

CANARD ESTATES SUBDIVISION

PHASE 2

TOWN OF AMHERSTBURG

COUNTY OF ESSEX

TRAFFIC IMPACT STUDY

Prepared for:

1473511 ONTARIO LIMITED

Prepared by:



RC SPENCER ASSOCIATES INC.
Consulting Engineers

Windsor: 800 University Ave. W. - Windsor ON N9A 5R9
Leamington: 18 Talbot St. W. - Leamington ON N8H 1M4
Chatham-Kent: 138 King St. W. Unit 102 - Chatham ON N7M 1E3

CANARD ESTATES SUBDIVISION PHASE 2
TOWN OF AMHERSTBURG, COUNTY OF ESSEX
TRAFFIC IMPACT STUDY

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1.0 INTRODUCTION AND BACKGROUND

Phase 2 of an existing development has been proposed for the south side of Middle Side Road (County Road 10) in the suburb of McGregor, Town of Amherstburg, County of Essex, Ontario. The property is located off of Middle Side Road (County Road 10) between Concession Road 8 and Walker Road (County Road 11). The area is illustrated on Figure 1.

This previously undeveloped site will support the proposed development of 72 single family dwelling units. Vehicles can access the proposed development site to and from Middle Side Road (County Road 10) by way of the new street, Bogdan Drive, or the existing street, Canard Boulevard.

Walker Road (County Road 11) is a highly used two lane arterial road which provides a major access corridor into Windsor to/from the north and to/from Harrow to the south. It also facilitates access to commercial, retail and residential land uses along its entire length.

The two-lane collector Middle Side Road (County Road 10) intersects with Walker Road (County Road 11) at a stop-controlled intersection at the easterly limits of the study area, where it becomes Concession Road 11. Middle Side Road (County Road 10) also intersects with collector road Concession Road 8 at a stop-controlled intersection at the westerly limit of the study area. The purpose of this study is to examine the traffic implications of the proposed development on traffic operations in the defined study area.

2.0 EXISTING CONDITIONS

Traffic counts for the stop-controlled intersection of Middle Side Road (County Road 10) / Concession Road 11 at Walker Road (County Road 11) were obtained by RC Spencer Associates Inc. on 5 February 2019. Traffic counts for the stop-controlled intersection of Middle Side Road (County Road 10) at Concession Road 8 were obtained by RC Spencer Associates Inc. on 7 February 2019. The results are contained in Appendix A. These traffic counts provided the basis for analysis in the Synchro 10 program, which calculates various parameters of intersection performance, such as Level of Service (LOS), Intersection Capacity Utilization (ICU), and queue lengths on individual approaches.

The results of the analysis show that the stop-controlled intersection of Middle Side Road (County Road 10) / Concession Road 11 at Walker Road (County Road 11) is performing relatively well in both the AM and PM peak time periods, with both stop-controlled eastbound/westbound approaches experiencing a LOS B during the AM peak hour and a LOS C and B for eastbound/westbound approaches respectively during the PM peak hour. The critical period is the PM peak hour, which is the result of maximum north / south flow of traffic volumes.

The stop-controlled intersection of Middle Side Road (County Road 10) at Concession Road 8 is also performing relatively well in both the AM and PM peak time periods, with both stop-controlled northbound/southbound approaches experiencing a LOS B during the PM peak hour and a LOS B and A for northbound/southbound approaches respectively during the AM peak hour.

3.0 TRIP GENERATION AND DISTRIBUTION

The proposed development's site plan is illustrated on Figure 2. The type of land use is ITE No. 210 – Single-Family Detached Housing, which was obtained from the ITE Trip Generation Manual – 10th Edition. This reference was used to determine an estimation of trips generated by the proposed site. These references are provided in Appendix B.

The proposed development will consist of 72 single family dwelling units. ITE Land Use Code 210 (Single-Family Detached Housing) was used to obtain a conservative estimate of trips generated by this proposed development. The AM peak hour average trip generation rate is 0.74 trips per dwelling unit with 25% entering and 75% exiting. The PM peak hour average rate is 0.99 trips per dwelling unit with 63% entering and 37% exiting.

The trip generation estimates were calculated based on the aforementioned rates and values. As calculated in Appendix B, the proposed site is estimated to generate a total of 53 trips in the AM peak hour, with 13 trips entering the site and 40 trips exiting the site, as well as 71 trips in the PM peak hour, with 45 trips entering the site and 26 exiting the site.

The distribution of trips to and from the proposed site was estimated as per the distributions exhibited by existing traffic patterns recorded during the AM and PM peak hours. In particular, the existing traffic patterns at the major intersection of Middle Side Road (County Road 10) / Concession Road 11 and Walker Road (County Road 11) were used to determine a regional origin-destination estimate.

As identified on the site plan, vehicles can access the proposed development site to and from Middle Side Road (County Road 10) by way of the new street, Bogdan Drive, or the existing street, Canard Boulevard. The distribution of trips to and from the proposed site was estimated with respect to these access parameters; trips were assigned to the traffic network based on a “path of least resistance”.

The site generated traffic schematics for both AM and PM peak periods are identified on Figure 3. These site generated traffic volumes were then added to existing and anticipated future background traffic volumes to analyze the traffic impact of the development under existing and projected conditions.

4.0 CAPACITY AND LEVEL OF SERVICE ANALYSIS

Figure 4 illustrates the existing traffic volumes for AM and PM peak hours. Figure 5 illustrates the traffic volumes for AM and PM peak hours when the site generated traffic is added to the existing traffic.

In order to accommodate future growth, existing volumes at the intersection of Middle Side Road (County Road 10) / Concession Road 11 at Walker Road (County Road 11) and Middle Side Road (County Road 10) at Concession Road 8 were increased by 2% per year compounded for the 2025 and 2030 horizon years. The increased traffic volumes were then distributed to the proposed driveway accesses for these horizon years. Site generated traffic was added to these future background traffic scenarios, and the resulting totals are illustrated on Figures 6 and 7.

Intersection-specific figures indicating how existing traffic volumes are projected to grow as a result of site generated traffic and background growth are made available in Appendix C. The data from Figures 4 to 7 was used in the Synchro analysis of intersection performance. The

proposed development access was modelled to ensure that the access provided for safe and normal traffic operations into and out of the site. The results from the Synchro reports are summarized in Tables 1 through 4, and the detailed Synchro results are provided in Appendix D.

**Table 1: Level of Service by Approach – Middle Side Road (County Road 10) /
Concession Road 11 at Walker Road (County Road 11)**

Scenario	Middle Side Road (County Road 10) / Concession Road 11 at Walker Road (County Road 11)							
	AM Peak Hour				PM Peak Hour			
	E/B	W/B	N/B	S/B	E/B	W/B	N/B	S/B
Existing Traffic	B	B	A	A	C	B	A	A
Existing + Site Generated Traffic	B	B	A	A	C	B	A	A
Total Traffic 2025	B	B	A	A	C	C	A	A
Total Traffic 2030	C	B	A	A	C	C	A	A

**Table 2: Level of Service by Approach – Middle Side Road (County Road 10) at Canard
Boulevard / Gardiner Crescent**

Scenario	Middle Side Road (County Road 10) at Canard Boulevard / Gardiner Crescent							
	AM Peak Hour				PM Peak Hour			
	E/B	W/B	N/B	S/B	E/B	W/B	N/B	S/B
Existing Traffic	A	A	A	A	A	A	A	A
Existing + Site Generated Traffic	A	A	A	A	A	A	A	A
Total Traffic 2025	A	A	A	A	A	A	A	B
Total Traffic 2030	A	A	A	A	A	A	A	B

Table 3: Level of Service by Approach – Middle Side Road (County Road 10) at Site Access

Scenario	Middle Side Road (County Road 10) at Site Access							
	AM Peak Hour				PM Peak Hour			
	E/B	W/B	N/B	S/B	E/B	W/B	N/B	S/B
Existing Traffic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Existing + Site Generated Traffic	A	A	A	N/A	A	A	A	N/A
Total Traffic 2025	A	A	A	N/A	A	A	A	N/A
Total Traffic 2030	A	A	A	N/A	A	A	A	N/A

**Table 4: Level of Service by Approach – Middle Side Road (County Road 10) at
Concession Road 8**

Scenario	Middle Side Road (County Road 10) at Concession Road 8							
	AM Peak Hour				PM Peak Hour			
	E/B	W/B	N/B	S/B	E/B	W/B	N/B	S/B
Existing Traffic	A	A	B	A	A	A	B	B
Existing + Site Generated Traffic	A	A	B	A	A	A	B	B
Total Traffic 2025	A	A	B	A	A	A	B	B
Total Traffic 2030	A	A	B	A	A	A	B	B

4.1 Middle Side Rd. (County Rd. 10) / Concession Rd. 11 at Walker Rd. (County Rd. 11)

It is observed that there is no adverse effect when adding site generated traffic to existing traffic volumes at the intersection of Middle Side Road (County Road 10) / Concession Road 11 at Walker Road (County Road 11), which is controlled by stop signs on Middle Side Road (County Road 10). From Table 1, it is apparent that, although traffic conditions begin to slightly deteriorate in the approaches as background traffic volumes increase for the 2025 and 2030 horizon years, the critical eastbound leg of the intersection of Middle Side Road (County Road 10) / Concession Road 11 at Walker Road (County Road 11) does not deteriorate beyond an overall LOS C in either peak hour. Individual approaches maintain LOS A to C for all future growth scenarios. This suggests that the proposed development will not have a significant impact on traffic operations and that the intersection will continue to operate at an acceptable level of service well into the horizon years.

4.2 Middle Side Rd. (County Rd. 10) at Canard Blvd. / Gardiner Cres.

From Table 2, it is evident that the levels of service at the site access at Canard Boulevard from Middle Side Road (County Road 10) show no adverse effects when adding site generated traffic to existing traffic volumes.

4.3 Middle Side Rd. (County Rd. 10) at Site Access

From Table 3, it is evident that the levels of service at the site access, located at the intersection of Bogdan Drive and Middle Side Road (County Road 10), indicate no adverse effects when adding site generated traffic to existing traffic volumes.

4.4 Middle Side Rd. (County Rd. 10) at Concession Rd. 8

From Table 4, it is apparent that the intersection of Middle Side Road (County Road 10) at Concession Road 8, which is controlled by stop signs on Concession Road 8, operates very well (LOS A or B) for all approaches throughout the growth scenarios; there is no observable change when compared to the existing levels of service.

5.0 INTERSECTION QUEUEING ANALYSIS

From the Synchro reports, in the “worst case” scenario (i.e. Total Traffic 2030 – PM Peak), all intersections of Middle Side Road (County Road 10) continue to operate without any adverse effect on queueing. Although the minor eastbound and westbound approaches at Walker Road (County Road 11) exhibit increases in control delay in the horizon years, all legs of the respective intersections currently provide sufficient storage for queueing. No queueing issues may be anticipated as a result of the proposed development.

6.0 SIGNAL WARRANT ANALYSIS

6.1 Middle Side Rd. (County Rd. 10) / Concession Rd. 11 at Walker Rd. (County Rd. 11)

A signal warrant analysis was completed based on the procedures outlined in the Ontario Traffic Manual for the intersection of Middle Side Road (County Road 10) / Concession Road 11 at Walker Road (County Road 11), which is east of the Canard Boulevard access to the proposed development. The detailed results of the signal warrant analysis are presented in Appendix E and indicate that the intersection does not meet minimum warrants for signalization under the conservatively estimated future conditions. Generally, the reason is the imbalance of traffic volumes between the very high volumes on Walker Road (County Road 11) and the lower side street volumes on Middle Side Road (County Road 10) / Concession Road 11.

7.0 INTERSECTION SIGHT DISTANCE

As calculated in Appendix F and illustrated on Figure 8, the required sight distance for a vehicle exiting the site is approximately 125m for a left turning movement and 108m for a right turning movement. Considering all potential hazards and conflict points, it is the engineer’s opinion that sight lines are currently clear for both right and left turning maneuvers out of the site. However, the developer should ensure that all boulevard areas adjacent to the roadway are clear of obstructions.

8.0 SUMMARY AND CONCLUSIONS

Phase 2 of an existing development has been proposed for the south side of Middle Side Road (County Road 10) in the suburb of McGregor, Town of Amherstburg, County of Essex, Ontario. The property is located off of Middle Side Road (County Road 10) between Concession Road 8 and Walker Road (County Road 11).

This previously undeveloped site will support the proposed development of 72 single family dwelling units with access to the proposed development site to and from Middle Side Road (County Road 10) by way of the new street Bogdan Drive or the existing street Canard Boulevard.

Using recent traffic counts and the best available trip generation and distribution data, an analysis was completed to measure the operational impact of the development on traffic conditions in the area. Existing conditions and growth for the 2025 and 2030 horizon years were considered in the analysis.

The results indicate the following:

- Although traffic conditions begin to slightly deteriorate in the approaches as background traffic volumes increase for the 2025 and 2030 horizon years, the proposed development will not have a significant impact on traffic operations, and all the intersections within the study area will continue to operate at an acceptable level of service well into the horizon years.
- All legs of the respective intersections currently provide sufficient storage for queueing; no queueing issues may be anticipated as a result of the proposed development.
- The major intersection of Middle Side Road (County Road 10) / Concession Road 11 at Walker Road (County Road 11) does not meet minimum warrants for signalization under the conservatively estimated future conditions.
- Sight lines are currently clear for both right and left turning maneuvers out of the site; however, the developer should ensure that all boulevard areas adjacent to the roadway are clear of obstructions.

All of which is respectfully submitted,

RC Spencer Associates Inc.



A handwritten signature in black ink, appearing to read "John D. Tofflemire".

John D. Tofflemire, M.A.Sc., P.Eng.
Manager, Leamington Office



A handwritten signature in black ink, appearing to read "Aaron D. Blata".

Aaron D. Blata, M.Eng., P.Eng.
Traffic Engineer





			 RC SPENCER ASSOCIATES INC. Consulting Engineers Windsor 800 University Ave. W. - Windsor ON N9A 5R9 Leamington 18 Talbot St. W. - Leamington ON N8H 1M4 Chatham-Kent 138 King St. W. Unit 102 - Chatham ON N7M 1E3  Professional Engineers Ontario						DESIGN A.D.B.	CANARD ESTATES SUBDIVISION P. 2 – TIS	PROJECT NO. 18-743
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				1.	COMPLETED REPORT FIGURES	JAN 24 2019	R.L.B.	A.D.B.			
				NO.	REVISION	DATE	BY	APP			

AREA PLAN





RC SPENCER ASSOCIATES INC.
Consulting Engineers
Windsor: 800 University Ave. W., Windsor ON N9A 5B9
Leamington: 18 Talbot St. W., Leamington ON N8H 1M4
Chatham-Kent: 138 King St. W. Unit 102, Chatham ON N7M 1E3



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NO.	REVISION	DATE	BY	APP		

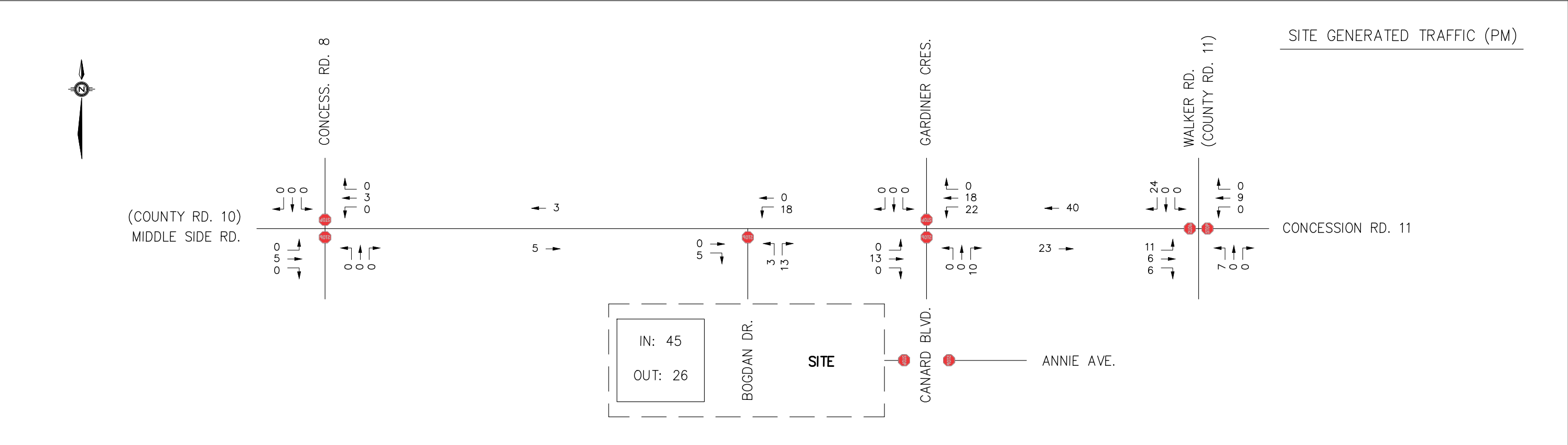
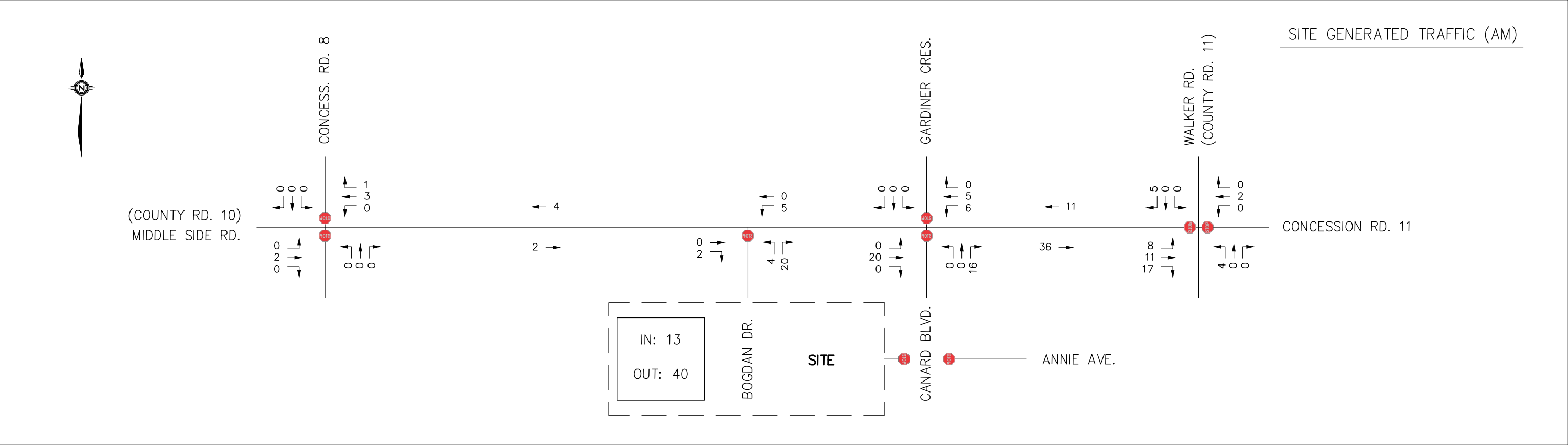
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SITE PLAN

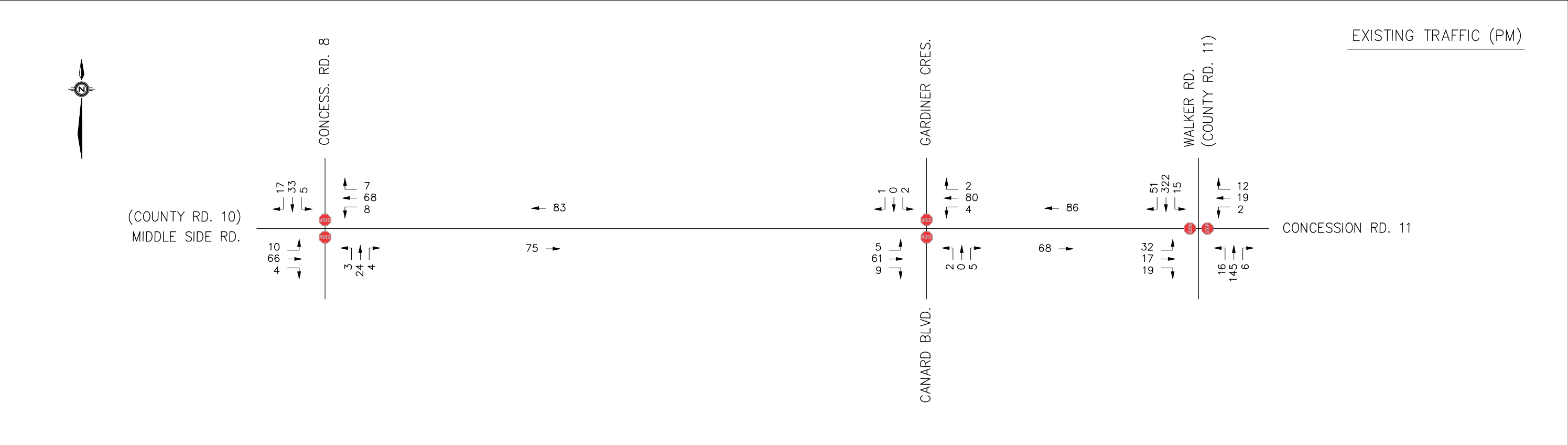
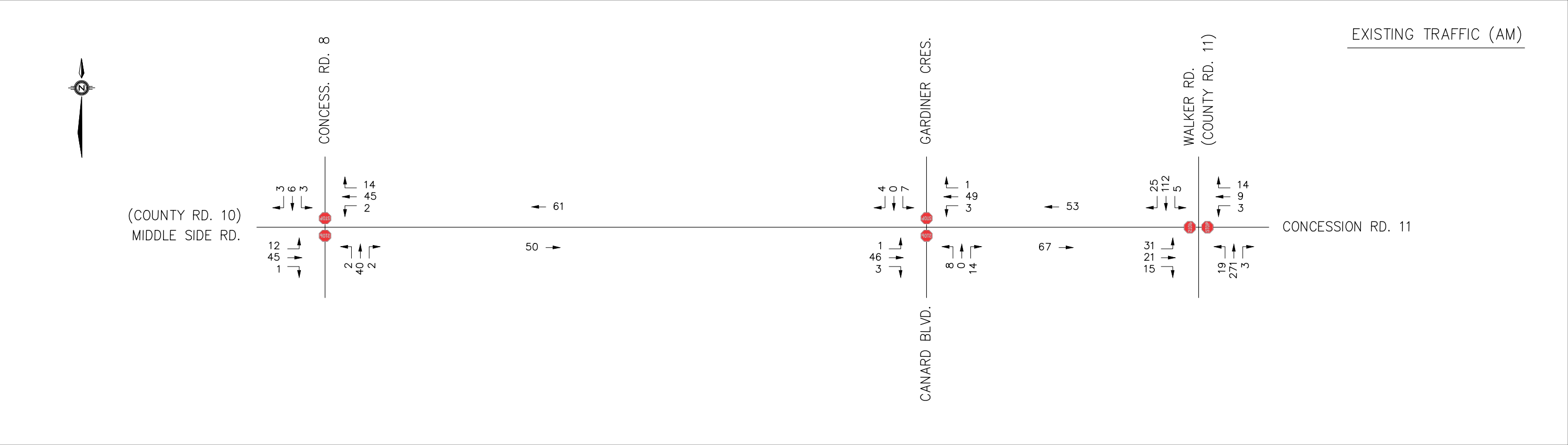
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18-743

