	100	112	75	54	68	243	158	118	99	67	39
Shared Lane Traffic (%)												
Lane Group Flow (vph)	70	212	0	0	197	0	243	276	0	99	106	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	58.9%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	64	92	103	69	50	63	224	145	109	91	62	36
Future Volume (vph)	64	92	103	69	50	63	224	145	109	91	62	36
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	70	100	112	75	54	68	243	158	118	99	67	39

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	70	212	197	243	276	99	106
Volume Left (vph)	70	0	75	243	0	99	0
Volume Right (vph)	0	112	68	0	118	0	39
Hadj (s)	0.64	-0.18	0.01	0.69	-0.19	0.65	-0.19
Departure Headway (s)	7.6	6.8	7.0	7.2	6.3	7.7	6.8
Degree Utilization, x	0.15	0.40	0.38	0.49	0.48	0.21	0.20
Capacity (veh/h)	443	500	484	476	551	438	490
Control Delay (s)	10.7	13.0	14.2	15.6	13.8	11.5	10.3
Approach Delay (s)	12.5		14.2	14.6		10.9	
Approach LOS	B		B	B		B	

Intersection Summary					
Delay	13.4				
Level of Service	B				
Intersection Capacity Utilization	58.9%	ICU Level of Service		B	
Analysis Period (min)	15				

Intersection	
Intersection Delay, s/veh	14.7
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	64	92	103	69	50	63	224	145	109	91	62	36
Future Vol, veh/h	64	92	103	69	50	63	224	145	109	91	62	36
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	8	7	15	9	10	6	11	8	4	9	2	7
Mvmt Flow	70	100	112	75	54	68	243	158	118	99	67	39
Number of Lanes	1	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	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	2
HCM Control Delay	13.6	15.1	16.1	12
HCM LOS	B	C	C	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	100%	0%	38%	100%	0%
Vol Thru, %	0%	57%	0%	47%	27%	0%	63%
Vol Right, %	0%	43%	0%	53%	35%	0%	37%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	224	254	64	195	182	91	98
LT Vol	224	0	64	0	69	91	0
Through Vol	0	145	0	92	50	0	62
RT Vol	0	109	0	103	63	0	36
Lane Flow Rate	243	276	70	212	198	99	107
Geometry Grp	7	7	7	7	6	7	7
Degree of Util (X)	0.496	0.496	0.15	0.405	0.399	0.215	0.204
Departure Headway (Hd)	7.331	6.462	7.777	6.871	7.265	7.81	6.911
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	494	560	461	524	497	460	519
Service Time	5.031	4.162	5.518	4.613	5.306	5.554	4.654
HCM Lane V/C Ratio	0.492	0.493	0.152	0.405	0.398	0.215	0.206
HCM Control Delay	17	15.4	11.9	14.2	15.1	12.7	11.4
HCM Lane LOS	C	C	B	B	C	B	B
HCM 95th-tile Q	2.7	2.7	0.5	1.9	1.9	0.8	0.8

