TRAFFIC IMPACT STUDY

SHADOW CREEK SUBDIVISION
LIV COMMUNITIES

TOWNSHIP OF SEVERN

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REVISION NUMBER	DATE	COMMENTS
Rev. 0	January 2022	First Submission to the Township, County and MTO

1.0 EXECUTIVE SUMMARY

C.F. Crozier & Associates Inc. (Crozier) was retained by LIV Communities to complete a Traffic Impact Study (TIS) to support a Draft Plan of Subdivision Application for a proposed residential development in the Township of Severn (Township).

The proposed Draft Plan of Subdivision for the Shadow Creek Subdivision consists of 319 single detached dwelling units and 215 townhouse dwelling units. Access to the Subject Lands is proposed through two full-moves accesses on Menoke Beach Road. Both entrances are located at the southern limits of the property. The west access is referred to as Access A and the east access is referred to as Access B.

The MTO Highway Corridor Management Manual specifies that new public roadways should be offset a minimum of 400 metres from the nearest Highway intersection. Given the available property frontage on Menoke Beach Road, only one access can meet the minimum offset requirement. The west access is located 250 metres east of Highway 11. To assess the impacts of the reduced offset, and provide recommendations for access configurations and movement permissions, this TIS assesses and provides input on the accesses under the following access configurations: Two full-moves accesses; One full-moves access and one right-in/right-out access; One full-moves access and one emergency access.

The analysis was completed using the proposed Draft Plan of Subdivision prepared by MHBC (January 2022). For the purpose of the analysis, it was assumed that the development would be built-out by 2026. Accordingly, the horizon years of 2026, 2031 and 2036 have been assessed representing full build-out, as well as five and ten years beyond full build-out.

The existing Highway 11 accesses at Menoke Beach Road, Telford Line and Soules Road are restricted to right-in/right-out movements only. Yield signs are present at the entrance and dedicated lanes are provided on Highway 11 to facilitate merging. As vehicles do not need to come to a stop while completing the manoeuvre, queueing is not anticipated, and minimal delay is expected. Synchro does not calculate delays associated with these free flow conditions, as such, Synchro results have not been included in the report tables.

Intersection analysis of the 2021 existing traffic volumes indicates the following:

- All study intersections are operating at a Level of Service (LOS) "A" or better during the weekday a.m. and p.m. peak hours.
- The maximum volume-to-capacity ratio of 0.75 and maximum control delay of 10.0 s are associated with traffic at Centre Avenue and Telford Line.
- These metrics indicate that the boundary road network has reserve capacity for increases in traffic volumes.

Intersection analysis of the 2026 to 2036 future background traffic volumes indicates the following:

- The study intersections are expected to operate with a LOS "B" or better in the weekday a.m. and p.m. peak hours under 2036 future background traffic volume conditions.
- The maximum control delay of 11.3 s (SB) and volume-to-capacity ratio of 0.24 (NB), both forecasted for Centre Avenue and Telford Line, indicate that the boundary road network is expected to continue operating acceptably with excess capacity for increases in traffic volumes.

The proposed development is forecasted to generate 304 and 408 external two-way trips in the

weekday a.m. and p.m. peak hours, respectively.

The requirement for auxiliary left-turn lanes were reviewed for the eastbound and westbound left-turn movements at Site Access A and Site Access B/Ardtrea Road. The analysis was completed based on the 2036 traffic volumes and no improvements were warranted.

Intersection analysis of the 2026 to 2036 future total traffic volumes indicates the following:

- The study intersections are anticipated to continue operating with an LOS "B" in the a.m. and p.m. peak hours, with the exception of Menoke Beach Road and Ardtrea Drive/Site Access B which is anticipated to operate with a LOS "C".
- The site generated traffic is anticipated to result in a maximum increase in control delay of 7.4 s and a maximum increase in volume to capacity ratio of 0.30 at the intersection of Menoke Beach Road and Ardtrea Drive/Site Access B.

Under both full moves and right-in/right-out conditions, the intersection of Menoke Beach Road and Site Access A is expected to continue operating well with a LOS "B" or better. Given the low volume of westbound through vehicles on Menoke Beach Road, minimal delay and queuing is anticipated for eastbound left-turning vehicles.

The removal of left turns at Site Access A results in increased delay at the intersection of Menoke Beach Road and Ardtrea Drive/Site Access B. This is due to the addition of the eastbound left-turning volumes which results in increased conflicting movements for the northbound and southbound through and left-turning vehicles.

Based on the expected operations under each access scenario, the scenario of two full-moves accesses, as presented in the Draft Plan, results in the best operations at Menoke Beach Road and Ardtrea Drive/Site Access B compared to the two other scenarios. Additionally, providing two entrances improves the connectivity of the site and provides multiple means of ingress and egress.

Accordingly, from a connectivity and operations perspective, the configuration of two full-moves accesses would be the preferred scenario.

The available sight distances exceed the minimum sight distance requirements at both Site Accesses. Accordingly, the proposed development can be supported from a sight distance perspective.

It is concluded that the traffic generated by the Shadow Creek Subdivision can be accommodated by the boundary road network without any mitigation measures.

The analysis was prepared using the most recent Draft Plan of Subdivision prepared by MHBC (January 2022). Any minor changes to the Plan will not affect the conclusions of this report. The Shadow Creek Subdivision can be supported from a traffic operations and safety perspective.

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2.0 INTRODUCTION

2.1 BACKGROUND

C.F. Crozier & Associates Inc. (Crozier) was retained by LIV Communities to complete a Traffic Impact Study (TIS) to support a Draft Plan of Subdivision Application for a proposed residential development in the Township of Severn (Township). The proposed development is referred to as Shadow Creek and will herein be referred to as the Subject Development/Subject Lands. The Subject Lands are located in the West Shore region of the Township.

An original TIS was prepared by Cansult Tatham Transportation Consultants in December 2005 for the full development, previously referred to as the "ORSI Development". An addendum was completed in 2020 by Tatham Engineering for Phases 1 and 2 of the Menoke Beach Subdivision. This TIS has been prepared for the Shadow Creek Subdivision, which was previously Phase 3 of the Menoke Beach Subdivision.

2.2 PURPOSE AND SCOPE

The purpose of the study was to assess the impacts of the proposed development on the boundary road network and to recommend warranted mitigation measures.

The study reviewed the following aspects of the proposed development from a transportation engineering perspective:

- Existing, future background, and future total traffic operations at the study intersections
- Forecasted trip generation of the proposed development
- Auxiliary turn-lane and signal warrants
- Sight distance at the proposed site accesses
- Entrance spacing and control type of the proposed site accesses

The Traffic Impact Study was conducted in accordance with the terms of reference circulated with the Township, County, and MTO. **Appendix A** contains the terms of reference correspondence.

2.3 DEVELOPMENT PROPOSAL

The proposed Draft Plan of Subdivision for the Subject Development consists of the following:

- 319 single detached dwelling units
- 215 townhouse dwelling units

Access to the Subject Lands is proposed through two full-moves accesses on Menoke Beach Road. Both entrances are located on the southern limits of the property. The western access shall be referred to as 'Access A' and the eastern access shall be referred to as 'Access B' herein.

While Blocks 1, 3, 4 and 5 have frontage on Menoke Beach Road, all site generated traffic was assumed to utilize Street A or Street B to provide a conservative analysis.

Figure 1 contains the Draft Plan of Subdivision (MHBC, January 2022).

2.4 SITE ACCESS CONFIGURATION AND ENTRANCE SPACING REQUIREMENTS

As noted previously, access to the Subject Development is proposed through two full-moves entrances on Menoke Beach Road. The proposed entrance locations were reviewed from an offset spacing perspective in comparison to Highway 11. The minimum offset spacing requirements for public road connections are illustrated in Figure 4.6.10 of the MTO Highway Corridor Management Manual (September, 2018). **Appendix B** includes relevant excerpts from the manual. The minimum, and available spacing between the proposed entrances and Highway 11 is summarized in **Table 1.**

Table 1: Minimum Spacing Requirements

Access	Minimum	Available
A	400	250 m
B		400 m

Given the available property frontage on Menoke Beach Road, only one access can meet the minimum offset spacing criteria of 400 metres. Based on the National Fire Prevention Association (NFPA) Standard for Fire Protection Infrastructure for Land Development in Wildland, Rural and Suburban Areas (2017), developments with 100-600 units require two entrances. Accordingly, this TIS has reviewed the proposed access configuration and assessed the appropriate movement permissions for Access A. **Appendix C** contains relevant excerpts from the National Fire Prevention Association.

The study assesses and provides input on the accesses under the following access configurations:

- Two full-moves accesses
- One full-moves access and one right-in/right-out access
- One full-moves access and one emergency access

3.0 EXISTING CONDITIONS

3.1 DEVELOPMENT LANDS

The Subject Lands are 45.5 ha (455, 000 m^2), and are currently vacant. The Subject Development is bounded by Menoke Beach Road to the south, Highway 11 to the west, and residential lands to the north and east. The location of the Subject Lands is reflected on the development Site Location Plan included as **Figure 2**.

3.2 KEY INTERSECTIONS

The following key intersections within the study area have been analysed under existing, future background and future total traffic volume conditions. The site accesses on Menoke Beach Road will be analyzed in the future total conditions. **Figure 3** illustrates the existing traffic controls and lane configurations at each intersection.

- Menoke Beach Road and Highway 11
- Menoke Beach Road and Ardtrea Drive
- Soules Road/ Telford Line and Highway 11
- Campbell Road and Soules Road
- Soules Road and Centre Avenue
- Centre Avenue and Telford Line
- Menoke Beach Road and Site Accesses

3.3 BOUNDARY ROAD NETWORK

The boundary road network is described in **Table 2.** The information included below was obtained from the Township of Severn's Official Plan Schedules A3, A5, and B, included in **Appendix D**. Speed limits were taken from the Township's Speed Limits By-Law where possible, or assumed to be 50 km/h as the Subject Lands are located in a local rural area. **Appendix E** contains Speed Limit Bylaw excerpts.

Table 2: Boundary Road Network

Roadway	Highway 11	Menoke Beach Road	Ardtrea Drive	Campbell Road	Soules Road	Centre Avenue	Telford Line
Direction	North-South	East-West	North South	North-South	East-West	North-South	East-West
Classification	Highway	Local	Local	Local	Local	Local/Overpass	Local
Jurisdiction	MTO	Township of Severn	Township of Severn	Township of Severn	Township of Severn	Township of Severn South of Telford Line MTO	Township of Severn
Posted Speed Limit	90 km/h	60 km/h	50 km/h (Assumed)	50 km/h (Assumed)	50 km/h (Assumed)	50 km/h	50 km/h
Number of Lanes Per Direction	2	1	1	1	1	1	1

No sidewalks, bike lanes, or transit stops are located on the boundary road network. The transportation master plan recommends a signed bike route on Campbell Road and Ardtrea Drive, a bike shoulder on Telford Line, (Ainley 2014). This will not impact automobile operations but will improve the active transportation network.

3.4 TRAFFIC DATA

Turning movement counts at the study intersections were undertaken by Spectrum Traffic Data Inc. from 6:00 a.m. to 10:00 a.m. and from 3:00 p.m. to 7:00 p.m. on Wednesday, December 1, 2021. The turning movement count data is included in **Appendix F**. **Figure 4** illustrates the 2021 existing traffic volumes.

3.5 INTERSECTION MODELLING

The existing Highway 11 accesses at Menoke Beach Road, Telford Line and Soules Road are restricted to right-in/right-out movements only. Yield signs are present at the entrance and dedicated lanes are provided on Highway 11 to facilitate merging. As vehicles do not need to come to a stop while completing the manoeuvre, queueing is not anticipated, and minimal delay is expected. Synchro does not calculate delays associated with these free flow conditions, as such, Synchro results have not been included in the report tables.

Peak hour factors (PHF) associated with the weekday a.m. and p.m. peak hours were calculated for each intersection within the study area based on the 2021 existing traffic volumes. **Table 3** outlines the PHFs as calculated and applied to the model for their respective intersections. For the intersections of the future site accesses, the Synchro Modelling Software default PHF of 0.92 was used.

Table 3: Peak Hour Factor

Intersection	Peak Hour	Peak Hour Factor
Menoke Beach Road and Highway 11	7:30 – 8:30 a.m.	0.95
	4:15 – 5:15 p.m.	0.98
Menoke Beach Road and Ardtrea Drive	8:45 – 9:45 a.m.	0.69
	5:00 – 6:00 p.m.	0.72
Soules Road/ Telford Line and Highway 11	7:30 – 8:30 a.m.	0.95
	4:15 – 5:15 p.m.	0.96
Campbell Road and Soules Road	7:45 – 8:45 a.m.	0.82
	4:00 – 5:00 p.m.	0.89
Soules Road and Centre Avenue	7:45 – 8:45 a.m.	0.92
	3:45 – 4:45 p.m.	0.92
Centre Avenue and Telford Line	7:45 – 8:45 a.m.	0.97
	3:45 – 4:45 p.m.	0.90

3.6 INTERSECTION OPERATIONS

The operations of the study intersections were analyzed based on the traffic volumes illustrated in **Figure 4**. **Table 4** outlines the 2021 traffic levels of service for the counts taken at the study intersections under the existing conditions and geometric configurations. **Appendix G** contains Level of Service (LOS) definitions. **Appendix H** contains detailed Capacity Analyses Worksheets.

Table 4: 2021 Existing Levels of Service

Intersection	Control	Peak Hour	Level of Service	Control Delay[1]	Maximum v/c Ratio
Menoke Beach Road and Ardtrea Drive	Stop	A.M.	A	8.9 s	0.02 (NB)
		P.M.	A	8.7 s	0.02 (NB)
Campbell Road and Soules Road	Stop	A.M.	A	9.4 s	0.05 (SB)
		P.M.	A	9.7 s	0.04 (SB)
Soules Road and Centre Avenue	Stop	A.M.	A	9.5 s	0.08 (NB)
		P.M.	A	9.6 s	0.12 (NB)
Centre Avenue and Telford Line	Stop	A.M.	A	10.0 s (SB)	0.10(NB)
		P.M.	A	9.8 s (SB)	0.15 (NB)

Note[1]: The Level of Service of a two way or T stop-controlled intersection is based on the delay associated with the critical minor road approach. The Level of Service of all way stop-controlled intersection is based on the average intersection delay.

As presented in **Table 4**, under the existing traffic volume conditions, the study intersections operate with a LOS "A" or in the weekday a.m. and p.m. peak hours. The maximum control delay of 10.0 s (Soules Road and Centre Avenue) and maximum volume-to-capacity ratio of 0.15 (NB, Centre Avenue and Telford Line) indicate that the boundary road network has capacity for increases in traffic volumes.

4.0 FUTURE BACKGROUND CONDITIONS

4.1 HORIZON YEARS & GROWTH RATE

In accordance with the agreed upon Terms of Reference, the horizon years of full build out (assumed 2026) as well as 5 and 10-years beyond build out (2031 and 2036) were assessed. Additionally, a growth rate of 1% was utilized to forecast background growth on the boundary road network. This growth rate was established based on Annual Average Daily Traffic and Summer Average Daily Traffic data from Highway 11 near Bayou Road between the years of 2010 and 2016.

4.2 FUTURE ROADWAY IMPROVEMENTS

No roadway improvements have been identified on the boundary road network which would result in capacity improvements to the study intersections.

4.3 BACKGROUND DEVELOPMENTS

Menoke Beach Phase 1 and 2 have been accounted for as background developments. The trip generation and distribution of Phases 1 and 2 have been adopted from the TIS Addendum prepared by Tatham Engineering in October 2020. **Figure 5** illustrates the background development trip assignment and **Appendix I** contains report excerpts. **Table 5** outlines the forecasted trip generation of Phases 1 and 2 of the Menoke Beach subdivision, as adopted from the TIS Addendum (Tatham Engineering, October 2020).

Table 5: Menoke Beach Phase 1 and 2 Trip Generation

Phase	Peak Hour	Number of Trips		
		Inbound	Outbound	Total
1	Weekday A.M.	17	51	68
	Weekday P.M.	57	34	91
2	Weekday A.M.	16	51	67
	Weekday P.M.	57	33	90
TOTAL	**Weekday A.M.**	**35**	**102**	**136**
	Weekday P.M.	**114**	**67**	**181**

Note: The trip generation above was adopted from the Menoke Bach Road TIS Addendum (Tatham Engineering, October 2020).

4.4 INTERSECTION OPERATIONS

The operations of the study intersections were analyzed based on the 2026, 2031, and 2036 future background traffic volumes illustrated in **Figures 6, 7, and 8**. **Table 6, Table 7,** and **Table 8** outline the 2026, 2031, and 2036 future background traffic Levels of Service, respectively. **Appendix G** contains Level of Service definitions, and **Appendix H** contains detailed Capacity Analyses Worksheets.

Table 6: 2026 Future Background Levels of Service

Intersection	Control	Peak Hour	Level of Service	Control Delay[1]	Maximum v/c Ratio
Menoke Beach Road and Ardtrea Drive	Stop	A.M.	A	9.7 s	0.04 (NB)
		P.M.	A	9.7 s	0.07 (NB)
Campbell Road and Soules Road	Stop	A.M.	B	10.2 s	0.17 (SB)
		P.M.	B	10.4 s	0.12(SB)
Soules Road and Centre Avenue	Stop	A.M.	A	9.9 s	0.11 (NB)
		P.M.	B	10.2 s	0.17 (NB)
Centre Avenue and Telford Line	Stop	A.M.	B	11.0 s (SB)	0.19 (NB)
		P.M.	B	10.7 s (SB)	0.22 (NB)

Note[1]: The Level of Service of a two way or T stop-controlled intersection is based on the delay associated with the critical minor road approach. The Level of Service of all way stop-controlled intersection is based on the average intersection delay.

Table 7: 2031 Future Background Levels of Service

Intersection	Control	Peak Hour	Level of Service	Control Delay[1]	Maximum v/c Ratio
Menoke Beach Road and Ardtrea Drive	Stop	A.M.	A	9.7 s	0.04 (NB)
		P.M.	A	9.7 s	0.07 (NB)
Campbell Road and Soules Road	Stop	A.M.	B	10.2 s	0.18 (SB)
		P.M.	B	10.6 s	0.12 (SB)
Soules Road and Centre Avenue	Stop	A.M.	A	10.0 s	0.11 (NB)
		P.M.	B	10.2 s	0.18 (NB)
Centre Avenue and Telford Line	Stop	A.M.	B	11.1 s (SB)	0.19 (NB)
		P.M.	B	10.8 s (SB)	0.23 (NB)

Note[1]: The Level of Service of a two way or T stop-controlled intersection is based on the delay associated with the critical minor road approach. The Level of Service of all way stop-controlled intersection is based on the average intersection delay.

Table 8: 2036 Future Background Levels of Service

Intersection	Control	Peak Hour	Level of Service	Control Delay[1]	Maximum v/c Ratio
Menoke Beach Road and Ardtrea Drive	Stop	A.M.	A	9.7 s	0.04 (NB)
		P.M.	A	9.7 s	0.07 (NB)
Campbell Road and Soules Road	Stop	A.M.	B	10.3 s	0.18 (SB)
		P.M.	B	10.7 s	0.13 (SB)
Soules Road and Centre Avenue	Stop	A.M.	B	10.1 s	0.12 (NB)
		P.M.	B	10.3 s	0.18 (NB)
Centre Avenue and Telford Line	Stop	A.M.	B	11.3 s (SB)	0.20 (NB)
		P.M.	B	10.9 s (SB)	0.24 (NB)

Note[1]: The Level of Service of a two way or T stop-controlled intersection is based on the delay associated with the critical minor road approach. The Level of Service of all way stop-controlled intersection is based on the average intersection delay.

The study intersections are expected to continue operating with a LOS "B" or better in the weekday a.m. and p.m. peak hours under the 2036 future background traffic volume conditions. The maximum control delay of 11.3 s (SB) and volume to capacity ratio of 0.24 (NB), both forecasted for Centre Avenue and Telford Line, indicate that the boundary road network is forecasted to continue operating acceptably with excess capacity for increases in traffic volumes.