FIGURE NO.
2

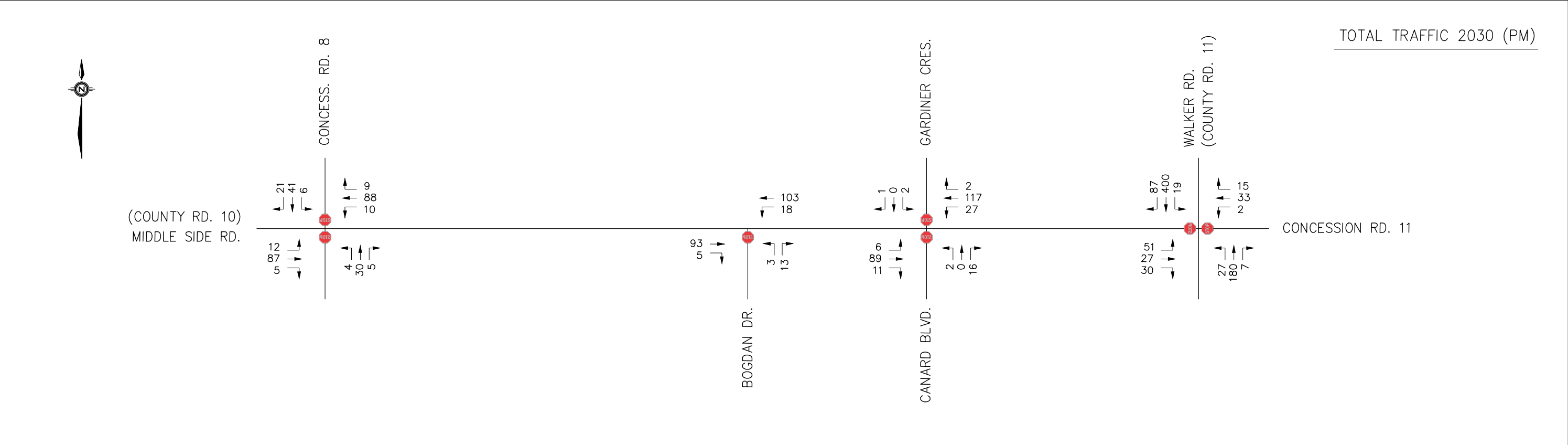
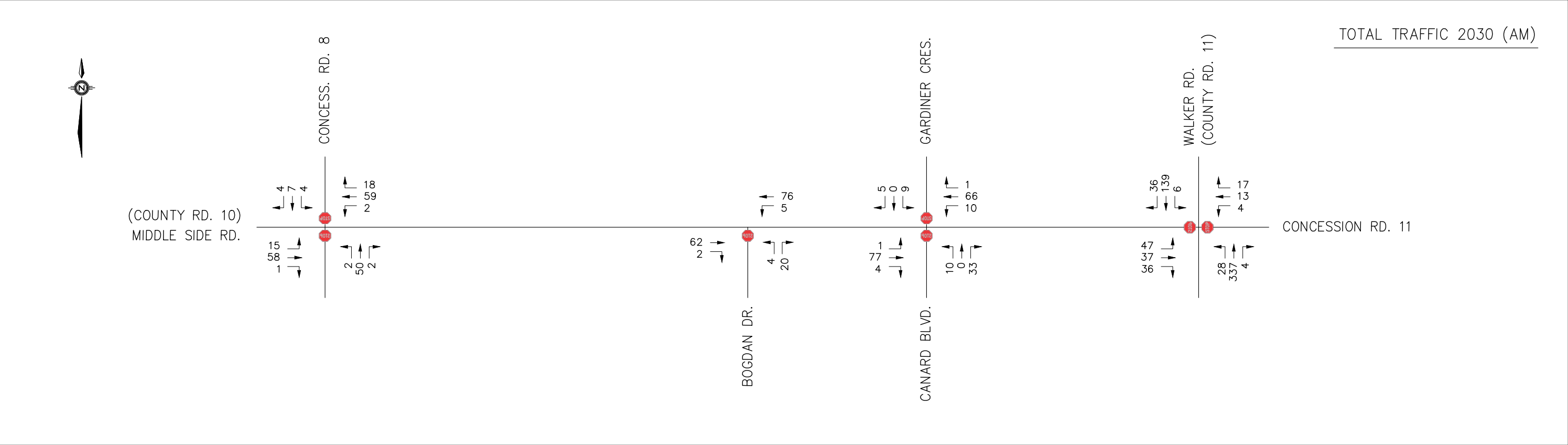
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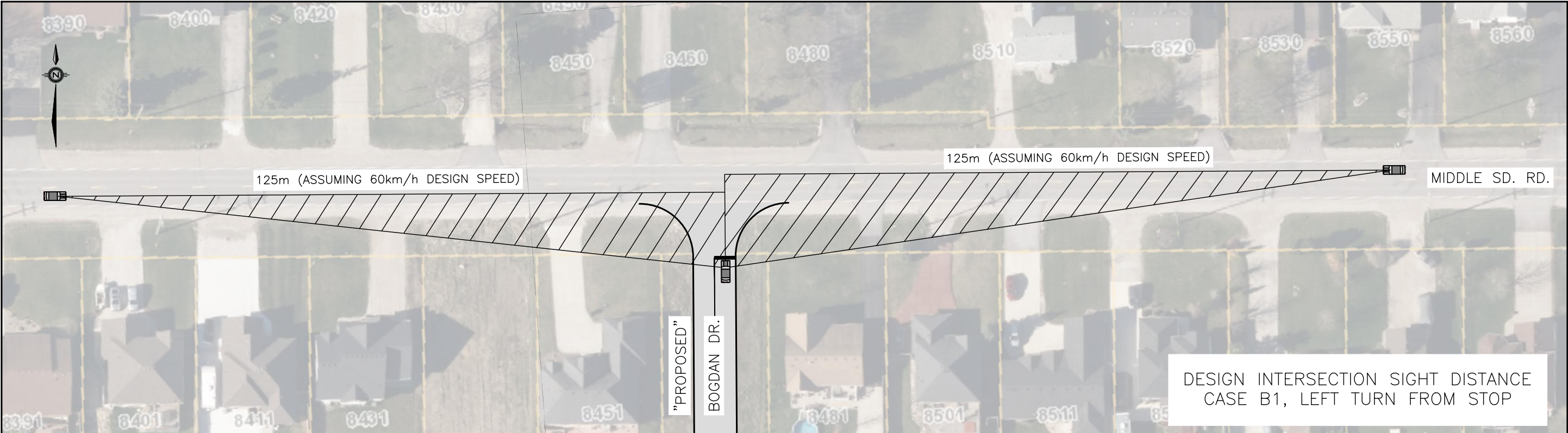
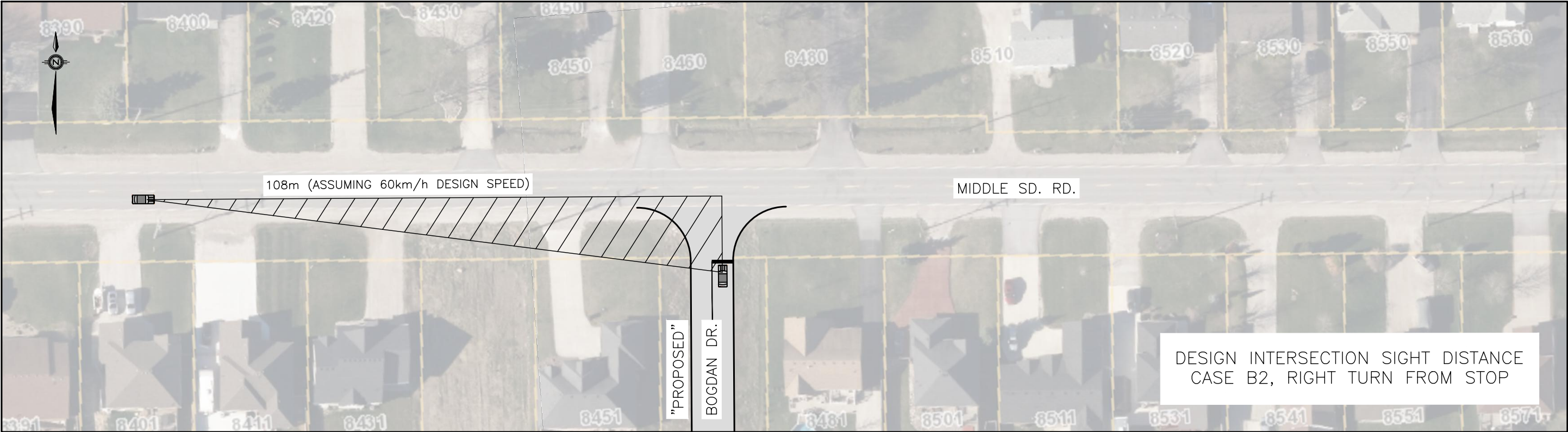
			RC SPENCER ASSOCIATES INC. Consulting Engineers Windsor 800 University Ave. W. - Windsor ON N9A 5B9 Leamington 18 Talbot St. W. - Leamington ON N8H 1M4 Chatham-Kent 138 King St. W. Unit 102 - Chatham ON N7M 1E3 Professional Engineers Ontario					DESIGN	A.D.B.	CANARD ESTATES SUBDIVISION P. 2 – TIS	PROJECT NO.			
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Consulting Engineers
Windsor: 800 University Ave. W. - Windsor ON N9A 5B9
Leamington: 18 Talbot St. W. - Leamington ON N8H 1M4
Chatham-Kent: 138 King St. W. Unit 102 - Chatham ON N7M 1E3

Professional Engineers
Ontario

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SIGHT LINE ANALYSIS NO.1
INTERSECTION SIGHT DISTANCE

PROJECT NO.	18-743
FIGURE NO.	8
OF	8

Appendix A

TRAFFIC COUNTS

**Middle Side Road (County Road 10) /
Concession Road 11 at
Walker Road (County Road 11)**

**Middle Side Road (County Road 10) at
Concession Road 8**



RC SPENCER ASSOCIATES INC.

Consulting Engineers

Windsor: 800 University Ave. W. - Windsor ON N9A 5R9
Leamington: 18 Talbot St. W. - Leamington ON N8H 1M4
Chatham-Kent: 138 King St. W. Unit 102 - Chatham ON N7M 1E3

Date: February 5, 2019
Counted by: Parth Bhatt
Weather Conditions: Overcast
Walker Road (CR11) at Middle Side Road (CR10)

Groups Printed- P. Veh. - Buses - Trucks

Start Time	Walker Road (CR11) N/B					Walker Road (CR11) S/B					Middle Side Road (CR10) E/B					Middle Side Road (CR10) W/B					Exclu. Total	Inclu. Total	Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total			
07:00 AM	1	56	4	(0)	61	3	17	0	(0)	20	4	1	11	(0)	16	1	1	1	(0)	3	0	100	100
07:15 AM	0	80	6	(2)	86	2	27	1	(0)	30	2	6	6	(0)	14	4	3	2	(0)	9	2	139	141
07:30 AM	2	79	5	(0)	86	5	31	1	(0)	37	3	4	11	(0)	18	4	0	1	(0)	5	0	146	146
07:45 AM	0	64	5	(0)	69	9	29	2	(0)	40	6	5	6	(0)	17	2	4	0	(0)	6	0	132	132
Total	3	279	20	(2)	302	19	104	4	(0)	127	15	16	34	(0)	65	11	8	4	(0)	23	2	517	519
08:00 AM	1	48	3	(0)	52	9	25	1	(0)	35	4	6	8	(0)	18	4	2	0	(0)	6	0	111	111
08:15 AM	0	60	4	(0)	64	7	24	2	(0)	33	3	6	13	(0)	22	1	2	0	(0)	3	0	122	122
08:30 AM	1	59	4	(0)	64	7	25	3	(0)	35	2	8	6	(0)	16	2	2	2	(0)	6	0	121	121
08:45 AM	1	37	0	(0)	38	5	26	0	(0)	31	2	4	7	(0)	13	0	2	1	(0)	3	0	85	85
Total	3	204	11	(0)	218	28	100	6	(0)	134	11	24	34	(0)	69	7	8	3	(0)	18	0	439	439
09:00 AM	0	46	4	(0)	50	8	24	3	(0)	35	1	6	7	(0)	14	2	4	1	(0)	7	0	106	106
09:15 AM	2	32	1	(0)	35	3	19	3	(0)	25	4	6	6	(0)	16	3	6	1	(0)	10	0	86	86
09:30 AM	0	41	2	(0)	43	6	17	2	(0)	25	1	2	2	(0)	5	3	0	0	(0)	3	0	76	76
09:45 AM	0	31	4	(0)	35	5	22	1	(0)	28	0	3	11	(0)	14	3	3	0	(0)	6	0	83	83
Total	2	150	11	(0)	163	22	82	9	(0)	113	6	17	26	(0)	49	11	13	2	(0)	26	0	351	351
** BREAK **																							
03:00 PM	1	36	4	(1)	41	16	49	5	(0)	70	2	5	15	(0)	22	3	1	1	(0)	5	1	138	139
03:15 PM	2	31	3	(1)	36	14	64	4	(0)	82	3	8	9	(0)	20	2	3	0	(0)	5	1	143	144
03:30 PM	3	37	6	(0)	46	15	78	4	(0)	97	5	2	9	(0)	16	2	8	0	(0)	10	0	169	169
03:45 PM	1	43	6	(0)	50	11	79	3	(0)	93	3	5	10	(0)	18	2	7	1	(0)	10	0	171	171
Total	7	147	19	(2)	173	56	270	16	(0)	342	13	20	43	(0)	76	9	19	2	(0)	30	2	621	623
04:00 PM	0	27	3	(0)	30	14	80	4	(0)	98	7	7	8	(0)	22	4	1	0	(0)	5	0	155	155
04:15 PM	2	38	1	(0)	41	11	85	4	(0)	100	4	3	5	(1)	12	4	3	1	(0)	8	1	161	162
04:30 PM	0	26	4	(1)	30	13	75	5	(0)	93	4	9	8	(0)	21	2	4	0	(0)	6	1	150	151
04:45 PM	0	39	4	(0)	43	14	66	5	(0)	85	5	2	4	(0)	11	4	8	1	(0)	13	0	152	152
Total	2	130	12	(1)	144	52	306	18	(0)	376	20	21	25	(1)	66	14	16	2	(0)	32	2	618	620
05:00 PM	1	29	1	(0)	31	15	73	5	(0)	93	5	5	15	(1)	25	3	3	0	(0)	6	1	155	156
05:15 PM	1	29	2	(0)	32	11	79	3	(0)	93	4	7	7	(0)	18	1	10	3	(0)	14	0	157	157
05:30 PM	0	22	4	(0)	26	8	61	4	(0)	73	5	3	11	(0)	19	3	4	1	(0)	8	0	126	126
05:45 PM	0	26	7	(0)	33	10	68	1	(0)	79	2	3	11	(0)	16	7	6	1	(0)	14	0	142	142
Total	2	106	14	(0)	122	44	281	13	(0)	338	16	18	44	(1)	78	14	23	5	(0)	42	1	580	581
Grand Total	19	1016	87	(5)	1122	221	1143	66	(0)	1430	81	116	206	(2)	403	66	87	18	(0)	171	7	3126	3133
Apprch %	1.7	90.6	7.8			15.5	79.9	4.6			20.1	28.8	51.1			38.6	50.9	10.5					
Total %	0.6	32.5	2.8		35.9	7.1	36.6	2.1		45.7	2.6	3.7	6.6		12.9	2.1	2.8	0.6		5.5	0.2	99.8	
P. Veh.	16	951	73		1045	211	1071	62		1344	75	112	201		390	61	86	18		165	0	0	2944
% P. Veh.	84.2	93.6	83.9	100	92.7	95.5	93.7	93.9	0	94	92.6	96.6	97.6	100	96.3	92.4	98.9	100	0	96.5	0	0	94
Buses	2	16	4		22	8	14	4		26	4	1	2		7	5	0	0		5	0	0	60
% Buses	10.5	1.6	4.6	0	2	3.6	1.2	6.1	0	1.8	4.9	0.9	1	0	1.7	7.6	0	0	0	2.9	0	0	1.9
Trucks	1	49	10		60	2	58	0		60	2	3	3		8	0	1	0		1	0	0	129
% Trucks	5.3	4.8	11.5	0	5.3	0.9	5.1	0	0	4.2	2.5	2.6	1.5	0	2	0	1.1	0	0	0.6	0	0	4.1



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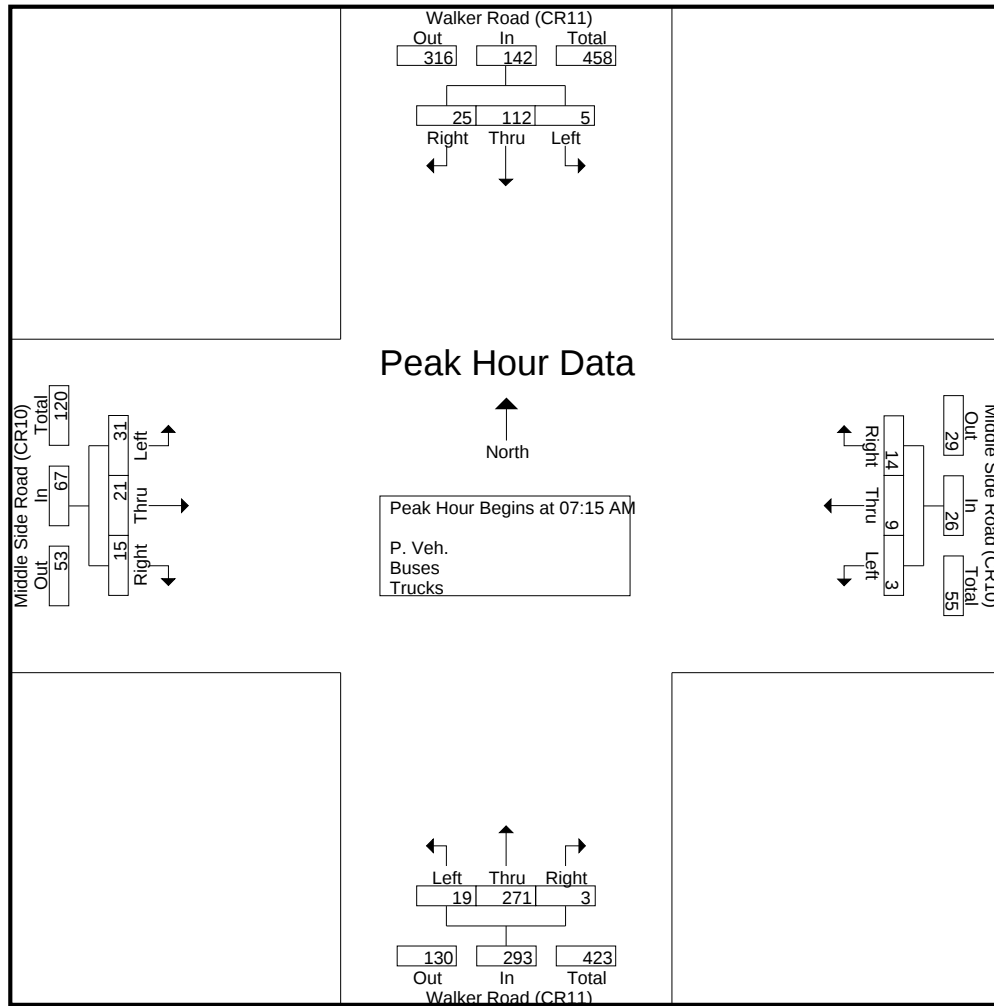
Consulting Engineers

Windsor: 800 University Ave. W. - Windsor ON N9A 5R9

Leamington: 18 Talbot St. W. - Leamington ON N8H 1M4

Chatham-Kent: 138 King St. W. Unit 102 - Chatham ON N7M 1E3

	Walker Road (CR11) N/B				Walker Road (CR11) S/B				Middle Side Road (CR10) E/B				Middle Side Road (CR10) W/B				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	80	6	86	2	27	1	30	2	6	6	14	4	3	2	9	139
07:30 AM	2	79	5	86	5	31	1	37	3	4	11	18	4	0	1	5	146
07:45 AM	0	64	5	69	9	29	2	40	6	5	6	17	2	4	0	6	132
08:00 AM	1	48	3	52	9	25	1	35	4	6	8	18	4	2	0	6	111
Total Volume	3	271	19	293	25	112	5	142	15	21	31	67	14	9	3	26	528
% App. Total	1	92.5	6.5		17.6	78.9	3.5		22.4	31.3	46.3		53.8	34.6	11.5		
PHF	.375	.847	.792	.852	.694	.903	.625	.888	.625	.875	.705	.931	.875	.563	.375	.722	.904

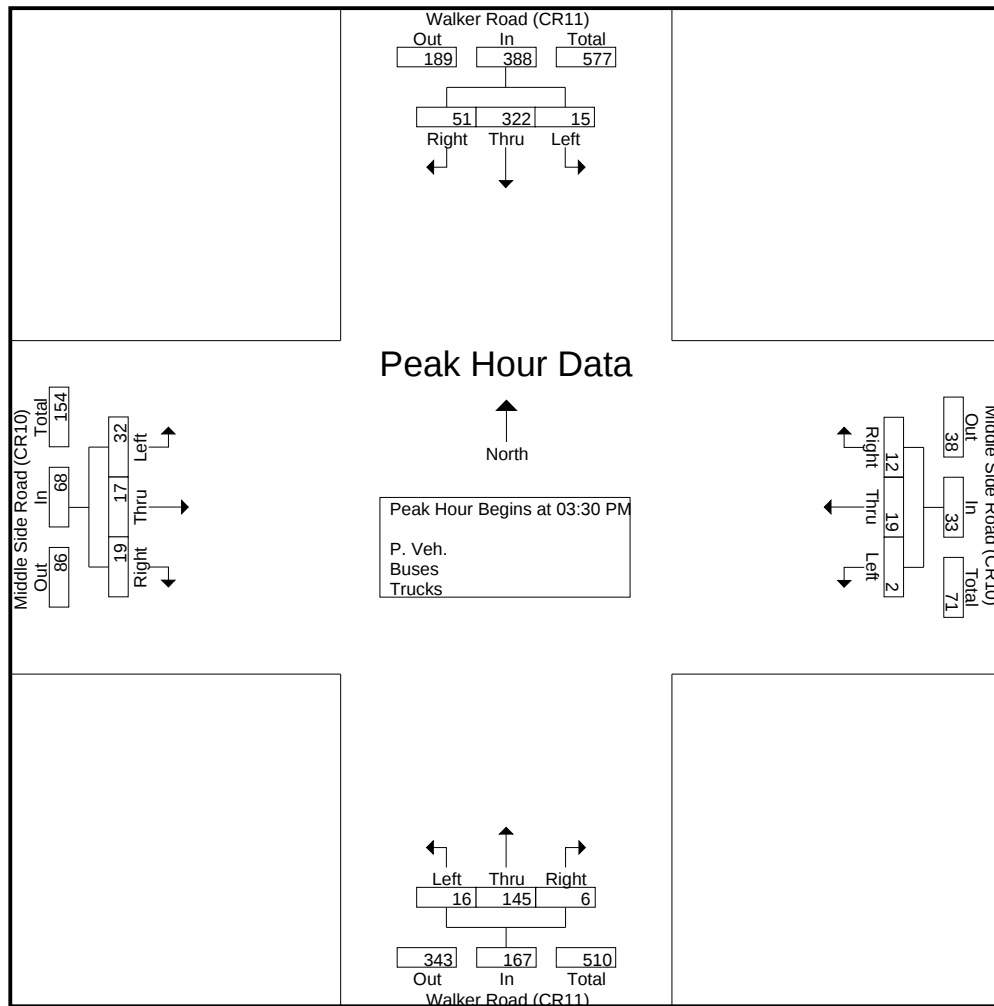




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Consulting Engineers

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Chatham-Kent: 138 King St. W. Unit 102 - Chatham ON N7M 1E3

	Walker Road (CR11) N/B				Walker Road (CR11) S/B				Middle Side Road (CR10) E/B				Middle Side Road (CR10) W/B				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 03:30 PM																	
03:30 PM	3	37	6	46	15	78	4	97	5	2	9	16	2	8	0	10	169
03:45 PM	1	43	6	50	11	79	3	93	3	5	10	18	2	7	1	10	171
04:00 PM	0	27	3	30	14	80	4	98	7	7	8	22	4	1	0	5	155
04:15 PM	2	38	1	41	11	85	4	100	4	3	5	12	4	3	1	8	161
Total Volume	6	145	16	167	51	322	15	388	19	17	32	68	12	19	2	33	656
% App. Total	3.6	86.8	9.6		13.1	83	3.9		27.9	25	47.1		36.4	57.6	6.1		
PHF	.500	.843	.667	.835	.850	.947	.938	.970	.679	.607	.800	.773	.750	.594	.500	.825	.959





RC SPENCER ASSOCIATES INC.

Consulting Engineers

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 Leamington: 18 Talbot St. W. - Leamington ON N8H 1M4
 Chatham-Kent: 138 King St. W. Unit 102 - Chatham ON N7M 1E3

Date: February 7, 2019
 Counted by: Parth Bhatt
 Weather Conditions: Overcast
 Middle Side Road (CR10) at Concession Road 8

Groups Printed- P. Veh. - Buses - Trucks

Start Time	Concession Road 8 N/B					Concession Road 8 S/B					Middle Side Road (CR10) E/B					Middle Side Road (CR10) W/B					Exclu. Total	Inclu. Total	Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total			
07:15 AM	0	12	0	(0)	12	0	0	0	(0)	0	0	10	4	(0)	14	0	9	0	(0)	9	0	35	35
07:30 AM	0	13	2	(0)	15	0	2	2	(0)	4	0	14	5	(0)	19	6	13	1	(0)	20	0	58	58
07:45 AM	1	8	0	(0)	9	0	2	1	(0)	3	0	9	3	(0)	12	5	13	1	(0)	19	0	43	43
Total	1	33	2	(0)	36	0	4	3	(0)	7	0	33	12	(0)	45	11	35	2	(0)	48	0	136	136
08:00 AM	1	7	0	(0)	8	3	2	0	(0)	5	1	12	0	(0)	13	3	10	0	(0)	13	0	39	39
** BREAK **																							
Total	1	7	0	(0)	8	3	2	0	(0)	5	1	12	0	(0)	13	3	10	0	(0)	13	0	39	39
** BREAK **																							
03:30 PM	0	8	0	(0)	8	0	5	0	(0)	5	2	16	4	(0)	22	3	14	0	(0)	17	0	52	52
03:45 PM	0	5	1	(0)	6	5	11	3	(0)	19	0	11	3	(0)	14	0	19	3	(0)	22	0	61	61
Total	0	13	1	(0)	14	5	16	3	(0)	24	2	27	7	(0)	36	3	33	3	(0)	39	0	113	113
04:00 PM	1	7	0	(0)	8	4	10	1	(0)	15	0	23	0	(0)	23	4	17	3	(0)	24	0	70	70
04:15 PM	3	4	2	(0)	9	8	7	1	(0)	16	2	16	3	(0)	21	0	18	2	(0)	20	0	66	66
Grand Total	6	64	5	(0)	75	20	39	8	(0)	67	5	111	22	(0)	138	21	113	10	(0)	144	0	424	424
Apprch %	8	85.3	6.7			29.9	58.2	11.9			3.6	80.4	15.9			14.6	78.5	6.9					
Total %	1.4	15.1	1.2		17.7	4.7	9.2	1.9		15.8	1.2	26.2	5.2		32.5	5	26.7	2.4		34	0	100	
P. Veh.	5	64	3		72	20	38	8		66	5	105	21		131	20	104	10		134	0	0	403
% P. Veh.	83.3	100	60	0	96	100	97.4	100	0	98.5	100	94.6	95.5	0	94.9	95.2	92	100	0	93.1	0	0	95
Buses	1	0	2		3	0	1	0		1	0	2	1		3	1	7	0		8	0	0	15
% Buses	16.7	0	40	0	4	0	2.6	0	0	1.5	0	1.8	4.5	0	2.2	4.8	6.2	0	0	5.6	0	0	3.5
Trucks	0	0	0		0	0	0	0		0	0	4	0		4	0	2	0		2	0	0	6
% Trucks	0	0	0	0	0	0	0	0	0	0	0	3.6	0	0	2.9	0	1.8	0	0	1.4	0	0	1.4



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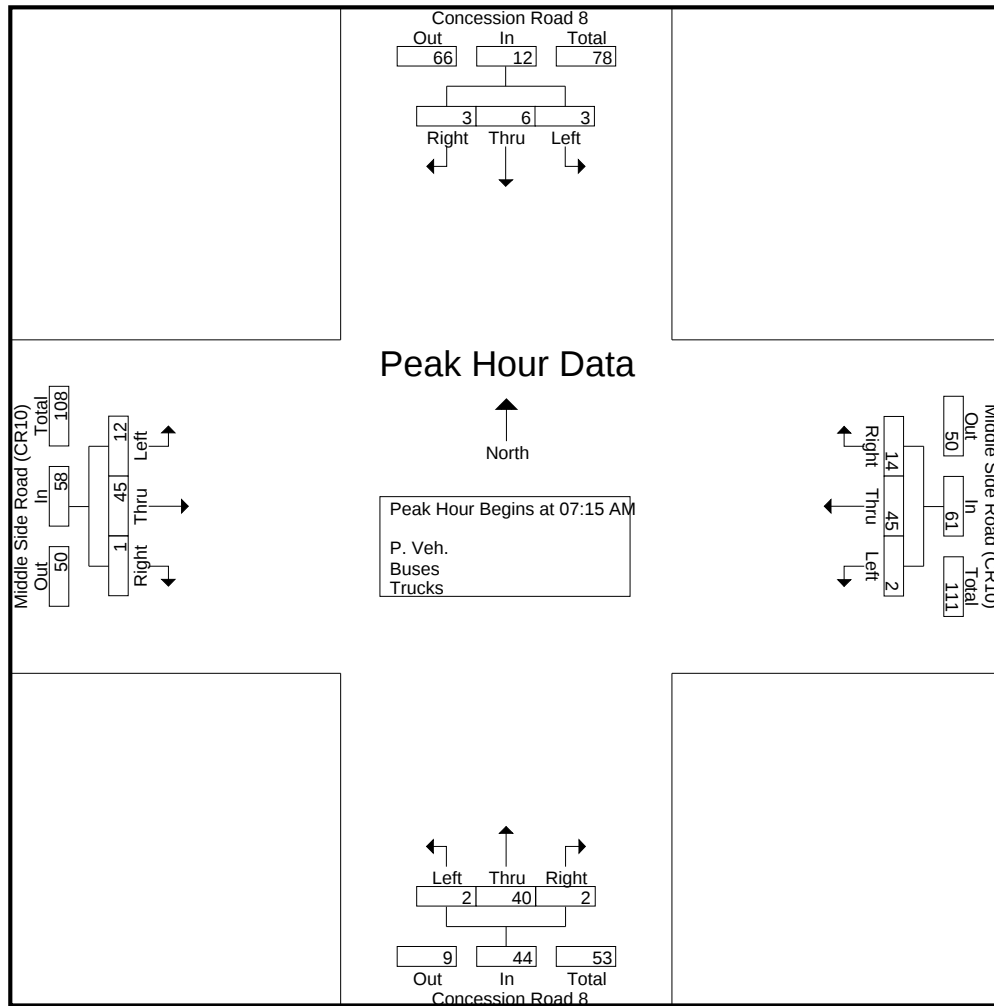
Consulting Engineers