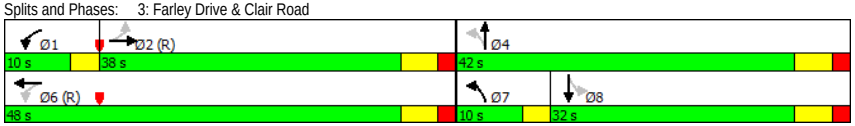
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	306	633	252	46	361	98	122	81	33	67	64	159
Future Volume (vph)	306	633	252	46	361	98	122	81	33	67	64	159
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	125.0		0.0	50.0		0.0	0.0		25.0	0.0		10.0
Storage Lanes	1		0	1		0	1		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	0.99		1.00	0.99		0.99	0.99			0.98	
Frt		0.957			0.968			0.956			0.926	
Flt Protected	0.950			0.950			0.950				0.989	
Satd. Flow (prot)	1805	3351	0	1805	3364	0	1805	1780	0	0	1692	0
Flt Permitted	0.469			0.187			0.367				0.884	
Satd. Flow (perm)	885	3351	0	355	3364	0	692	1780	0	0	1509	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		73			51			27			68	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		373.0			336.9			108.8			158.0	
Travel Time (s)		26.9			24.3			7.8			11.4	
Confl. Peds. (#/hr)	9		8	8		9	14		9	9		14
Confl. Bikes (#/hr)									1			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	3%	0%	0%	4%	0%	0%	2%	0%	6%	0%	0%
Adj. Flow (vph)	333	688	274	50	392	107	133	88	36	73	70	173
Shared Lane Traffic (%)												
Lane Group Flow (vph)	333	962	0	50	499	0	133	124	0	0	316	0
Turn Type	Perm	NA		pm+pt	NA		pm+pt	NA		Perm	NA	
Protected Phases		2		1	6		7	4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		1	6		7	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		7.0	10.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	35.0	35.0		10.0	35.0		10.0	32.0		32.0	32.0	
Total Split (s)	38.0	38.0		10.0	48.0		10.0	42.0		32.0	32.0	
Total Split (%)	42.2%	42.2%		11.1%	53.3%		11.1%	46.7%		35.6%	35.6%	
Yellow Time (s)	4.0	4.0		3.0	4.0		3.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		0.0	2.0		0.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Lost Time (s)	6.0	6.0		3.0	6.0		3.0	6.0			6.0	
Lead/Lag	Lag	Lag		Lead			Lead			Lag	Lag	
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		None	C-Max		None	None		None	None	
Act Effct Green (s)	42.1	42.1		51.1	48.1		32.9	29.9			19.9	
Actuated g/C Ratio	0.47	0.47		0.57	0.53		0.37	0.33			0.22	
v/c Ratio	0.81	0.60		0.16	0.27		0.39	0.20			0.82	
Control Delay	42.6	20.4		11.6	11.5		21.7	16.0			42.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Delay	42.6	20.4		11.6	11.5		21.7	16.0			42.7	
LOS	D	C		B	B		C	B			D	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		26.1			11.5			19.0			42.7	
Approach LOS		C			B			B			D	
Queue Length 50th (m)	55.3	67.2		3.9	22.1		16.1	12.2			43.1	
Queue Length 95th (m)	#120.0	100.0		10.3	36.6		26.1	22.6			69.2	
Internal Link Dist (m)		349.0			312.9			84.8			134.0	
Turn Bay Length (m)	125.0			50.0								
Base Capacity (vph)	413	1604		315	1822		339	728			484	
Starvation Cap Reductn	0	0		0	0		0	0			0	
Spillback Cap Reductn	0	0		0	0		0	0			0	
Storage Cap Reductn	0	0		0	0		0	0			0	
Reduced v/c Ratio	0.81	0.60		0.16	0.27		0.39	0.17			0.65	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay: 24.2		Intersection LOS: C	
Intersection Capacity Utilization 80.4%		ICU Level of Service D	
Analysis Period (min) 15			

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

Splits and Phases: 3: Farley Drive & Clair Road



APPENDIX E
2025 TOTAL TRAFFIC OPERATIONS REPORTS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	0	35	4	0	8	9	174	2	4	222	1
Future Volume (vph)	4	0	35	4	0	8	9	174	2	4	222	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.878			0.907			0.999			0.999	
Flt Protected		0.995			0.985			0.998			0.999	
Satd. Flow (prot)	0	1627	0	0	1547	0	0	1824	0	0	1798	0
Flt Permitted		0.995			0.985			0.998			0.999	
Satd. Flow (perm)	0	1627	0	0	1547	0	0	1824	0	0	1798	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		74.1			71.3			157.6			174.9	
Travel Time (s)		5.3			5.1			11.3			12.6	
Confl. Peds. (#/hr)				2					7	7		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	0%	2%	14%	2%	4%	0%	33%	5%	2%
Adj. Flow (vph)	4	0	38	4	0	9	10	189	2	4	241	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	42	0	0	13	0	0	201	0	0	246	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 24.2%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	0	35	4	0	8	9	174	2	4	222	1
Future Volume (Veh/h)	4	0	35	4	0	8	9	174	2	4	222	1
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	0	38	4	0	9	10	189	2	4	241	1
Pedestrians					7			2				
Lane Width (m)					3.6			3.6				
Walking Speed (m/s)					1.2			1.2				
Percent Blockage					1			0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	468	468	244	506	467	197	242			198		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	468	468	244	506	467	197	242			198		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.3	4.1			4.4		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.4	2.2			2.5		
p0 queue free %	99	100	95	99	100	99	99			100		
cM capacity (veh/h)	493	485	794	448	485	810	1324			1202		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	42	13	201	246
Volume Left	4	4	10	4
Volume Right	38	9	2	1
cSH	750	648	1324	1202
Volume to Capacity	0.06	0.02	0.01	0.00
Queue Length 95th (m)	1.4	0.5	0.2	0.1
Control Delay (s)	10.1	10.7	0.4	0.2
Lane LOS	B	B	A	A
Approach Delay (s)	10.1	10.7	0.4	0.2
Approach LOS	B	B		