5.0 SITE GENERATED TRAFFIC

5.1 TRIP GENERATION

The development will result in additional vehicles on the boundary road network that previously did not exist. The trip generation of the development was forecasted using the fitted curve equations provided in the Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition.

Per the proposed Draft Plan, the development is proposed to consist of 319 single detached units and 215 townhome units. Accordingly, the land use code (LUC) 210 "Single Family Detached Housing" and LUC 220 "Multifamily Housing (Low-Rise)" were used to forecast trips generated by the proposed development. **Table 9** summarizes the trip generation of the proposed development and **Appendix J** contains ITE excerpts.

Table 9: Trip Generation

Land Use	Peak Hour	Number of Trips		
		Inbound	Outbound	Total
LUC 210 "Single Family Detached Housing" (319 units)	Weekday A.M.	56	158	214
	Weekday P.M.	186	109	295
LUC 220 "Multifamily Housing (Low-Rise)" (215 units)	Weekday A.M.	21	69	90
	Weekday P.M.	71	42	113
TOTAL	**Weekday A.M.**	**77**	**227**	**304**
	Weekday P.M.	**258**	**151**	**408**

5.2 TRIP DISTRIBUTION AND ASSIGNMENT

The trips generated by the residential development were distributed to the boundary road network based on Transportation Tomorrow Survey Data, which is consistent with the distributions described in the original TIS for Phases 1-3 "Orsi Development" prepared by Cansult Tatham Transportation Consultants (December 2005). **Appendix K** includes the Transportation Tomorrow Survey data. The following distribution was applied for both the a.m. and p.m. peak hours:

- 25% north via Highway 11
- 75% south via Highway 11

As noted previously the Highway 11 accesses are restricted to right-in/right-out movements only. Accordingly, vehicles travelling to the south or arriving from the north must utilize the Centre Avenue overpass to access the Telford Line Highway entrance. Accordingly, vehicles arriving from the north or travelling to the south were assigned to Ardtrea Drive, Soules Road, Centre Avenue and Telford Line. Vehicles arriving from the south or departing to the north were assigned to the Menoke Beach Road highway entrance.

The residential trip distribution is illustrated in **Figure 9**, with the corresponding trip assignment illustrated in **Figure 10**.

6.0 TOTAL FUTURE CONDITIONS

6.1 BASIS OF ASSESSMENT

The traffic impacts arising from the proposed development were assessed based on the site generated traffic illustrated in **Figure 10** being superimposed on the future background traffic volumes in **Figures 6, 7,** and **8**. The resulting 2026, 2031, and 2036 future total traffic volumes for the weekday a.m. and p.m. peak hours are illustrated in **Figures 11, 12,** and **13**, respectively.

6.2 AUXILIARY LANE ANALYSIS

Left-turn lane warrants were undertaken for the intersections of Menoke Beach Road with Ardtrea Drive using the Ministry of Transportation Ontario (MTO) Design Supplement to the Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads (GDGCR). The warrants were undertaken during the weekday a.m. and p.m. peak periods for the westbound and eastbound left-turn movements at the site accesses.

The warrants were completed based on the 2036 future total traffic volumes for a design speed of 70 km/h roadway. Auxiliary left-turn lane warrant charts have been included as **Appendix L**. **Table 10** summarizes the results of the left-turn lane warrants.

Table 10: Auxiliary Turn-Lane Warrants

Intersection	Year	Peak Hour	V_A	V_O	%LT in V_A	Warranted?	Reference
Two Full-moves Accesses Scenario							
Access B **Eastbound**	2036	A.M.	92	138	13%	**No**	Exhibit 9A-11
		P.M	191	94	20%	**No**	Exhibit 9A-12
Access B **Westbound**	2036	A.M.	138	92	71%	**No**	Exhibit 9A-14
		P.M	94	191	70%	**No**	Exhibit 9A-14
Access A **Eastbound**	2036	A.M.	103	60	45%	**No**	Exhibit 9A-14
		P.M	321	52	49%	**No**	Exhibit 9A-14
Right-in/Right-out & Emergency Access Scenarios							
Access B **Eastbound**	2036	A.M.	103	138	56%	**No**	Exhibit 9A-14
		P.M	322	94	60%	**No**	Exhibit 9A-14
Access B **Westbound**	2036	A.M.	138	103	71%	**No**	Exhibit 9A-14
		P.M	94	322	70%	**No**	Exhibit 9A-14

As summarized in **Table 10**, eastbound auxiliary left-turn lanes are not warranted for any of the proposed scenarios.

6.3 INTERSECTION OPERATIONS

The operations of the study intersections were analyzed based on the 2026, 2031, and 2036 total traffic volumes illustrated in **Figures 11, 12,** and **13**. **Table 11, Table 12,** and **Table 13** outline the future total traffic operations for the 2026, 2031 and 2036 horizon years, respectively. The operations of the proposed site accesses have also been included in these tables for the scenario of two full-moves site accesses. The subsequent section provides a comparison of the operations of the three different access scenarios under 2036 future total traffic volume conditions.

Appendix G contains Level of Service definitions, and **Appendix H** contains detailed Capacity Analyses Worksheets.

Table 11: 2026 Future Total Levels of Service

Intersection	Control	Peak Hour	Level of Service	Control Delay[1]	Maximum v/c Ratio
Menoke Beach Road and Ardtrea Drive/Site Access B	Stop	A.M.	C	16.8 s	0.34 (SB)
		P.M.	C	15.5 s	0.24 (SB)
Menoke Beach Road and Access A	Stop	A.M.	A	9.5 s	0.10 (SB)
		P.M.	B	11.1 s	0.09 (SB)
Campbell Road and Soules Road	Stop	A.M.	B	12.5 s	0.43 (SB)
		P.M.	B	12.3	0.30 (SB)
Soules Road and Centre Avenue	Stop	A.M.	B	10.9 s	0.15 (NB)
		P.M.	B	11.4 s	0.27(NB)
Centre Avenue and Telford Line	Stop	A.M.	B	14.3 s (SB)	0.36 (NB)
		P.M.	A	13.5 s (SB)	0.37 (NB)

Note[1]: The Level of Service of a two way or T stop-controlled intersection is based on the delay associated with the critical minor road approach. The Level of Service of all way stop-controlled intersection is based on the average intersection delay.

Table 12: 2031 Future Total Levels of Service

Intersection	Control	Peak Hour	Level of Service	Control Delay[1]	Maximum v/c Ratio
Menoke Beach Road and Ardtrea Drive/Site Access B	Stop	A.M.	C	17.0 s	0.34 (SB)
		P.M.	C	15.6 s	0.26 (SB)
Menoke Beach Road and Access A	Stop	A.M.	A	9.6 s	0.10 (SB)
		P.M.	B	11.1 s	0.09 (SB)
Campbell Road and Soules Road	Stop	A.M.	B	12.7 s	0.43 (SB)
		P.M.	B	12.4 s	0.31 (SB)
Soules Road and Centre Avenue	Stop	A.M.	B	10.9 s	0.15 (NB)
		P.M.	B	11.6 s	0.28 (NB)
Centre Avenue and Telford Line	Stop	A.M.	B	14.5 s (SB)	0.37 (NB)
		P.M.	B	13.6 s (SB)	0.38 (NB)

Note[1]: The Level of Service of a two way or T stop-controlled intersection is based on the delay associated with the critical minor road approach. The Level of Service of all way stop-controlled intersection is based on the average intersection delay.

Table 13: 2036 Future Total Levels of Service

Intersection	Control	Peak Hour	Level of Service	Control Delay[1]	Maximum v/c Ratio
Menoke Beach Road and Ardtrea Drive/Site Access B	Stop	A.M.	C	17.1 s	0.34 (SB)
		P.M.	C	15.8 s	0.24 (SB)
Menoke Beach Road and Access A	Stop	A.M.	A	9.6 s	0.10 (NB)
		P.M.	B	11.1 s	0.09 (NB)
Campbell Road and Soules Road	Stop	A.M.	B	12.8 s	0.44 (SB)
		P.M.	B	12.7 s	0.32 (SB)
Soules Road and Centre Avenue	Stop	A.M.	B	11.0 s	0.16 (NB)
		P.M.	B	11.7 s	0.29 (NB)
Centre Avenue and Telford Line	Stop	A.M.	B	14.7 s (SB)	0.38 (NB)
		P.M.	B	13.8 s (SB)	0.40 (NB)

Note[1]: The Level of Service of a two way or T stop-controlled intersection is based on the delay associated with the critical minor road approach. The Level of Service of all way stop-controlled intersection is based on the average intersection delay.

The study intersections are anticipated to continue operating with an LOS "B" or better in the a.m. and p.m. peak hours, with the exception of Menoke Beach Road and Ardtrea Drive/Site Access B, which is anticipated to operate with a LOS "C". At the intersection of Menoke Beach Road and Ardtrea Drive/Site Access B the site generated traffic is anticipated to result in a maximum increase in control delay of 7.4 seconds and a maximum increase in the volume to capacity ratio of 0.30.

The above metrics indicate that the study intersections are anticipated to continue operating acceptably under 2036 future total traffic volume conditions. Accordingly, the boundary road network can accommodate the site generated traffic.

6.4 ENTRANCE OPERATIONS

To assess the appropriate control type and movement permissions, the operations of the site accesses were analyzed under the following access configurations for the 2036 horizon: Two full-moves accesses; One full-moves access and one right-in/right-out access; One full-moves access and one emergency access. The trip assignment of the scenario with two full-moves accesses is illustrated in **Figure 10**. **Figures 14** illustrates the trip assignment of the one full-moves access and one right-in/right-out access scenario, while **Figure 15** illustrates the trip assignment of the one full-moves access and one emergency access scenario.

Table 14 outlines the anticipated levels of service. **Appendix G** contains Level of Service definitions, and **Appendix H** contains detailed Capacity Analyses Worksheets.

Table 14: 2036 Site Access Future Total Levels of Service Comparison

Intersection	Control	Peak Hour	Two Full Moves			One Full Moves and One RIRO			One Full Moves and One Emergency Access		
			LOS	Control Delay[1]	Maximum v/c Ratio	LOS	Control Delay[1]	Maximum v/c Ratio	LOS	Control Delay[1]	Maximum v/c Ratio
Menoke Beach Road and Ardtrea Drive/Site Access B	Stop	A.M.	C	17.1 s	0.34 (SB)	C	21.2 s	0.47 (SB)	C	20.6 s	0.51 (SB)
		P.M.	C	15.8 s	0.24 (SB)	D	31.6 s	0.50 (SB)	D	29.2 s	0.53 (SB)
Menoke Beach Road and Site Access A	Stop	A.M.	A	9.6 s	0.10 (NB)	A	8.8 s	0.05 (SB)	N/A		
		P.M.	B	11.1 s	0.09 (NB)	A	8.6 s	0.03 (SB)			

Note[1]: The Level of Service of a two way or T stop-controlled intersection is based on the delay associated with the critical minor road approach. The Level of Service of all way stop-controlled intersection is based on the average intersection delay.

Under both full moves and right-in/right-out conditions, the intersection of Menoke Beach Road and Site Access A is expected to continue operating well with a LOS "B" or better. The proposed access is supportable from an operations perspective. Given the low volume of westbound through vehicles on Menoke Beach Road, minimal delay and queuing is anticipated for eastbound left-turning vehicles.

The removal of left turns at Site Access A results in increased delay at the intersection of Menoke Beach Road and Ardtrea Drive/Site Access B. This is due to the addition of the eastbound left-turning volumes which results in increased conflicting movements for the northbound and southbound through and left-turning vehicles.

Based on the above metrics, the scenario of two full-moves accesses, as presented in the Draft Plan, results in the best operations at Menoke Beach Road and Ardtrea Drive/Site Access B compared to the two other scenarios. Additionally, providing two entrances improves the connectivity of the site and provides multiple means of ingress and egress.

Accordingly, from a connectivity and operations perspective, the configuration of two full-moves accesses would be the preferred scenario.

7.0 SIGHT DISTANCE ASSESSMENT

A sight distance assessment was completed to demonstrate that the proposed accesses provide sufficient stopping and intersection sight distances on both site accesses**.** The minimum stopping sight distance and the minimum intersection sight distance requirements were obtained from the Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads (GDGCR).

Section 2.5 of the TAC GDGCR provides stopping sight distances for various design speeds on level roadways. For roadways with a design speed of 70 km/h, a minimum stopping sight distance of 105 m is required.

Section 9.9 of the TAC GDGCR provides intersection sight distance for different intersection control types. For these accesses, the applicable cases include "Case B1 – Left turns from the minor road", and "Case B2 – Right turns from the minor road". Comparing these cases, Case B1 has the greatest sight distance requirement of 150 m for 70 km/h design speed roads. The required intersection sight distance and stopping sight distance were taken from "Table 9.9.4" as outlined in **Appendix M.**

Table 15: Sight Distance

Access	Oncoming Traffic	Stopping Sight Distance		Intersection Sight Distance	
		Minimum Standard	Available Distance	Minimum Standard	Available Distance
A	Eastbound	105 m	+300 m	150 m	+300 m
	Westbound	105 m	200 m	150 m	200 m
B	Eastbound	105 m	+200 m	150 m	+200 m
	Westbound	105 m	+300 m	150 m	+300 m

As summarized above, the available sight distances exceed the minimum sight distance requirements at both site accesses. Accordingly, the proposed development can be supported from a sight distance perspective.

8.0 CONCLUSIONS

The analysis contained within this report has resulted in the following key findings:

- Intersection analysis of the 2021 existing traffic volumes indicates the following:
  - All study intersections are operating at a Level of Service (LOS) "A" or better during the weekday a.m. and p.m. peak hours.
  - The maximum volume-to-capacity ratio of 0.75 and maximum control delay of 10.0 s are associated with traffic at Centre Avenue and Telford Line.
  - These metrics indicate that the boundary road network has reserve capacity for increases in traffic volumes.

- Intersection analysis of the 2026 to 2036 future background traffic volumes indicates the following:
  - The study intersections are expected to operate with a LOS "B" or better in the weekday a.m. and p.m. peak hours under 2036 future background traffic volume conditions.
  - The maximum control delay of 11.3 s (SB) and volume-to-capacity ratio of 0.24 (NB), both forecasted for Centre Avenue and Telford Line, indicate that the boundary road network is expected to continue operating acceptably with excess capacity for increases in traffic volumes.

- The proposed development is forecasted to generate 304 and 408 external two-way trips in the weekday a.m. and p.m. peak hours, respectively.

- The requirement for auxiliary left-turn lanes were reviewed for the eastbound and westbound left-turn movements at Site Access A and Site Access B/Ardtrea Road. The analysis was completed based on the 2036 traffic volumes and no improvements were warranted.

- Intersection analysis of the 2026 to 2036 future total traffic volumes indicates the following:
  - The study intersections are anticipated to continue operating with an LOS "B" in the a.m. and p.m. peak hours, with the exception of Menoke Beach Road and Ardtrea Drive/Site Access B which is anticipated to operate with a LOS "C".
  - The site generated traffic is anticipated to result in a maximum increase in control delay of 7.4 s and a maximum increase in volume to capacity ratio of 0.30 at the intersection

of Menoke Beach Road and Ardtrea Drive/Site Access B.
  - Under both full moves and right-in/right-out conditions, the intersection of Menoke Beach Road and Site Access A is expected to continue operating well with a LOS "B" or better. Given the low volume of westbound through vehicles on Menoke Beach Road, minimal delay and queuing is anticipated for eastbound left-turning vehicles.
  - The removal of left turns at Site Access A results in increased delay at the intersection of Menoke Beach Road and Ardtrea Drive/Site Access B. This is due to the addition of the eastbound left-turning volumes which results in increased conflicting movements for the northbound and southbound through and left-turning vehicles.

- Based on the expected operations under each access scenario, the scenario of two full-moves accesses, as presented in the Draft Plan, results in the best operations at Menoke Beach Road and Ardtrea Drive/Site Access B compared to the two other scenarios. Additionally, providing two entrances improves the connectivity of the site and provides multiple means of ingress and egress. Accordingly, from a connectivity and operations perspective, the configuration of two full-moves accesses would be the preferred scenario.

- The available sight distances exceed the minimum sight distance requirements at both site accesses. Accordingly, the proposed development can be supported from a sight distance perspective.

It is concluded that the traffic generated by the Shadow Creek Subdivision can be accommodated by the boundary road network without any mitigation measures.

The analysis was prepared using the most recent Draft Plan of Subdivision prepared by MHBC (January 2022). Any minor changes to the Plan will not affect the conclusions of this report. The Shadow Creek Subdivision can be supported from a traffic operations and safety perspective.

Prepared by,

C.F. CROZIER & ASSOCIATES INC.

Madeleine Ferguson, P.Eng.
Manager of Transportation

C.F. CROZIER & ASSOCIATES INC.

Emma Howlett, E.I.T
Engineering Intern, Transportation

MF/eh

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APPENDIX A

Terms of Reference Correspondence

Emma Howlett

From: Doherty, Chris <Chris.Doherty@simcoe.ca>
Sent: November 9, 2021 4:10 PM
To: Emma Howlett
Cc: Madeleine Ferguson
Subject: RE: Terms of Reference to review - Menoke Beach Phase 3 (Project: 1935-6103) File: SV-PRE-2102

Good afternoon Emma,

Thank you for circulating us on your TOR, however there are no County Roads in the vicinity of the development. I will defer the confirmation of the TOR to the Township of Severn and the MTO. I'm pretty sure that, at least my department won't be circulated the final TIS for review and comment. Have a great rest of the day.

Regards,

Chris Doherty, C. Tech.
Engineering Tech
County of Simcoe

From: Emma Howlett <ehowlett@cfcrozier.ca>
Sent: Tuesday, November 09, 2021 3:01 PM
To: Doherty, Chris <Chris.Doherty@simcoe.ca>
Cc: Madeleine Ferguson <mferguson@cfcrozier.ca>
Subject: [EXTERNAL] Terms of Reference to review - Menoke Beach Phase 3 (Project: 1935-6103) File: SV-PRE-2102

To Chris Doherty,

I hope you're doing well. We have been retained to prepare a Transportation Impact Study (TIS) for the Menoke Beach Residential Development Phase 3. The site is located at 8743 Highway 11 and 3651 Menoke Beach Road in the Township of Severn, County of Simcoe. The elements envisioned for this subdivision include 329 single family units and 254 townhouse units. A concept plan has been attached for your review.

Please advise if the Terms of Reference (TOR) outlined below will be acceptable. If you are not the correct person for correspondence, I'd appreciate it if you could direct me to the correct contact. We have also contacted the MTO and Township to get their comments on the TOR.

We are proposing a scope of work in-line with the pre-consultation comments provided by the Town, County, and MTO. The TIS would review the following intersections:

- Menoke Beach Rd and Highway 11
- Menoke Beach Rd & Ardtrea Dr
- Soules Road/Telford Line and Highway 11
- Campbell Road and Soules Road
- Soules Road and Center Avenue
- Center Avenue and Telford Line
- Menoke Beach Road and Site Accesses

Traffic counts will be completed. A 0.7% growth rate was established based on historical MTO AADT and SADT data along the roadway. Accordingly, a 1% growth rate will be applied to existing volumes.

Analysis Periods and Scenarios

Emma Howlett

From: Emma Howlett
Sent: November 22, 2021 1:39 PM
To: Katie Mandeville
Cc: Madeleine Ferguson; Andrea Woodrow
Subject: RE: Terms of Reference to review - Menoke Beach Phase 3 (Project: 1935-6103) File: SV-PRE-2102
Attachments: RE: Terms of Reference to review - Menoke Beach Phase 3 (Project: 1935-6103)

Hi Kattie,

The MTO has already provided comments (attached)

From: Katie Mandeville <kmandeville@severn.ca>
Sent: November 22, 2021 1:28 PM
To: Emma Howlett <ehowlett@cfcrozier.ca>
Cc: Madeleine Ferguson <mferguson@cfcrozier.ca>; Andrea Woodrow <AWoodrow@severn.ca>
Subject: RE: Terms of Reference to review - Menoke Beach Phase 3 (Project: 1935-6103) File: SV-PRE-2102

Hi Emma,

The Township has engaged a Peer Reviewer however we would like to withhold our comments on the Terms of Reference until MTO has provided their comments. I emailed Peter Dorton from MTO to request their comments and to convey this process.