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Leamington: 18 Talbot St. W. - Leamington ON N8H 1M4

Chatham-Kent: 138 King St. W. Unit 102 - Chatham ON N7M 1E3

	Concession Road 8 N/B				Concession Road 8 S/B				Middle Side Road (CR10) E/B				Middle Side Road (CR10) W/B				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 11:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	12	0	12	0	0	0	0	0	10	4	14	0	9	0	9	35
07:30 AM	0	13	2	15	0	2	2	4	0	14	5	19	6	13	1	20	58
07:45 AM	1	8	0	9	0	2	1	3	0	9	3	12	5	13	1	19	43
08:00 AM	1	7	0	8	3	2	0	5	1	12	0	13	3	10	0	13	39
Total Volume	2	40	2	44	3	6	3	12	1	45	12	58	14	45	2	61	175
% App. Total	4.5	90.9	4.5		25	50	25		1.7	77.6	20.7		23	73.8	3.3		
PHF	.500	.769	.250	.733	.250	.750	.375	.600	.250	.804	.600	.763	.583	.865	.500	.763	.754



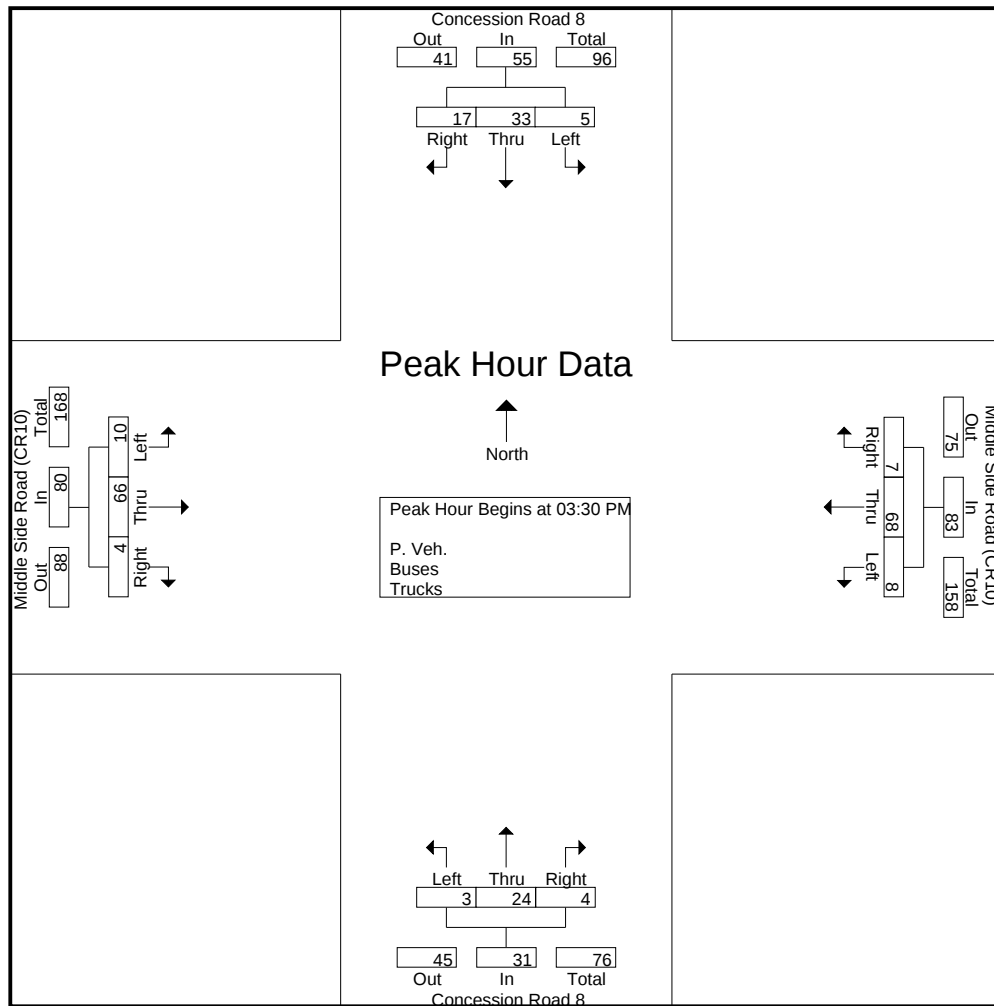


RC SPENCER ASSOCIATES INC.

Consulting Engineers

Windsor: 800 University Ave. W. - Windsor ON N9A 5R9
Leamington: 18 Talbot St. W. - Leamington ON N8H 1M4
Chatham-Kent: 138 King St. W. Unit 102 - Chatham ON N7M 1E3

	Concession Road 8 N/B				Concession Road 8 S/B				Middle Side Road (CR10) E/B				Middle Side Road (CR10) W/B				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 04:15 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 03:30 PM																	
03:30 PM	0	8	0	8	0	5	0	5	2	16	4	22	3	14	0	17	52
03:45 PM	0	5	1	6	5	11	3	19	0	11	3	14	0	19	3	22	61
04:00 PM	1	7	0	8	4	10	1	15	0	23	0	23	4	17	3	24	70
04:15 PM	3	4	2	9	8	7	1	16	2	16	3	21	0	18	2	20	66
Total Volume	4	24	3	31	17	33	5	55	4	66	10	80	7	68	8	83	249
% App. Total	12.9	77.4	9.7		30.9	60	9.1		5	82.5	12.5		8.4	81.9	9.6		
PHF	.333	.750	.375	.861	.531	.750	.417	.724	.500	.717	.625	.870	.438	.895	.667	.865	.889



Appendix B

ITE TRIP GENERATION MANUAL – 10TH EDITION REFERENCES

Single-Family Detached Housing (210)

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

Setting/Location: General Urban/Suburban

Number of Studies: 173

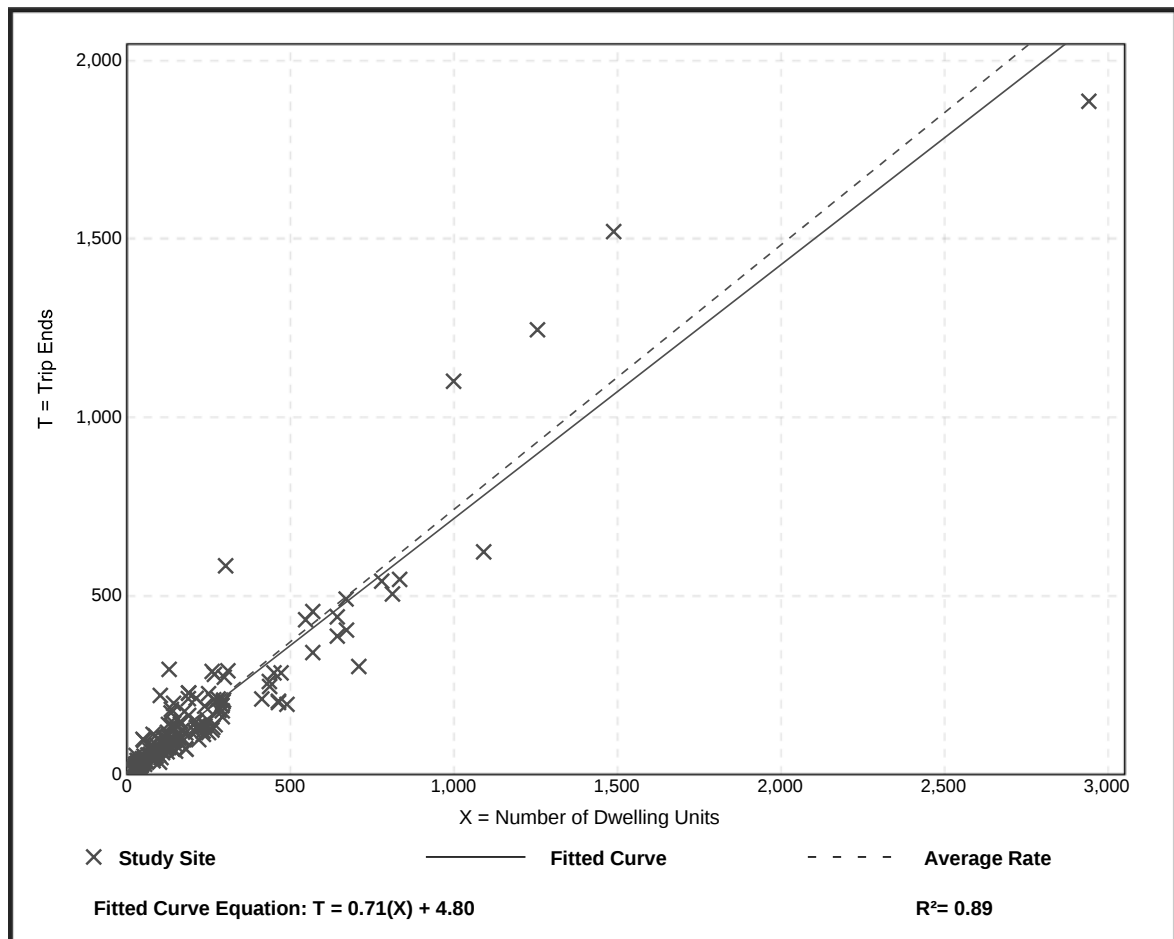
Avg. Num. of Dwelling Units: 219

Directional Distribution: 25% entering, 75% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.74	0.33 - 2.27	0.27

Data Plot and Equation



Single-Family Detached Housing (210)

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

Setting/Location: General Urban/Suburban

Number of Studies: 190

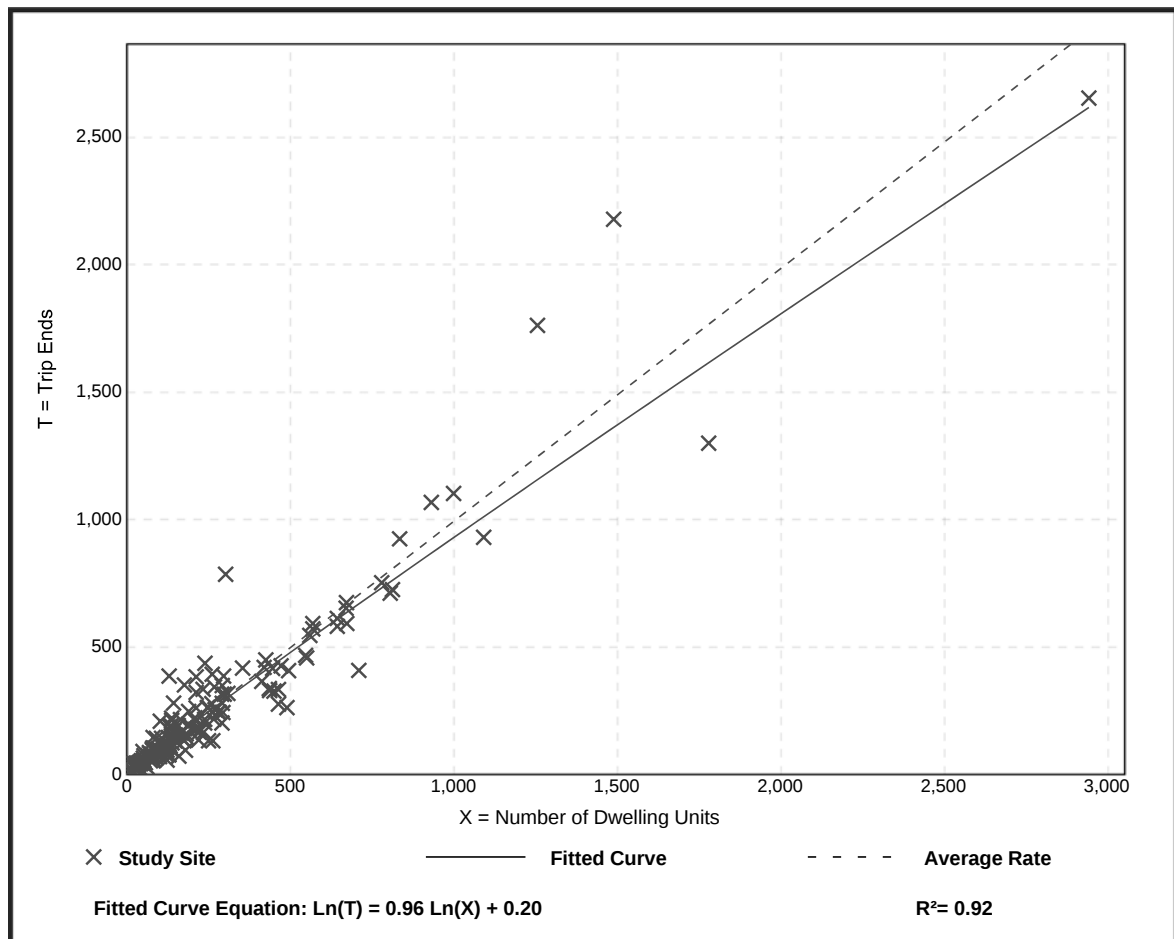
Avg. Num. of Dwelling Units: 242

Directional Distribution: 63% entering, 37% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.99	0.44 - 2.98	0.31

Data Plot and Equation



Proposed Site Development Trip Generation and Distribution

Project: Canard Estates Subdivision Phase 2

Assumed Land Use: Single Family Detached Housing (ITE No. 210)

Average Vehicle Trip Ends vs.: Dwelling Units

ITE Trip Generation Data collected on a: Weekday

AM Peak Hour:

0.74

 = Average Rate

25
75

 % Entering
% Exiting

PM Peak Hour:

0.99

 = Average Rate

63
37

 % Entering
% Exiting

Assumed Land Use: Single Family Detached Housing (ITE No. 210)				
	No. of Units	Trips Generated	Trips Entering	Trips Exiting
AM Peak	72	53	13	40
PM Peak	72	71	45	26

Appendix C

TRAFFIC PROJECTION FIGURES

**Middle Side Road (County Road 10) /
Concession Road 11 at
Walker Road (County Road 11)**

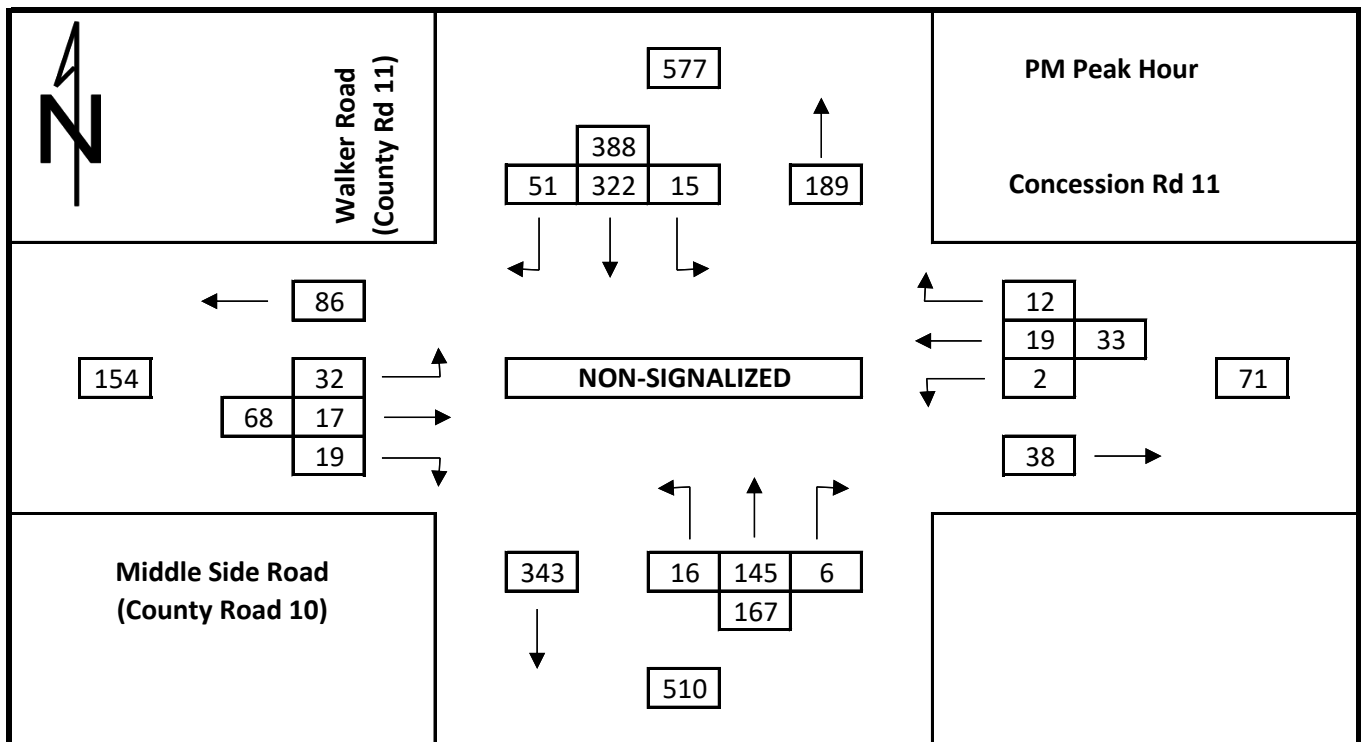
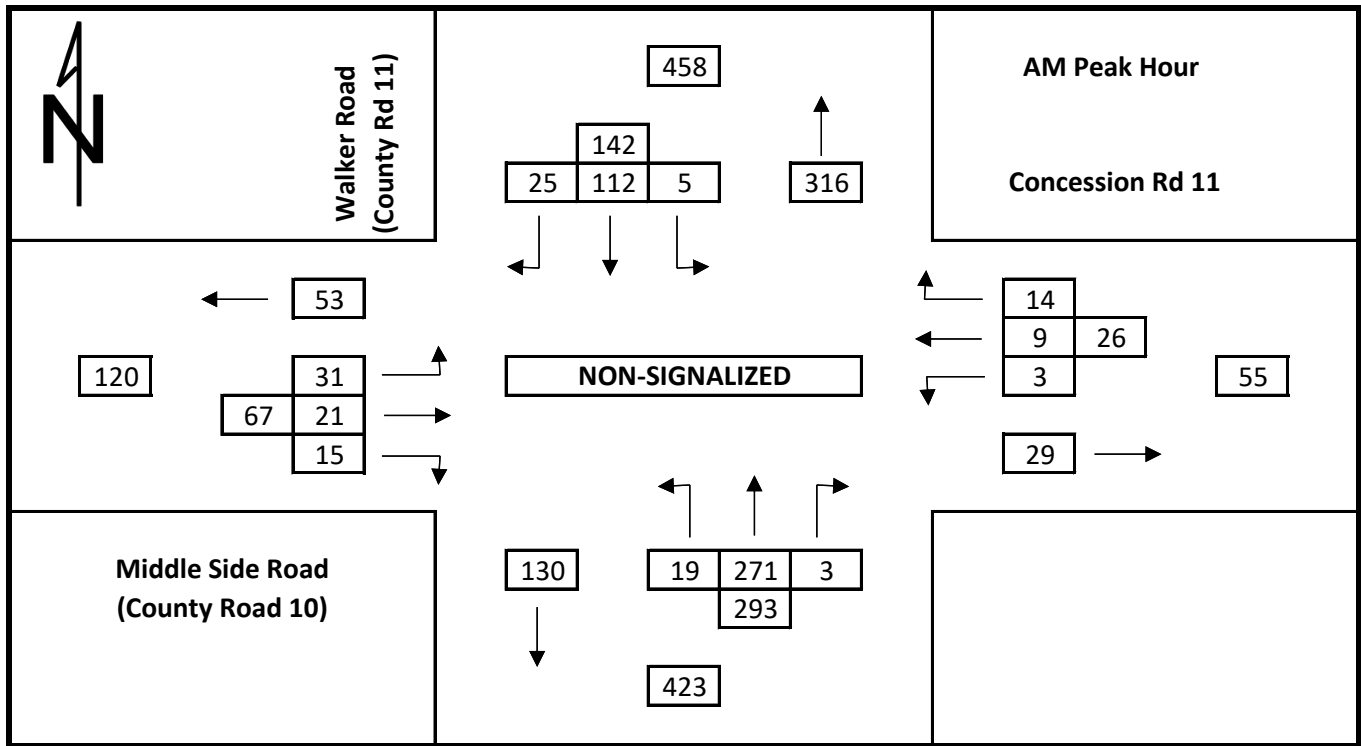
**Middle Side Road (County Road 10) at
Canard Boulevard / Gardiner Crescent**

**Middle Side Road (County Road 10) at
Site Access (Bogdan Drive)**

**Middle Side Road (County Road 10) at
Concession Road 8**

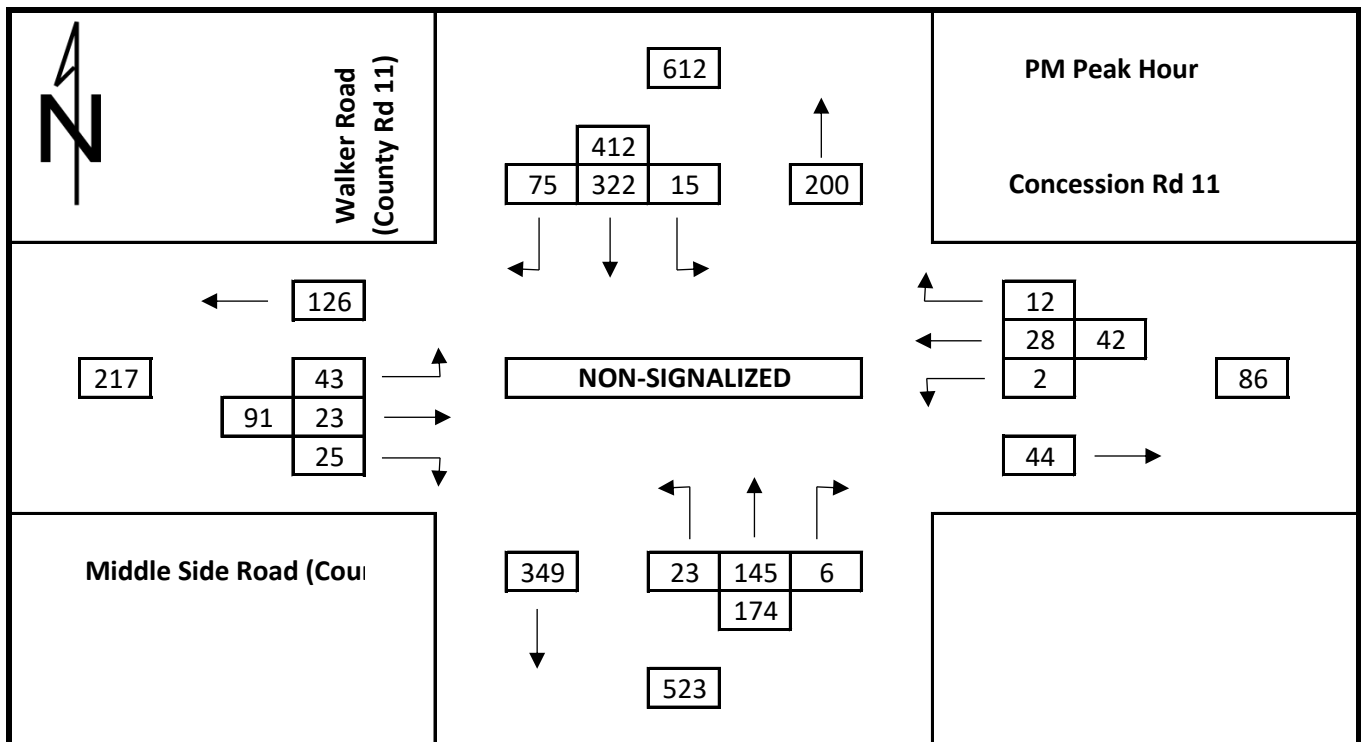
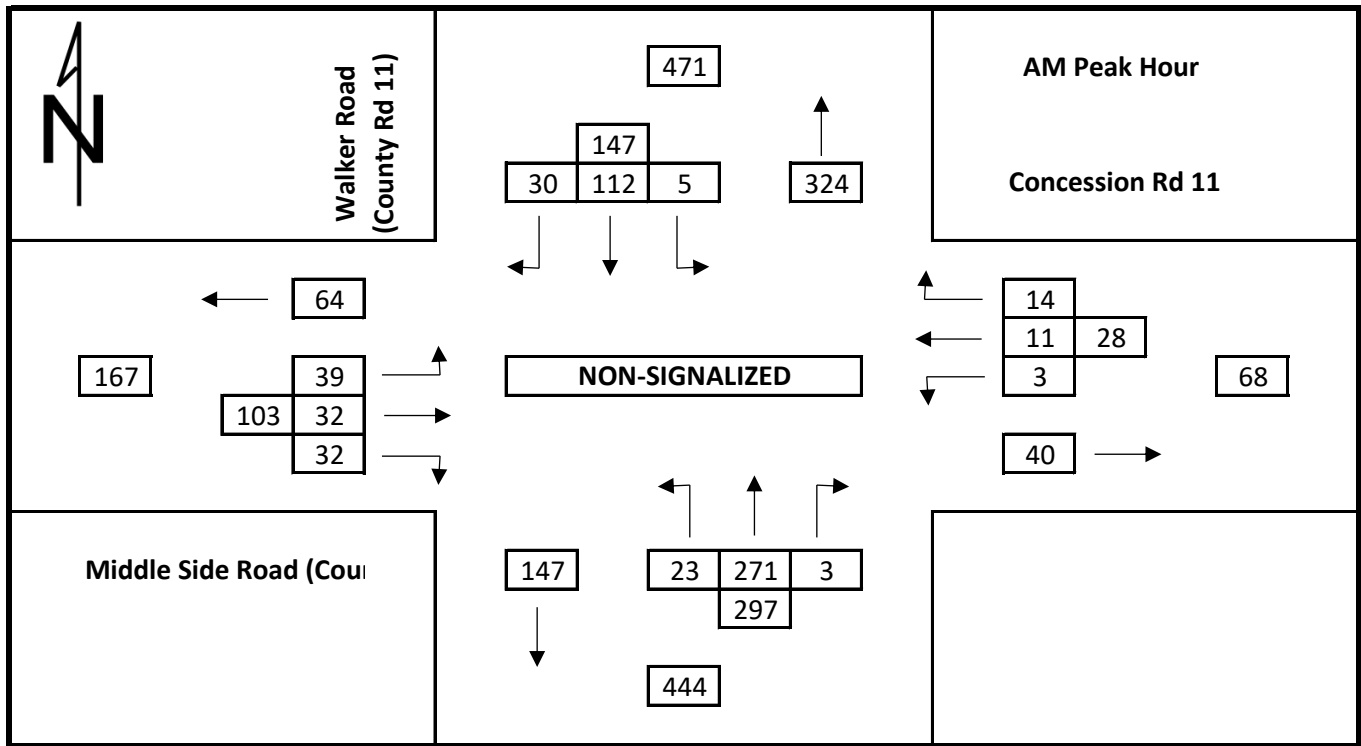
Existing Traffic Counts