Intersection Summary				
Average Delay		1.4		
Intersection Capacity Utilization		24.2%	ICU Level of Service	A
Analysis Period (min)		15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	32	44	82	70	106	99	56	21	76	139	45
Future Volume (vph)	16	32	44	82	70	106	99	56	21	76	139	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	15.0		0.0	0.0		0.0	15.0		0.0	20.0		0.0
Storage Lanes	1		0	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	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		0.913			0.945			0.959			0.963	
Flt Protected	0.950				0.984		0.950			0.950		
Satd. Flow (prot)	1805	1500	0	0	1701	0	1543	1771	0	1703	1751	0
Flt Permitted	0.950				0.984		0.950			0.950		
Satd. Flow (perm)	1805	1500	0	0	1701	0	1543	1771	0	1703	1751	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		63.3			76.6			158.0			157.6	
Travel Time (s)		4.6			5.5			11.4			11.3	
Confl. Peds. (#/hr)	14		12	12		14	7		7	7		7
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	27%	4%	5%	3%	17%	4%	0%	6%	4%	6%
Adj. Flow (vph)	17	35	48	89	76	115	108	61	23	83	151	49
Shared Lane Traffic (%)												
Lane Group Flow (vph)	17	83	0	0	280	0	108	84	0	83	200	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	48.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	16	32	44	82	70	106	99	56	21	76	139	45
Future Volume (vph)	16	32	44	82	70	106	99	56	21	76	139	45
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	17	35	48	89	76	115	108	61	23	83	151	49

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	17	83	280	108	84	83	200
Volume Left (vph)	17	0	89	108	0	83	0
Volume Right (vph)	0	48	115	0	23	0	49
Hadj (s)	0.50	-0.14	-0.12	0.79	-0.14	0.60	-0.10
Departure Headway (s)	6.8	6.2	5.8	6.9	5.9	6.6	5.9
Degree Utilization, x	0.03	0.14	0.45	0.21	0.14	0.15	0.33
Capacity (veh/h)	485	536	586	494	567	518	583
Control Delay (s)	8.8	9.0	13.6	10.4	8.7	9.5	10.5
Approach Delay (s)	8.9		13.6	9.7		10.2	
Approach LOS	A		B	A		B	

Intersection Summary					
Delay	11.0				
Level of Service	B				
Intersection Capacity Utilization	48.3%	ICU Level of Service	A		
Analysis Period (min)	15				

Intersection	
Intersection Delay, s/veh	11.8
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	16	32	44	82	70	106	99	56	21	76	139	45
Future Vol, veh/h	16	32	44	82	70	106	99	56	21	76	139	45
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	0	0	27	4	5	3	17	4	0	6	4	6
Mvmt Flow	17	35	48	89	76	115	108	61	23	83	151	49
Number of Lanes	1	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	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	2
HCM Control Delay	9.6	13.9	10.7	11.1
HCM LOS	A	B	B	B

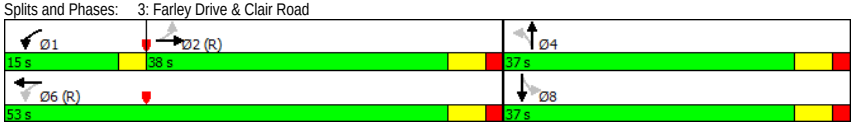
Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	100%	0%	32%	100%	0%
Vol Thru, %	0%	73%	0%	42%	27%	0%	76%
Vol Right, %	0%	27%	0%	58%	41%	0%	24%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	99	77	16	76	258	76	184
LT Vol	99	0	16	0	82	76	0
Through Vol	0	56	0	32	70	0	139
RT Vol	0	21	0	44	106	0	45
Lane Flow Rate	108	84	17	83	280	83	200
Geometry Grp	7	7	7	7	6	7	7
Degree of Util (X)	0.206	0.139	0.033	0.136	0.461	0.151	0.326
Departure Headway (Hd)	6.9	5.974	6.856	5.937	5.912	6.586	5.871
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	520	599	522	603	609	544	612
Service Time	4.643	3.717	4.603	3.683	3.948	4.326	3.611
HCM Lane V/C Ratio	0.208	0.14	0.033	0.138	0.46	0.153	0.327
HCM Control Delay	11.4	9.7	9.8	9.6	13.9	10.5	11.4
HCM Lane LOS	B	A	A	A	B	B	B
HCM 95th-tile Q	0.8	0.5	0.1	0.5	2.4	0.5	1.4