Thanks,
Katie

Katie Mandeville, *BA, BURPI, RPP, MCIP*
Senior Planner

Email: kmandeville@severn.ca
Phone: 705-325-2315 x238

severn.ca

From: Emma Howlett <ehowlett@cfcrozier.ca>
Sent: November 17, 2021 10:23 AM
To: Katie Mandeville <kmandeville@severn.ca>
Cc: Madeleine Ferguson <mferguson@cfcrozier.ca>; Andrea Woodrow <AWoodrow@severn.ca>
Subject: RE: Terms of Reference to review - Menoke Beach Phase 3 (Project: 1935-6103) File: SV-PRE-2102

Emma Howlett

From: Dorton, Peter (MTO) <Peter.Dorton@ontario.ca>
Sent: November 17, 2021 11:02 AM
To: Emma Howlett
Cc: Janke, Aaron (MTO); Nicol, Elena (MTO); Blaney, Cameron (MTO); Andrea Woodrow; Nolan, Julie
Subject: RE: Terms of Reference to review - Menoke Beach Phase 3 (Project: 1935-6103)

Categories: Filed to Sharepoint

Hi Emma:

Please include traffic generated from Menoke Beach Phase 2 in this Phase 3 TIS.
We are not aware of any other potential area developments to consider; please check with Severn Township on this.
Please ensure that access comments provided below on Nov. 10 are also addressed in the TIS.
All other aspects of the ToR are acceptable.

Thanks,
Peter D.

From: Emma Howlett <ehowlett@cfcrozier.ca>
Sent: November 10, 2021 1:48 PM
To: Dorton, Peter (MTO) <Peter.Dorton@ontario.ca>
Subject: RE: Terms of Reference to review - Menoke Beach Phase 3 (Project: 1935-6103)

Hi Peter,

Sorry, for 3735 Menoke Beach Road proposes the development I referenced [Plan of Subdivision for 3735 Menoke Beach Road - Township of Severn - Planning (simcoe.ca)]

I was planning on referencing the 2020 addendum regarding the proposed units to the east of Amigo Drive. If you do not think we need to reference this development please let us know

Emma Howlett | Engineering Intern
1 First Street, Suite 200 | Collingwood, ON L9Y 1A1
T: 705.446.3510

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From: Dorton, Peter (MTO) <Peter.Dorton@ontario.ca>
Sent: November 10, 2021 1:15 PM
To: Emma Howlett <ehowlett@cfcrozier.ca>
Cc: Madeleine Ferguson <mferguson@cfcrozier.ca>
Subject: RE: Terms of Reference to review - Menoke Beach Phase 3 (Project: 1935-6103)

Thanks Emma.
Please confirm what is planned for 3735 Menoke Beach Road.
Thanks,
Peter D.

From: Emma Howlett <ehowlett@cfcrozier.ca>
Sent: November 10, 2021 12:38 PM
To: Dorton, Peter (MTO) <Peter.Dorton@ontario.ca>
Cc: Madeleine Ferguson <mferguson@cfcrozier.ca>
Subject: RE: Terms of Reference to review - Menoke Beach Phase 3 (Project: 1935-6103)

Hi Peter,

Sorry here is the Concept plan, to confirm the site proposes approximately 329 single family units and 254 townhouse units.

Emma Howlett | Engineering Intern
1 First Street, Suite 200 | Collingwood, ON L9Y 1A1
T: 705.446.3510

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CONSULTING ENGINEERS

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From: Dorton, Peter (MTO) <Peter.Dorton@ontario.ca>
Sent: November 10, 2021 12:04 PM
To: Emma Howlett <ehowlett@cfcrozier.ca>
Cc: Madeleine Ferguson <mferguson@cfcrozier.ca>
Subject: RE: Terms of Reference to review - Menoke Beach Phase 3 (Project: 1935-6103)

Hi Emma.

Could you please send me the Concept Plan, and confirm what is proposed at 3735 Menoke Beach Road.

Also, you mention a 2nd access. We had indicated previously that the first access is to be opposite Ardtrea Dr.. Anything closer you are seeking approval for would have to reference the spacing along Menoke (to other roads / entrances between Hwy 11 and Ardtrea Dr.). Another access option to consider would be to make it an emergency access only.

I will circulate these Terms to our Traffic Office once you have gotten back to me.

Thanks,
Peter Dorton
Senior Project Manager
Ministry of Transportation
Central Operations, Highway Corridor Management Section
159 Sir William Hearst Avenue, 7th Floor
Toronto, ON M3M 0B7
Cell: (437) 833 - 9396
E-Mail: peter.dorton@ontario.ca
Web: www.mto.gov.on.ca/english/engineering/management/corridor

---

From: Emma Howlett <ehowlett@cfcrozier.ca>
Sent: November 9, 2021 3:03 PM
To: Dorton, Peter (MTO) <Peter.Dorton@ontario.ca>
Cc: Madeleine Ferguson <mferguson@cfcrozier.ca>
Subject: Terms of Reference to review - Menoke Beach Phase 3 (Project: 1935-6103)

To Peter Dorton,

I hope you're doing well. We have been retained to prepare a Transportation Impact Study (TIS) for the Menoke Beach Residential Development Phase 3. The site is located at 8743 Highway 11 and 3651 Menoke Beach Road in the Township of Severn, County of Simcoe. The elements envisioned for this subdivision include 329 single family units and 254 townhouse units. A concept plan has been attached for your review.

Please advise if the Terms of Reference (TOR) outlined below will be acceptable. If you are not the correct person for correspondence, I'd appreciate it if you could direct me to the correct contact. We have also contacted the County and Township to get their comments on the TOR.

We are proposing a scope of work in-line with the pre-consultation comments provided by the Town, County, and MTO. The TIS would review the following intersections:

- Menoke Beach Rd and Highway 11
- Menoke Beach Rd & Ardtrea Dr
- Soules Road/Telford Line and Highway 11
- Campbell Road and Soules Road
- Soules Road and Center Avenue
- Center Avenue and Telford Line
- Menoke Beach Road and Site Accesses

Traffic counts will be completed. A 0.7% growth rate was established based on historical MTO AADT and SADT data along the roadway. Accordingly, a 1% growth rate will be applied to existing volumes.

Analysis Periods and Scenarios

Analysis of weekday A.M. and P.M. peak hours will be used to capture the peak hours associated with the proposed use.
The 5-, and 10-year horizons will be analyzed. For analysis purposes it will be assumed that the development will be built out by 2026. Accordingly, the 2026, 2031, and 2036horizons will be analyzed. Details regarding phasing are being confirmed and will be reflected in updated horizon years if applicable.

Background Developments

3735 Menoke Beach Road will be included in our background developments. Please advise if there are any other background developments which should be included in the analysis.

Trip Generation

ITE Trip Generation 11th Edition will be used to calculate the expected trip generation for the development. Assignment of site generated traffic on the boundary road network will be based on existing travel patterns, expected catchment areas, and other study findings.

Road Characteristics

A number of elements will be reviewed including auxiliary turn-lane and signalization requirements at the proposed site access on Menoke Beach Road and Ardtrea Drive, as well as sight distance requirements at the proposed access. We will also review the second access (between Ardtrea Drive and Highway 11) and assess the appropriate access type (i.e. full moves, right-in/right-out, etc.).

I hope the above is acceptable. Should you have any questions or concerns, please feel free to contact me.

Regards,

Emma Howlett | Engineering Intern
1 First Street, Suite 200 | Collingwood, ON L9Y 1A1
T: 705.446.3510

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simcoe.ca

PLANNING

PRE-CONSULTATION MEETING MINUTES

DATE:	July 8, 2021
FILE NUMBER:	SV-PRE-2102
PROPERTY ADDRESS:	8743 Highway 11 North, Township of Severn
OWNER:	LIV Communities
AGENT/ APPLICANT:	Eldon Theodore, MHBC

ATTENDEES	
Ministry of Transportation	Peter Dorton
County of Simcoe	Julie Nolan
Township of Severn	Andrea Woodrow, Planning Director Katie Mandeville, Senior Planner Tim Collingwood, Engineering Consultant
Development Team	Eldon Theodore, Lead Planning Consultant Amie Chung, Planning Consultant Katherine Rauscher, Planning Consultant Sam Badawi, Owner Scott Tarof, Environmental Consultant Ted Kruska, Engineering Consultant

Development Proposal

LIV Communities is proposing a Draft Plan of Subdivision that would consist of 811 dwelling units. The draft plan is proposing 439 single detached, 222 townhouse units and a condominium multi-story building with 150 units, all of which would be on Municipal services.

The proposed draft plan has been designed to include a distribution of housing types across plan, having the higher density/intensity along the corridors to Highway 11.

With respect to the open space areas identified on the proposed draft plan, the applicant is seeking an opportunity to execute privately owned/publicly accessible park space to connect to other surrounding lands i.e. walkways, commercial uses (Webers), etc. along highway 11.

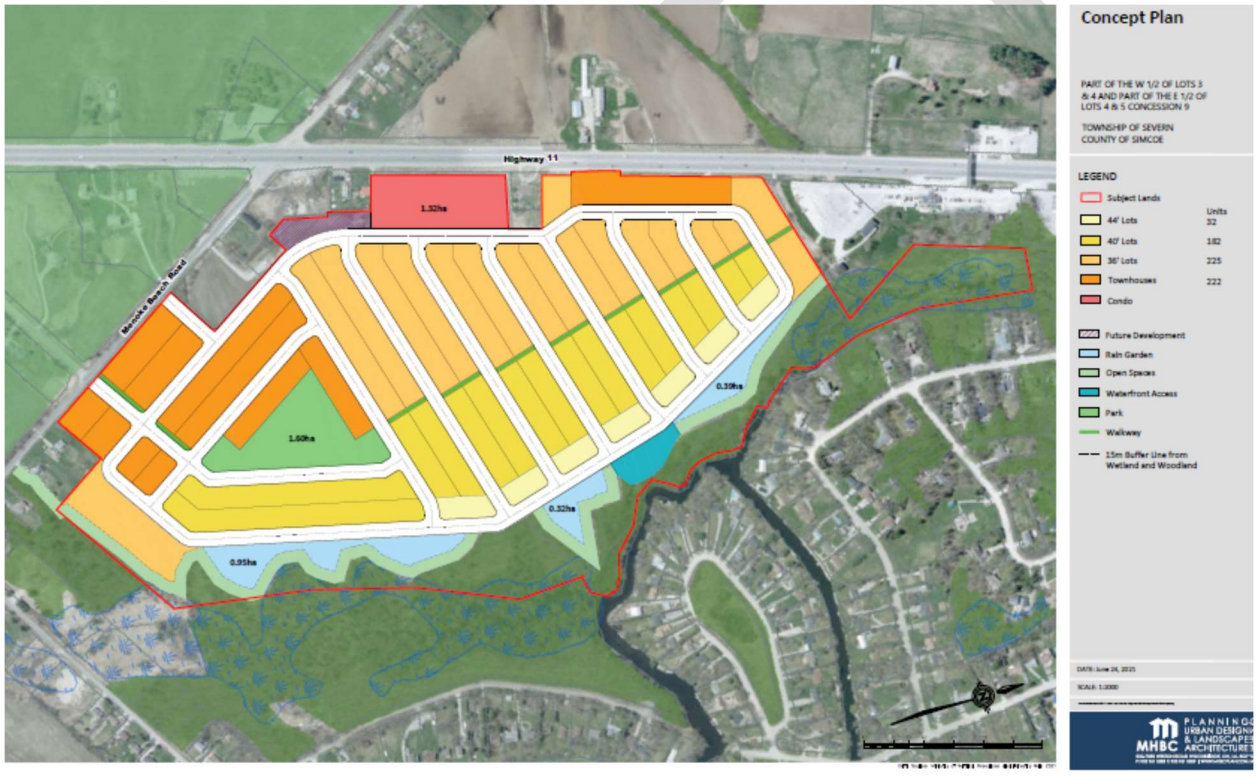
The applicant wishes to promote pedestrian and active transportation movement.

The easterly portion of the property for drainage as it moves towards Shadow Creek. This area has been identified on the Draft Plan to be enhanced and provide an open space for community use. Additionally, the applicant would like to offer water access for the community.

The above noted subject lands were considered while completing Menoke Beach Draft Plan Phase 1 and proposed Draft Plan Phase 2. Using the subject lands, parkland dedication transfers and trails were made pre-emptively. The parkland dedication has already been completed in the form of a “pre” dedication to aid in the completion of Menoke Beach Draft Plans Phase 1 & 2.

Note: The area outlined in red with hatching in the North West corner is not currently owned by the applicant and is not part of the development proposal.

Concept Plan



Staff/Agency Comments

Ministry of Transportation, Peter Dorton, Senior Project Manager

- A portion of the subject lands is within the MTO Permit Area
- It would be desirable to make connections to local roads and adjacent neighbourhoods in case the highway becomes fully controlled (currently no plans to do so, but a possibility in the future)

- If/when the highway becomes fully controlled, having more local road connections will be imperative.
- There are currently no plans for an intersection/overpass to be completed at Menoke Beach Road and Highway 11. The Ministry does not have a current Environmental Assessment for future expansion. The best guess as to where interchanges would go if/when the Highway is converted to a "freeway", and those locations would most likely be where there are existing flyovers and interchanges. Someday this intersection could disappear, but it is not contemplated at this point in time. The local connections would be necessary.
- No new accesses off of Highway 11 are being permitted and the existing entrances will be flipped to ensure access is off of a local road.
- All public Road accesses are to be a minimum of 400m from Highway 11. The current proposed Draft Plan does not appear to meet this requirement.
- The Traffic Study should review the following items:
    - The implementation of a 4 way intersection if the road entering the development is changed.
    - The intersection at highway 11 and Menoke Beach Road as well as the queuing at the accesses of the proposed Draft Plan and whether or not a signalized intersection is required.
    - The distance of the first entrance into the subdivision from Highway 11.
    - Other ways to access the subject lands locally from other subdivisions.
    - Lighting plans to ensure they do not affect the Highway
    - Stormwater Management to ensure no negative impact on Highway 11.
    - Detailed grading/servicing plans to show no negative impacts on Highway 11.

- A connection to Weber's would be desirable if possible.
- MTO will have to review the proposed lot fabric in relation to whether or not any road widening of the Highway would be required for taking.
- A 14 metre minimum setback from Highway 11 is required for any buildings.
- MTO can provide a list of conditions that would be required with respect to development along the Highway.
- Through the findings of the Traffic Study, if there are any upgrades or improvements required to any ramps, intersections, overpasses etc., it would be the developer's responsibility to pay for these improvements including design, construction etc.

Simcoe County, Julie Nolan, Planner III

- From a policy conformity perspective, the proposed subdivision is in the Settlements designation of the County Official Plan and generally conforms to the Settlements policies.

- A review of the site conditions i.e. natural heritage features, species at risk, etc. will need to be completed to ensure the suitability and form of the development and ensure no negative impacts and/or mitigation as found appropriate.
- Part of the lands are within the Delineated Built Boundary identified by MMAH, as the majority is outside. Please review these policies with respect to densities.
- Further investigation into the servicing capacity is required to confirm the phasing and dictate the density of the proposed Draft Plan. Please work with the Township to confirm.
- Typically two entrances are preferred for emergency services to access the subdivision. The Traffic Study should explore the options to incorporate this in conjunction with MTOs 400m setback from Highway 11.
- With respect to the design of the internal roadways, it may more efficient and desirable to have development on both sides of the street instead of a single sided road adjacent to open space (this speaks specifically to the road along the south boundary). Additionally, to prevent individual subdivisions becoming stand-alone “island” type developments, it is encouraged to create a more complete community by connecting the proposed Draft Plan with adjacent neighbourhoods/Draft Plans.

Township of Severn, Andrea Woodrow, Planning Director, Katie Mandeville, Senior Planner

- It would be desirable to incorporate a commercial/convenience block within the proposed subdivision based on the location and size of the proposed development.
- There are a couple developments to the north of the subject lands that have provided parkland dedication for future trail connections. Lands within the shadow creek area were dedicated to the Town for future park and trail purposes. The Township is undertaking a recreational master plan so there will be opportunity for connections for potential pedestrian connectivity. Please follow up with the Township for more information.
- The Township of Severn has a maximum of 3 stories due to Fire services’ lateral fire trucks. Buildings higher than 3 storeys are not permitted due to fire safety restrictions.
- The proposed Draft Plan exceeds the prescribed density of the Official Plan. An Official Plan Amendment is required.
- The subject lands are within an intake protection zone (IPZ2). Severn Sound Environmental Association (SSEA) provides environmental review services to the Township of Severn and acts as their Risk Management Official.
- With respect to remaining water and wastewater capacity in West Shore, a report from 2018 (Township is undertaking uncommitted capacity reports to evaluate development capacity) stated that approximately 17090 additional units for water and 890 units for wastewater. However, that does not reflect what is left as of

July 2021 due to recent subdivision approvals. Please confirm with the Township the capacity and sequencing of the next servicing EA to determine phasing. The next EA commences once servicing is at 85% capacity.

- SSEA works with the Township as a peer reviewer for all environmental works. Should the applicant wish to engage them earlier on in the process, a deposit would be required for their time. Engaging SSEA early on in the process will help better scope the environmental works to be completed.
- Please review the Township's pre-consultation form if you wish to engage the Township's engineer or peer reviewers while scoping and initiating the process.

Questions/Discussion

- During the Public Information Meeting held for Menoke Beach Phase 2 Draft Plan of Subdivision, community members had concerns about the traffic and road quality along Ardtrea Drive/Campbell Road. The Traffic Study should address the additional traffic and access to the interchanges/bridge both north bound and southbound d, ability to take on study should include volumes from Ardtrea, and southbound access to southbound traffic access to highway 11.
- The Township would like the exploration of local road connections from the proposed draft plan to other adjacent subdivisions. The applicant will explore the possibility to connect to local roads, however, there is a PSW and environmentally sensitive areas along the river and this may not be feasible to the south/east. The applicant would also need permissions from other land owners. The Township offered that there are still some vacant lots to the south along Amigo Drive Cres. (Simcoe Estates), that there may be some opportunity for a connection to link communities. Having that connectivity would be desirable to better connect the community.
- The applicant is happy to explore the feasibility of the option to link another road to other communities, however, due to the environmental features, it is difficult to create trails, roads, etc. while maintaining buffers. Further investigation through the EIS will determine what is on the ground and whether these types of connections are possible.
- Applicant would like water access along Shadow Creek canal system asking if the Town sees any issues with this waterway connection. The Town had no immediate concerns provided the results of the EIS prove to support it. The Town did note that the canal is very dry Aug-Sept. and has been dredged in the past.
- The Town suggested having more public consultation at the front end to mitigate any concerns or questions from local home owners.