Middle Side Road (County Road 10) / Concession Road 11 at Walker Road (County Road 11)



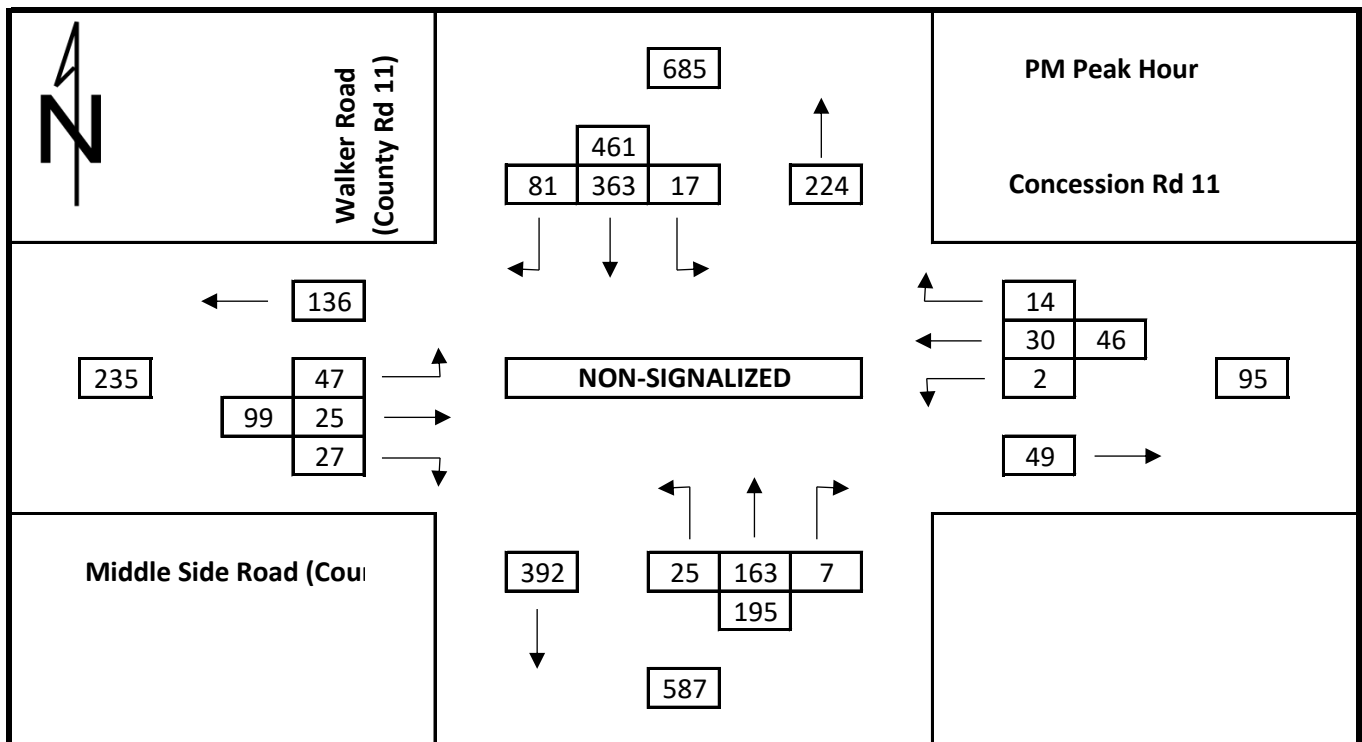
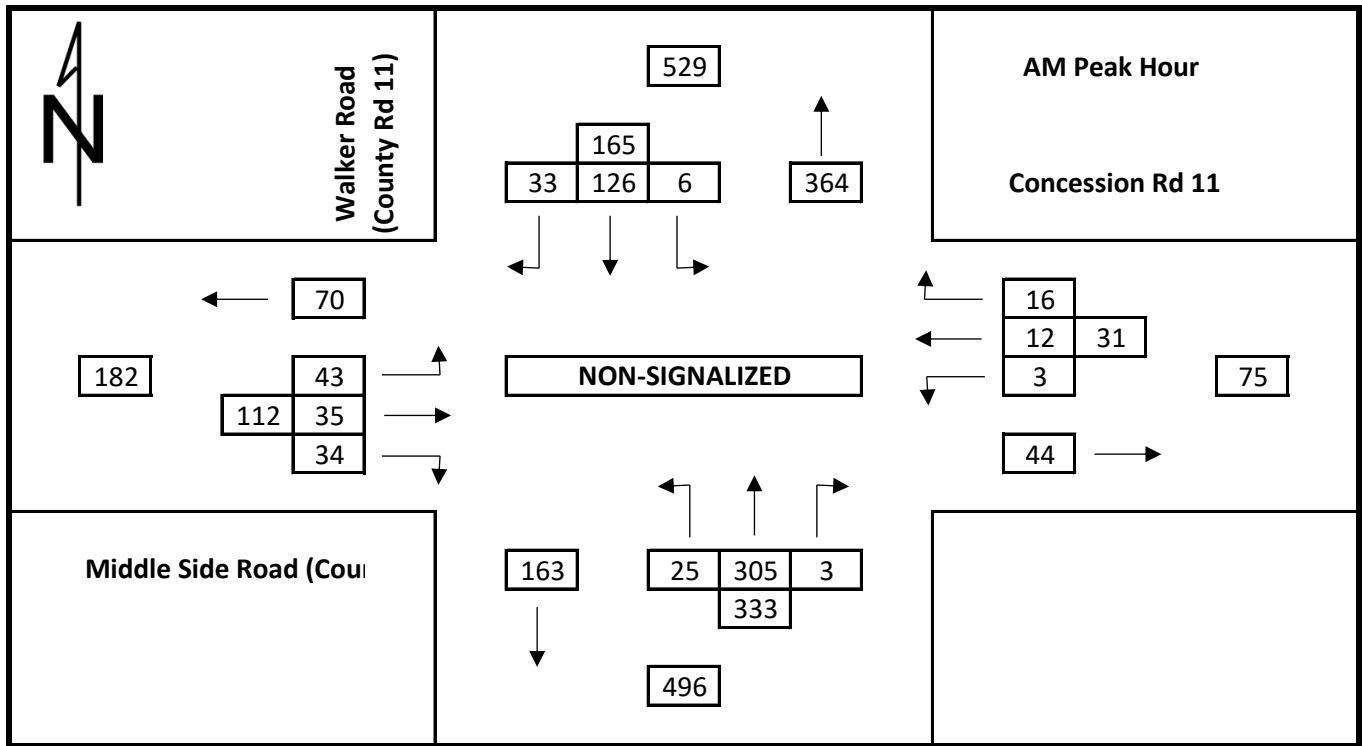
Existing + Site Generated Traffic

Middle Side Road (County Road 10) / Concession Road 11 at Walker Road (County Road 11)



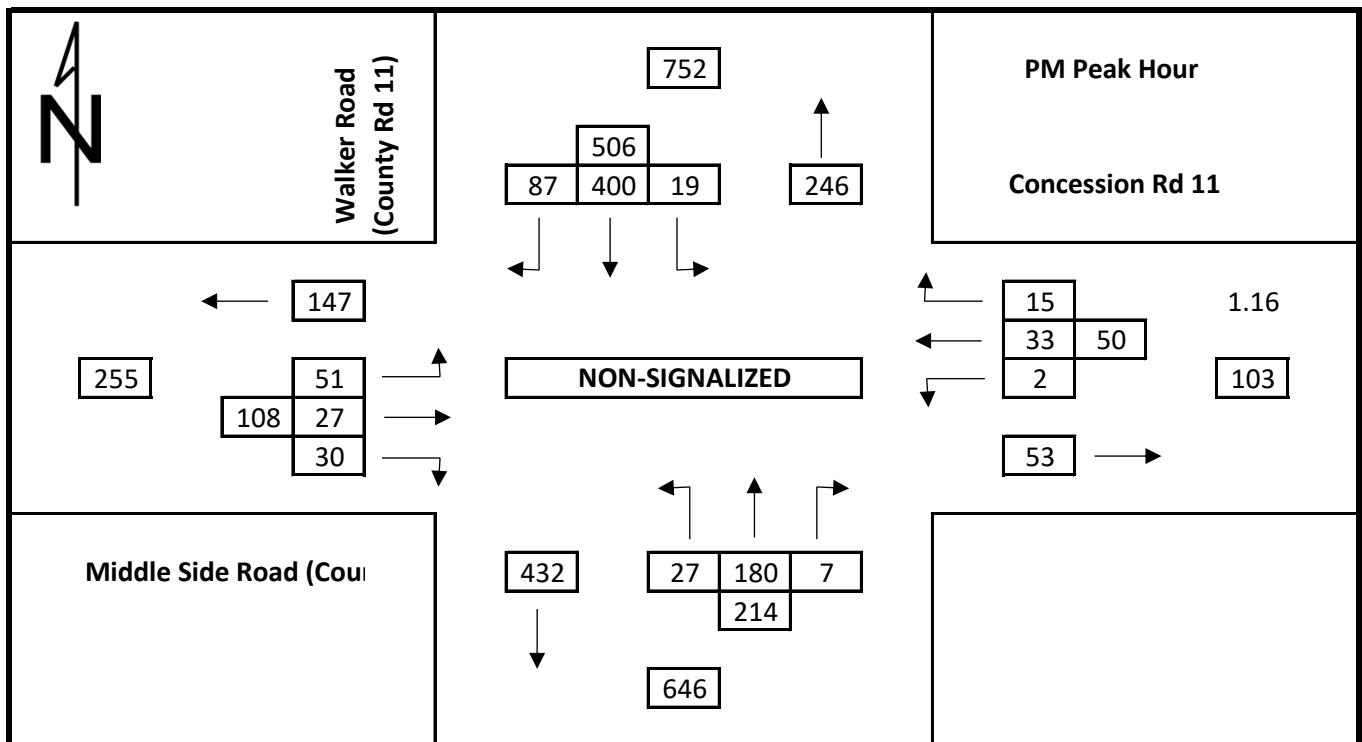
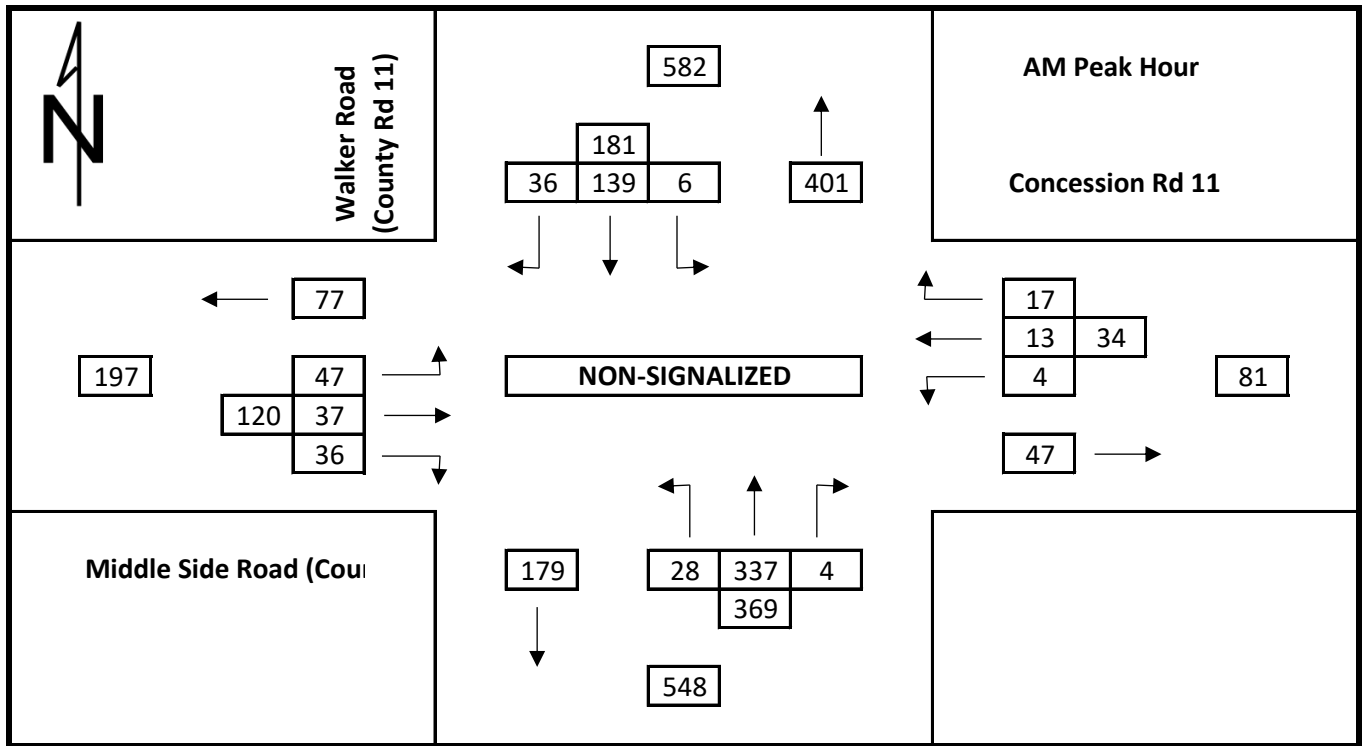
Total Traffic 2025

Middle Side Road (County Road 10) / Concession Road 11 at Walker Road (County Road 11)



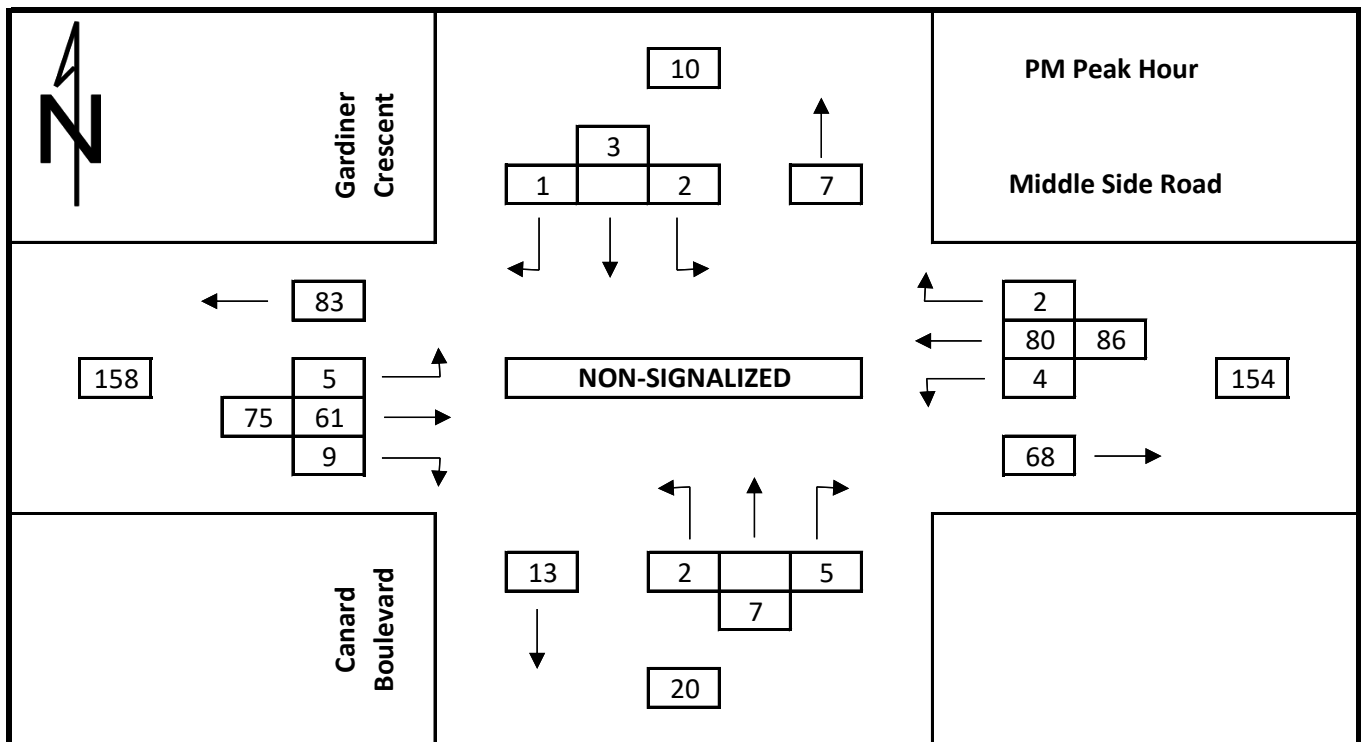
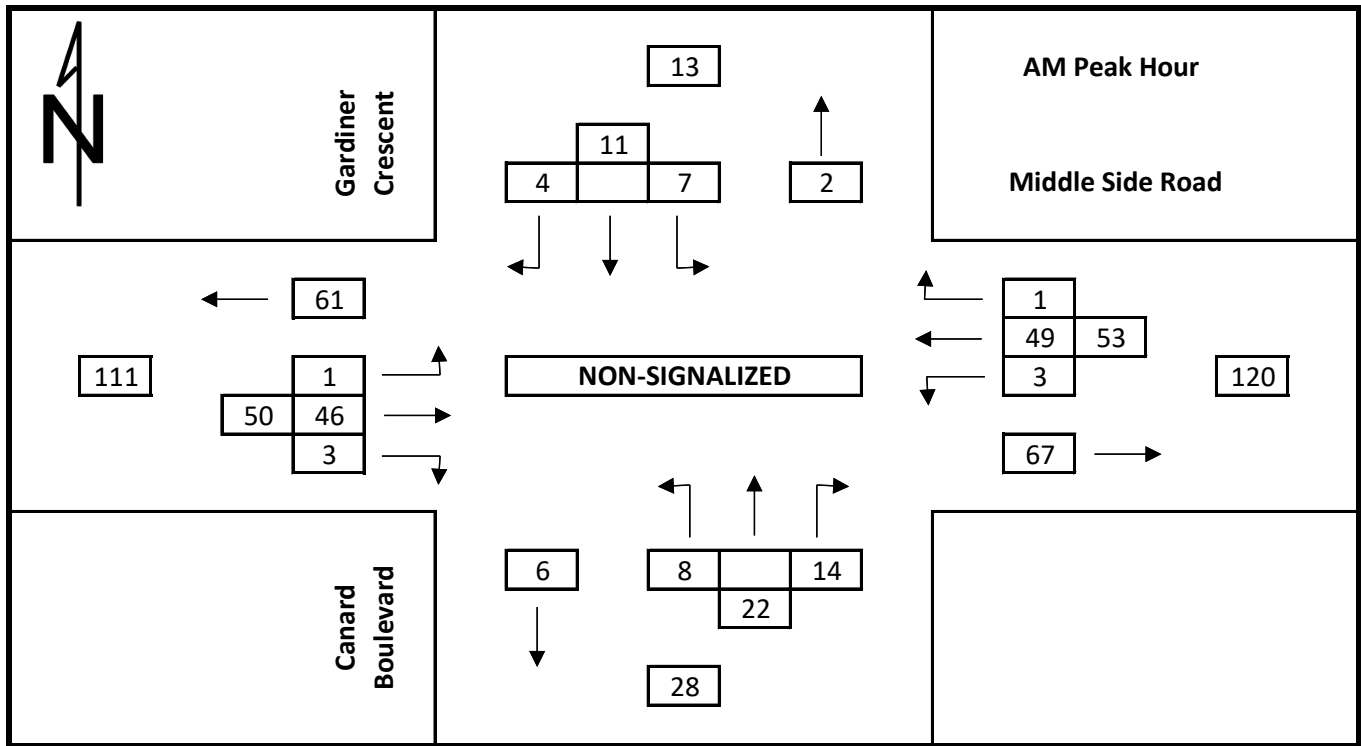
Total Traffic 2030

Middle Side Road (County Road 10) / Concession Road 11 at Walker Road (County Road 11)



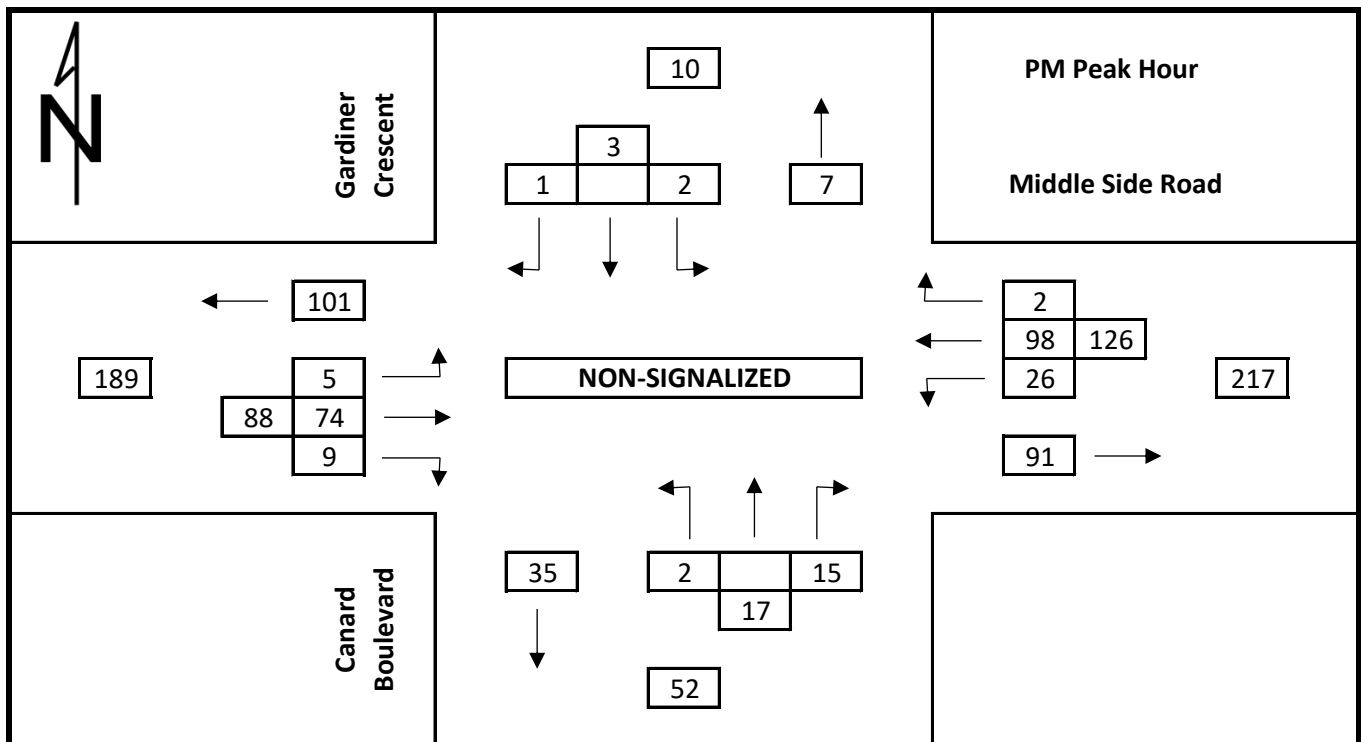
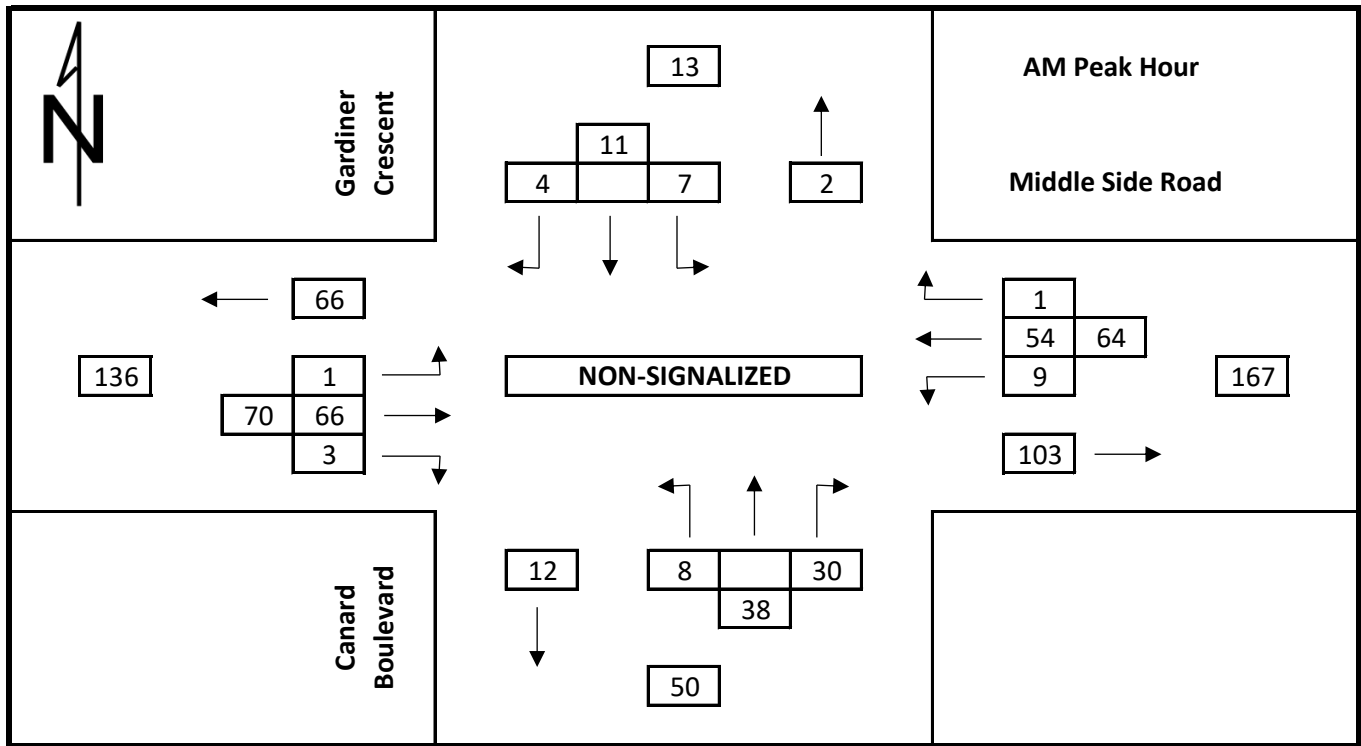
Existing Traffic Counts