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	104	329	37	14	739	80	25	8	15	38	21	204
Future Volume (vph)	104	329	37	14	739	80	25	8	15	38	21	204
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	125.0		0.0	50.0		0.0	0.0		25.0	0.0		10.0
Storage Lanes	1		0	1		0	1		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00		1.00	1.00		1.00				0.99	
Frt		0.985			0.985			0.904			0.895	
Flt Protected	0.950			0.950			0.950				0.993	
Satd. Flow (prot)	1703	3037	0	1805	3406	0	1570	1635	0	0	1624	0
Flt Permitted	0.320			0.492			0.293				0.945	
Satd. Flow (perm)	572	3037	0	932	3406	0	482	1635	0	0	1546	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		15			19			16			140	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		373.0			336.9			82.7			158.0	
Travel Time (s)		26.9			24.3			6.0			11.4	
Confl. Peds. (#/hr)	6		3	3		6	6					6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	6%	18%	6%	0%	4%	5%	15%	14%	0%	12%	0%	1%
Adj. Flow (vph)	113	358	40	15	803	87	27	9	16	41	23	222
Shared Lane Traffic (%)												
Lane Group Flow (vph)	113	398	0	15	890	0	27	25	0	0	286	0
Turn Type	Perm	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		1	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		7.0	10.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	35.0	35.0		10.0	35.0		32.0	32.0		32.0	32.0	
Total Split (s)	38.0	38.0		15.0	53.0		37.0	37.0		37.0	37.0	
Total Split (%)	42.2%	42.2%		16.7%	58.9%		41.1%	41.1%		41.1%	41.1%	
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		0.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Lost Time (s)	6.0	6.0		3.0	6.0		6.0	6.0			6.0	
Lead/Lag	Lag	Lag		Lead								
Lead-Lag Optimize?	Yes	Yes		Yes								
Recall Mode	C-Max	C-Max		None	C-Max		None	None		None	None	
Act Effct Green (s)	61.2	61.2		66.2	63.2		14.8	14.8			14.8	
Actuated g/C Ratio	0.68	0.68		0.74	0.70		0.16	0.16			0.16	
v/c Ratio	0.29	0.19		0.02	0.37		0.34	0.09			0.77	
Control Delay	11.4	7.0		4.9	6.6		42.4	17.1			31.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Delay	11.4	7.0		4.9	6.6		42.4	17.1			31.4	
LOS	B	A		A	A		D	B			C	
Approach Delay		7.9			6.6			30.2			31.4	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach LOS		A			A			C			C	
Queue Length 50th (m)	6.4	10.5		0.6	28.3		4.4	1.4			25.3	
Queue Length 95th (m)	27.2	29.5		3.0	52.8		11.6	7.4			48.5	
Internal Link Dist (m)		349.0			312.9			58.7			134.0	
Turn Bay Length (m)	125.0			50.0								
Base Capacity (vph)	388	2069		801	2397		166	573			624	
Starvation Cap Reductn	0	0		0	0		0	0			0	
Spillback Cap Reductn	0	0		0	0		0	0			0	
Storage Cap Reductn	0	0		0	0		0	0			0	
Reduced v/c Ratio	0.29	0.19		0.02	0.37		0.16	0.04			0.46	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 43 (48%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay: 11.7		Intersection LOS: B	
Intersection Capacity Utilization 70.4%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 3: Farley Drive & Clair Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	0	22	7	0	7	39	268	8	8	206	6
Future Volume (vph)	2	0	22	7	0	7	39	268	8	8	206	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.875			0.932			0.996			0.996	
Flt Protected		0.996			0.976			0.994			0.998	
Satd. Flow (prot)	0	1623	0	0	1728	0	0	1737	0	0	1772	0
Flt Permitted		0.996			0.976			0.994			0.998	
Satd. Flow (perm)	0	1623	0	0	1728	0	0	1737	0	0	1772	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		53.6			71.3			157.6			174.9	
Travel Time (s)		3.9			5.1			11.3			12.6	
Confl. Peds. (#/hr)				8		2			12	12		
Confl. Bikes (#/hr)									1			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	0%	2%	0%	2%	9%	14%	0%	7%	2%
Adj. Flow (vph)	2	0	24	8	0	8	42	291	9	9	224	7
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	26	0	0	16	0	0	342	0	0	240	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	42.0%	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)	2	0	22	7	0	7	39	268	8	8	206	6
Future Volume (Veh/h)	2	0	22	7	0	7	39	268	8	8	206	6
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	0	24	8	0	8	42	291	9	9	224	7
Pedestrians					12			8			2	
Lane Width (m)					3.6			3.6			3.6	
Walking Speed (m/s)					1.2			1.2			1.2	
Percent Blockage					1			1			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	635	642	236	669	640	310	231			312		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	635	642	236	669	640	310	231			312		
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 %	99	100	97	98	100	99	97			99		
cM capacity (veh/h)	372	374	798	344	374	727	1337			1247		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	26	16	342	240
Volume Left	2	8	42	9
Volume Right	24	8	9	7
cSH	734	467	1337	1247
Volume to Capacity	0.04	0.03	0.03	0.01
Queue Length 95th (m)	0.9	0.9	0.8	0.2
Control Delay (s)	10.1	13.0	1.2	0.4
Lane LOS	B	B	A	A
Approach Delay (s)	10.1	13.0	1.2	0.4
Approach LOS	B	B		