Next Steps

- Revisions to the Draft Plan based on the pre-consultation discussion.
- EIS
- Confirmation of the servicing capacity from the Township to determine the phasing and potential for units
- Review of the geotechnical/hydrogeology by Azimuth to determine the feasibility of the site

Additional Information and Material Required

Legal & Related

- Legal and/or Topographic Survey
- Parcel Register/PIN Abstract
- Corporate Profile or Articles of Incorporation

Historical & Environmental Conditions

- Archaeological Assessment
- Environmental Impact Study
- Tree Identification/Preservation Plan

Policy Review & Supporting Studies

- Planning Justification Report
    - Growth Management
    -

Architectural, Urban Design and Master Planning

- Site Plan
- Landscaping Plan
- Conceptual Building Renderings
- Open Space/Trail Plan

Engineering/Technical Plans, Studies and Reports

- Servicing Plan
- Functional Servicing Report
- Geotechnical/Soil Stability Report
- Hydrogeological Study/ Hydrology Study or Water Budget
- Lot Grading Plan
- Operations and Maintenance Manual (should you have condominium elements)
- Source Water Protection Land Use
- Lighting Plan per MTO specifications
- Stormwater Management Report

- Traffic Impact Study including on ramp to Highway 11, off ramp to Menoke Beach Road and surrounding roads to the proposed development
- Watershed/Sub-watershed Study

Other

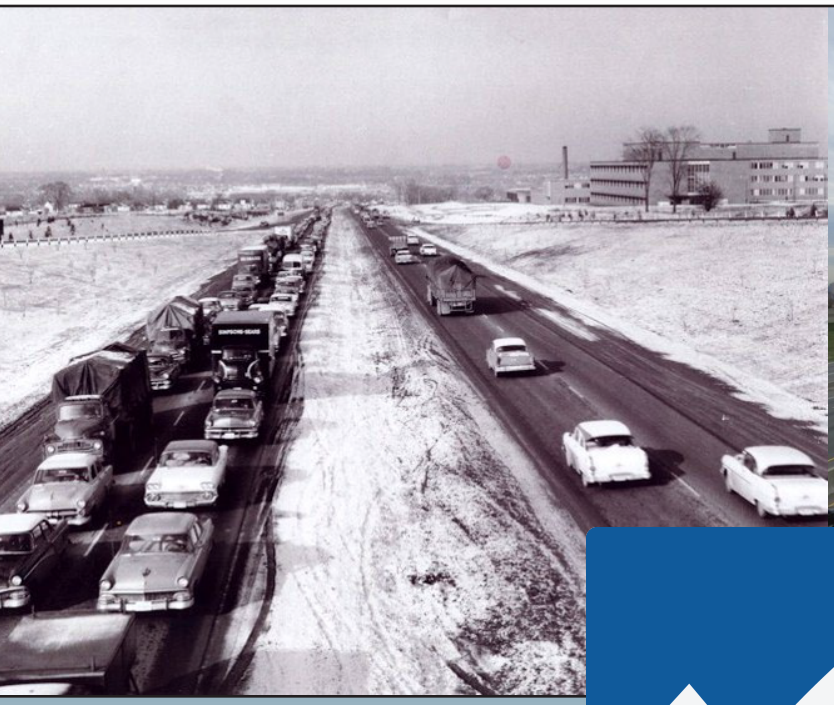
- Pre-consultation comments response matrix
- One (1) digital copy of all submission materials

APPENDIX B

MTO Highway Corridor Management Manual (September 2018)

Highway Corridor Management **Manual**

Ontario



Provincial Highway Corridor Management Section

Ministry of Transportation

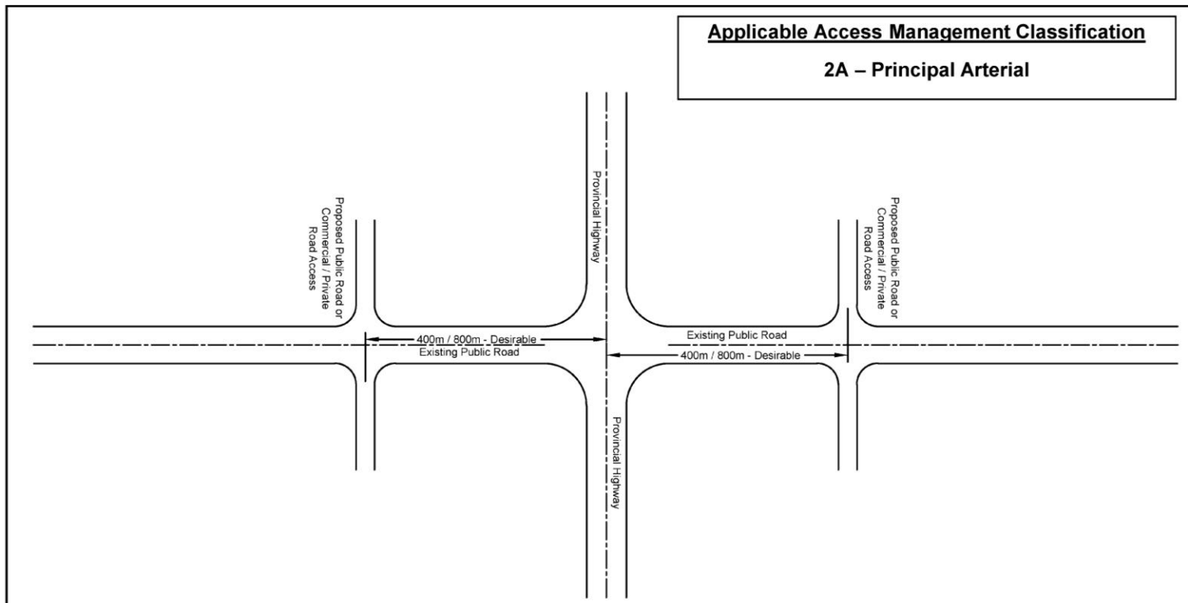
September 2018

Functional Intersection Area - Desirable Offset Spacing Criteria
Public Road and Commercial / Private Road Access Connections
(Medium / High Volume Traffic Generators)

Access Management Classification	Desirable Offset Criteria
Class 2A - Principal Arterial	400 / 800 m (see Notes)
Class 2B - Arterial Class 3 - Collector Class 4 - Local	400 m

Notes:

- All new Public Road connections, which are to be located downstream of an existing highway intersection, shall meet the desirable offset spacing criteria in accordance with the above table.
- All new medium / high volume Commercial / Private Road access connections, which are to be located downstream of an existing highway intersection, shall meet the desirable spacing offset criteria in accordance with the above table.
- For Principal Arterials where at-grade intersections are present and are not to be upgraded to interchanges, the desirable offset spacing is 400 m. However, where interchanges are proposed, the desirable offset spacing is 800 m.
- A medium / high volume Commercial / Private Road access connection is one that provides access to a commercial development which is a medium / large traffic generator, and which warrants intersection improvements on the Public Road.
- MTO requires the submission of a Traffic Impact Study for all commercial developments which are medium / high volume traffic generators. A Traffic Impact Study will determine the warranted improvements for both the highway intersection as well as the Commercial / Private Road access connection on the intersecting Public Road.
- Desirable offset spacing distances may be increased / decreased based upon MTO's review of a Traffic Impact Study.
- Distances provided in this Figure are provided to demonstrate desirable offset spacing for Public Roads and medium / high volume Commercial / Private Road access connections for corner and non-corner properties, in order to protect the safety and operational integrity of the intersection.
- Corner properties, which have frontage on both the Provincial Highway and the Public Road shall obtain all access from the Public Road.
- Desirable offset spacing criteria typically apply to requests for new Public Road and new medium / high volume Commercial / Private Road access connections.
- All distances are measured from the centreline of the highway intersection to the centreline of the proposed Public Roads or proposed medium / high volume Commercial / Private Road access connection.
- Existing Public Road or Commercial / Private Road access connections which fall with the desirable offset spacing criteria are constraints located within the Functional Intersection Area and will be permitted to remain for their existing use.



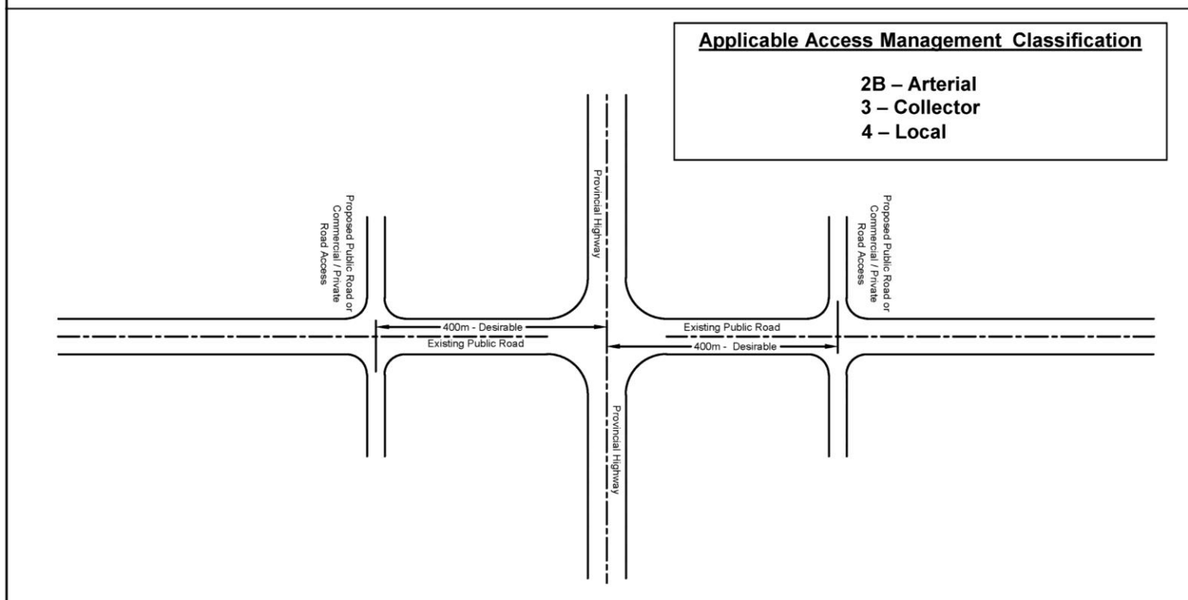


Figure 4.6.10: Functional Intersection Area - Desirable Offset Spacing Criteria – Public Road and Medium / High Volume Commercial / Private Road Access Connections

APPENDIX C

National Fire Prevention Association Excerpts

NFPA®

1141

Standard for Fire Protection Infrastructure for Land Development in Wildland, Rural, and Suburban Areas

2017

NFPA®

(2) The material is reported as passing ASTM E136, *Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750 Degrees C.*
(3) The material is reported as complying with the pass/fail criteria of ASTM E136 when tested in accordance with the test method and procedure in ASTM E2652, *Standard Test Method for Behavior of Materials in a Tube Furnace with a Cone-shaped Airflow Stabilizer, at 750 Degrees C.*

[**5000:** 7.1.4.1.1]

Chapter 5 Means of Access

5.1 General.

5.1.1 This section shall apply to all means of access, publicly or privately owned, whether or not they are designated as public thoroughfares.

5.1.2 Means of access shall be provided to all buildings more than 400 ft^2 (37 m^2) in ground floor area and to public occupancies with structural components.

5.1.3 The AHJ shall have the authority to require a means of unlocking any security feature that is installed.

5.1.3.1 Any gates shall not be located closer than 30 ft (9.144 m) from an intersection and shall open in the direction of emergency vehicle travel unless other provisions are made for safe personnel operation.

5.1.3.2 The clear opening through gates shall have a usable width at least 2 ft (0.6 m) wider than the means of access it controls.

5.1.4 Number of Means of Access.

5.1.4.1* A land development shall have one or more means of access in accordance with Table 5.1.4.1(a), Table 5.1.4.1(b), or 5.1.4.2, whichever produces the greatest number.

5.1.4.2 Where residential areas are mixed with nonresidential areas, the minimum number of access routes shall be determined by calculating five parking spaces for each dwelling unit, adding that number to the parking spaces count for the nonresidential area, and using Table 5.1.4.1(b).

5.1.4.3 Where multiple means of access are required, one of the means of access shall be permitted to be restricted for emergency use only, when approved by the AHJ.

Table 5.1.4.1(a) Required Number of Access Routes for Residential Areas

Number of Households	Number of Access Routes
0–100	1
101–600	2
>600	3

Table 5.1.4.1(b) Required Number of Access Routes for Nonresidential Areas

Number of Parking Spaces	Number of Access Routes
0–1250	1
1251–3000	2
>3000	3

5.1.4.4 Where multiple means of access are required, they shall be located as remotely from each other as practical and acceptable to the AHJ.

5.2 Roadways. Roadways shall be constructed and maintained in accordance with this section.

5.2.1* The legal right-of-way for a roadway shall accommodate the width necessary for the construction, drainage, erosion control, and maintenance of the roadway, and provisions for utilities and sidewalks.

5.2.2 Roadways shall be constructed of a hard, all-weather surface designed to support all legal loads of the jurisdiction.

5.2.3 Roadways shall have a minimum clear width of 12 ft (3.7 m) for each lane of travel, excluding shoulders and parking.

5.2.3.1 Curves shall not reduce the width of the roadway.

5.2.3.2 Provisions shall be made for drainage, snowbanks, parking, utilities, and the like such that they do not impinge on the minimum clear width.

5.2.4 Where parking is permitted, such space shall be provided in accordance with Section 5.4.

5.2.5 Any roadway intersecting with another shall be sloped to prevent the accumulation of water and ice on either roadway.

5.2.6 At least 13 ft 6 in. (4.2 m) nominal vertical clearance shall be provided and maintained over the full width of the roadway.

5.2.7 Turns in roadways shall be constructed with a minimum radius of 60 ft (18.2 m) to the outside of the turn.

5.2.8 Median left-turn lanes and traffic signals shall be provided at intersections where necessary to prevent traffic from impeding fire department response time.

5.2.9 Where required by the AHJ, any traffic signal system shall have an automatic means for fire apparatus to control the signals to maintain an unimpeded right-of-way.

5.2.9.1 Sight distance shall be incorporated into the design of intersections.

5.2.10* Bridges and culverts shall be designed to accommodate a minimum of 100-year flood elevations and flows in accordance with accepted engineering practices.

5.2.11 Vehicle load limits shall be posted at both entrances to bridges where required by the AHJ.

5.2.12 Easements shall be obtained to permit vegetation clearance alongside roads to minimize the likelihood of evacuation routes being blocked during wildfire or other natural disasters.

5.2.13* Roadways shall not be designed and constructed to include speed bumps or speed humps.

5.2.14 Alternative traffic calming devices such as chicanes and roundabouts shall be acceptable with approval by the AHJ.

5.2.15 Roadway design shall incorporate provisions for emergency pull-offs, spaced according to the AHJ.

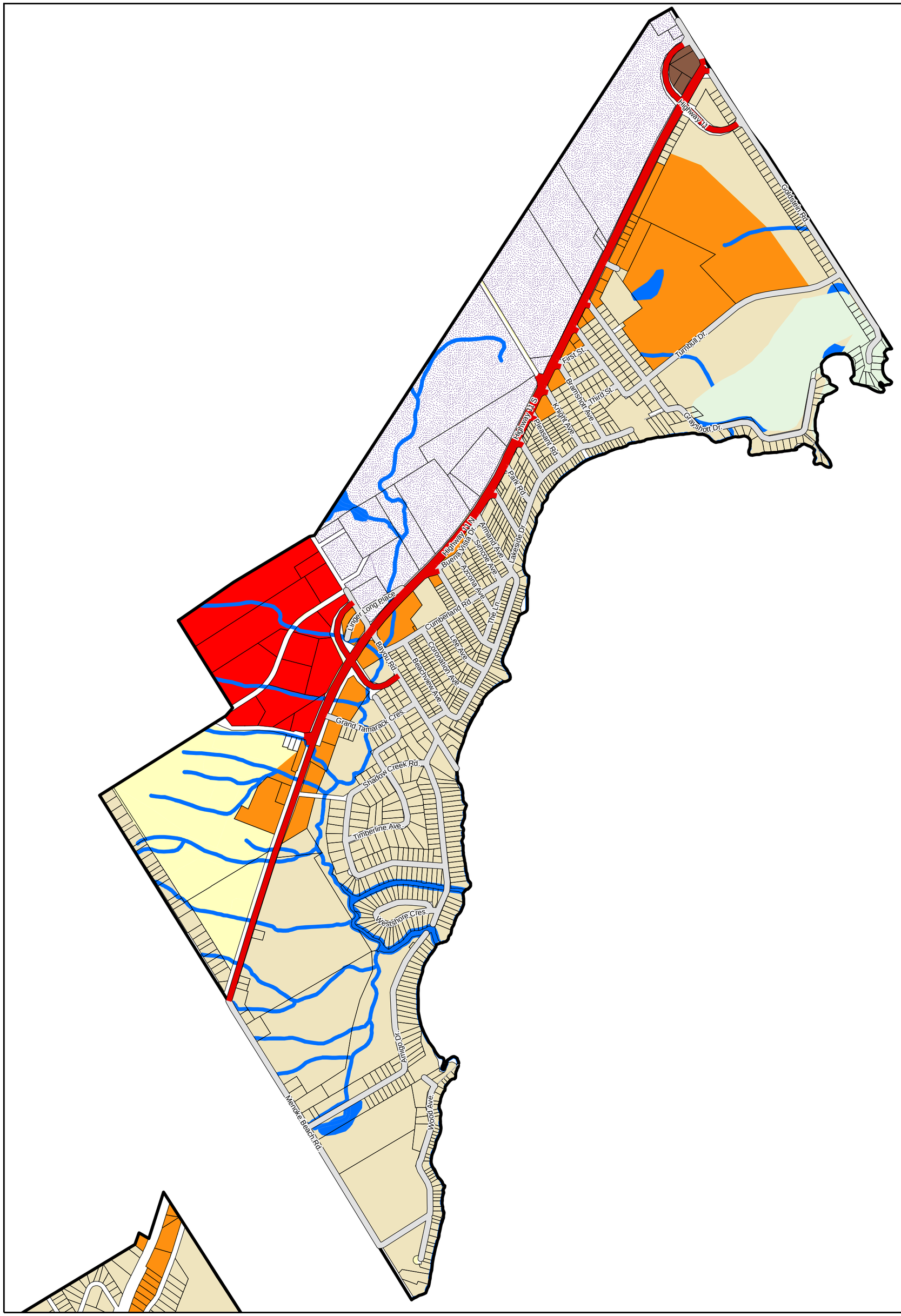
5.2.16 Grades.