Middle Side Road (County Road 10) at Canard Boulevard / Gardiner Crescent



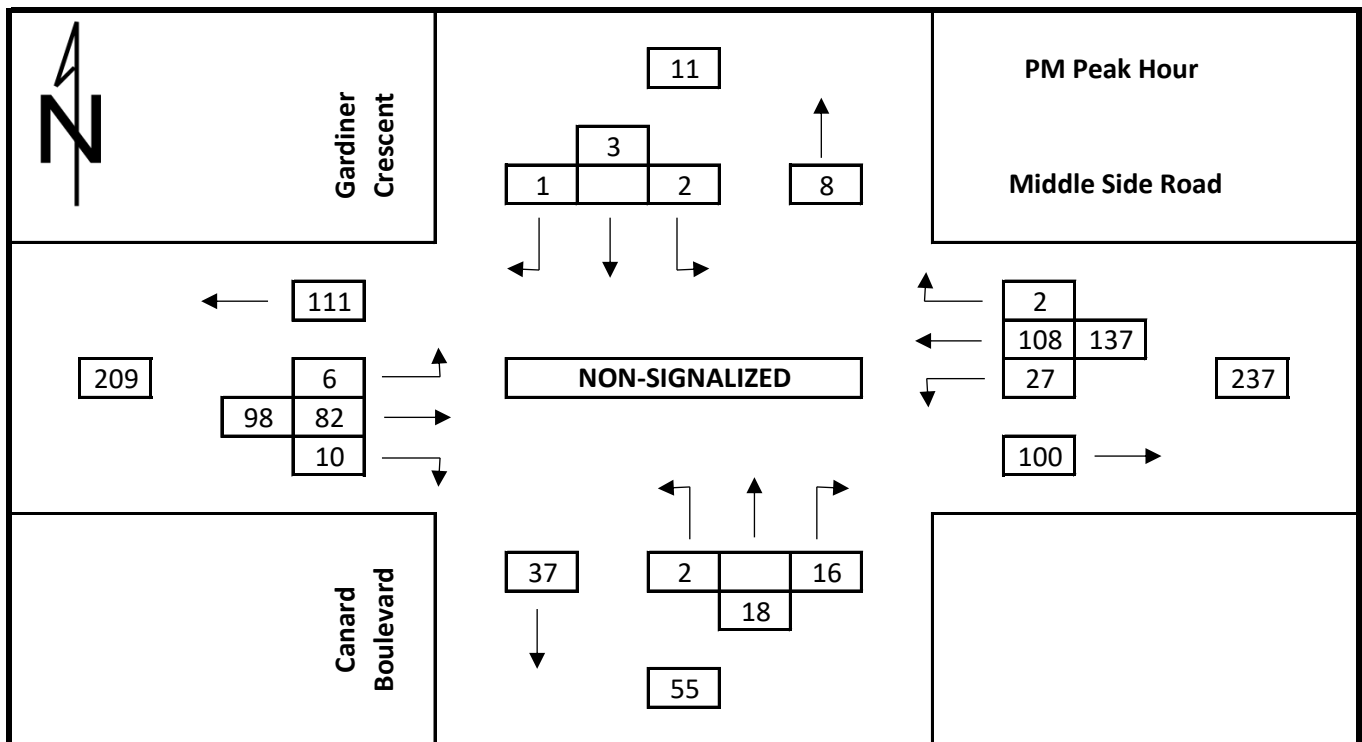
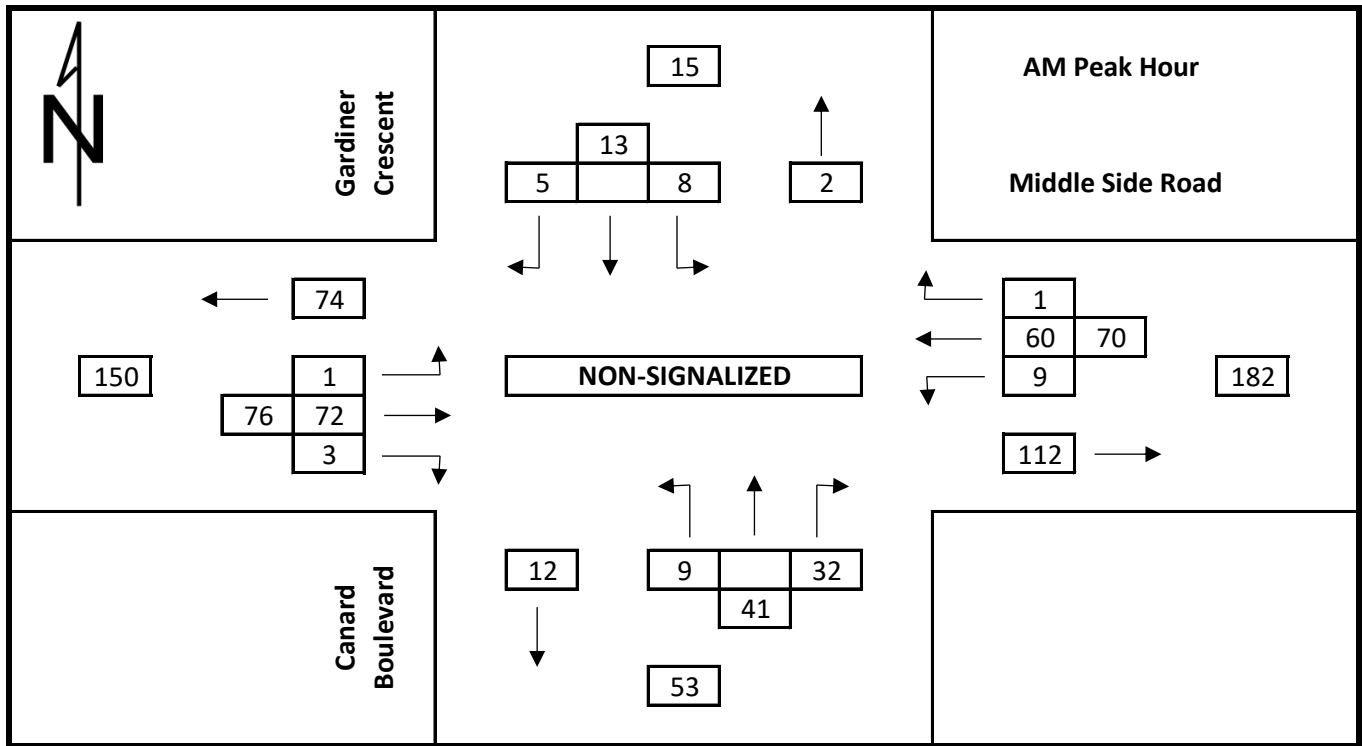
Existing + Site Generated Traffic

Middle Side Road (County Road 10) at Canard Boulevard / Gardiner Crescent



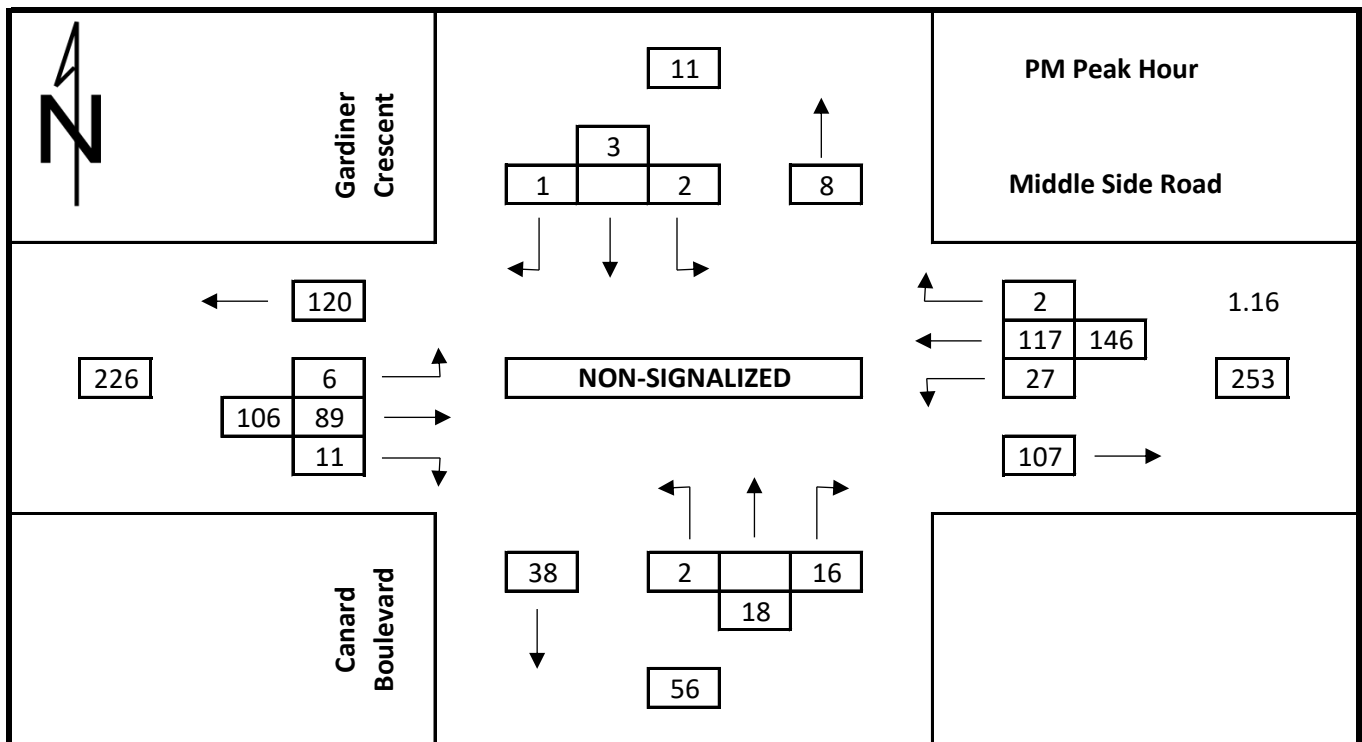
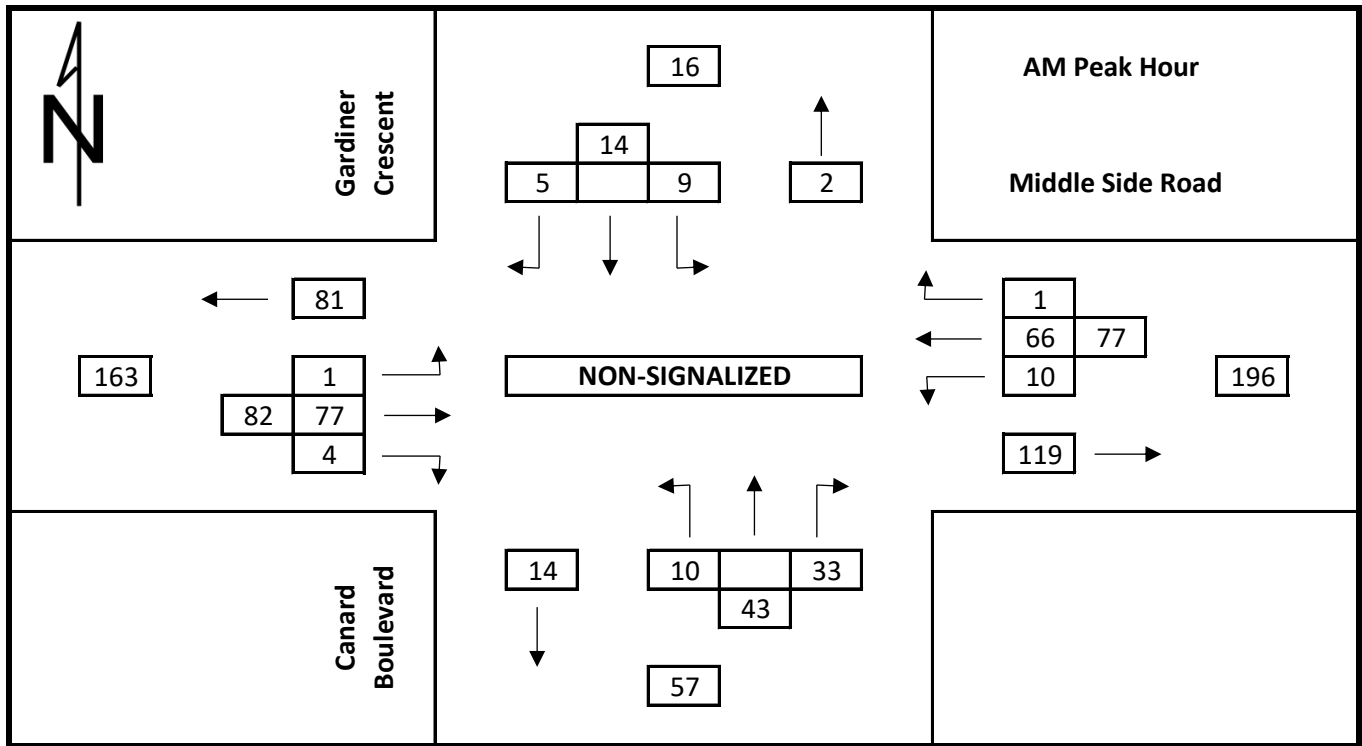
Total Traffic 2025

Middle Side Road (County Road 10) at Canard Boulevard / Gardiner Crescent

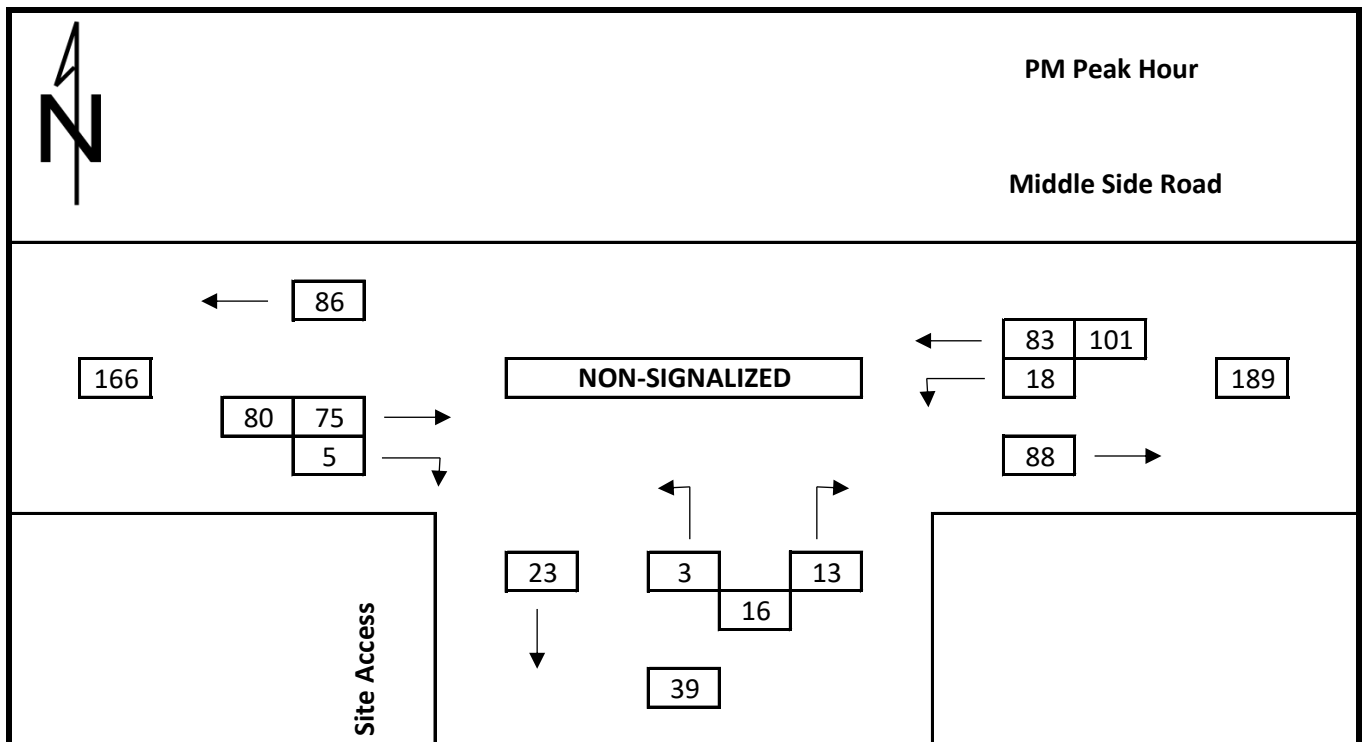
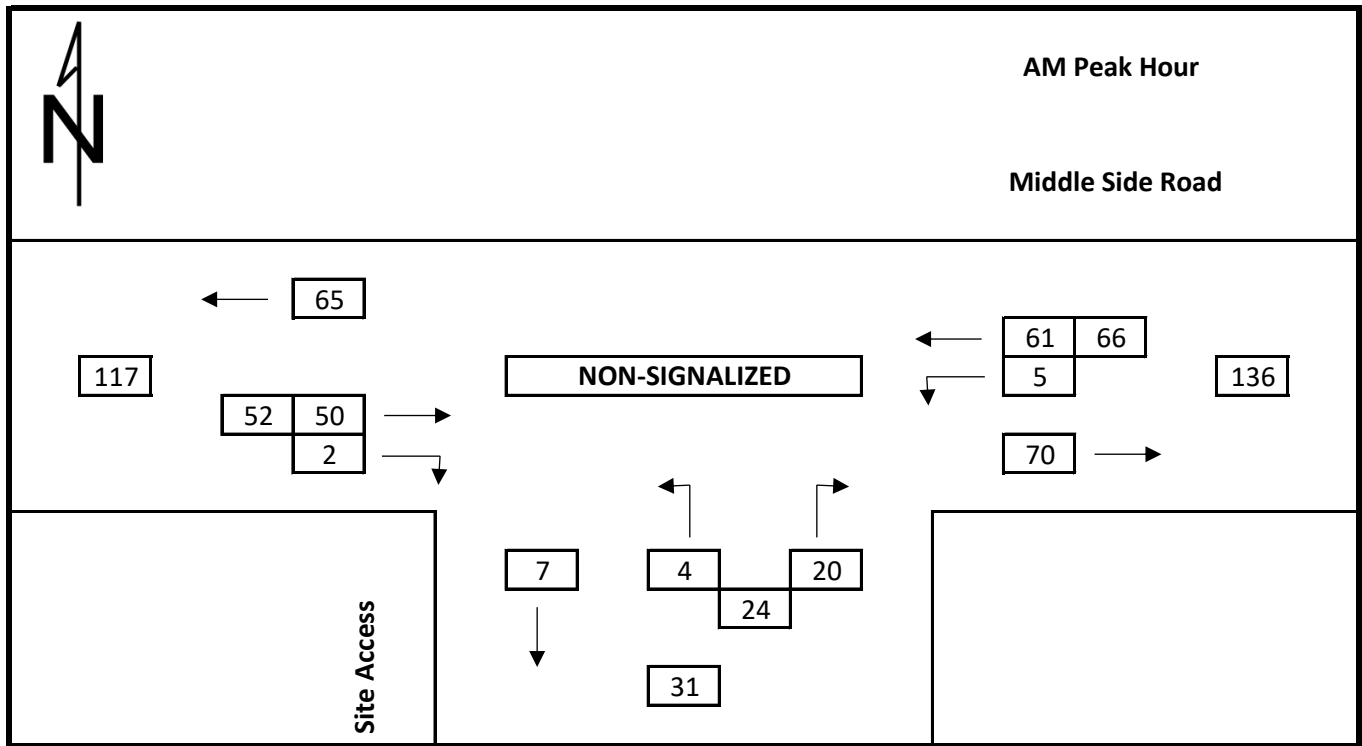


Total Traffic 2030

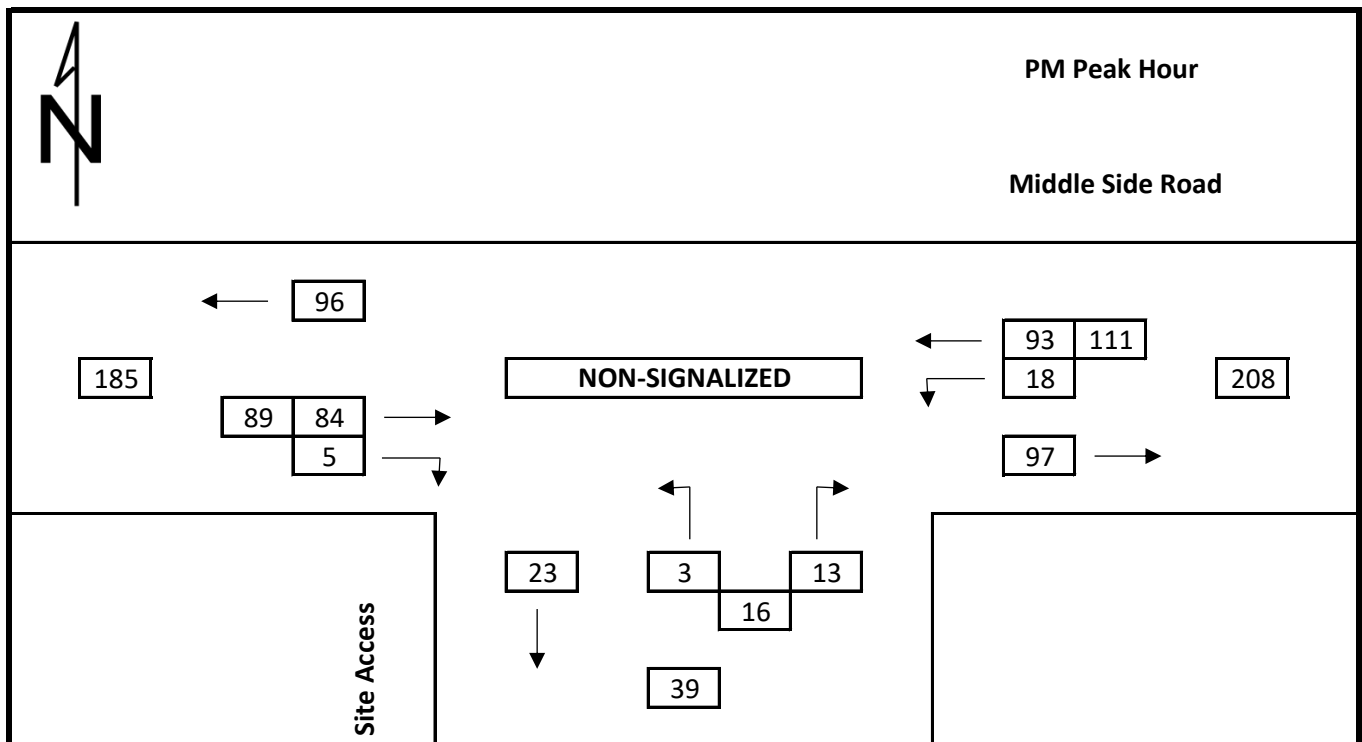
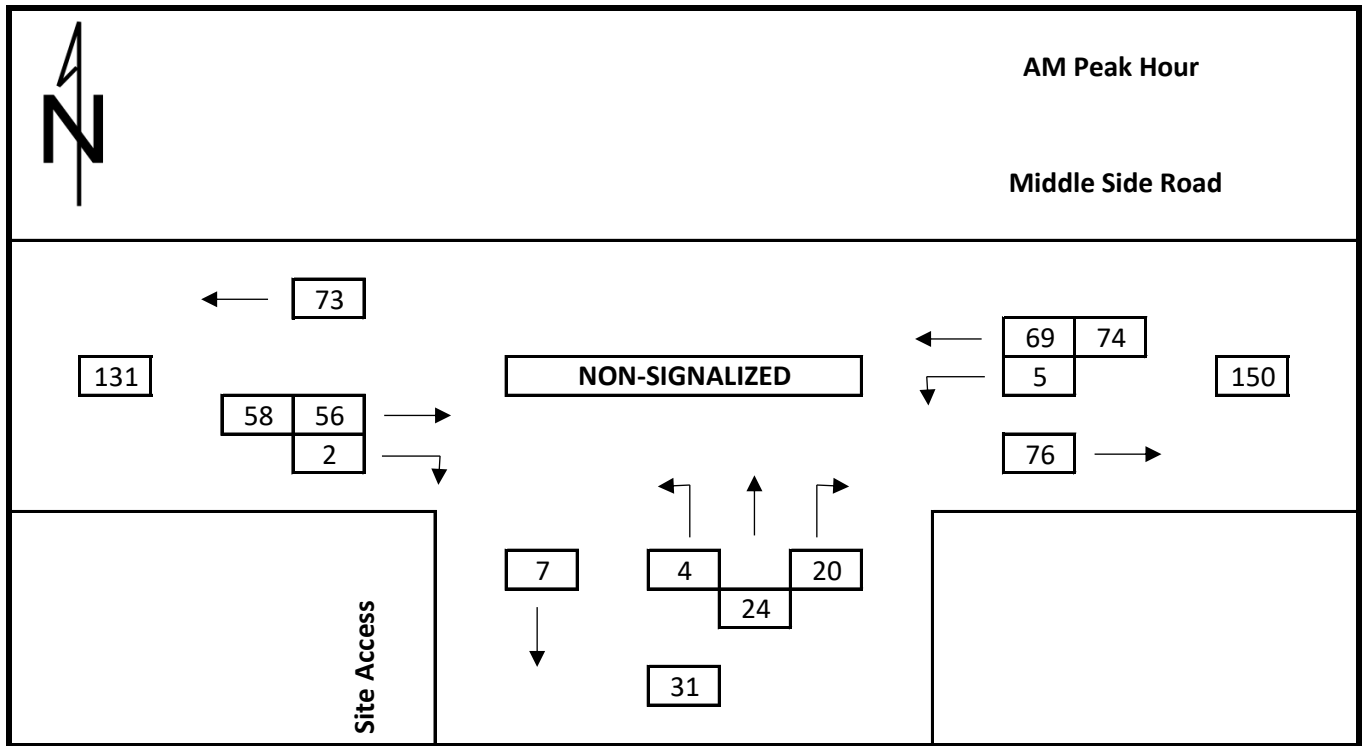
Middle Side Road (County Road 10) at Canard Boulevard / Gardiner Crescent