Intersection Summary				
Average Delay	1.6			
Intersection Capacity Utilization	42.0%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	66	92	103	69	50	69	224	176	109	92	80	39
Future Volume (vph)	66	92	103	69	50	69	224	176	109	92	80	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	15.0		0.0	0.0		0.0	15.0		0.0	20.0		0.0
Storage Lanes	1		0	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	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		0.921			0.950			0.943			0.951	
Flt Protected	0.950				0.982		0.950			0.950		
Satd. Flow (prot)	1671	1573	0	0	1639	0	1626	1683	0	1656	1744	0
Flt Permitted	0.950				0.982		0.950			0.950		
Satd. Flow (perm)	1671	1573	0	0	1639	0	1626	1683	0	1656	1744	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		63.3			76.6			158.0			157.6	
Travel Time (s)		4.6			5.5			11.4			11.3	
Confl. Peds. (#/hr)	16		26	26		16	12		7	7		12
Confl. Bikes (#/hr)									1			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	8%	7%	15%	9%	10%	6%	11%	8%	4%	9%	2%	7%
Adj. Flow (vph)	72	100	112	75	54	75	243	191	118	100	87	42
Shared Lane Traffic (%)												
Lane Group Flow (vph)	72	212	0	0	204	0	243	309	0	100	129	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	59.9%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	66	92	103	69	50	69	224	176	109	92	80	39
Future Volume (vph)	66	92	103	69	50	69	224	176	109	92	80	39
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	72	100	112	75	54	75	243	191	118	100	87	42

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	72	212	204	243	309	100	129
Volume Left (vph)	72	0	75	243	0	100	0
Volume Right (vph)	0	112	75	0	118	0	42
Hadj (s)	0.64	-0.18	-0.01	0.69	-0.16	0.65	-0.17
Departure Headway (s)	7.8	7.0	7.2	7.3	6.5	7.8	7.0
Degree Utilization, x	0.16	0.41	0.41	0.50	0.56	0.22	0.25
Capacity (veh/h)	432	486	474	469	530	431	481
Control Delay (s)	11.1	13.7	15.0	16.1	16.1	11.8	11.1
Approach Delay (s)	13.0		15.0	16.1		11.4	
Approach LOS	B		B	C		B	

Intersection Summary					
Delay	14.4				
Level of Service	B				
Intersection Capacity Utilization	59.9%	ICU Level of Service		B	
Analysis Period (min)	15				

Intersection	
Intersection Delay, s/veh	15.6
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	66	92	103	69	50	69	224	176	109	92	80	39
Future Vol, veh/h	66	92	103	69	50	69	224	176	109	92	80	39
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	8	7	15	9	10	6	11	8	4	9	2	7
Mvmt Flow	72	100	112	75	54	75	243	191	118	100	87	42
Number of Lanes	1	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	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	2
HCM Control Delay	14.1	15.9	17.6	12.6
HCM LOS	B	C	C	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	100%	0%	37%	100%	0%
Vol Thru, %	0%	62%	0%	47%	27%	0%	67%
Vol Right, %	0%	38%	0%	53%	37%	0%	33%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	224	285	66	195	188	92	119
LT Vol	224	0	66	0	69	92	0
Through Vol	0	176	0	92	50	0	80
RT Vol	0	109	0	103	69	0	39
Lane Flow Rate	243	310	72	212	204	100	129
Geometry Grp	7	7	7	7	6	7	7
Degree of Util (X)	0.503	0.568	0.159	0.417	0.423	0.221	0.255
Departure Headway (Hd)	7.435	6.598	7.985	7.078	7.448	7.962	7.09
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	485	548	450	509	484	451	507
Service Time	5.172	4.335	5.727	4.82	5.49	5.708	4.836
HCM Lane V/C Ratio	0.501	0.566	0.16	0.417	0.421	0.222	0.254
HCM Control Delay	17.5	17.7	12.2	14.8	15.9	13	12.3
HCM Lane LOS	C	C	B	B	C	B	B
HCM 95th-tile Q	2.8	3.5	0.6	2	2.1	0.8	1