5.2.16.1 Grades shall not be more than 10 percent, except as permitted by this section.

APPENDIX D

Township of Severn's Official Plan Excerpts

Township of Severn
Schedule A3
West Shore Settlement Area



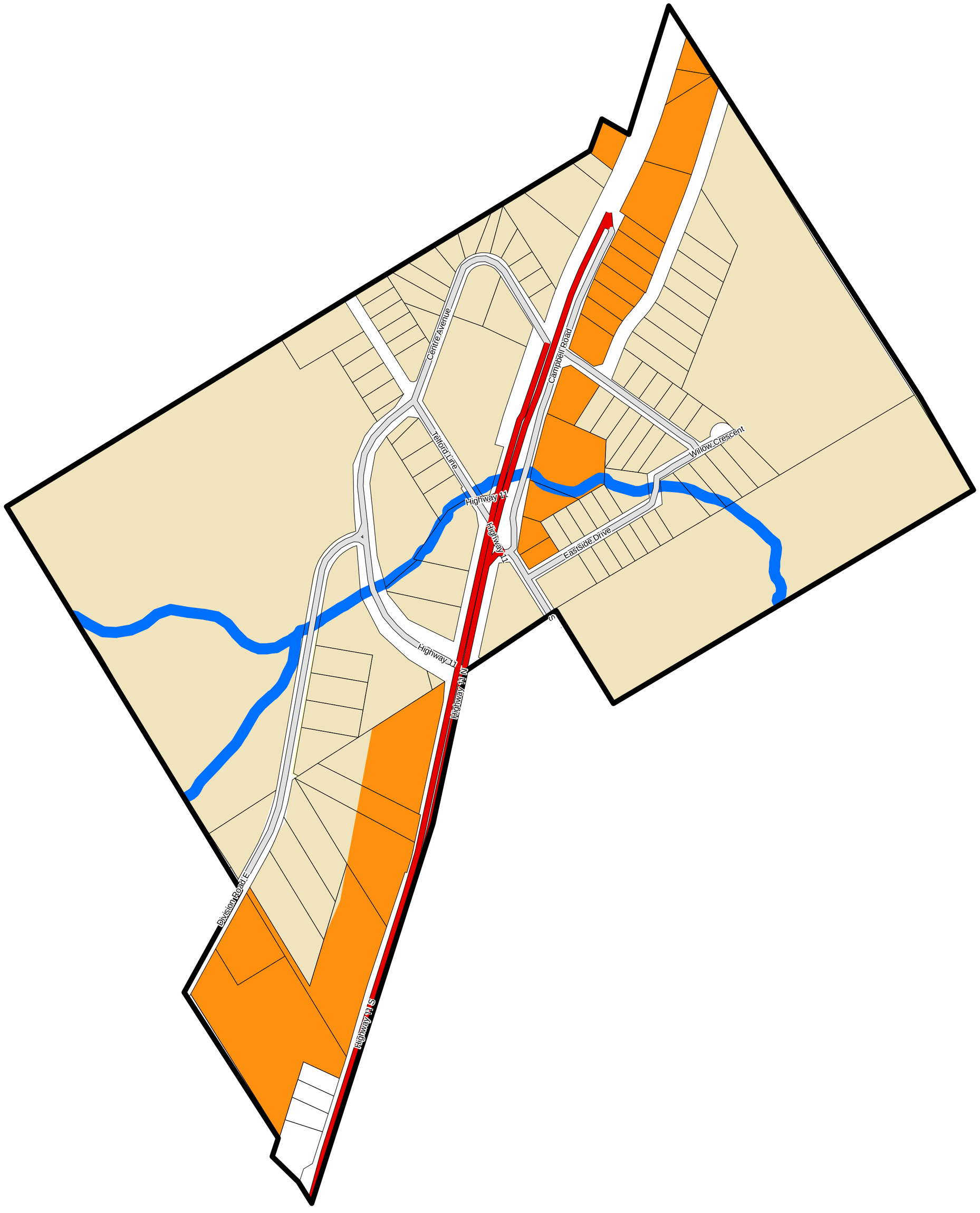
0 250 500 Meters

Legend

- PROVINCIAL HIGHWAY
- COUNTY ROAD
- LOCAL ROAD
- PRIVATE ROAD
- Settlement Boundary
- Country Residential
- Settlement Employment Area
- Highway Employment
- Settlement Living Area
- Major Recreation Area
- Resort Commercial
- Rural
- Shoreline Residential
- Settlement Employment SP Area
- Settlement Living SP Area
- Environmental Protection Area
- Greenland
- Agricultural Land

*** SP = Special Policy**

Township of Severn
Schedule A5
Ardtrea Settlement Area



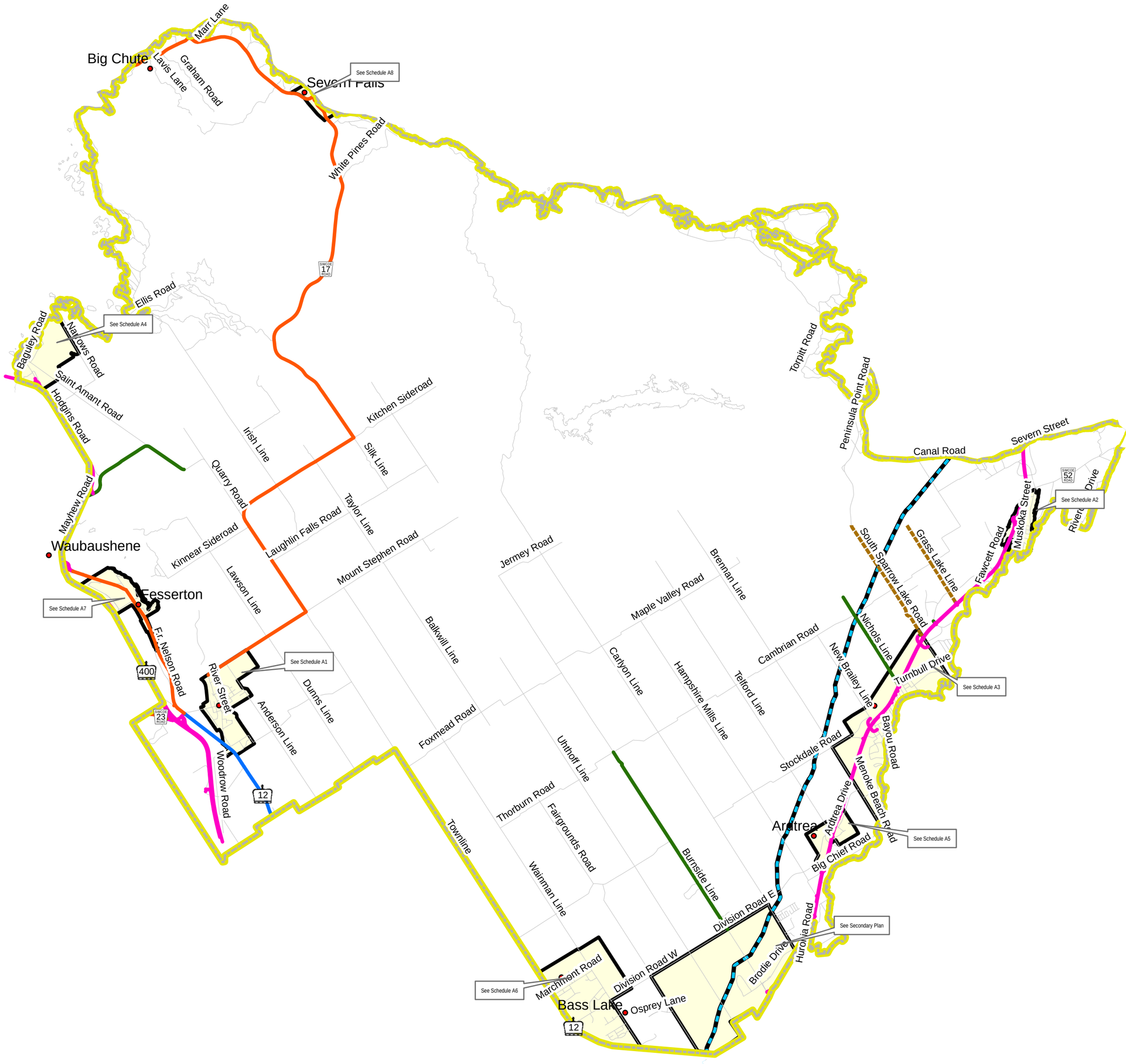
0 125 250 Meters

Legend

- PROVINCIAL HIGHWAY
- COUNTY ROAD
- LOCAL ROAD
- PRIVATE ROAD
- Settlement Boundary
- Country Residential
- Settlement Employment Area
- Highway Employment
- Settlement Living Area
- Major Recreation Area
- Resort Commercial
- Rural
- Shoreline Residential
- Settlement Employment SP Area
- Settlement Living SP Area
- Agricultural Land
- Environmental Protection Area
- Greenlands

*** SP = Special Policy**

Township of Severn
Schedule B
Transportation & Servicing



N
W E
S

0 2.5 5 Kilometers

SEVERN TRANSPORTATION

- Aterials and County
- Exsisting Major Haul Route
- Exsisting Minor Haul Route
- Provincial Freeway
- Provincial Highway
- Trans Canada Pipeline
- Settlement Boundary
- Municipal Border
- middlecities
- E911SLRN

APPENDIX E

Speed Limit Bylaw Excerpts

THE CORPORATION OF THE TOWNSHIP OF SEVERN

BY-LAW NO. 2021-75

BEING A BY-LAW TO AMEND BY0LAW NO. 2017-28 (Regulate Traffic & Speed Limits on Highways)

WHEREAS the Council of the Corporation of the Township of Severn enacted By-law NO. 2017-28 to regulate traffic and speed limits on highways within the Corporation of the Township of Severn;

AND WHEREAS it is deemed expedient to amend By-law No. 2017-28 to reduce the speed limit on Carlyon Line from 80 km/hr to 70 km/hr;

NOW THEREFORE THE COUNCIL OF THE CORPORATION OF THE TOWNSHIP OF SEVERN HEREBY ENACTS AS FOLLOWS:

1. That By-law No. 2017-28 be and it is hereby amended by deleting Schedule “A” in its entirety and inserting Schedule “A” attached hereto and forming part of this By-law.
2. That this By-law shall come into force and effect on the date of passing thereof.

By-law read a first, second, third time and finally passed this 3rd day of November, 2021.

CORPORATION OF THE TOWNSHIP OF SEVERN

_____

MAYOR

_____

CLERK

SCHEDULE "A" TO BY-LAW NO. 2021-75

Schedule "A" to By-law No. 2017-28, as amended

Speed of Vehicles

Highways

Road Name	From	To	Speed Limit
Agnew Road	West Limit of South Sparrow Lake Road	West Limit of the Southbound Lane of Highway No. 11	60 km/hr
Anderson Line	South Limit of County Road #17 (Upper Big Chute Road)	200 Metres South of Donlands Court	50 km/hr
Anderson Line	200 Metres South of Donlands Court	Foxmead Road	60 km/hr
Antonio Court	North Limit of Brodie Drive	West Limit of Antonio Court	40 km/hr
Avery Lane	East Limit of Town Line	West Limit of Hale Street	50 km/hr
Baguley Road	East Limit of Saint. Amant Road	West Limit of Baguley Road	40 km/hr.
Brennan Line	300 Metres North of Stockdale Road	732 Metres South of Stockdale Road	50 km/hr
Brodie Drive	East Limit of Burnside Line	West Limit of Carlyon Line	60 km/hr
Burnside Line	North Limit of Highway No. 11	North Limit of Birchcliffe Crescent	60 km/hr
Cambrian Road	East Limit of Brennan Line	West Limit of Nichols Line	60 km/hr
Canal Road	West Limit of Highway No. 11	East Limit of Cambrian Road	50 km/hr
Carlyon Line	Division Road	Cambrian Road	70 km/hr
Centre Avenue	West Limit of Highway No. 11	North Limit of Telford Line	50 km/hr
Coldwater Road	100 Metres South of Robinson Street	100 Metres North of Sturgeon Bay Road	40 km/hr
Cumberland Road	East Limit of Bayou Road	West Limit of Highview Avenue	40 km/hr
Cunningham Crescent	East Limit of Drinkwater Drive	West Limit of Wilson Point Road	50 km/hr
Division Road East	East Limit of Burnside Line	West Limit of Telford Line	60 km/hr
Division Road West	East Limit of Highway No. 12	East Limit of Martindale Crescent	60 km/hr
Division Road West	West Limit of Wainman Line	30 Metres East of Uhthoff Line	60 km/hr
Division Road West	East Limit of Martindale Crescent	West Limit of Wainman Line	40 km/hr
Eastside Drive	East Limit of Soules Road	East Limit of Highway No. 11	40 km/hr
Ellis road	West Limit of Pioneer Road	East Limit of Irish Line	40 km/hr
Fairgrounds Road	East Limit of Highway No. 12	500 Meters North of Highway 12	50 km/hr
Fairgrounds Road	500 Metres North of Highway 12	South Limit of Division Road	60 km/hr
Forest Wood Drive	East Limit of Huronia Road	North End of Forest Wood Drive	50 km/hr
Foxmead Road	West Limit of Town Line	500 Metres East on Foxmead Road	50 km/hr
Foxmead Road	500 Metres from East Limit of Town Line	300 Metres West of Balkwill Line	60 km/hr
Goldstein Road	East Limit of Highway No. 11	South Limit of Turnbull Drive	50 km/hr

Schedule “A” to By-law No. 2017-28, as amended (cont’d)

Highways (cont’d)

Road Name	From	To	Speed Limit
Gray Street	West Limit of Craddock Street	West Limit of Lot 55, Plan 1721 (51 Gray Street)	40 km/hr
Hale Street	South Limit of Marchmont Road	Southerly Limit of Hale Street	50 km/hr
Highview Avenue	East Limit of Highway No. 11	North Limit of Cumberland Road	40 km/hr
Holcroft Road	Intersection of Forest Wood Avenue	South to Lake Couchiching	50 km/hr
Hume Street	North Limit of Marchmont Road	Northerly Limit of Hume Street	50 km/hr
Hurlwood Lane	West Limit of Burnside Line	West Limit of Hawk Ridge Crescent	50 km/hr
Huronia Road	South Limit of Forest Wood Drive	City of Orillia Corporate Limits	50 km/hr
Irish Line	South Limit of Lot 17, Concession 1	North Limit of Bridge over Black River	40 km/hr
Irish Line	North Limit of County Road #17 (Upper Big Chute Road)	South Limit of Oakley Sideroad	60 km/hr
Jermey Road	East Limit of Burnside Line	East Limit of Jermey Road	60 km/hr
Lakeside Drive	East Limit of Beachview Avenue	West Limit of Highview Avenue	40 km/hr
Marchmont Road	East Limit of Town Line	150 Metres East of the Marchmont Bridge	50 km/hr
Marchmont Road	150 Metres West of the Marchmont Bridge	West Limit of Wainman Line	50 km/hr
Menoke Beach Road	South Limit of Ardtrea Drive	South Limit of Menoke Beach Road	60 km/hr
Millwood Road	East Limit of Town Line	Southerly Limit of Hale Street	50 km/hr
Mount Stephen Road	Upper Big Chute Road	Taylor Line	60 km/hr
Muskoka Street	400 Feet North of Ramsay Street	South Limit of Coopers Falls Road (County Rd. #52)	50 km/hr
Narrows Road	East Limit of Saint Amant Road	West Limit of Saint Amant Road	60 km/hr.
Nichols Line	West Limit of Highway No. 11	North Limit of Nichols Line	60 km/hr
Peninsula Point Road	East Limit of South Sparrow Lake Road	North Limit of Bennett Avenue	50 km/hr
Peninsula Point Road	North Limit of Bennett Avenue	North Limit of Peninsula Point Road	40 km/hr
Port Stanton Parkway	Port Stanton Dock	Wild Echo Lodge Lane	20 km/hr
Quarry Road	East Limit of Highway No. 400	500 Metres Easterly	40 km/hr
Quarry Road	North Limit of North River Drive	North Limit of Upper Big Chute Road	50 km/hr
Reservoir Road	South Entrance of Highway 400	Westerly Limit of Reservoir Road	50 km/hr
Riverdale Drive	South Limit of Coopers Falls Road	End of Riverdale Drive	50 km/hr
Riverwood Lane	South Limit of Marchmont Road	West Limit of Wainman Line	50 km/hr
Russell Drive	North Limit of Narrows Road	North Limit of Russell Drive	40 km/hr.
Shoreview Drive	East Limit of Highway No. 11	Southerly Limit of Anchor Drive	40 km/hr
Silk Line	South Limit of Upper Big Chute Road	Lot Line Between Lots 5 & 6	50 km/hr
Silk Line	Lot Line Between Lots 5 & 6	Lot Line Between Lots 4 & 5	25 km/hr.
South Sparrow Lake Road	West Limit of Highway No. 11	Intersection of Torpitt Road	60 km/hr

Schedule "A" to By-law No. 2017-28, as amended (cont'd)

Highways (cont'd)

Road Name	From	To	Speed Limit
Stockdale Road	West Limit of New Brailey Line	East Limit of Telford Line	60 km/hr
Taylor Line	Mount Stephen Road	Upper Big Chute Road	60 km/hr
Thomson Crescent	South Boundary at Big Chief Road	North Boundary at Weald Way	40 km/hr
Torpitt Road	North Limit of South Sparrow Lake Road	North Limit of Torpitt Road	60 km/hr
Town Line	Southerly Boundary of Lot 15	Northerly Boundary of Lot 16	60 km/hr
Town Line	East Limit of Highway No. 12	South Limit of Warminster Road	50 km/hr
Treeline Drive	South Limit of Shoreview Drive	Southerly Limit of Treeline Drive	40 km/hr
Turnbull Drive	East Limit of Grayshott Drive	500 Feet Easterly on Turnbull Drive	50 km/hr
Uhthoff Line	City of Orillia Corporate Limits	.5 Kilometres Northerly	60 km/hr
Wainman Line	15 Metres North of Highway No. 12	300 Metres South of Marchmont Road	60 km/hr
Weald Way	South Limit at Thomson Crescent	North Limit at Thomson Crescent	40 km/hr
Wilson Point Road North	North Limit of Cunningham Crescent	Most Northerly Limit of Wilson Point Road North	60 km/hr

Bridges

Bridge Name	From	To	Speed Limit
Marchmont Bridge	150 Metres West	150 Metres East	40 km/hr
Woodrow Bridge	150 Metres West	Highway 12	40 km/hr

APPENDIX F

Traffic Data

Spectrum

Turning Movement Count
Location Name: CAMPBELL RD & SOULES RD
Date: Wed, Dec 01, 2021 Deployment Lead: Theo Daglis

Crozier & Associates
SUITE 301 40 HURON STREET
COLLINGWOOD ONTARIO, L9Y 4R3
CANADA

Turning Movement Count (4 . CAMPBELL RD & SOULES RD)

Start Time	N Approach SOULES RD						E Approach CAMPBELL RD						S Approach SOULES RD						SE Approach DRIVEWAY						Int. Total (15 min)	Int. Total (1 hr)
	Thru N:S	Bear Left N:SE	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Left E:S	Hard Left E:SE	UTurn E:E	Peds E:	Approach Total	Hard Right S:SE	Right S:E	Thru S:N	UTurn S:S	Peds S:	Approach Total	Hard Right SE:E	Bear Right SE:N	Hard Left SE:S	UTurn SE:SE	Peds SE:	Approach Total		
06:00:00	6	0	1	0	0	7	0	7	0	0	0	7	0	1	4	0	0	5	0	0	0	0	0	0	19	
06:15:00	7	0	3	0	0	10	0	7	0	0	0	7	0	2	4	0	0	6	0	0	0	0	0	0	23	
06:30:00	8	0	2	0	0	10	0	5	0	0	0	5	0	1	10	0	0	11	0	0	0	0	0	0	26	
06:45:00	10	0	0	0	0	10	0	7	0	0	0	7	0	1	9	0	0	10	0	0	0	0	0	0	27	95
07:00:00	4	0	1	0	0	5	0	3	0	0	0	3	0	2	14	0	0	16	0	0	0	0	1	0	24	100
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09:15:00	12	0	1	0	0	13	0	3	0	0	0	3	0	0	7	0	0	7	0	0	0	0	0	0	23	119
09:30:00	12	0	1	0	0	13	0	12	0	0	0	12	0	4	9	0	0	13	0	0	0	0	0	0	38	120
09:45:00	11	0	3	0	0	14	0	8	0	0	0	8	0	1	11	0	0	12	0	0	0	0	0	0	34	119
BREAK																										
15:00:00	13	0	2	0	0	15	0	6	0	0	0	6	0	2	13	0	0	15	0	0	0	0	0	0	36	
15:15:00	13	0	4	0	0	17	1	6	0	0	0	7	0	6	12	0	0	18	0	0	0	0	2	0	42	
15:30:00	21	0	2	0	0	23	0	4	0	0	0	4	0	5	15	0	0	20	0	0	0	0	0	0	47	
15:45:00	21	0	4	0	0	25	0	6	0	0	0	6	0	4	17	0	0	21	0	0	0	0	0	0	52	177
16:00:00	20	0	3	0	0	23	0	4	0	0	0	4	0	3	21	0	0	24	0	0	0	0	2	0	51	192
16:15:00	29	2	0	0	0	31	3	6	0	0	0	9	0	3	18	0	0	21	0	0	1	0	0	1	62	212
16:30:00	23	0	2	0	0	25	0	10	0	0	0	10	0	2	16	0	0	18	0	0	0	0	0	0	53	218
16:45:00	22	0	2	0	0	24	0	4	0	0	1	4	0	2	24	0	0	26	0	0	0	0	1	0	54	220
17:00:00	15	0	6	0	0	21	0	6	0	0	0	6	0	2	16	0	0	18	0	0	0	0	0	0	45	214
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17:30:00	11	0	1	0	0	12	0	3	0	0	0	3	0	5	13	0	0	18	0	0	0	0	0	0	33	190
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18:15:00	15	0	0	0	0	15	0	5	0	0	0	5	0	1	8	0	0	9	0	0	0	0	0	0	29	136
18:30:00	9	0	1	0	0	10	0	4	0	0	0	4	0	1	9	0	0	10	0	0	0	0	0	0	24	127
18:45:00	9	0	0	0	0	9	0	4	0	0	0	4	0	0	4	0	0	4	0	0	0	0	0	0	17	104
Grand Total	418	3	50	0	0	471	7	202	0	0	1	209	0	76	399	0	0	475	0	0	2	0	7	2	**1157**	-
Approach%	88.7%	0.6%	10.6%	0%		-	3.3%	96.7%	0%	0%		-	0%	16%	84%	0%		-	0%	0%	100%	0%		-	**-**	-
Totals %	36.1%	0.3%	4.3%	0%		40.7%	0.6%	17.5%	0%	0%		18.1%	0%	6.6%	34.5%	0%		41.1%	0%	0%	0.2%	0%		0.2%	**-**	-
Heavy	27	0	2	0		-	0	9	0	0		-	0	7	30	0		-	0	0	0	0		-	**-**	-
Heavy %	6.5%	0%	4%	0%		-	0%	4.5%	0%	0%		-	0%	9.2%	7.5%	0%		-	0%	0%	0%	0%		-	**-**	-
Bicycles	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-
Bicycle %	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	**-**	-