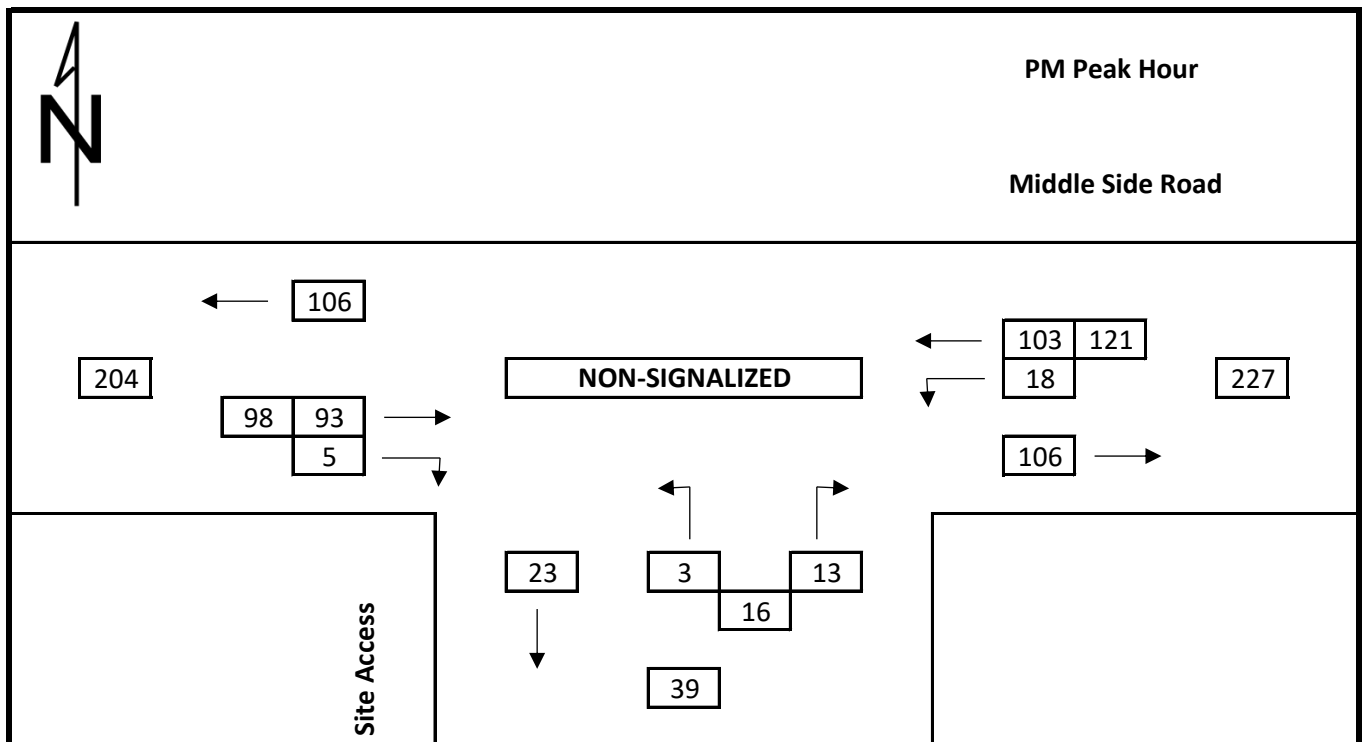
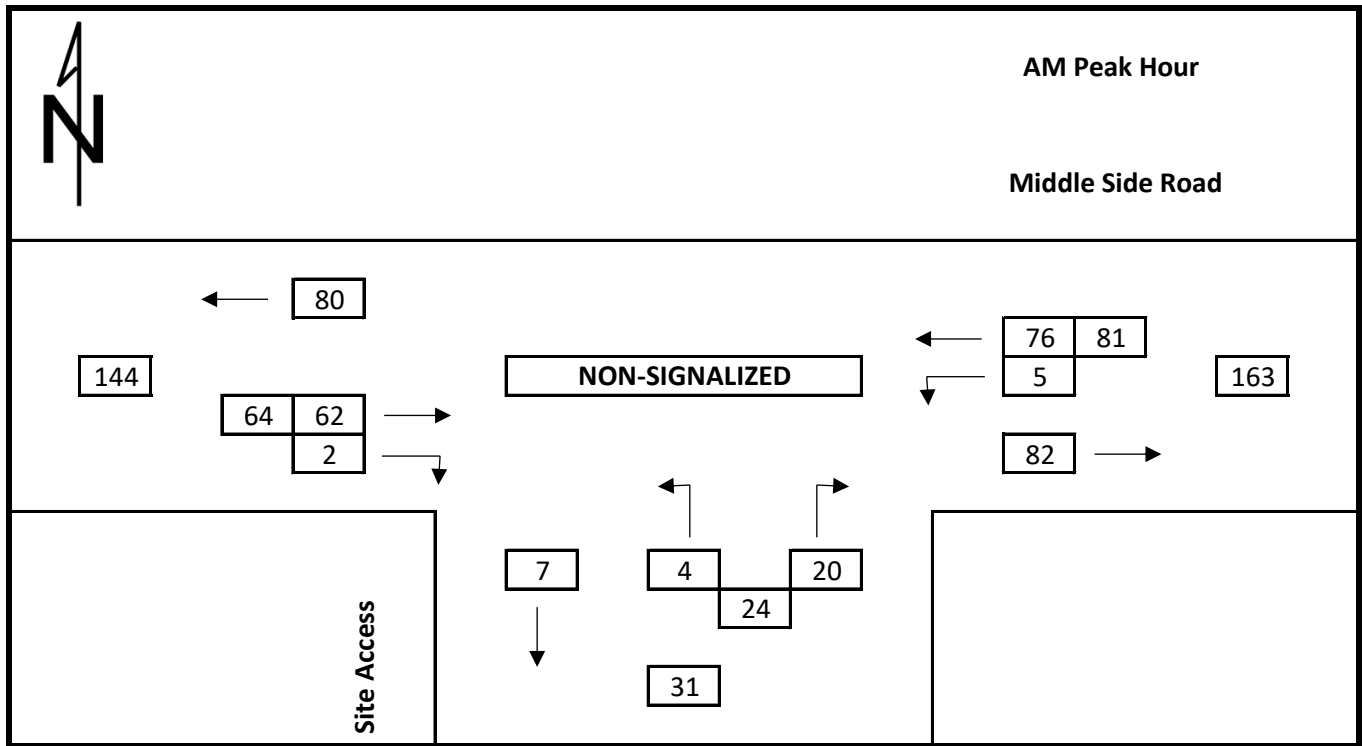
Existing + Site Generated Traffic
Middle Side Road (County Road 10) at Site Access (Bogdan Drive)



Total Traffic 2025
Middle Side Road (County Road 10) at Site Access (Bogdan Drive)

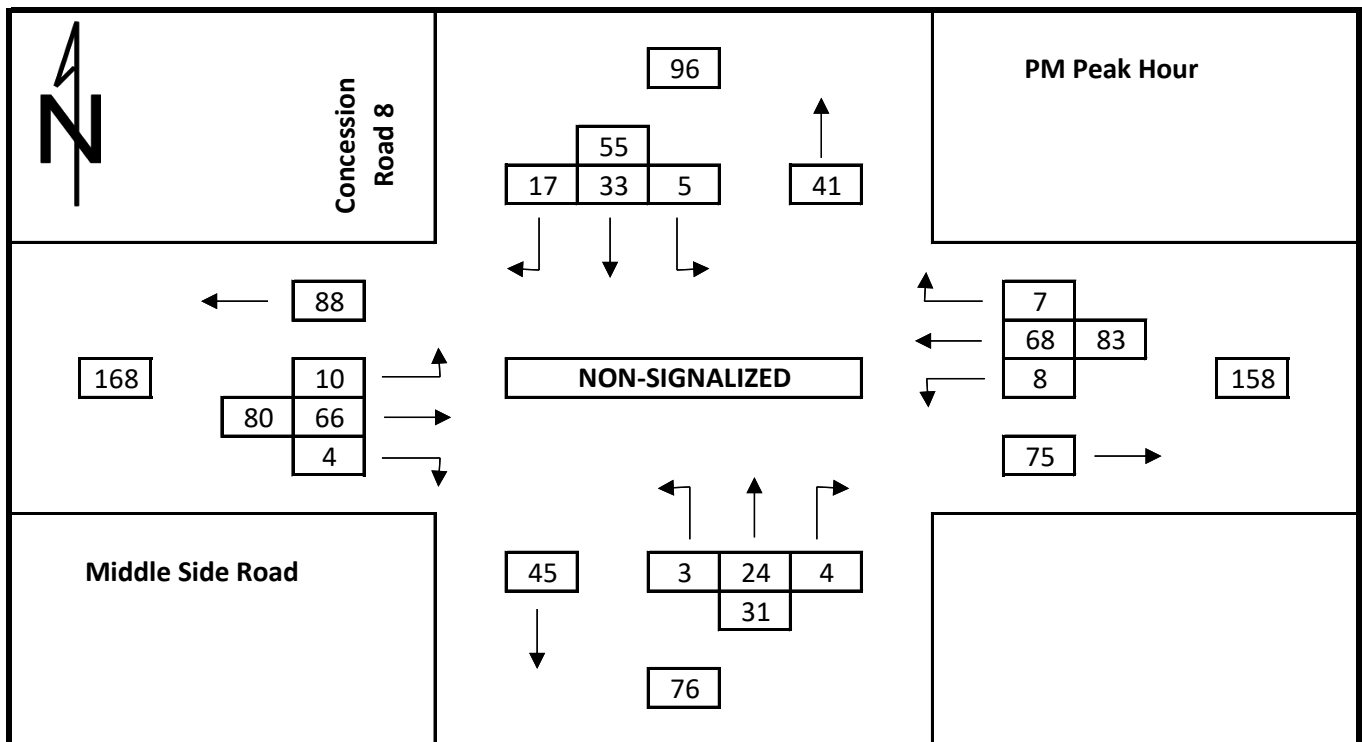
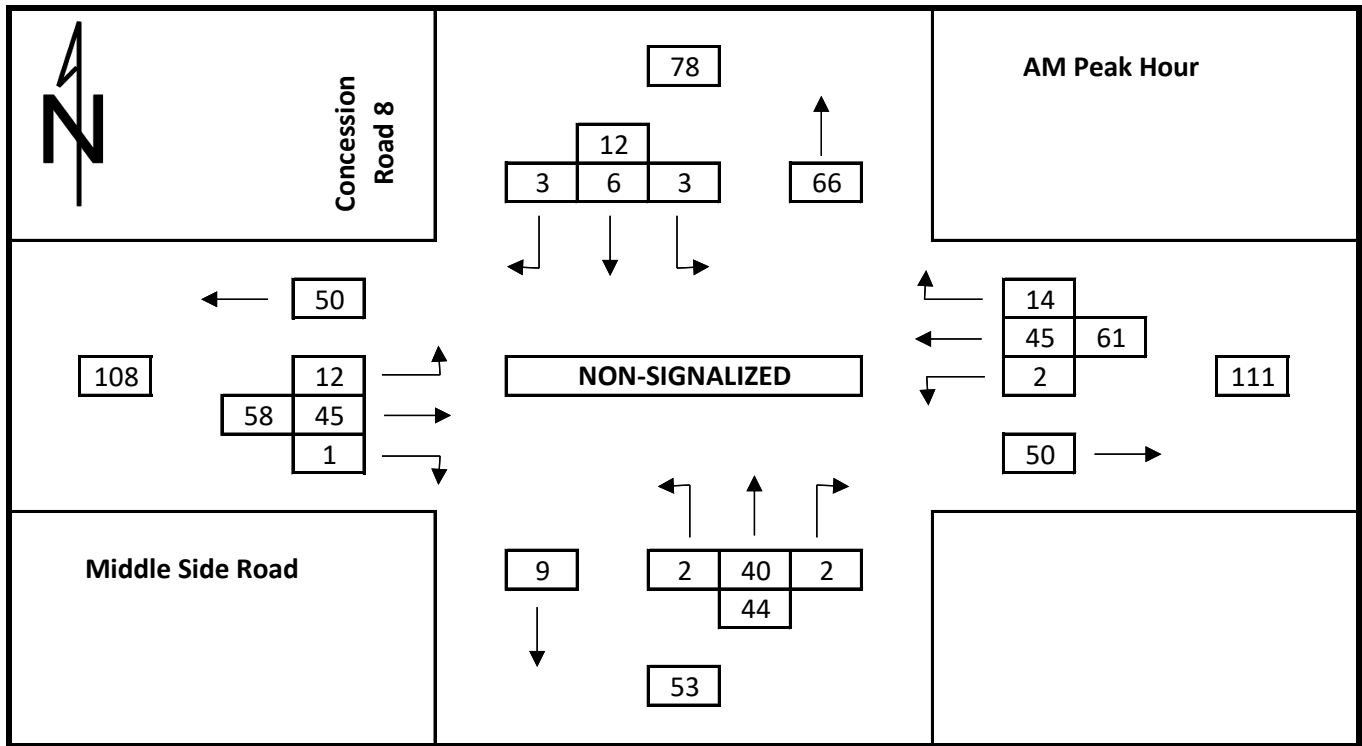


Total Traffic 2030
Middle Side Road (County Road 10) at Site Access (Bogdan Drive)

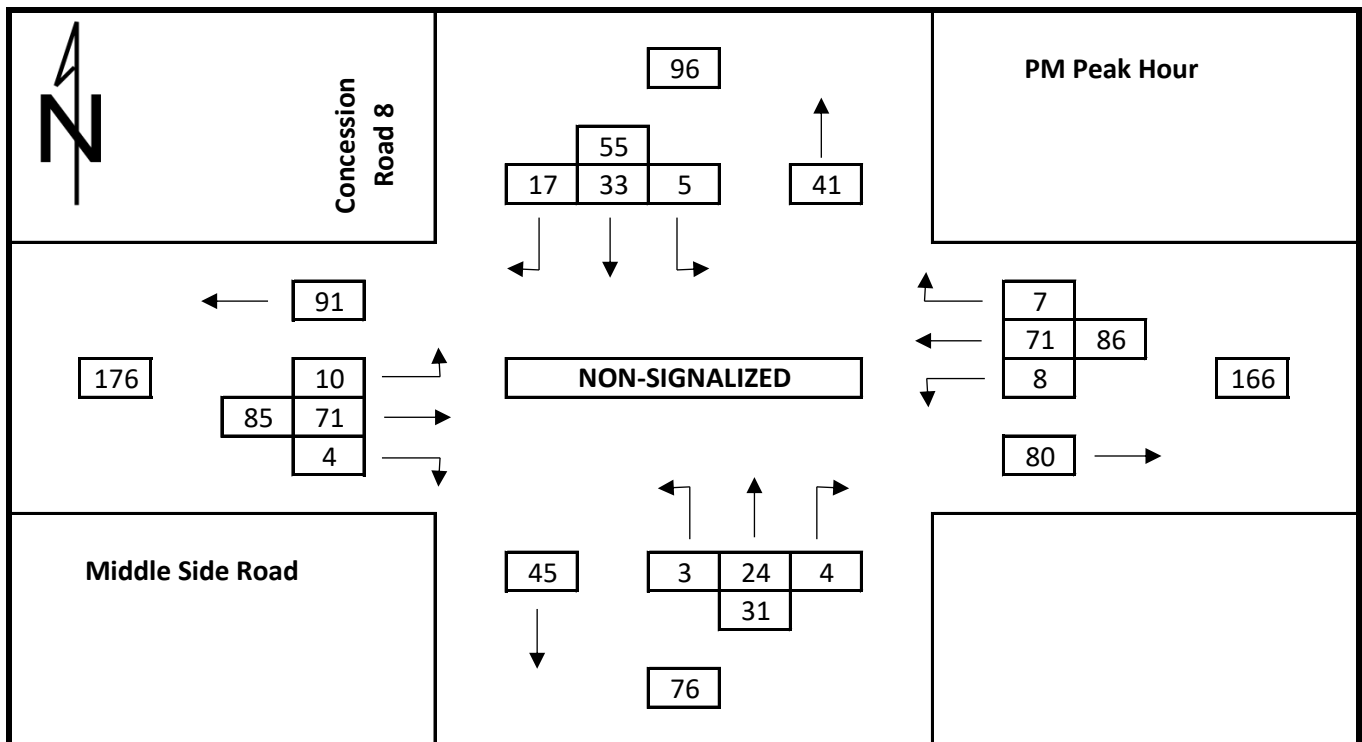
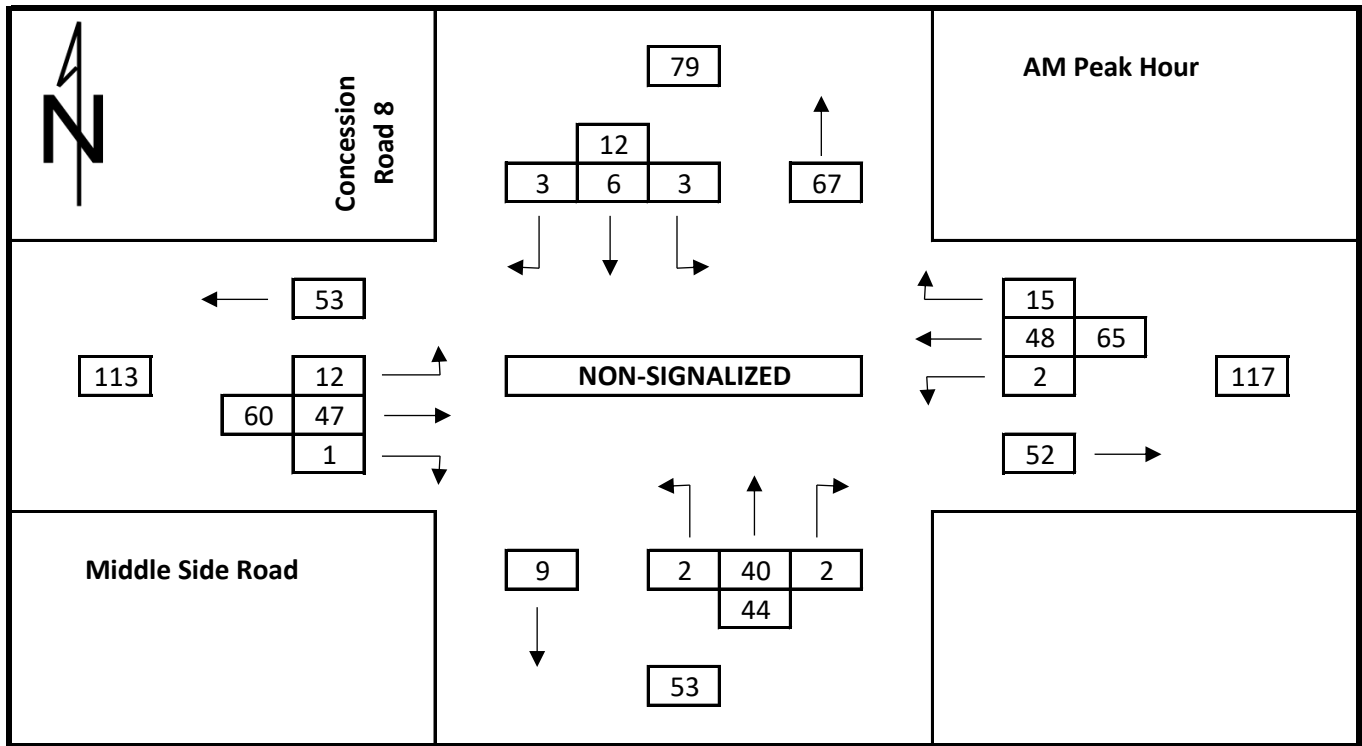


Existing Traffic Counts

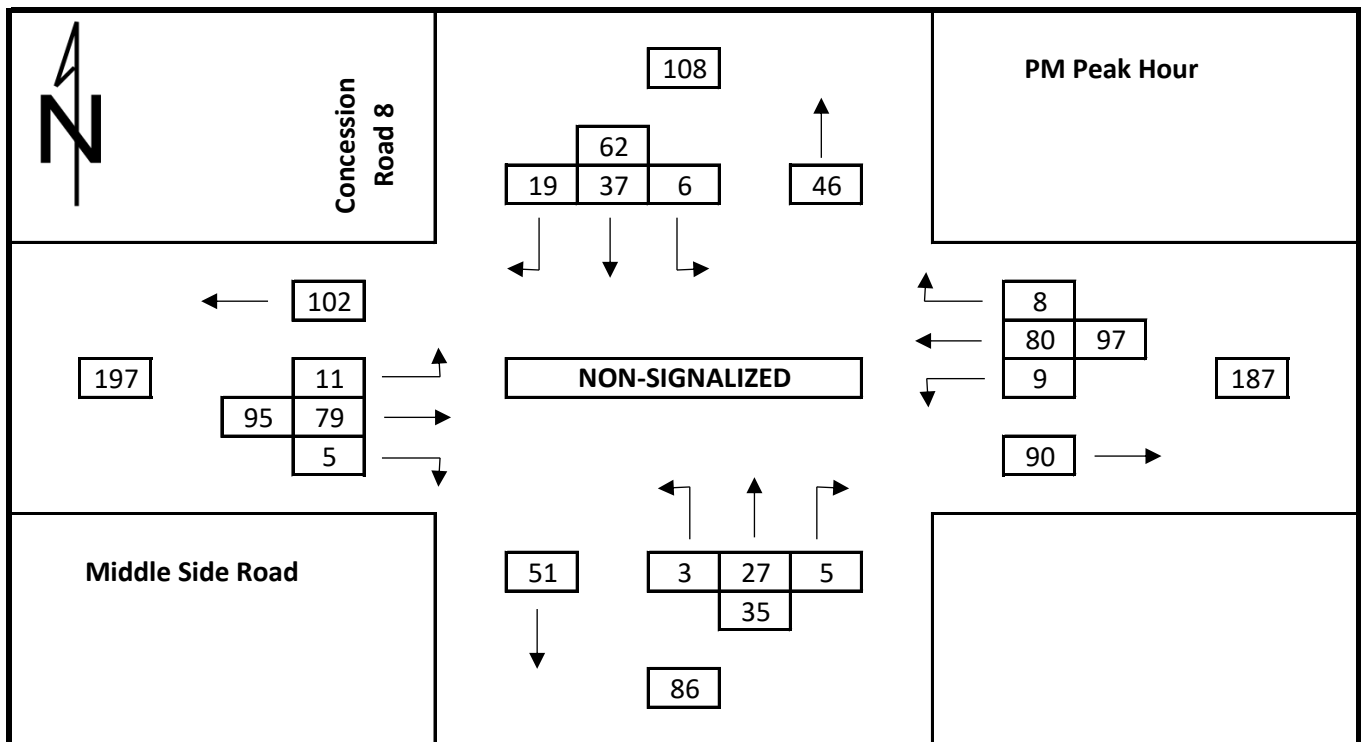
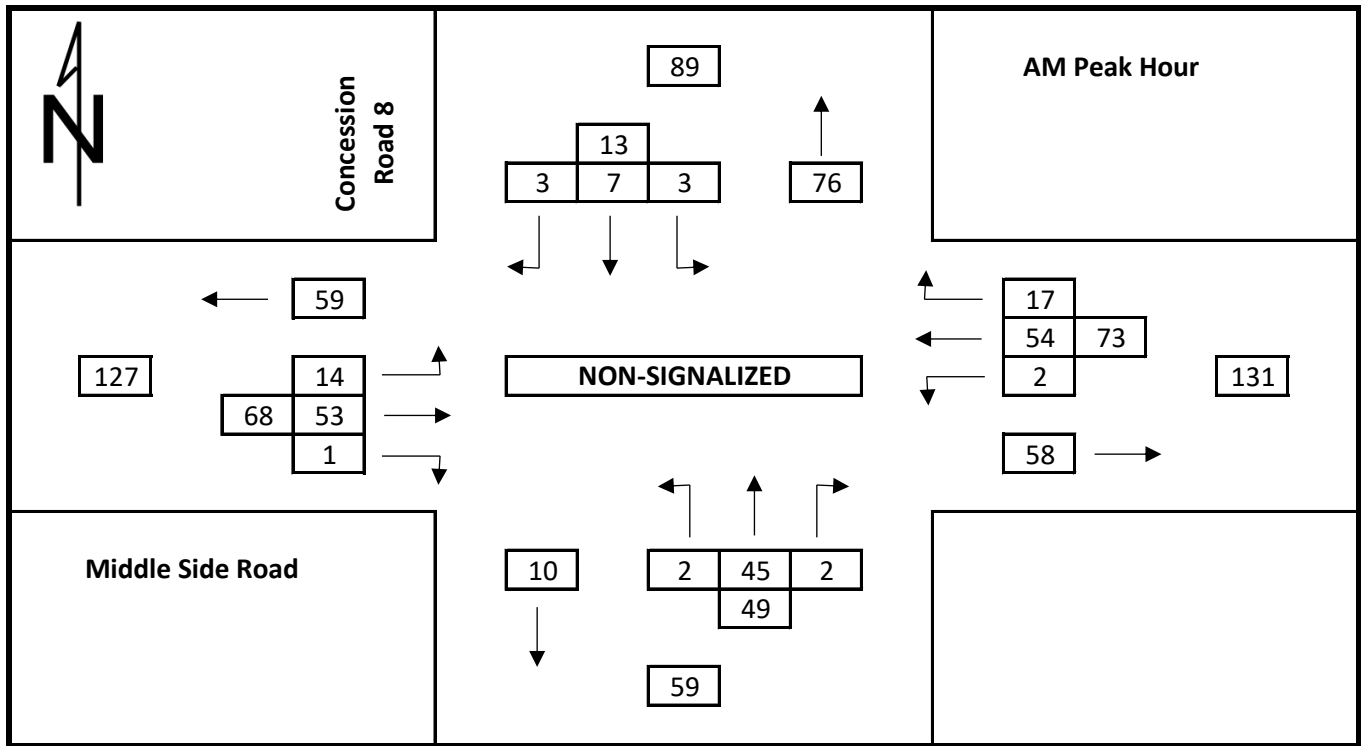
Middle Side Road (County Road 10) at Concession Road 8