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	317	633	252	46	361	117	122	82	33	72	65	171
Future Volume (vph)	317	633	252	46	361	117	122	82	33	72	65	171
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (m)	125.0		0.0	50.0		0.0	0.0		25.0	0.0		10.0
Storage Lanes	1		0	1		0	1		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	0.99		1.00	0.99		0.99	0.99			0.98	
Frt		0.957			0.963			0.957			0.925	
Flt Protected	0.950			0.950			0.950				0.988	
Satd. Flow (prot)	1805	3351	0	1805	3347	0	1805	1782	0	0	1688	0
Flt Permitted	0.371			0.231			0.364				0.883	
Satd. Flow (perm)	701	3351	0	438	3347	0	687	1782	0	0	1505	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		72			53			27			71	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		373.0			336.9			108.8			158.0	
Travel Time (s)		26.9			24.3			7.8			11.4	
Confl. Peds. (#/hr)	9		8	8		9	14		9	9		14
Confl. Bikes (#/hr)									1			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	3%	0%	0%	4%	0%	0%	2%	0%	6%	0%	0%
Adj. Flow (vph)	345	688	274	50	392	127	133	89	36	78	71	186
Shared Lane Traffic (%)												
Lane Group Flow (vph)	345	962	0	50	519	0	133	125	0	0	335	0
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		Perm	NA	
Protected Phases	5	2		1	6		7	4			8	
Permitted Phases	2			6			4			8		
Detector Phase	5	2		1	6		7	4		8	8	
Switch Phase												
Minimum Initial (s)	7.0	10.0		7.0	10.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	10.0	35.0		10.0	35.0		10.0	32.0		32.0	32.0	
Total Split (s)	10.0	37.0		10.0	37.0		10.0	43.0		33.0	33.0	
Total Split (%)	11.1%	41.1%		11.1%	41.1%		11.1%	47.8%		36.7%	36.7%	
Yellow Time (s)	3.0	4.0		3.0	4.0		3.0	4.0		4.0	4.0	
All-Red Time (s)	0.0	2.0		0.0	2.0		0.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Lost Time (s)	3.0	6.0		3.0	6.0		3.0	6.0			6.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead			Lag	Lag	
Lead-Lag Optimize?	Yes				Yes							
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Act Effct Green (s)	49.2	41.1		43.7	33.7		33.9	30.9			20.9	
Actuated g/C Ratio	0.55	0.46		0.49	0.37		0.38	0.34			0.23	
v/c Ratio	0.68	0.61		0.16	0.40		0.39	0.20			0.83	
Control Delay	23.0	21.4		12.3	20.4		20.9	15.5			42.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Delay	23.0	21.4		12.3	20.4		20.9	15.5			42.8	
LOS	C	C		B	C		C	B			D	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		21.8			19.7			18.2			42.8	
Approach LOS		C			B			B			D	
Queue Length 50th (m)	32.9	69.0		4.0	33.7		15.7	12.1			45.8	
Queue Length 95th (m)	#77.6	102.0		10.6	48.3		25.6	22.2			72.9	
Internal Link Dist (m)		349.0			312.9			84.8			134.0	
Turn Bay Length (m)	125.0			50.0								
Base Capacity (vph)	511	1568		319	1285		345	748			501	
Starvation Cap Reductn	0	0		0	0		0	0			0	
Spillback Cap Reductn	0	0		0	0		0	0			0	
Storage Cap Reductn	0	0		0	0		0	0			0	
Reduced v/c Ratio	0.68	0.61		0.16	0.40		0.39	0.17			0.67	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay: 23.8		Intersection LOS: C	
Intersection Capacity Utilization 80.4%		ICU Level of Service D	
Analysis Period (min) 15			

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

Splits and Phases: 3: Farley Drive & Clair Road