Spectrum

Turning Movement Count
Location Name: CAMPBELL RD & SOULES RD
Date: Wed, Dec 01, 2021 Deployment Lead: Theo Daglis

Crozier & Associates
SUITE 301 40 HURON STREET
COLLINGWOOD ONTARIO, L9Y 4R3
CANADA

Peak Hour: 07:45 AM - 08:45 AM **Weather: Overcast Clouds (0.5 °C)**

Start Time	N Approach SOULES RD						E Approach CAMPBELL RD						S Approach SOULES RD						SE Approach DRIVEWAY						Int. Total (15 min)
	Thru	Bear Left	Left	UTurn	Peds	Approach Total	Right	Left	Hard Left	UTurn	Peds	Approach Total	Hard Right	Right	Thru	UTurn	Peds	Approach Total	Hard Right	Bear Right	Hard Left	UTurn	Peds	Approach Total	
07:45:00	15	0	0	0	0	15	0	10	0	0	0	10	0	2	18	0	0	20	0	0	0	0	0	0	45
08:00:00	5	0	0	0	0	5	0	8	0	0	0	8	0	3	12	0	0	15	0	0	0	0	0	0	28
08:15:00	10	0	0	0	0	10	0	10	0	0	0	10	0	1	16	0	0	17	0	0	0	0	0	0	37
08:30:00	10	0	1	0	0	11	1	9	0	0	0	10	0	2	14	0	0	16	0	0	0	0	0	0	37
Grand Total	40	0	1	0	0	41	1	37	0	0	0	38	0	8	60	0	0	68	0	0	0	0	0	0	**147**
Approach%	97.6%	0%	2.4%	0%		-	2.6%	97.4%	0%	0%		-	0%	11.8%	88.2%	0%		-	0%	0%	0%	0%		-	**-**
Totals %	27.2%	0%	0.7%	0%		27.9%	0.7%	25.2%	0%	0%		25.9%	0%	5.4%	40.8%	0%		46.3%	0%	0%	0%	0%		0%	**-**
PHF	0.67	0	0.25	0		0.68	0.25	0.93	0	0		0.95	0	0.67	0.83	0		0.85	0	0	0	0		0	**-**
Heavy	5	0	0	0		5	0	2	0	0		2	0	2	3	0		5	0	0	0	0		0	**-**
Heavy %	12.5%	0%	0%	0%		12.2%	0%	5.4%	0%	0%		5.3%	0%	25%	5%	0%		7.4%	0%	0%	0%	0%		0%	**-**
Lights	35	0	1	0		36	1	35	0	0		36	0	6	57	0		63	0	0	0	0		0	**-**
Lights %	87.5%	0%	100%	0%		87.8%	100%	94.6%	0%	0%		94.7%	0%	75%	95%	0%		92.6%	0%	0%	0%	0%		0%	**-**
Single-Unit Trucks	3	0	0	0		3	0	1	0	0		1	0	0	3	0		3	0	0	0	0		0	**-**
Single-Unit Trucks %	7.5%	0%	0%	0%		7.3%	0%	2.7%	0%	0%		2.6%	0%	0%	5%	0%		4.4%	0%	0%	0%	0%		0%	**-**
Buses	1	0	0	0		1	0	1	0	0		1	0	2	0	0		2	0	0	0	0		0	**-**
Buses %	2.5%	0%	0%	0%		2.4%	0%	2.7%	0%	0%		2.6%	0%	25%	0%	0%		2.9%	0%	0%	0%	0%		0%	**-**
Articulated Trucks	1	0	0	0		1	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	**-**
Articulated Trucks %	2.5%	0%	0%	0%		2.4%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		**-**

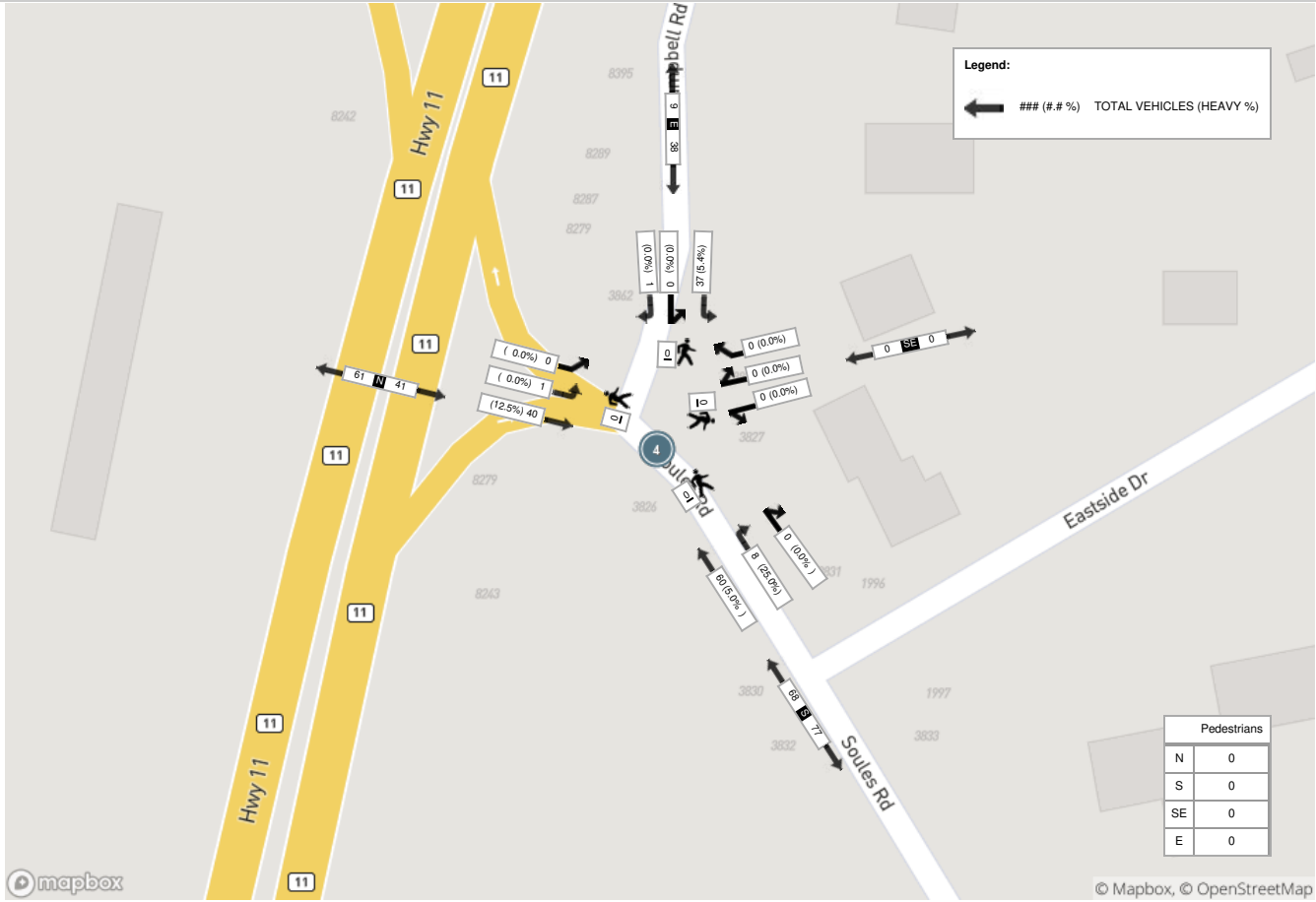
Crozier & Associates
SUITE 301 40 HURON STREET
COLLINGWOOD ONTARIO, L9Y 4R3
CANADA

Peak Hour: 04:00 PM - 05:00 PM Weather: Overcast Clouds (2.74 °C)

Start Time	N Approach SOULES RD						E Approach CAMPBELL RD						S Approach SOULES RD						SE Approach DRIVEWAY						Int. Total (15 min)
	Thru	Bear Left	Left	UTurn	Peds	Approach Total	Right	Left	Hard Left	UTurn	Peds	Approach Total	Hard Right	Right	Thru	UTurn	Peds	Approach Total	Hard Right	Bear Right	Hard Left	UTurn	Peds	Approach Total	
16:00:00	20	0	3	0	0	23	0	4	0	0	0	4	0	3	21	0	0	24	0	0	0	0	2	0	51
16:15:00	29	2	0	0	0	31	3	6	0	0	0	9	0	3	18	0	0	21	0	0	1	0	0	1	62
16:30:00	23	0	2	0	0	25	0	10	0	0	0	10	0	2	16	0	0	18	0	0	0	0	0	0	53
16:45:00	22	0	2	0	0	24	0	4	0	0	1	4	0	2	24	0	0	26	0	0	0	0	1	0	54
Grand Total	94	2	7	0	0	103	3	24	0	0	1	27	0	10	79	0	0	89	0	0	1	0	3	1	**220**
Approach%	91.3%	1.9%	6.8%	0%		-	11.1%	88.9%	0%	0%		-	0%	11.2%	88.8%	0%		-	0%	0%	100%	0%		-	**-**
Totals %	42.7%	0.9%	3.2%	0%		46.8%	1.4%	10.9%	0%	0%		12.3%	0%	4.5%	35.9%	0%		40.5%	0%	0%	0.5%	0%		0.5%	**-**
PHF	0.81	0.25	0.58	0		0.83	0.25	0.6	0	0		0.68	0	0.83	0.82	0		0.86	0	0	0.25	0		0.25	**-**
Heavy	1	0	0	0		1	0	0	0	0		0	0	1	4	0		5	0	0	0	0		0	**-**
Heavy %	1.1%	0%	0%	0%		1%	0%	0%	0%	0%		0%	0%	10%	5.1%	0%		5.6%	0%	0%	0%	0%		0%	**-**
Lights	93	2	7	0		102	3	24	0	0		27	0	9	75	0		84	0	0	1	0		1	**-**
Lights %	98.9%	100%	100%	0%		99%	100%	100%	0%	0%		100%	0%	90%	94.9%	0%		94.4%	0%	0%	100%	0%		100%	**-**
Single-Unit Trucks	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	**-**
Single-Unit Trucks %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	**-**
Buses	1	0	0	0		1	0	0	0	0		0	0	1	2	0		3	0	0	0	0		0	**-**
Buses %	1.1%	0%	0%	0%		1%	0%	0%	0%	0%		0%	0%	10%	2.5%	0%		3.4%	0%	0%	0%	0%		0%	**-**
Articulated Trucks	0	0	0	0		0	0	0	0	0		0	0	0	2	0		2	0	0	0	0		0	**-**
Articulated Trucks %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	2.5%	0%		2.2%	0%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	3	-	**-**
Pedestrians%	-	-	-	-	0%		-	-	-	-	25%		-	-	-	-	0%		-	-	-	-	75%		**-**

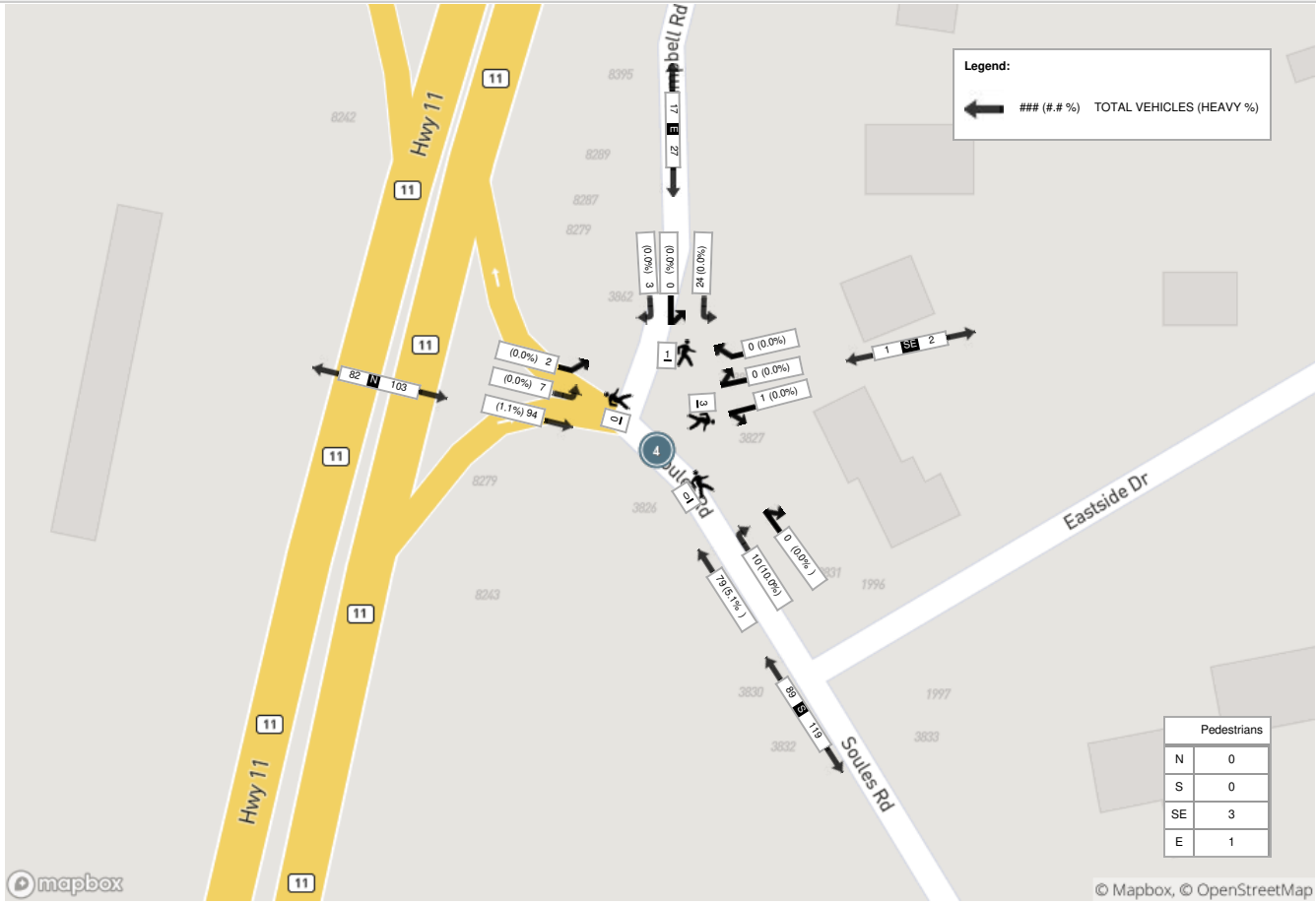
Crozier & Associates
SUITE 301 40 HURON STREET
COLLINGWOOD ONTARIO, L9Y 4R3
CANADA

Peak Hour: 07:45 AM - 08:45 AM **Weather: Overcast Clouds (0.5 °C)**



Crozier & Associates
SUITE 301 40 HURON STREET
COLLINGWOOD ONTARIO, L9Y 4R3
CANADA

Peak Hour: 04:00 PM - 05:00 PM **Weather: Overcast Clouds (2.74 °C)**



Spectrum

Turning Movement Count
Location Name: CENTER AVE & TELFORD LINE
Date: Wed, Dec 01, 2021 Deployment Lead: Theo Daglis

Crozier & Associates
SUITE 301 40 HURON STREET
COLLINGWOOD ONTARIO, L9Y 4R3
CANADA

Turning Movement Count (6 . CENTER AVE & TELFORD LINE)

Start Time	N Approach TELFORD LINE						E Approach CENTRE AVE						S Approach TELFORD LINE						W Approach CENTRE AVE						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total		
06:00:00	1	3	0	0	0	4	0	0	0	0	0	0	0	0	2	0	0	2	12	0	1	0	0	13	19	
06:15:00	0	1	0	0	0	1	0	1	0	0	0	1	0	0	6	0	0	6	16	0	1	0	0	17	25	
06:30:00	1	4	0	0	0	5	0	0	1	0	0	1	0	1	4	1	0	6	17	0	0	0	0	17	29	
06:45:00	2	4	0	0	0	6	0	1	0	0	0	1	0	0	1	0	0	1	15	0	5	0	0	20	28	101
07:00:00	1	3	0	0	0	4	0	0	0	0	1	0	0	1	6	0	0	7	7	0	3	0	0	10	21	103
07:15:00	2	5	0	0	0	7	0	0	0	0	0	0	0	1	7	0	0	8	12	0	2	0	0	14	29	107
07:30:00	1	6	0	0	0	7	0	0	0	0	0	0	0	0	10	0	0	10	16	0	2	0	0	18	35	113
07:45:00	0	5	0	0	0	5	0	0	1	0	0	1	0	1	8	0	0	9	23	0	5	0	0	28	43	128
08:00:00	3	6	0	0	0	9	0	0	0	0	0	0	0	1	10	0	0	11	19	1	2	0	0	22	42	149
08:15:00	2	7	0	0	0	9	0	1	0	0	0	1	0	1	9	0	0	10	22	0	2	0	0	24	44	164
08:30:00	1	6	0	0	0	7	0	0	1	0	3	1	0	0	8	0	0	8	21	0	5	0	0	26	42	171
08:45:00	3	6	0	0	0	9	0	1	0	0	0	1	0	1	8	0	0	9	9	0	7	0	0	16	35	163
09:00:00	1	2	0	0	0	3	0	2	0	0	0	2	0	1	10	0	0	11	7	0	3	0	0	10	26	147
09:15:00	0	3	0	0	0	3	1	1	0	0	0	2	1	1	5	1	0	8	13	0	6	0	0	19	32	135
09:30:00	1	5	1	0	0	7	1	0	0	0	0	1	1	0	11	0	0	12	18	0	7	0	0	25	45	138
09:45:00	2	3	0	0	0	5	0	0	1	0	0	1	0	0	5	0	0	5	22	0	4	0	0	26	37	140
BREAK																										
15:00:00	2	3	0	0	0	5	1	0	0	0	0	1	0	1	11	0	0	12	17	0	6	0	0	23	41	
15:15:00	1	4	0	0	0	5	0	1	0	0	0	1	1	2	9	0	0	12	14	0	11	0	1	25	43	
15:30:00	1	0	0	0	0	1	0	0	0	0	1	0	1	2	16	0	0	19	12	1	12	0	0	25	45	
15:45:00	4	5	1	0	0	10	0	2	0	0	8	2	0	2	12	0	0	14	17	1	15	0	0	33	59	188
16:00:00	1	3	0	0	0	4	0	0	0	0	0	0	0	0	14	0	0	14	15	1	10	0	0	26	44	191
16:15:00	2	4	0	0	0	6	1	1	3	0	0	5	0	1	13	0	0	14	15	0	15	0	0	30	55	203
16:30:00	2	6	1	0	0	9	1	0	0	0	0	1	1	2	13	0	0	16	13	0	15	1	0	29	55	213
16:45:00	2	2	0	0	0	4	0	0	0	0	0	0	0	2	16	0	0	18	18	2	13	0	0	33	55	209
17:00:00	1	9	0	0	0	10	0	1	0	0	0	1	0	2	3	0	0	5	7	1	13	0	0	21	37	202
17:15:00	1	4	0	0	0	5	0	0	0	0	0	0	0	3	13	0	0	16	17	0	14	0	0	31	52	199
17:30:00	3	5	0	0	0	8	0	0	0	0	0	0	0	1	14	0	0	15	7	0	10	0	0	17	40	184
17:45:00	0	6	0	0	0	6	0	1	0	0	0	1	0	0	9	0	0	9	16	1	5	0	0	22	38	167
18:00:00	1	2	0	0	0	3	0	1	0	0	0	1	0	0	6	0	0	6	9	1	9	0	0	19	29	159
18:15:00	1	3	1	0	0	5	0	1	0	0	0	1	0	0	3	0	0	3	7	0	10	0	0	17	26	133
18:30:00	0	1	0	0	0	1	1	0	0	0	0	1	0	0	5	0	0	5	6	0	5	0	0	11	18	111
18:45:00	1	3	1	0	0	5	0	0	0	0	0	0	0	0	6	0	0	6	9	0	6	0	0	15	26	99
Grand Total	44	129	5	0	0	178	6	15	7	0	13	28	5	27	273	2	0	307	448	9	224	1	1	682	**1195**	-
Approach%	24.7%	72.5%	2.8%	0%		-	21.4%	53.6%	25%	0%		-	1.6%	8.8%	88.9%	0.7%		-	65.7%	1.3%	32.8%	0.1%		-	-	-
Totals %	3.7%	10.8%	0.4%	0%		14.9%	0.5%	1.3%	0.6%	0%		2.3%	0.4%	2.3%	22.8%	0.2%		25.7%	37.5%	0.8%	18.7%	0.1%		57.1%	-	-
Heavy	3	4	0	0		-	0	0	0	0		-	0	4	20	2		-	21	0	11	0		-	-	-
Heavy %	6.8%	3.1%	0%	0%		-	0%	0%	0%	0%		-	0%	14.8%	7.3%	100%		-	4.7%	0%	4.9%	0%		-	-	-
Bicycles	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-
Bicycle %	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-