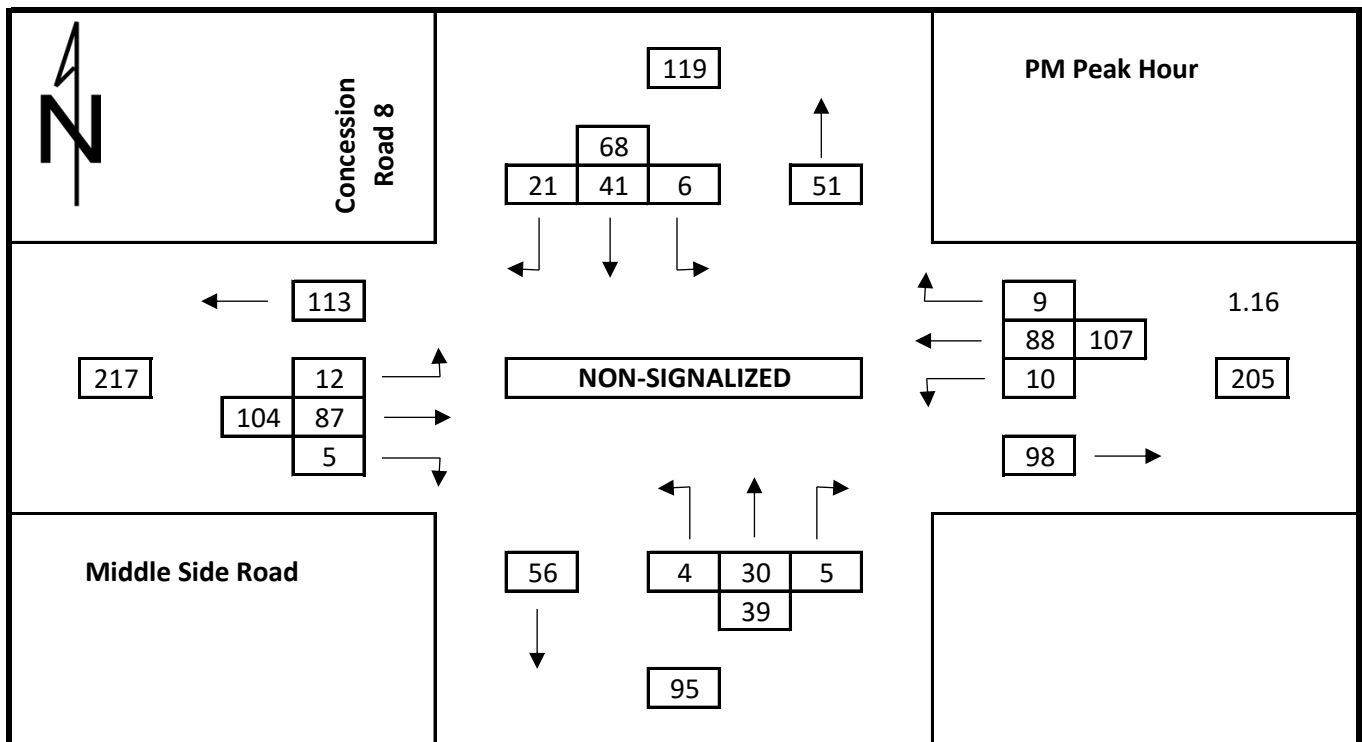
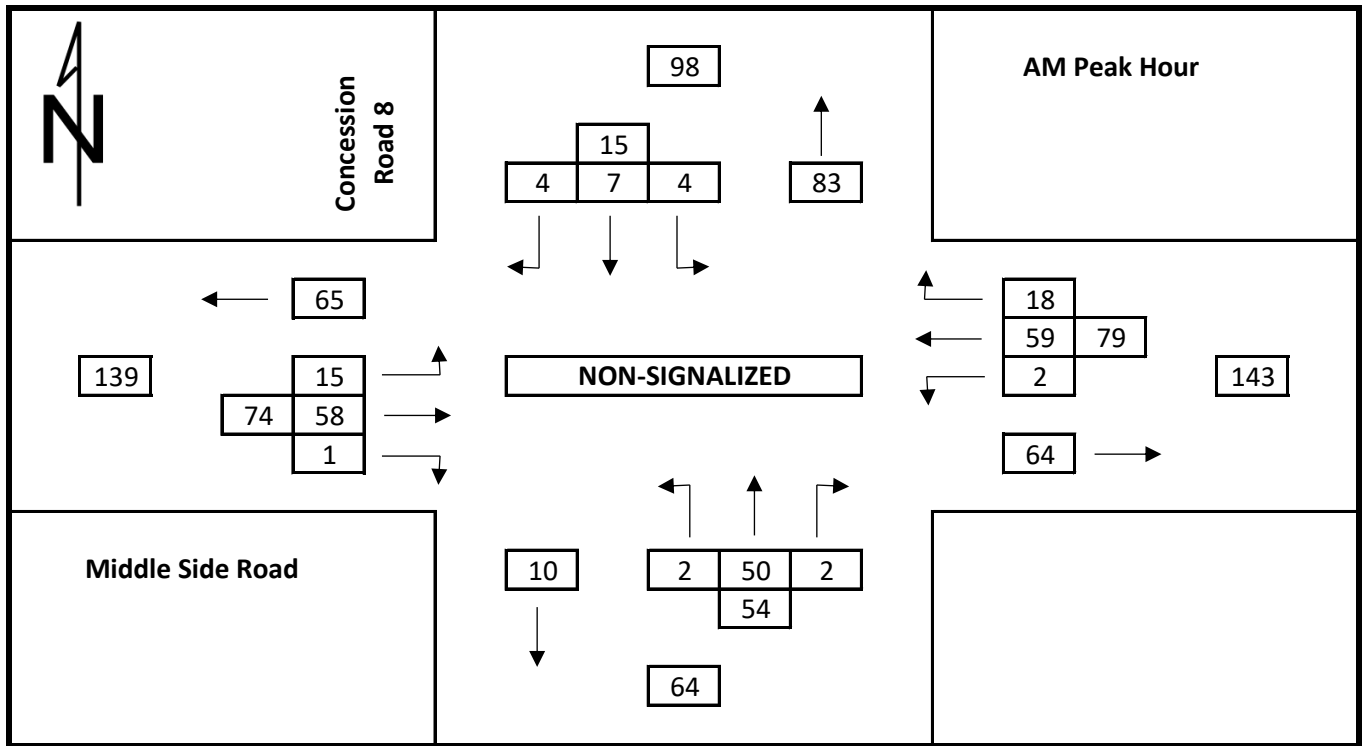
Existing + Site Generated Traffic
 Middle Side Road (County Road 10) at Concession Road 8



Total Traffic 2025
Middle Side Road (County Road 10) at Concession Road 8



Total Traffic 2030
 Middle Side Road (County Road 10) at Concession Road 8



Appendix D

DETAILED SYNCHRO RESULTS

**Middle Side Road (County Road 10) /
Concession Road 11 at
Walker Road (County Road 11)**

**Middle Side Road (County Road 10) at
Canard Boulevard / Gardiner Crescent**

**Middle Side Road (County Road 10) at
Site Access (Bogdan Drive)**

**Middle Side Road (County Road 10) at
Concession Road 8**

Middle Side Road at Walker Road
Amherstburg, Ontario

Existing Traffic, AM Peak
Existing Geometric Configuration

Intersection												
Int Delay, s/veh	2.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	31	21	15	3	9	14	19	271	3	5	112	25
Future Vol, veh/h	31	21	15	3	9	14	19	271	3	5	112	25
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	3	2	0	1	0	12	5	5	0	5	1
Mvmt Flow	34	23	16	3	10	15	21	295	3	5	122	27
Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	497	486	136	504	498	297	149	0	0	298	0	0
Stage 1	146	146	-	339	339	-	-	-	-	-	-	-
Stage 2	351	340	-	165	159	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.53	6.22	7.1	6.51	6.2	4.22	-	-	4.1	-	-
Critical Hdwy Stg 1	6.12	5.53	-	6.1	5.51	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.53	-	6.1	5.51	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.027	3.318	3.5	4.009	3.3	2.308	-	-	2.2	-	-
Pot Cap-1 Maneuver	483	480	913	482	475	747	1373	-	-	1275	-	-
Stage 1	857	774	-	680	642	-	-	-	-	-	-	-
Stage 2	666	637	-	842	768	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	458	469	913	448	465	747	1373	-	-	1275	-	-
Mov Cap-2 Maneuver	458	469	-	448	465	-	-	-	-	-	-	-
Stage 1	842	771	-	668	630	-	-	-	-	-	-	-
Stage 2	631	626	-	799	765	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Control Delay, s	13		11.5			0.5			0.3			
HCM LOS	B		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1373	-	-	520	580	1275	-	-				
HCM Lane V/C Ratio	0.015	-	-	0.14	0.049	0.004	-	-				
HCM Control Delay (s)	7.7	0	-	13	11.5	7.8	0	-				
HCM Lane LOS	A	A	-	B	B	A	A	-				
HCM 95th %tile O(veh)	0	-	-	0.5	0.2	0	-	-				

Middle Side Road at Walker Road
Amherstburg, Ontario

Existing Traffic, PM Peak
Existing Geometric Configuration

Intersection												
Int Delay, s/veh	2.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	32	17	19	2	19	12	16	145	6	15	322	51
Future Vol, veh/h	32	17	19	2	19	12	16	145	6	15	322	51
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	3	2	0	1	0	12	5	5	0	5	1
Mvmt Flow	35	18	21	2	21	13	17	158	7	16	350	55
Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	623	609	378	625	633	162	405	0	0	165	0	0
Stage 1	410	410	-	196	196	-	-	-	-	-	-	-
Stage 2	213	199	-	429	437	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.53	6.22	7.1	6.51	6.2	4.22	-	-	4.1	-	-
Critical Hdwy Stg 1	6.12	5.53	-	6.1	5.51	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.53	-	6.1	5.51	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.027	3.318	3.5	4.009	3.3	2.308	-	-	2.2	-	-
Pot Cap-1 Maneuver	398	408	669	400	398	888	1102	-	-	1426	-	-
Stage 1	619	594	-	810	740	-	-	-	-	-	-	-
Stage 2	789	735	-	608	581	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	367	395	669	365	385	888	1102	-	-	1426	-	-
Mov Cap-2 Maneuver	367	395	-	365	385	-	-	-	-	-	-	-
Stage 1	608	585	-	796	727	-	-	-	-	-	-	-
Stage 2	742	723	-	562	572	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Control Delay, s	15.1		13.1			0.8			0.3			
HCM LOS	C		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1102	-	-	429	483	1426	-	-				
HCM Lane V/C Ratio	0.016	-	-	0.172	0.074	0.011	-	-				
HCM Control Delay (s)	8.3	0	-	15.1	13.1	7.6	0	-				
HCM Lane LOS	A	A	-	C	B	A	A	-				
HCM 95th %tile O(veh)	0	-	-	0.6	0.2	0	-	-				

Middle Side Road at Walker Road
Amherstburg, Ontario

Existing + Site Generated Traffic, AM Peak
Currently Proposed Geometric Configuration

Intersection												
Int Delay, s/veh	3.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	39	32	32	3	11	14	23	271	3	5	112	30
Future Vol, veh/h	39	32	32	3	11	14	23	271	3	5	112	30
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	3	2	0	1	0	12	5	5	0	5	1
Mvmt Flow	42	35	35	3	12	15	25	295	3	5	122	33
Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	509	497	139	531	512	297	155	0	0	298	0	0
Stage 1	149	149	-	347	347	-	-	-	-	-	-	-
Stage 2	360	348	-	184	165	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.53	6.22	7.1	6.51	6.2	4.22	-	-	4.1	-	-
Critical Hdwy Stg 1	6.12	5.53	-	6.1	5.51	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.53	-	6.1	5.51	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.027	3.318	3.5	4.009	3.3	2.308	-	-	2.2	-	-
Pot Cap-1 Maneuver	475	473	909	462	467	747	1366	-	-	1275	-	-
Stage 1	854	772	-	673	637	-	-	-	-	-	-	-
Stage 2	658	632	-	822	764	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	447	461	909	411	455	747	1366	-	-	1275	-	-
Mov Cap-2 Maneuver	447	461	-	411	455	-	-	-	-	-	-	-
Stage 1	835	769	-	658	623	-	-	-	-	-	-	-
Stage 2	618	618	-	752	761	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Control Delay, s	13.5		11.8			0.6			0.3			
HCM LOS	B		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1366	-	-	537	558	1275	-	-				
HCM Lane V/C Ratio	0.018	-	-	0.208	0.055	0.004	-	-				
HCM Control Delay (s)	7.7	0	-	13.5	11.8	7.8	0	-				
HCM Lane LOS	A	A	-	B	B	A	A	-				
HCM 95th %tile O(veh)	0.1	-	-	0.8	0.2	0	-	-				

Middle Side Road at Walker Road
Amherstburg, Ontario

Existing + Site Generated Traffic, PM Peak
Currently Proposed Geometric Configuration

Intersection												
Int Delay, s/veh	3.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	43	23	25	2	28	12	23	145	6	15	322	75
Future Vol, veh/h	43	23	25	2	28	12	23	145	6	15	322	75
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	3	2	0	1	0	12	5	5	0	5	1
Mvmt Flow	47	25	27	2	30	13	25	158	7	16	350	82
Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	656	638	391	661	676	162	432	0	0	165	0	0
Stage 1	423	423	-	212	212	-	-	-	-	-	-	-
Stage 2	233	215	-	449	464	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.53	6.22	7.1	6.51	6.2	4.22	-	-	4.1	-	-
Critical Hdwy Stg 1	6.12	5.53	-	6.1	5.51	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.53	-	6.1	5.51	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.027	3.318	3.5	4.009	3.3	2.308	-	-	2.2	-	-
Pot Cap-1 Maneuver	379	393	658	379	376	888	1076	-	-	1426	-	-
Stage 1	609	586	-	795	729	-	-	-	-	-	-	-
Stage 2	770	723	-	593	565	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	339	377	658	334	361	888	1076	-	-	1426	-	-
Mov Cap-2 Maneuver	339	377	-	334	361	-	-	-	-	-	-	-
Stage 1	593	577	-	774	710	-	-	-	-	-	-	-
Stage 2	707	704	-	536	557	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Control Delay, s	16.8		14.3			1.1			0.3			
HCM LOS	C		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1076	-	-	403	433	1426	-	-				
HCM Lane V/C Ratio	0.023	-	-	0.245	0.105	0.011	-	-				
HCM Control Delay (s)	8.4	0	-	16.8	14.3	7.6	0	-				
HCM Lane LOS	A	A	-	C	B	A	A	-				
HCM 95th %tile O(veh)	0.1	-	-	1	0.4	0	-	-				

Middle Side Road at Walker Road
Amherstburg, Ontario

Total Traffic 2025, AM Peak
Currently Proposed Geometric Configuration

Intersection												
Int Delay, s/veh	3.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	43	35	34	3	12	16	25	305	3	6	126	33
Future Vol, veh/h	43	35	34	3	12	16	25	305	3	6	126	33
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	3	2	0	1	0	12	5	5	0	5	1
Mvmt Flow	47	38	37	3	13	17	27	332	3	7	137	36
Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	572	558	155	595	575	334	173	0	0	335	0	0
Stage 1	169	169	-	388	388	-	-	-	-	-	-	-
Stage 2	403	389	-	207	187	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.53	6.22	7.1	6.51	6.2	4.22	-	-	4.1	-	-
Critical Hdwy Stg 1	6.12	5.53	-	6.1	5.51	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.53	-	6.1	5.51	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.027	3.318	3.5	4.009	3.3	2.308	-	-	2.2	-	-
Pot Cap-1 Maneuver	431	437	891	419	430	712	1345	-	-	1236	-	-
Stage 1	833	757	-	640	611	-	-	-	-	-	-	-
Stage 2	624	607	-	800	747	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	401	423	891	365	417	712	1345	-	-	1236	-	-
Mov Cap-2 Maneuver	401	423	-	365	417	-	-	-	-	-	-	-
Stage 1	812	752	-	624	596	-	-	-	-	-	-	-
Stage 2	581	592	-	724	743	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Control Delay, s	14.7		12.4			0.6			0.3			
HCM LOS	B		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1345	-	-	491	521	1236	-	-				
HCM Lane V/C Ratio	0.02	-	-	0.248	0.065	0.005	-	-				
HCM Control Delay (s)	7.7	0	-	14.7	12.4	7.9	0	-				
HCM Lane LOS	A	A	-	B	B	A	A	-				
HCM 95th %tile O(veh)	0.1	-	-	1	0.2	0	-	-				

Middle Side Road at Walker Road
Amherstburg, Ontario

Total Traffic 2025, PM Peak
Currently Proposed Geometric Configuration

Intersection												
Int Delay, s/veh	3.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	47	25	27	2	30	14	25	163	7	17	363	81
Future Vol, veh/h	47	25	27	2	30	14	25	163	7	17	363	81
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	3	2	0	1	0	12	5	5	0	5	1
Mvmt Flow	51	27	29	2	33	15	27	177	8	18	395	88
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	734	714	439	738	754	181	483	0	0	185	0	0
Stage 1	475	475	-	235	235	-	-	-	-	-	-	-
Stage 2	259	239	-	503	519	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.53	6.22	7.1	6.51	6.2	4.22	-	-	4.1	-	-
Critical Hdwy Stg 1	6.12	5.53	-	6.1	5.51	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.53	-	6.1	5.51	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.027	3.318	3.5	4.009	3.3	2.308	-	-	2.2	-	-
Pot Cap-1 Maneuver	336	355	618	336	339	867	1030	-	-	1402	-	-
Stage 1	570	556	-	773	712	-	-	-	-	-	-	-
Stage 2	746	706	-	555	534	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	294	339	618	290	323	867	1030	-	-	1402	-	-
Mov Cap-2 Maneuver	294	339	-	290	323	-	-	-	-	-	-	-
Stage 1	553	546	-	751	691	-	-	-	-	-	-	-
Stage 2	678	686	-	493	524	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	19.4		15.4		1.1		0.3					
HCM LOS	C		C									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1030	-	-	357	397	1402	-	-				
HCM Lane V/C Ratio	0.026	-	-	0.301	0.126	0.013	-	-				
HCM Control Delay (s)	8.6	0	-	19.4	15.4	7.6	0	-				
HCM Lane LOS	A	A	-	C	C	A	A	-				
HCM 95th %tile O(veh)	0.1	-	-	1.2	0.4	0	-	-				

Middle Side Road at Walker Road
Amherstburg, Ontario

Total Traffic 2030, AM Peak
Currently Proposed Geometric Configuration

Intersection												
Int Delay, s/veh	3.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	47	37	36	4	13	17	28	337	4	6	139	36
Future Vol, veh/h	47	37	36	4	13	17	28	337	4	6	139	36
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	3	2	0	1	0	12	5	5	0	5	1
Mvmt Flow	51	40	39	4	14	18	30	366	4	7	151	39
Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	629	615	171	652	632	368	190	0	0	370	0	0
Stage 1	185	185	-	428	428	-	-	-	-	-	-	-
Stage 2	444	430	-	224	204	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.53	6.22	7.1	6.51	6.2	4.22	-	-	4.1	-	-
Critical Hdwy Stg 1	6.12	5.53	-	6.1	5.51	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.53	-	6.1	5.51	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.027	3.318	3.5	4.009	3.3	2.308	-	-	2.2	-	-
Pot Cap-1 Maneuver	395	405	873	384	399	682	1326	-	-	1200	-	-
Stage 1	817	745	-	609	586	-	-	-	-	-	-	-
Stage 2	593	582	-	783	735	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	363	390	873	329	385	682	1326	-	-	1200	-	-
Mov Cap-2 Maneuver	363	390	-	329	385	-	-	-	-	-	-	-
Stage 1	793	740	-	591	569	-	-	-	-	-	-	-
Stage 2	546	565	-	702	730	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Control Delay, s	16.2		13.1			0.6			0.3			
HCM LOS	C		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1326	-	-	452	480	1200	-	-				
HCM Lane V/C Ratio	0.023	-	-	0.289	0.077	0.005	-	-				
HCM Control Delay (s)	7.8	0	-	16.2	13.1	8	0	-				
HCM Lane LOS	A	A	-	C	B	A	A	-				
HCM 95th %tile Q(veh)	0.1	-	-	1.2	0.2	0	-	-				

Middle Side Road at Walker Road
Amherstburg, Ontario

Total Traffic 2030, PM Peak
Currently Proposed Geometric Configuration

Intersection												
Int Delay, s/veh	4.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	51	27	30	2	33	15	27	180	7	19	400	87
Future Vol, veh/h	51	27	30	2	33	15	27	180	7	19	400	87
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	3	2	0	1	0	12	5	5	0	5	1
Mvmt Flow	55	29	33	2	36	16	29	196	8	21	435	95

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	809	787	483	814	830	200	530	0	0	204	0	0
Stage 1	525	525	-	258	258	-	-	-	-	-	-	-
Stage 2	284	262	-	556	572	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.53	6.22	7.1	6.51	6.2	4.22	-	-	4.1	-	-
Critical Hdwy Stg 1	6.12	5.53	-	6.1	5.51	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.53	-	6.1	5.51	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.027	3.318	3.5	4.009	3.3	2.308	-	-	2.2	-	-
Pot Cap-1 Maneuver	299	323	584	299	307	846	988	-	-	1380	-	-
Stage 1	536	528	-	751	696	-	-	-	-	-	-	-
Stage 2	723	690	-	519	506	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	255	306	584	251	290	846	988	-	-	1380	-	-
Mov Cap-2 Maneuver	255	306	-	251	290	-	-	-	-	-	-	-
Stage 1	518	516	-	726	673	-	-	-	-	-	-	-
Stage 2	649	667	-	452	495	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	22.8		16.8		1.1		0.3	
HCM LOS	C		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	988	-	-	318	358	1380	-
HCM Lane V/C Ratio	0.03	-	-	0.369	0.152	0.015	-
HCM Control Delay (s)	8.8	0	-	22.8	16.8	7.6	0
HCM Lane LOS	A	A	-	C	C	A	A
HCM 95th %tile Q(veh)	0.1	-	-	1.6	0.5	0	-

Intersection												
Int Delay, s/veh	2.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	46	3	3	49	1	8	0	14	7	0	4
Future Vol, veh/h	1	46	3	3	49	1	8	0	14	7	0	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	4	0	0	2	0	0	0	0	0	0	0
Mvmt Flow	1	50	3	3	53	1	9	0	15	8	0	4
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	54	0	0	53	0	0	116	114	52	121	115	54
Stage 1	-	-	-	-	-	-	54	54	-	60	60	-
Stage 2	-	-	-	-	-	-	62	60	-	61	55	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1564	-	-	1566	-	-	865	780	1021	859	779	1019
Stage 1	-	-	-	-	-	-	963	854	-	957	849	-
Stage 2	-	-	-	-	-	-	954	849	-	955	853	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1564	-	-	1566	-	-	859	778	1021	844	777	1019
Mov Cap-2 Maneuver	-	-	-	-	-	-	859	778	-	844	777	-
Stage 1	-	-	-	-	-	-	962	853	-	956	847	-
Stage 2	-	-	-	-	-	-	948	847	-	940	852	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			0.4			8.9			9.1		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	955	1564	-	-	1566	-	-	900				
HCM Lane V/C Ratio	0.025	0.001	-	-	0.002	-	-	0.013				
HCM Control Delay (s)	8.9	7.3	0	-	7.3	0	-	9.1				
HCM Lane LOS	A	A	A	-	A	A	-	A				
HCM 95th %tile O(veh)	0.1	0	-	-	0	-	-	0				

Intersection												
Int Delay, s/veh	0.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	61	9	4	80	2	2	0	5	2	0	1
Future Vol, veh/h	5	61	9	4	80	2	2	0	5	2	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	4	0	0	2	0	0	0	0	0	0	0
Mvmt Flow	5	66	10	4	87	2	2	0	5	2	0	1
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	89	0	0	76	0	0	178	178	71	180	182	88
Stage 1	-	-	-	-	-	-	81	81	-	96	96	-
Stage 2	-	-	-	-	-	-	97	97	-	84	86	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1519	-	-	1536	-	-	789	719	997	786	716	976
Stage 1	-	-	-	-	-	-	932	832	-	916	819	-
Stage 2	-	-	-	-	-	-	914	819	-	929	827	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1519	-	-	1536	-	-	784	715	997	778	712	976
Mov Cap-2 Maneuver	-	-	-	-	-	-	784	715	-	778	712	-
Stage 1	-	-	-	-	-	-	929	830	-	913	817	-
Stage 2	-	-	-	-	-	-	910	817	-	921	825	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.5			0.3			8.9			9.3		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	925	1519	-	-	1536	-	-	834				
HCM Lane V/C Ratio	0.008	0.004	-	-	0.003	-	-	0.004				
HCM Control Delay (s)	8.9	7.4	0	-	7.3	0	-	9.3				
HCM Lane LOS	A	A	A	-	A	A	-	A				
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0				

Middle Side Road at Canard Blvd.
Amherstburg, Ontario

Existing + Site Generated Traffic, AM Peak
Currently Proposed Geometric Configuration

Intersection												
Int Delay, s/veh	2.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	66	3	9	54	1	8	0	30	7	0	4
Future Vol, veh/h	1	66	3	9	54	1	8	0	30	7	0	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	4	0	0	2	0	0	0	0	0	0	0
Mvmt Flow	1	72	3	10	59	1	9	0	33	8	0	4
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	60	0	0	75	0	0	158	156	74	172	157	60
Stage 1	-	-	-	-	-	-	76	76	-	80	80	-
Stage 2	-	-	-	-	-	-	82	80	-	92	77	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1556	-	-	1537	-	-	813	740	993	796	739	1011
Stage 1	-	-	-	-	-	-	938	836	-	934	832	-
Stage 2	-	-	-	-	-	-	931	832	-	920	835	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1556	-	-	1537	-	-	805	734	993	765	733	1011
Mov Cap-2 Maneuver	-	-	-	-	-	-	805	734	-	765	733	-
Stage 1	-	-	-	-	-	-	937	835	-	933	826	-
Stage 2	-	-	-	-	-	-	921	826	-	889	834	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			1			9			9.4		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	946	1556	-	-	1537	-	-	839				
HCM Lane V/C Ratio	0.044	0.001	-	-	0.006	-	-	0.014				
HCM Control Delay (s)	9	7.3	0	-	7.4	0	-	9.4				
HCM Lane LOS	A	A	A	-	A	A	-	A				
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0				

Intersection												
Int Delay, s/veh	1.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	74	9	26	98	2	2	0	15	2	0	1
Future Vol, veh/h	5	74	9	26	98	2	2	0	15	2	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	4	0	0	2	0	0	0	0	0	0	0
Mvmt Flow	5	80	10	28	107	2	2	0	16	2	0	1
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	109	0	0	90	0	0	260	260	85	267	264	108
Stage 1	-	-	-	-	-	-	95	95	-	164	164	-
Stage 2	-	-	-	-	-	-	165	165	-	103	100	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1494	-	-	1518	-	-	697	648	980	690	645	951
Stage 1	-	-	-	-	-	-	917	820	-	843	766	-
Stage 2	-	-	-	-	-	-	842	766	-	908	816	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1494	-	-	1518	-	-	684	632	980	666	630	951
Mov Cap-2 Maneuver	-	-	-	-	-	-	684	632	-	666	630	-
Stage 1	-	-	-	-	-	-	913	817	-	840	751	-
Stage 2	-	-	-	-	-	-	824	751	-	889	813	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.4			1.5			8.9			9.9		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	933	1494	-	-	1518	-	-	740				
HCM Lane V/C Ratio	0.02	0.004	-	-	0.019	-	-	0.004				
HCM Control Delay (s)	8.9	7.4	0	-	7.4	0	-	9.9				
HCM Lane LOS	A	A	A	-	A	A	-	A				
HCM 95th %tile O(veh)	0.1	0	-	-	0.1	-	-	0				

Middle Side Road at Canard Blvd. / Gardiner Cres.
Amherstburg, Ontario

Total Traffic 2025, AM Peak
Currently Proposed Geometric Configuration

Intersection												
Int Delay, s/veh	2.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	72	3	9	60	1	9	0	32	8	0	5
Future Vol, veh/h	1	72	3	9	60	1	9	0	32	8	0	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	4	0	0	2	0	0	0	0	0	0	0
Mvmt Flow	1	78	3	10	65	1	10	0	35	9	0	5
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	66	0	0	81	0	0	170	168	80	185	169	66
Stage 1	-	-	-	-	-	-	82	82	-	86	86	-
Stage 2	-	-	-	-	-	-	88	86	-	99	83	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1549	-	-	1529	-	-	798	728	986	780	728	1003
Stage 1	-	-	-	-	-	-	931	831	-	927	827	-
Stage 2	-	-	-	-	-	-	925	827	-	912	830	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1549	-	-	1529	-	-	789	722	986	748	722	1003
Mov Cap-2 Maneuver	-	-	-	-	-	-	789	722	-	748	722	-
Stage 1	-	-	-	-	-	-	930	830	-	926	821	-
Stage 2	-	-	-	-	-	-	914	821	-	879	829	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			0.9			9			9.4		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	935	1549	-	-	1529	-	-	829				
HCM Lane V/C Ratio	0.048	0.001	-	-	0.006	-	-	0.017				
HCM Control Delay (s)	9	7.3	0	-	7.4	0	-	9.4				
HCM Lane LOS	A	A	A	-	A	A	-	A				
HCM 95th %tile O(veh)	0.1	0	-	-	0	-	-	0.1				