Spectrum

Turning Movement Count
Location Name: CENTER AVE & TELFORD LINE
Date: Wed, Dec 01, 2021 Deployment Lead: Theo Daglis

Crozier & Associates
SUITE 301 40 HURON STREET
COLLINGWOOD ONTARIO, L9Y 4R3
CANADA

Peak Hour: 07:45 AM - 08:45 AM **Weather: Overcast Clouds (0.5 °C)**

Start Time	N Approach TELFORD LINE						E Approach CENTRE AVE						S Approach TELFORD LINE						W Approach CENTRE AVE						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
07:45:00	0	5	0	0	0	5	0	0	1	0	0	1	0	1	8	0	0	9	23	0	5	0	0	28	43
08:00:00	3	6	0	0	0	9	0	0	0	0	0	0	0	1	10	0	0	11	19	1	2	0	0	22	42
08:15:00	2	7	0	0	0	9	0	1	0	0	0	1	0	1	9	0	0	10	22	0	2	0	0	24	44
08:30:00	1	6	0	0	0	7	0	0	1	0	3	1	0	0	8	0	0	8	21	0	5	0	0	26	42
Grand Total	6	24	0	0	0	30	0	1	2	0	3	3	0	3	35	0	0	38	85	1	14	0	0	100	**171**
Approach%	20%	80%	0%	0%		-	0%	33.3%	66.7%	0%		-	0%	7.9%	92.1%	0%		-	85%	1%	14%	0%		-	**-**
Totals %	3.5%	14%	0%	0%		17.5%	0%	0.6%	1.2%	0%		1.8%	0%	1.8%	20.5%	0%		22.2%	49.7%	0.6%	8.2%	0%		58.5%	**-**
PHF	0.5	0.86	0	0		0.83	0	0.25	0.5	0		0.75	0	0.75	0.88	0		0.86	0.92	0.25	0.7	0		0.89	**-**
Heavy	0	0	0	0		0	0	0	0	0		0	0	1	4	0		5	5	0	2	0		7	**-**
Heavy %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	33.3%	11.4%	0%		13.2%	5.9%	0%	14.3%	0%		7%	**-**
Lights	6	24	0	0		30	0	1	2	0		3	0	2	31	0		33	80	1	12	0		93	**-**
Lights %	100%	100%	0%	0%		100%	0%	100%	100%	0%		100%	0%	66.7%	88.6%	0%		86.8%	94.1%	100%	85.7%	0%		93%	**-**
Single-Unit Trucks	0	0	0	0		0	0	0	0	0		0	0	0	2	0		2	2	0	0	0		2	**-**
Single-Unit Trucks %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	5.7%	0%		5.3%	2.4%	0%	0%	0%		2%	**-**
Buses	0	0	0	0		0	0	0	0	0		0	0	1	1	0		2	2	0	2	0		4	**-**
Buses %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	33.3%	2.9%	0%		5.3%	2.4%	0%	14.3%	0%		4%	**-**
Articulated Trucks	0	0	0	0		0	0	0	0	0		0	0	0	1	0		1	1	0	0	0		1	**-**
Articulated Trucks %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	2.9%	0%		2.6%	1.2%	0%	0%	0%		1%	**-**
Pedestrians	-	-	-	-	0	-	-	-	-	-	3	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	-	0%		-	-	-	-	100%		-	-	-	-	0%		-	-	-	-	0%		**-**

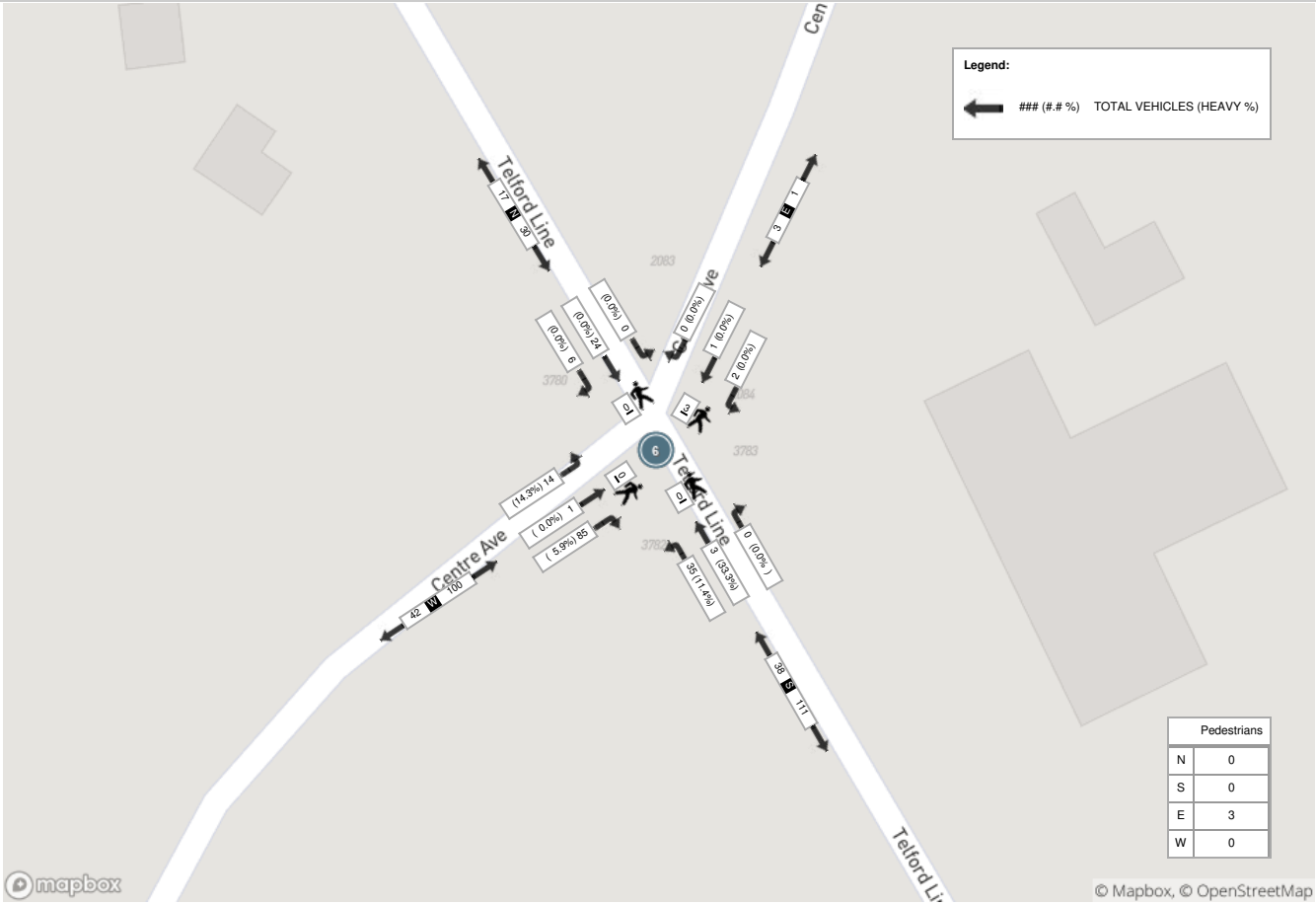
Crozier & Associates
SUITE 301 40 HURON STREET
COLLINGWOOD ONTARIO, L9Y 4R3
CANADA

Peak Hour: 03:45 PM - 04:45 PM Weather: Overcast Clouds (2.74 °C)

Start Time	N Approach TELFORD LINE						E Approach CENTRE AVE						S Approach TELFORD LINE						W Approach CENTRE AVE						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
15:45:00	4	5	1	0	0	10	0	2	0	0	8	2	0	2	12	0	0	14	17	1	15	0	0	33	59
16:00:00	1	3	0	0	0	4	0	0	0	0	0	0	0	0	14	0	0	14	15	1	10	0	0	26	44
16:15:00	2	4	0	0	0	6	1	1	3	0	0	5	0	1	13	0	0	14	15	0	15	0	0	30	55
16:30:00	2	6	1	0	0	9	1	0	0	0	0	1	1	2	13	0	0	16	13	0	15	1	0	29	55
Grand Total	9	18	2	0	0	29	2	3	3	0	8	8	1	5	52	0	0	58	60	2	55	1	0	118	**213**
Approach%	31%	62.1%	6.9%	0%		-	25%	37.5%	37.5%	0%		-	1.7%	8.6%	89.7%	0%		-	50.8%	1.7%	46.6%	0.8%		-	**-**
Totals %	4.2%	8.5%	0.9%	0%		13.6%	0.9%	1.4%	1.4%	0%		3.8%	0.5%	2.3%	24.4%	0%		27.2%	28.2%	0.9%	25.8%	0.5%		55.4%	**-**
PHF	0.56	0.75	0.5	0		0.73	0.5	0.38	0.25	0		0.4	0.25	0.63	0.93	0		0.91	0.88	0.5	0.92	0.25		0.89	**-**
Heavy	2	1	0	0		3	0	0	0	0		0	0	1	5	0		6	3	0	4	0		7	**-**
Heavy %	22.2%	5.6%	0%	0%		10.3%	0%	0%	0%	0%		0%	0%	20%	9.6%	0%		10.3%	5%	0%	7.3%	0%		5.9%	**-**
Lights	7	17	2	0		26	2	3	3	0		8	1	4	47	0		52	57	2	51	1		111	**-**
Lights %	77.8%	94.4%	100%	0%		89.7%	100%	100%	100%	0%		100%	100%	80%	90.4%	0%		89.7%	95%	100%	92.7%	100%		94.1%	**-**
Single-Unit Trucks	0	0	0	0		0	0	0	0	0		0	0	0	1	0		1	2	0	1	0		3	**-**
Single-Unit Trucks %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	1.9%	0%		1.7%	3.3%	0%	1.8%	0%		2.5%	**-**
Buses	2	1	0	0		3	0	0	0	0		0	0	1	3	0		4	0	0	3	0		3	**-**
Buses %	22.2%	5.6%	0%	0%		10.3%	0%	0%	0%	0%		0%	0%	20%	5.8%	0%		6.9%	0%	0%	5.5%	0%		2.5%	**-**
Articulated Trucks	0	0	0	0		0	0	0	0	0		0	0	0	1	0		1	1	0	0	0		1	**-**
Articulated Trucks %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	1.9%	0%		1.7%	1.7%	0%	0%	0%		0.8%	**-**
Pedestrians	-	-	-	-	0	-	-	-	-	-	8	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	-	0%		-	-	-	-	100%		-	-	-	-	0%		-	-	-	-	0%		**-**

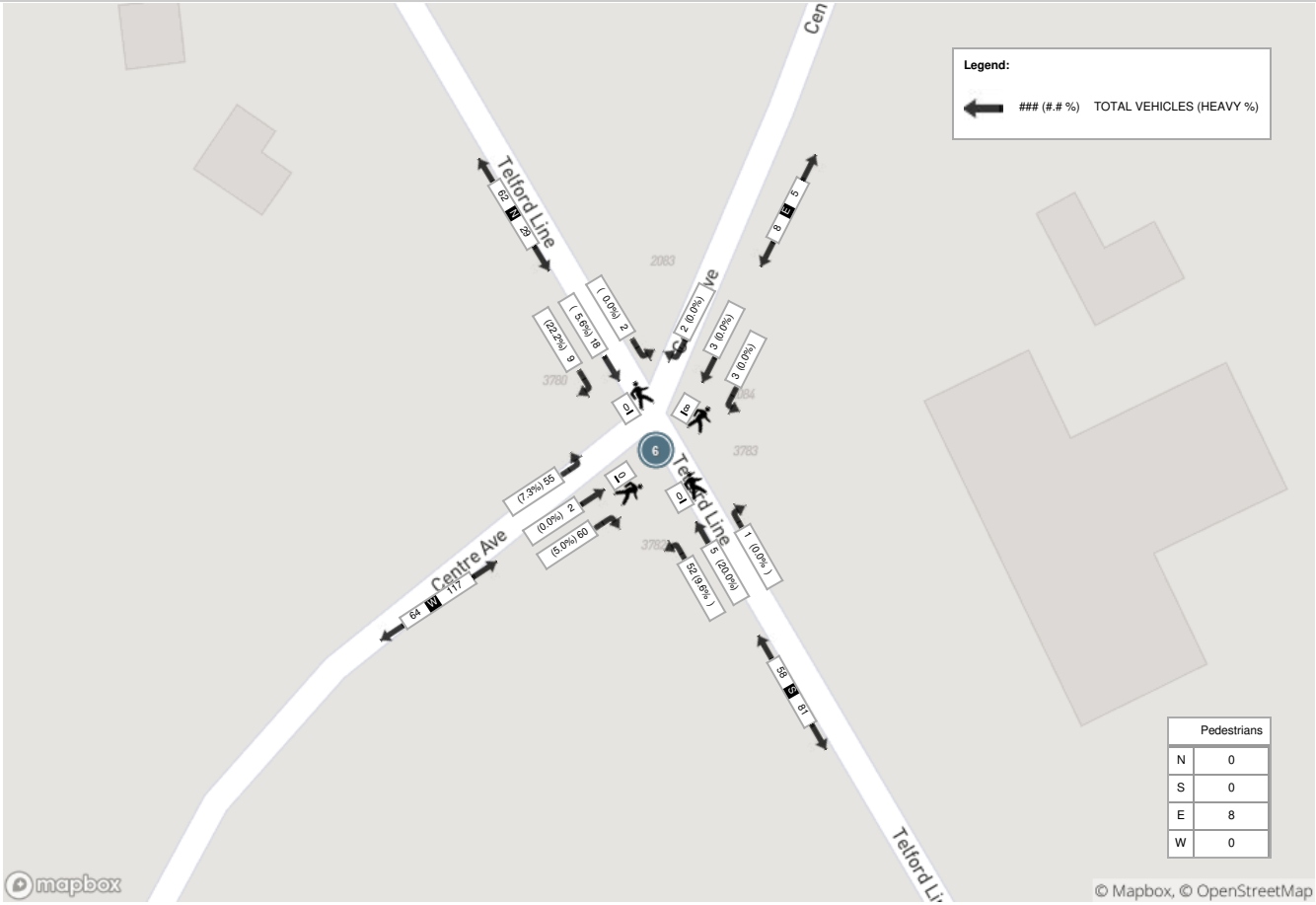
Crozier & Associates
SUITE 301 40 HURON STREET
COLLINGWOOD ONTARIO, L9Y 4R3
CANADA

Peak Hour: 07:45 AM - 08:45 AM **Weather: Overcast Clouds (0.5 °C)**



Crozier & Associates
SUITE 301 40 HURON STREET
COLLINGWOOD ONTARIO, L9Y 4R3
CANADA

Peak Hour: 03:45 PM - 04:45 PM **Weather: Overcast Clouds (2.74 °C)**



Crozier & Associates
SUITE 301 40 HURON STREET
COLLINGWOOD ONTARIO, L9Y 4R3
CANADA

Turning Movement Count (2 . MENOKE BEACH RD & ARDTREA DR)

Start Time	N Approach MENOKE BEACH RD					S Approach MENOKE BEACH RD					W Approach ARDTREA DR					Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	UTurn N:N	Peds N:	Approach Total	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Left W:N	UTurn W:W	Peds W:	Approach Total		
06:00:00	1	1	0	0	2	2	6	0	0	8	1	0	0	0	1	11	
06:15:00	0	0	0	0	0	1	3	0	0	4	0	0	0	0	0	4	
06:30:00	0	4	0	0	4	1	7	0	0	8	0	0	0	0	0	12	
06:45:00	0	3	0	0	3	1	3	0	0	4	0	0	0	0	0	7	34
07:00:00	0	0	0	0	0	5	3	0	0	8	1	0	0	0	1	9	32
07:15:00	0	2	0	0	2	1	1	0	0	2	1	0	0	0	1	5	33
07:30:00	2	0	0	0	2	4	6	0	0	10	0	0	0	0	0	12	33
07:45:00	0	3	0	0	3	3	6	0	0	9	1	0	0	0	1	13	39
08:00:00	0	2	0	0	2	3	4	0	0	7	1	0	0	0	1	10	40
08:15:00	0	4	0	0	4	2	8	0	0	10	0	0	0	0	0	14	49
08:30:00	0	2	0	0	2	0	5	0	0	5	3	1	0	2	4	11	48
08:45:00	0	5	0	0	5	4	2	0	0	6	3	0	0	0	3	14	49
09:00:00	0	6	0	0	6	2	3	1	0	6	1	1	0	0	2	14	53
09:15:00	0	3	0	0	3	3	3	0	0	6	0	0	0	0	0	9	48
09:30:00	0	3	0	0	3	3	10	0	0	13	2	3	0	0	5	21	58
09:45:00	2	1	0	0	3	3	4	0	0	7	1	0	0	0	1	11	55
BREAK																	
15:00:00	0	4	0	0	4	2	2	0	0	4	0	0	0	0	0	8	
15:15:00	0	7	0	0	7	3	4	0	0	7	0	0	0	0	0	14	
15:30:00	0	2	0	0	2	1	4	0	0	5	5	0	0	0	5	12	
15:45:00	1	5	0	0	6	3	2	0	0	5	2	0	0	0	2	13	47
16:00:00	0	10	0	0	10	1	2	0	0	3	3	1	0	1	4	17	56
16:15:00	0	9	0	0	9	2	2	0	0	4	1	0	0	0	1	14	56
16:30:00	3	6	0	0	9	0	3	0	0	3	1	1	0	0	2	14	58
16:45:00	1	8	0	0	9	1	2	0	0	3	2	0	0	0	2	14	59
17:00:00	0	12	0	0	12	3	2	0	0	5	1	0	0	0	1	18	60
17:15:00	0	6	0	0	6	0	3	0	0	3	1	1	0	0	2	11	57
17:30:00	0	10	0	0	10	5	4	0	0	9	3	2	0	0	5	24	67
17:45:00	2	6	0	0	8	1	4	0	0	5	3	0	0	0	3	16	69
18:00:00	1	4	0	0	5	0	1	0	0	1	2	1	0	0	3	9	60
18:15:00	0	1	0	0	1	2	5	0	0	7	0	0	0	0	0	8	57
18:30:00	1	3	0	0	4	1	2	0	0	3	1	0	0	0	1	8	41
18:45:00	0	4	0	0	4	0	1	0	0	1	0	0	0	0	0	5	30