Middle Side Road at Canard Blvd. / Gardiner Cres.
Amherstburg, Ontario

Total Traffic 2025, PM Peak
Currently Proposed Geometric Configuration

Intersection												
Int Delay, s/veh	1.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	6	82	10	27	108	2	2	0	16	2	0	1
Future Vol, veh/h	6	82	10	27	108	2	2	0	16	2	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	4	0	0	2	0	0	0	0	0	0	0
Mvmt Flow	7	89	11	29	117	2	2	0	17	2	0	1
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	119	0	0	100	0	0	286	286	95	293	290	118
Stage 1	-	-	-	-	-	-	109	109	-	176	176	-
Stage 2	-	-	-	-	-	-	177	177	-	117	114	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1482	-	-	1505	-	-	670	627	967	663	624	939
Stage 1	-	-	-	-	-	-	901	809	-	831	757	-
Stage 2	-	-	-	-	-	-	829	756	-	892	805	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1482	-	-	1505	-	-	656	611	967	638	608	939
Mov Cap-2 Maneuver	-	-	-	-	-	-	656	611	-	638	608	-
Stage 1	-	-	-	-	-	-	896	805	-	827	741	-
Stage 2	-	-	-	-	-	-	811	740	-	872	801	-
Approach	EB		WB				NB		SB			
HCM Control Delay, s	0.5		1.5				9		10.1			
HCM LOS							A		B			
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	919	1482	-	-	1505	-	-	714				
HCM Lane V/C Ratio	0.021	0.004	-	-	0.02	-	-	0.005				
HCM Control Delay (s)	9	7.4	0	-	7.4	0	-	10.1				
HCM Lane LOS	A	A	A	-	A	A	-	B				
HCM 95th %tile O(veh)	0.1	0	-	-	0.1	-	-	0				

Middle Side Road at Canard Blvd. / Gardiner Cres.
Amherstburg, Ontario

Total Traffic 2030, AM Peak
Currently Proposed Geometric Configuration

Intersection												
Int Delay, s/veh	2.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	77	4	10	66	1	10	0	33	9	0	5
Future Vol, veh/h	1	77	4	10	66	1	10	0	33	9	0	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	4	0	0	2	0	0	0	0	0	0	0
Mvmt Flow	1	84	4	11	72	1	11	0	36	10	0	5
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	73	0	0	88	0	0	185	183	86	201	185	73
Stage 1	-	-	-	-	-	-	88	88	-	95	95	-
Stage 2	-	-	-	-	-	-	97	95	-	106	90	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1540	-	-	1520	-	-	780	715	978	762	713	995
Stage 1	-	-	-	-	-	-	925	826	-	917	820	-
Stage 2	-	-	-	-	-	-	914	820	-	905	824	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1540	-	-	1520	-	-	771	709	978	729	707	995
Mov Cap-2 Maneuver	-	-	-	-	-	-	771	709	-	729	707	-
Stage 1	-	-	-	-	-	-	924	825	-	916	813	-
Stage 2	-	-	-	-	-	-	902	813	-	871	823	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			1			9.1			9.6		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	921	1540	-	-	1520	-	-	806				
HCM Lane V/C Ratio	0.051	0.001	-	-	0.007	-	-	0.019				
HCM Control Delay (s)	9.1	7.3	0	-	7.4	0	-	9.6				
HCM Lane LOS	A	A	A	-	A	A	-	A				
HCM 95th %tile O(veh)	0.2	0	-	-	0	-	-	0.1				

Intersection												
Int Delay, s/veh	1.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	6	89	11	27	117	2	2	0	16	2	0	1
Future Vol, veh/h	6	89	11	27	117	2	2	0	16	2	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	4	0	0	2	0	0	0	0	0	0	0
Mvmt Flow	7	97	12	29	127	2	2	0	17	2	0	1
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	129	0	0	109	0	0	304	304	103	312	309	128
Stage 1	-	-	-	-	-	-	117	117	-	186	186	-
Stage 2	-	-	-	-	-	-	187	187	-	126	123	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1469	-	-	1494	-	-	652	613	957	644	609	927
Stage 1	-	-	-	-	-	-	892	803	-	820	750	-
Stage 2	-	-	-	-	-	-	819	749	-	883	798	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1469	-	-	1494	-	-	638	597	957	620	593	927
Mov Cap-2 Maneuver	-	-	-	-	-	-	638	597	-	620	593	-
Stage 1	-	-	-	-	-	-	888	799	-	816	734	-
Stage 2	-	-	-	-	-	-	801	733	-	863	794	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.4			1.4			9.1			10.2		
HCM LOS							A			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	907	1469	-	-	1494	-	-	697				
HCM Lane V/C Ratio	0.022	0.004	-	-	0.02	-	-	0.005				
HCM Control Delay (s)	9.1	7.5	0	-	7.5	0	-	10.2				
HCM Lane LOS	A	A	A	-	A	A	-	B				
HCM 95th %tile O(veh)	0.1	0	-	-	0.1	-	-	0				

Intersection

Int Delay, s/veh 1.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	50	2	5	61	4	20
Future Vol, veh/h	50	2	5	61	4	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	0	0	2	0	0
Mvmt Flow	54	2	5	66	4	22

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	56
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.1
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.2
Pot Cap-1 Maneuver	-	-	1562
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1562
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	8.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	989	-	-	1562	-
HCM Lane V/C Ratio	0.026	-	-	0.003	-
HCM Control Delay (s)	8.7	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection

Int Delay, s/veh 1.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	75	5	18	83	3	13
Future Vol, veh/h	75	5	18	83	3	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	82	5	20	90	3	14

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	87
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.12
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.218
Pot Cap-1 Maneuver	-	-	1509
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1509
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.3	9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	926	-	-	1509	-
HCM Lane V/C Ratio	0.019	-	-	0.013	-
HCM Control Delay (s)	9	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection						
Int Delay, s/veh	1.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	56	2	5	69	4	20
Future Vol, veh/h	56	2	5	69	4	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	61	2	5	75	4	22
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	63	0	147	62
Stage 1	-	-	-	-	62	-
Stage 2	-	-	-	-	85	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1540	-	845	1003
Stage 1	-	-	-	-	961	-
Stage 2	-	-	-	-	938	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1540	-	842	1003
Mov Cap-2 Maneuver	-	-	-	-	842	-
Stage 1	-	-	-	-	958	-
Stage 2	-	-	-	-	938	-
Approach	EB	WB		NB		
HCM Control Delay, s	0	0.5		8.8		
HCM LOS	A					
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	972	-	-	1540	-	
HCM Lane V/C Ratio	0.027	-	-	0.004	-	
HCM Control Delay (s)	8.8	-	-	7.3	0	
HCM Lane LOS	A	-	-	A	A	
HCM 95th %tile Q(veh)	0.1	-	-	0	-	

Middle Side Road at Bogdan Drive
Amherstburg, Ontario

Total Traffic 2025, PM Peak
Currently Proposed Geometric Configuration

Intersection

Int Delay, s/veh 1.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	84	5	18	93	3	13
Future Vol, veh/h	84	5	18	93	3	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	91	5	20	101	3	14

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	96
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.12
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.218
Pot Cap-1 Maneuver	-	-	1498
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1498
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.2	9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	912	-	-	1498	-
HCM Lane V/C Ratio	0.019	-	-	0.013	-
HCM Control Delay (s)	9	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection

Int Delay, s/veh 1.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	62	2	5	76	4	20
Future Vol, veh/h	62	2	5	76	4	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	67	2	5	83	4	22

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	69
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.12
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.218
Pot Cap-1 Maneuver	-	-	1532
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1532
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.5	8.8
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	963	-	-	1532	-
HCM Lane V/C Ratio	0.027	-	-	0.004	-
HCM Control Delay (s)	8.8	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection

Int Delay, s/veh 1.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	93	5	18	103	3	13
Future Vol, veh/h	93	5	18	103	3	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	101	5	20	112	3	14

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	106
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.12
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.218
Pot Cap-1 Maneuver	-	-	1485
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1485
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.1	9.1
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	898	-	-	1485	-
HCM Lane V/C Ratio	0.019	-	-	0.013	-
HCM Control Delay (s)	9.1	-	-	7.5	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Middle Side Road at Concession Road 8
Amherstburg, Ontario

Existing Traffic, AM Peak
Existing Geometric Configuration

Intersection												
Int Delay, s/veh	3.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	45	1	2	45	14	2	40	2	3	6	3
Future Vol, veh/h	12	45	1	2	45	14	2	40	2	3	6	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	4	0	0	2	0	0	0	0	0	0	0
Mvmt Flow	13	49	1	2	49	15	2	43	2	3	7	3
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	64	0	0	50	0	0	142	144	50	159	137	57
Stage 1	-	-	-	-	-	-	76	76	-	61	61	-
Stage 2	-	-	-	-	-	-	66	68	-	98	76	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1551	-	-	1570	-	-	832	751	1024	811	758	1015
Stage 1	-	-	-	-	-	-	938	836	-	955	848	-
Stage 2	-	-	-	-	-	-	950	842	-	913	836	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1551	-	-	1570	-	-	818	743	1024	767	750	1015
Mov Cap-2 Maneuver	-	-	-	-	-	-	818	743	-	767	750	-
Stage 1	-	-	-	-	-	-	930	828	-	946	847	-
Stage 2	-	-	-	-	-	-	939	841	-	855	828	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	1.5			0.2			10.1			9.5		
HCM LOS							B			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	756	1551	-	-	1570	-	-	807				
HCM Lane V/C Ratio	0.063	0.008	-	-	0.001	-	-	0.016				
HCM Control Delay (s)	10.1	7.3	0	-	7.3	0	-	9.5				
HCM Lane LOS	B	A	A	-	A	A	-	A				
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0				

Middle Side Road at Concession Road 8
Amherstburg, Ontario

Existing Traffic, PM Peak
Existing Geometric Configuration

Intersection												
Int Delay, s/veh	4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	66	4	8	68	7	3	24	4	5	33	17
Future Vol, veh/h	10	66	4	8	68	7	3	24	4	5	33	17
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	4	0	0	2	0	0	0	0	0	0	0
Mvmt Flow	11	72	4	9	74	8	3	26	4	5	36	18
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	82	0	0	76	0	0	219	196	74	207	194	78
Stage 1	-	-	-	-	-	-	96	96	-	96	96	-
Stage 2	-	-	-	-	-	-	123	100	-	111	98	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1528	-	-	1536	-	-	741	703	993	755	705	988
Stage 1	-	-	-	-	-	-	916	819	-	916	819	-
Stage 2	-	-	-	-	-	-	886	816	-	899	818	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1528	-	-	1536	-	-	691	693	993	723	695	988
Mov Cap-2 Maneuver	-	-	-	-	-	-	691	693	-	723	695	-
Stage 1	-	-	-	-	-	-	909	812	-	909	814	-
Stage 2	-	-	-	-	-	-	826	811	-	859	811	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.9			0.7			10.2			10.1		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	721	1528	-	-	1536	-	-	768				
HCM Lane V/C Ratio	0.047	0.007	-	-	0.006	-	-	0.078				
HCM Control Delay (s)	10.2	7.4	0	-	7.4	0	-	10.1				
HCM Lane LOS	B	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.3				

Intersection												
Int Delay, s/veh	3.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	47	1	2	48	15	2	40	2	3	6	3
Future Vol, veh/h	12	47	1	2	48	15	2	40	2	3	6	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	4	0	0	2	0	0	0	0	0	0	0
Mvmt Flow	13	51	1	2	52	16	2	43	2	3	7	3
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	68	0	0	52	0	0	147	150	52	164	142	60
Stage 1	-	-	-	-	-	-	78	78	-	64	64	-
Stage 2	-	-	-	-	-	-	69	72	-	100	78	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1546	-	-	1567	-	-	826	745	1021	805	753	1011
Stage 1	-	-	-	-	-	-	936	834	-	952	846	-
Stage 2	-	-	-	-	-	-	946	839	-	911	834	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1546	-	-	1567	-	-	812	738	1021	762	745	1011
Mov Cap-2 Maneuver	-	-	-	-	-	-	812	738	-	762	745	-
Stage 1	-	-	-	-	-	-	928	826	-	943	845	-
Stage 2	-	-	-	-	-	-	935	838	-	853	826	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	1.5			0.2			10.1			9.6		
HCM LOS							B			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	751	1546	-	-	1567	-	-	802				
HCM Lane V/C Ratio	0.064	0.008	-	-	0.001	-	-	0.016				
HCM Control Delay (s)	10.1	7.3	0	-	7.3	0	-	9.6				
HCM Lane LOS	B	A	A	-	A	A	-	A				
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.1				

Intersection												
Int Delay, s/veh	3.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	71	4	8	71	7	3	24	4	5	33	17
Future Vol, veh/h	10	71	4	8	71	7	3	24	4	5	33	17
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	4	0	0	2	0	0	0	0	0	0	0
Mvmt Flow	11	77	4	9	77	8	3	26	4	5	36	18
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	85	0	0	81	0	0	227	204	79	215	202	81
Stage 1	-	-	-	-	-	-	101	101	-	99	99	-
Stage 2	-	-	-	-	-	-	126	103	-	116	103	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1524	-	-	1529	-	-	733	696	987	746	698	985
Stage 1	-	-	-	-	-	-	910	815	-	912	817	-
Stage 2	-	-	-	-	-	-	883	814	-	894	814	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1524	-	-	1529	-	-	683	686	987	713	688	985
Mov Cap-2 Maneuver	-	-	-	-	-	-	683	686	-	713	688	-
Stage 1	-	-	-	-	-	-	903	808	-	905	812	-
Stage 2	-	-	-	-	-	-	823	809	-	854	807	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.9			0.7			10.3			10.1		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	714	1524	-	-	1529	-	-	761				
HCM Lane V/C Ratio	0.047	0.007	-	-	0.006	-	-	0.079				
HCM Control Delay (s)	10.3	7.4	0	-	7.4	0	-	10.1				
HCM Lane LOS	B	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.3				

Middle Side Road at Concession Road 8
Amherstburg, Ontario

Total Traffic 2025, AM Peak
Currently Proposed Geometric Configuration

Intersection												
Int Delay, s/veh	3.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	14	53	1	2	54	17	2	45	2	3	7	3
Future Vol, veh/h	14	53	1	2	54	17	2	45	2	3	7	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	4	0	0	2	0	0	0	0	0	0	0
Mvmt Flow	15	58	1	2	59	18	2	49	2	3	8	3
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	77	0	0	59	0	0	167	170	59	186	161	68
Stage 1	-	-	-	-	-	-	89	89	-	72	72	-
Stage 2	-	-	-	-	-	-	78	81	-	114	89	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1535	-	-	1558	-	-	802	727	1012	779	735	1001
Stage 1	-	-	-	-	-	-	923	825	-	943	839	-
Stage 2	-	-	-	-	-	-	936	832	-	896	825	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1535	-	-	1558	-	-	787	719	1012	731	727	1001
Mov Cap-2 Maneuver	-	-	-	-	-	-	787	719	-	731	727	-
Stage 1	-	-	-	-	-	-	914	817	-	934	838	-
Stage 2	-	-	-	-	-	-	924	831	-	832	817	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	1.5			0.2			10.3			9.7		
HCM LOS							B			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	730	1535	-	-	1558	-	-	777				
HCM Lane V/C Ratio	0.073	0.01	-	-	0.001	-	-	0.018				
HCM Control Delay (s)	10.3	7.4	0	-	7.3	0	-	9.7				
HCM Lane LOS	B	A	A	-	A	A	-	A				
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.1				

Middle Side Road at Concession Road 8
Amherstburg, Ontario

Total Traffic 2025, PM Peak
Currently Proposed Geometric Configuration

Intersection												
Int Delay, s/veh	4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	11	79	5	9	80	8	3	27	5	6	37	19
Future Vol, veh/h	11	79	5	9	80	8	3	27	5	6	37	19
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	4	0	0	2	0	0	0	0	0	0	0
Mvmt Flow	12	86	5	10	87	9	3	29	5	7	40	21
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	96	0	0	91	0	0	255	229	89	242	227	92
Stage 1	-	-	-	-	-	-	113	113	-	112	112	-
Stage 2	-	-	-	-	-	-	142	116	-	130	115	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1510	-	-	1517	-	-	702	674	975	716	676	971
Stage 1	-	-	-	-	-	-	897	806	-	898	807	-
Stage 2	-	-	-	-	-	-	866	803	-	878	804	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1510	-	-	1517	-	-	648	664	975	680	666	971
Mov Cap-2 Maneuver	-	-	-	-	-	-	648	664	-	680	666	-
Stage 1	-	-	-	-	-	-	890	800	-	891	801	-
Stage 2	-	-	-	-	-	-	799	797	-	834	798	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.9			0.7			10.5			10.4		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	694	1510	-	-	1517	-	-	739				
HCM Lane V/C Ratio	0.055	0.008	-	-	0.006	-	-	0.091				
HCM Control Delay (s)	10.5	7.4	0	-	7.4	0	-	10.4				
HCM Lane LOS	B	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.3				

Middle Side Road at Concession Road 8
Amherstburg, Ontario

Total Traffic 2030, AM Peak
Currently Proposed Geometric Configuration

Intersection												
Int Delay, s/veh	3.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	15	58	1	2	59	18	2	50	2	4	7	4
Future Vol, veh/h	15	58	1	2	59	18	2	50	2	4	7	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	4	0	0	2	0	0	0	0	0	0	0
Mvmt Flow	16	63	1	2	64	20	2	54	2	4	8	4
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	84	0	0	64	0	0	180	184	64	202	174	74
Stage 1	-	-	-	-	-	-	96	96	-	78	78	-
Stage 2	-	-	-	-	-	-	84	88	-	124	96	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1526	-	-	1551	-	-	786	714	1006	761	723	993
Stage 1	-	-	-	-	-	-	916	819	-	936	834	-
Stage 2	-	-	-	-	-	-	929	826	-	885	819	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1526	-	-	1551	-	-	769	705	1006	708	714	993
Mov Cap-2 Maneuver	-	-	-	-	-	-	769	705	-	708	714	-
Stage 1	-	-	-	-	-	-	906	810	-	926	833	-
Stage 2	-	-	-	-	-	-	916	825	-	815	810	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	1.5			0.2			10.5			9.8		
HCM LOS							B			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	715	1526	-	-	1551	-	-	770				
HCM Lane V/C Ratio	0.082	0.011	-	-	0.001	-	-	0.021				
HCM Control Delay (s)	10.5	7.4	0	-	7.3	0	-	9.8				
HCM Lane LOS	B	A	A	-	A	A	-	A				
HCM 95th %tile O(veh)	0.3	0	-	-	0	-	-	0.1				

Middle Side Road at Concession Road 8
Amherstburg, Ontario

Total Traffic 2030, PM Peak
Currently Proposed Geometric Configuration

Intersection												
Int Delay, s/veh	4.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	12	87	5	10	88	9	4	30	5	6	41	21
Future Vol, veh/h	12	87	5	10	88	9	4	30	5	6	41	21
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	4	0	0	2	0	0	0	0	0	0	0
Mvmt Flow	13	95	5	11	96	10	4	33	5	7	45	23
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	106	0	0	100	0	0	281	252	98	266	249	101
Stage 1	-	-	-	-	-	-	124	124	-	123	123	-
Stage 2	-	-	-	-	-	-	157	128	-	143	126	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1498	-	-	1505	-	-	675	655	963	691	657	960
Stage 1	-	-	-	-	-	-	885	797	-	886	798	-
Stage 2	-	-	-	-	-	-	850	794	-	865	796	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1498	-	-	1505	-	-	616	644	963	652	646	960
Mov Cap-2 Maneuver	-	-	-	-	-	-	616	644	-	652	646	-
Stage 1	-	-	-	-	-	-	877	790	-	878	792	-
Stage 2	-	-	-	-	-	-	777	788	-	817	789	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.9			0.7			10.7			10.6		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	669	1498	-	-	1505	-	-	719				
HCM Lane V/C Ratio	0.063	0.009	-	-	0.007	-	-	0.103				
HCM Control Delay (s)	10.7	7.4	0	-	7.4	0	-	10.6				
HCM Lane LOS	B	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.3				

Appendix E

TRAFFIC SIGNAL WARRANTS

**Middle Side Road (County Road 10) /
Concession Road 11 at
Walker Road (County Road 11)**

Traffic Signal Warrants – Summary of Justifications (OTM Book 12)

Projected Total Traffic (Horizon Year 2025)

Middle Side Road (County Road 10) / Concession Road 11 at Walker Road (County Road 11)

JUSTIFICATION	DESCRIPTION	MINIMUM REQUIREMENTS FOR TWO-LANE ROADWAYS		COMPLIANCE	
		FREE FLOW	RESTRICTED FLOW		
		OPERATING SPEED GREATER THAN OR EQUAL TO 70 km/h	OPERATING SPEED LESS THAN 70 km/h	SECTIONAL %	ENTIRE %**
1. MINIMUM VEHICULAR VOLUME	A*. Vehicle Volume, All Approaches for Each of the Heaviest 8 Hours of an Average Day, and	480	720	42 ⁽¹⁾	29
	B***. Vehicle Volume, Along Minor Streets for Each of the Same 8 Hours	120	170	29 ⁽²⁾	
2. DELAY TO CROSS TRAFFIC	A*. Vehicle Volume, Major Street for Each of the Heaviest 8 Hours of an Average Day, and	480	720	35 ⁽³⁾	35
	B*. Combined Vehicle and Pedestrian Volume Crossing the Major Street for Each of the Same 8 Hours.	50	75	43 ⁽⁴⁾	
3. VOLUME/DELAY COMBINATIONS	The Above Justifications (1 and 2) Both Satisfied to the Extent of 80% or more	YES ☐	NO ☒		29
4. MIN. FOUR HOUR VEHICLE VOLUME	At Plotted Point Representing Hourly Volume for Minor Approach vs. Major Approach for Four Highest Hours of an Average Day Fall above the Applicable Curve	YES ☐	NO ☐		N/A
5. COLLISION EXPERIENCE	A. Total Reported Accidents of Types Susceptible to Correction by a Traffic Signal, per 12 Month Period Averaged over a 36 Month Period, and	5		N/A	N/A
	B. Adequate Trial of Less Restrictive Remedies. Where Satisfactory Observance and Enforcement Have Failed to Reduce the Number of Collisions	YES ☐	NO ☐		
6. PEDESTRIAN VOLUME AND DELAY	A. Plotted Point Representing 8 Hour Pedestrian Volume vs. 8 Hour Vehicular Volume Fall in Justified Zone, and	YES ☐	NO ☐		N/A
	B. Plotted Point Representing 8 Hour Volume of Pedestrian Experiencing Delays of 10 s or more vs. 8 Hour Pedestrian Volume Fall in Justified Zone	YES ☐	NO ☐		

Notes

- * Vehicle Volume Warrants 1A and 2A for Roadways Having Two or More Moving Lanes in One Direction Should be 25% Higher than Values Given Above.
- ** The Lowest Sectional Percentage Governs the Entire Warrant.
- *** For "T" Intersections, the Values for Warrant (1B) should be increased by 50%.

Justification 7 - Future Traffic Volumes

(1) = (537 + 667) / 4 / 720 = 42%

(2) = (94 + 102) / 4 / 170 = 29%

(3) = (443 + 565) / 4 / 720 = 35%

(4) = (56 + 74) / 4 / 75 = 43%

Traffic Signal Warrants – Summary of Justifications (OTM Book 12)

Projected Total Traffic (Horizon Year 2030)

Middle Side Road (County Road 10) / Concession Road 11 at Walker Road (County Road 11)

JUSTIFICATION	DESCRIPTION	MINIMUM REQUIREMENTS FOR TWO-LANE ROADWAYS		COMPLIANCE	
		FREE FLOW	RESTRICTED FLOW		
		OPERATING SPEED GREATER THAN OR EQUAL TO 70 km/h	OPERATING SPEED LESS THAN 70 km/h	SECTIONAL %	ENTIRE %**
1. MINIMUM VEHICULAR VOLUME	A*. Vehicle Volume, All Approaches for Each of the Heaviest 8 Hours of an Average Day, and	480	720	46 ⁽¹⁾	39
	B***. Vehicle Volume, Along Minor Streets for Each of the Same 8 Hours	120	170	39 ⁽²⁾	
2. DELAY TO CROSS TRAFFIC	A*. Vehicle Volume, Major Street for Each of the Heaviest 8 Hours of an Average Day, and	480	720	36 ⁽³⁾	36
	B*. Combined Vehicle and Pedestrian Volume Crossing the Major Street for Each of the Same 8 Hours.	50	75	50 ⁽⁴⁾	
3. VOLUME/DELAY COMBINATIONS	The Above Justifications (1 and 2) Both Satisfied to the Extent of 80% or more	YES ☐	NO ☒		36
4. MIN. FOUR HOUR VEHICLE VOLUME	At Plotted Point Representing Hourly Volume for Minor Approach vs. Major Approach for Four Highest Hours of an Average Day Fall above the Applicable Curve	YES ☐	NO ☐		N/A
5. COLLISION EXPERIENCE	A. Total Reported Accidents of Types Susceptible to Correction by a Traffic Signal, per 12 Month Period Averaged over a 36 Month Period, and	5		N/A	N/A
	B. Adequate Trial of Less Restrictive Remedies. Where Satisfactory Observance and Enforcement Have Failed to Reduce the Number of Collisions	YES ☐	NO ☐		
6. PEDESTRIAN VOLUME AND DELAY	A. Plotted Point Representing 8 Hour Pedestrian Volume vs. 8 Hour Vehicular Volume Fall in Justified Zone, and	YES ☐	NO ☐		N/A
	B. Plotted Point Representing 8 Hour Volume of Pedestrian Experiencing Delays of 10 s or more vs. 8 Hour Pedestrian Volume Fall in Justified Zone	YES ☐	NO ☐		

Notes

- * Vehicle Volume Warrants 1A and 2A for Roadways Having Two or More Moving Lanes in One Direction Should be 25% Higher than Values Given Above.
- ** The Lowest Sectional Percentage Governs the Entire Warrant.
- *** For "T" Intersections, the Values for Warrant (1B) should be increased by 50%.

Justification 7 - Future Traffic Volumes

(1) = $(584 + 730) / 4 / 720 = 46\%$

(2) = $(132 + 134) / 4 / 170 = 39\%$

(3) = $(452 + 596) / 4 / 720 = 36\%$

(4) = $(75 + 74) / 4 / 75 = 50\%$

Appendix F

SIGHT LINE ANALYSIS

**Site Access (Bogdan Drive) at
Middle Side Road (County Road 10)**

18-743: Canard Estates Subdivision Phase 2- Sight Line Analysis

Design Intersection Sight Distance (TAC Geometric Design Guide for Canadian Roads)

Design Speed: 60km/h

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

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

Intersection Stopping Distance (**ISD**) = $0.278 V_{\text{major}} t_g$

Where:

ISD = intersection sight distance (m)
(length of the leg of sight triangle along the major road)
 V_{major} = design speed of the major road (km/h)
 t_g = time gap for minor road vehicle to enter the major road (s)

ISD_{single-unit truck} (left turn from stop) = $0.278 \times 60 \times 7.5 = 125 \text{ m}$

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

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

ISD_{single-unit truck} (right turn from stop) = $0.278 \times 60 \times 6.5 = 108 \text{ m}$