Crozier & Associates
SUITE 301 40 HURON STREET
COLLINGWOOD ONTARIO, L9Y 4R3
CANADA

Grand Total	14	136	0	0	150	63	117	1	0	181	40	11	0	3	51	**382**	-
Approach%	9.3%	90.7%	0%		-	34.8%	64.6%	0.6%		-	78.4%	21.6%	0%		-	**-**	-
Totals %	3.7%	35.6%	0%		39.3%	16.5%	30.6%	0.3%		47.4%	10.5%	2.9%	0%		13.4%	**-**	-
Heavy	2	8	0		-	8	4	0		-	4	0	0		-	**-**	-
Heavy %	14.3%	5.9%	0%		-	12.7%	3.4%	0%		-	10%	0%	0%		-	**-**	-
Bicycles	-	-	-		-	-	-	-		-	-	-	-		-	**-**	-
Bicycle %	-	-	-		-	-	-	-		-	-	-	-		-	**-**	-

Crozier & Associates
SUITE 301 40 HURON STREET
COLLINGWOOD ONTARIO, L9Y 4R3
CANADA

Peak Hour: 08:45 AM - 09:45 AM Weather: Overcast Clouds (0.5 °C)

Start Time	N Approach MENOKE BEACH RD					S Approach MENOKE BEACH RD					W Approach ARDTREA DR					Int. Total (15 min)
	Right	Thru	UTurn	Peds	Approach Total	Thru	Left	UTurn	Peds	Approach Total	Right	Left	UTurn	Peds	Approach Total	
08:45:00	0	5	0	0	5	4	2	0	0	6	3	0	0	0	3	14
09:00:00	0	6	0	0	6	2	3	1	0	6	1	1	0	0	2	14
09:15:00	0	3	0	0	3	3	3	0	0	6	0	0	0	0	0	9
09:30:00	0	3	0	0	3	3	10	0	0	13	2	3	0	0	5	21
Grand Total	0	17	0	0	17	12	18	1	0	31	6	4	0	0	10	**58**
Approach%	0%	100%	0%		-	38.7%	58.1%	3.2%		-	60%	40%	0%		-	**-**
Totals %	0%	29.3%	0%		29.3%	20.7%	31%	1.7%		53.4%	10.3%	6.9%	0%		17.2%	**-**
PHF	0	0.71	0		0.71	0.75	0.45	0.25		0.6	0.5	0.33	0		0.5	**-**
Heavy	0	2	0		2	2	1	0		3	2	0	0		2	**-**
Heavy %	0%	11.8%	0%		11.8%	16.7%	5.6%	0%		9.7%	33.3%	0%	0%		20%	**-**
Lights	0	15	0		15	10	17	1		28	4	4	0		8	**-**
Lights %	0%	88.2%	0%		88.2%	83.3%	94.4%	100%		90.3%	66.7%	100%	0%		80%	**-**
Single-Unit Trucks	0	0	0		0	1	0	0		1	0	0	0		0	**-**
Single-Unit Trucks %	0%	0%	0%		0%	8.3%	0%	0%		3.2%	0%	0%	0%		0%	**-**
Buses	0	2	0		2	1	0	0		1	1	0	0		1	**-**
Buses %	0%	11.8%	0%		11.8%	8.3%	0%	0%		3.2%	16.7%	0%	0%		10%	**-**
Articulated Trucks	0	0	0		0	0	1	0		1	1	0	0		1	**-**
Articulated Trucks %	0%	0%	0%		0%	0%	5.6%	0%		3.2%	16.7%	0%	0%		10%	**-**
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	0%		-	-	-	0%		-	-	-	0%		**-**

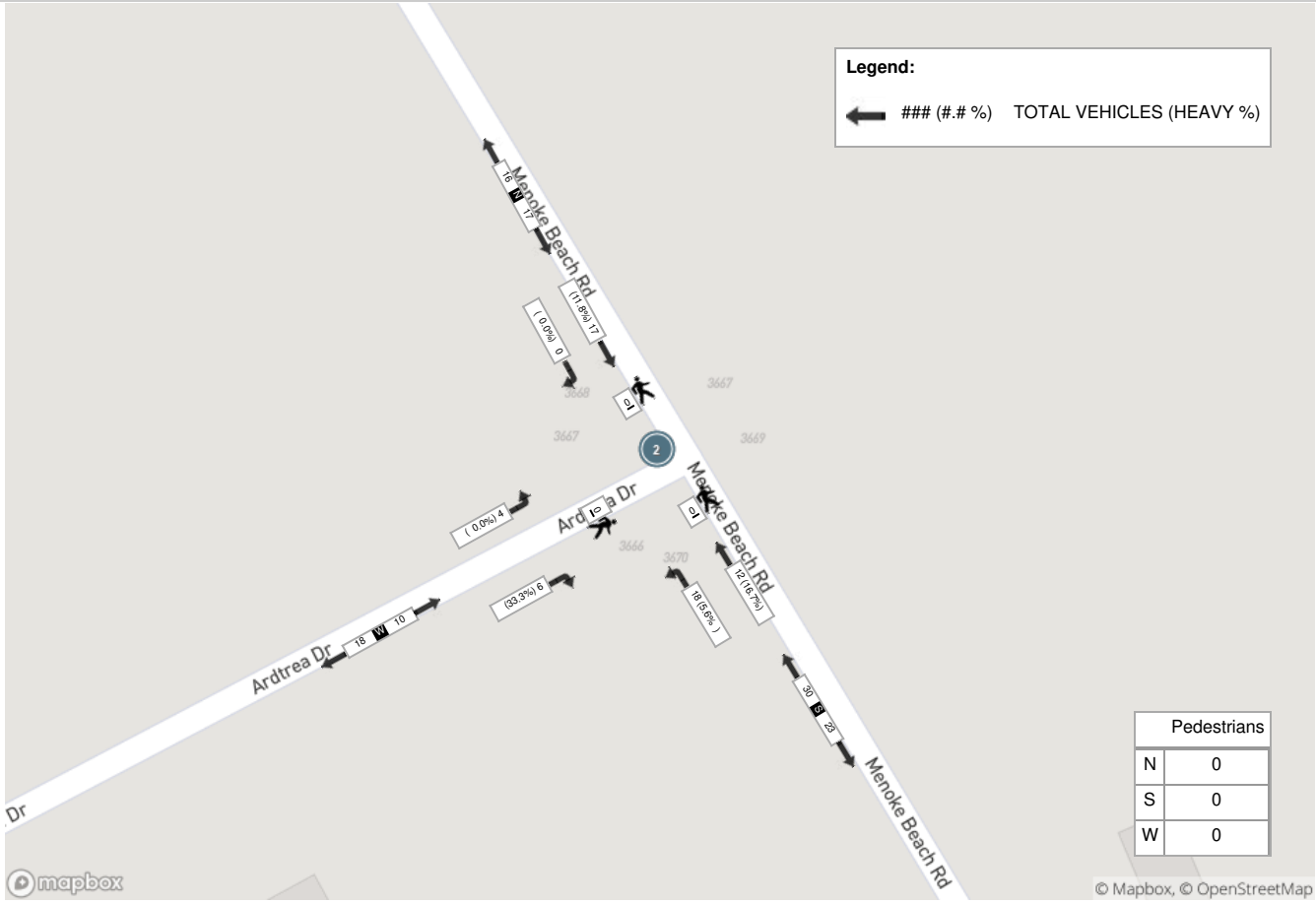
Crozier & Associates
SUITE 301 40 HURON STREET
COLLINGWOOD ONTARIO, L9Y 4R3
CANADA

Peak Hour: 05:00 PM - 06:00 PM Weather: Overcast Clouds (2.74 °C)

Start Time	N Approach MENOKE BEACH RD					S Approach MENOKE BEACH RD					W Approach ARDTREA DR					Int. Total (15 min)
	Right	Thru	UTurn	Peds	Approach Total	Thru	Left	UTurn	Peds	Approach Total	Right	Left	UTurn	Peds	Approach Total	
17:00:00	0	12	0	0	12	3	2	0	0	5	1	0	0	0	1	18
17:15:00	0	6	0	0	6	0	3	0	0	3	1	1	0	0	2	11
17:30:00	0	10	0	0	10	5	4	0	0	9	3	2	0	0	5	24
17:45:00	2	6	0	0	8	1	4	0	0	5	3	0	0	0	3	16
Grand Total	2	34	0	0	36	9	13	0	0	22	8	3	0	0	11	**69**
Approach%	5.6%	94.4%	0%		-	40.9%	59.1%	0%		-	72.7%	27.3%	0%		-	**-**
Totals %	2.9%	49.3%	0%		52.2%	13%	18.8%	0%		31.9%	11.6%	4.3%	0%		15.9%	**-**
PHF	0.25	0.71	0		0.75	0.45	0.81	0		0.61	0.67	0.38	0		0.55	**-**
Heavy	0	0	0		0	0	0	0		0	0	0	0		0	**-**
Heavy %	0%	0%	0%		0%	0%	0%	0%		0%	0%	0%	0%		0%	**-**
Lights	2	34	0		36	9	13	0		22	8	3	0		11	**-**
Lights %	100%	100%	0%		100%	100%	100%	0%		100%	100%	100%	0%		100%	**-**
Single-Unit Trucks	0	0	0		0	0	0	0		0	0	0	0		0	**-**
Single-Unit Trucks %	0%	0%	0%		0%	0%	0%	0%		0%	0%	0%	0%		0%	**-**
Buses	0	0	0		0	0	0	0		0	0	0	0		0	**-**
Buses %	0%	0%	0%		0%	0%	0%	0%		0%	0%	0%	0%		0%	**-**
Articulated Trucks	0	0	0		0	0	0	0		0	0	0	0		0	**-**
Articulated Trucks %	0%	0%	0%		0%	0%	0%	0%		0%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	0%		-	-	-	0%		-	-	-	0%		**-**

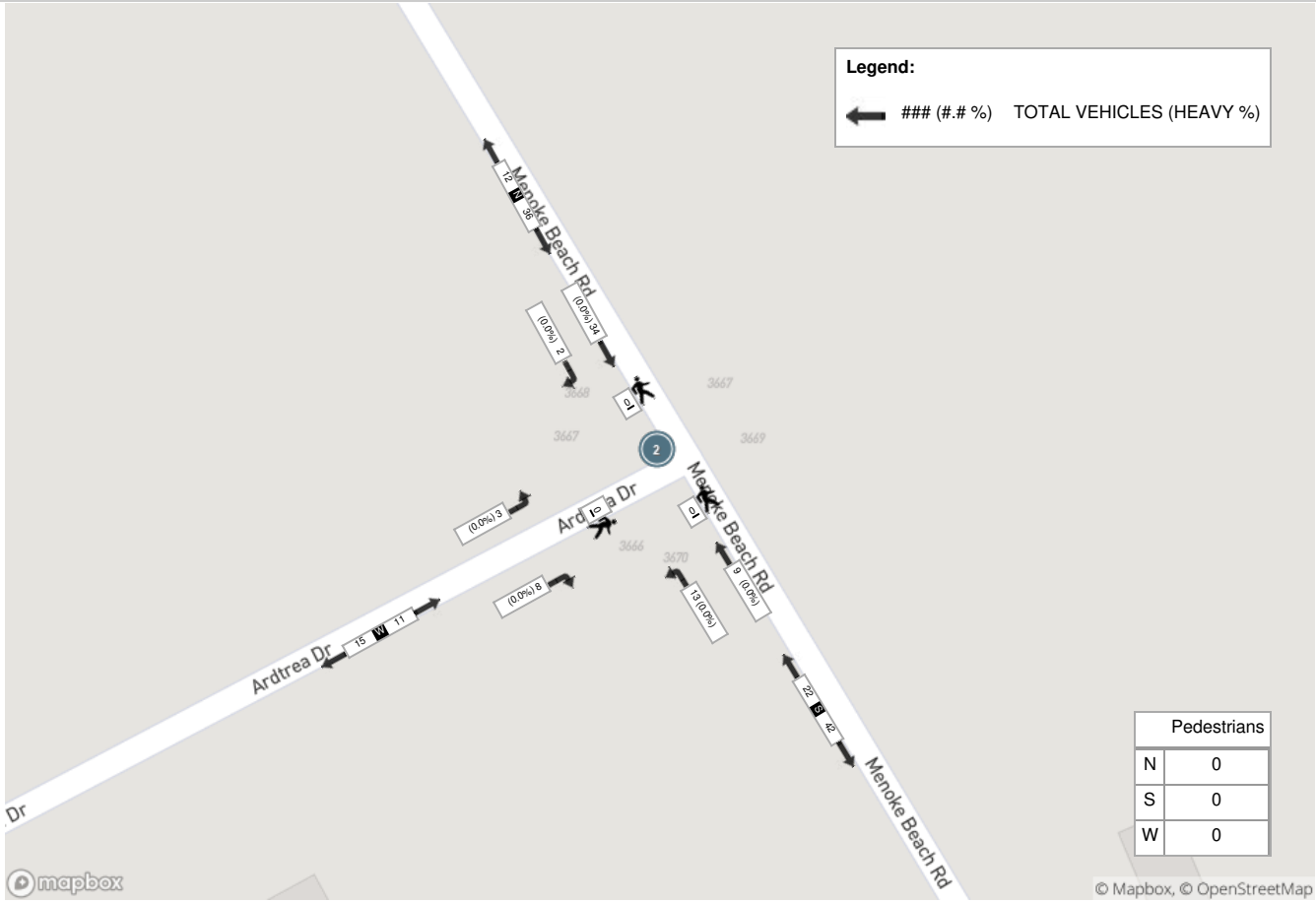
Crozier & Associates
SUITE 301 40 HURON STREET
COLLINGWOOD ONTARIO, L9Y 4R3
CANADA

Peak Hour: 08:45 AM - 09:45 AM Weather: Overcast Clouds (0.5 °C)



Crozier & Associates
SUITE 301 40 HURON STREET
COLLINGWOOD ONTARIO, L9Y 4R3
CANADA

Peak Hour: 05:00 PM - 06:00 PM Weather: Overcast Clouds (2.74 °C)



Spectrum

Turning Movement Count
Location Name: MENOKE BEACH RD & HWY 11
Date: Wed, Dec 01, 2021 Deployment Lead: Theo Daglis

Crozier & Associates
SUITE 301 40 HURON STREET
COLLINGWOOD ONTARIO, L9Y 4R3
CANADA

Turning Movement Count (1 . MENOKE BEACH RD & HWY 11)

Start Time	N Approach BRENNAN LINE						E Approach HWY 11						S Approach MENOKE BEACH RD						W Approach HWY 11						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	UTurn W:W	Peds W:	Approach Total		
06:00:00	1	0	0	0	0	1	0	86	0	0	0	86	1	0	0	0	0	1	1	86	0	0	0	87	175	
06:15:00	2	0	0	0	0	2	0	138	0	0	0	138	1	0	0	0	0	1	1	103	0	0	0	104	245	
06:30:00	3	0	0	0	0	3	1	152	0	0	0	153	1	0	0	0	0	1	3	127	0	0	0	130	287	
06:45:00	5	0	0	0	0	5	0	147	0	0	0	147	1	0	0	0	0	1	3	144	0	0	0	147	300	1007
07:00:00	1	0	0	0	0	1	1	182	0	0	0	183	5	0	0	0	0	5	0	162	0	0	0	162	351	1183
07:15:00	4	0	0	0	0	4	0	219	0	0	0	219	1	0	0	0	0	1	2	176	0	0	0	178	402	1340
07:30:00	5	0	0	0	0	5	0	273	0	0	0	273	4	0	0	0	0	4	1	169	0	0	0	170	452	1505
07:45:00	9	0	0	0	0	9	1	254	0	0	0	255	3	0	0	0	0	3	3	212	0	0	0	215	482	1687
08:00:00	6	0	0	0	0	6	0	230	0	0	0	230	4	0	0	0	0	4	4	195	0	0	0	199	439	1775
08:15:00	9	0	0	0	0	9	0	244	0	0	0	244	1	0	0	0	0	1	3	206	0	0	0	209	463	1836
08:30:00	4	0	0	0	0	4	0	191	0	0	0	191	1	0	0	0	0	1	3	182	0	0	0	185	381	1765
08:45:00	0	0	0	0	0	0	1	227	0	0	0	228	4	0	0	0	0	4	5	164	0	0	0	169	401	1684
09:00:00	3	0	0	0	0	3	0	207	0	0	0	207	3	0	0	0	0	3	6	173	0	0	0	179	392	1637
09:15:00	3	0	0	0	0	3	2	220	0	0	0	222	3	0	0	0	0	3	3	172	0	0	0	175	403	1577
09:30:00	4	0	0	0	0	4	0	244	0	0	0	244	5	0	0	0	0	5	4	176	0	0	0	180	433	1629
09:45:00	3	0	0	0	0	3	2	211	0	0	0	213	2	0	0	0	0	2	2	151	0	0	0	153	371	1599
BREAK																										
15:00:00	4	0	0	0	0	4	3	212	0	0	0	215	2	0	0	0	0	2	4	247	0	0	0	251	472	
15:15:00	2	0	0	0	0	2	0	233	0	0	0	233	3	0	0	0	0	3	7	248	0	0	0	255	493	
15:30:00	2	0	0	0	0	2	0	245	0	0	0	245	1	0	0	0	0	1	2	267	0	0	0	269	517	
15:45:00	3	0	0	0	0	3	0	226	0	0	0	226	4	0	0	0	0	4	8	247	0	0	0	255	488	1970
16:00:00	2	0	0	0	0	2	4	255	0	0	0	259	2	0	0	0	0	2	9	295	0	0	0	304	567	2065
16:15:00	2	0	0	0	0	2	4	260	0	0	0	264	2	0	0	0	0	2	10	304	0	0	0	314	582	2154
16:30:00	2	0	0	0	0	2	1	266	0	0	0	267	1	0	0	0	0	1	6	286	0	0	0	292	562	2199
16:45:00	4	0	0	0	0	4	1	269	0	0	0	270	1	0	0	0	0	1	11	307	0	0	0	318	593	2304
17:00:00	5	0	0	0	0	5	3	262	0	0	0	265	3	0	0	0	0	3	9	301	0	0	0	310	583	2320
17:15:00	4	0	0	0	0	4	2	251	0	0	0	253	2	0	0	0	0	2	9	271	0	0	0	280	539	2277
17:30:00	4	0	0	0	0	4	4	219	0	0	0	223	6	0	0	0	0	6	8	228	0	0	0	236	469	2184
17:45:00	3	0	0	0	0	3	2	200	0	0	0	202	1	0	0	0	0	1	8	198	0	0	0	206	412	2003
18:00:00	1	0	0	0	0	1	2	161	0	0	0	163	1	0	0	0	0	1	4	209	0	0	0	213	378	1798
18:15:00	2	0	0	0	0	2	0	144	0	0	0	144	2	0	0	0	0	2	1	175	0	0	0	176	324	1583
18:30:00	0	0	0	0	0	0	0	132	0	0	0	132	1	0	0	0	0	1	4	154	0	0	0	158	291	1405
18:45:00	0	0	0	0	0	0	2	123	0	0	0	125	0	0	0	0	0	0	4	142	0	0	0	146	271	1264
Grand Total	102	0	0	0	0	102	36	6683	0	0	0	6719	72	0	0	0	0	72	148	6477	0	0	0	6625	**13518**	-
Approach%	100%	0%	0%	0%		-	0.5%	99.5%	0%	0%		-	100%	0%	0%	0%		-	2.2%	97.8%	0%	0%		-	-	-
Totals %	0.8%	0%	0%	0%		0.8%	0.3%	49.4%	0%	0%		49.7%	0.5%	0%	0%	0%		0.5%	1.1%	47.9%	0%	0%		49%	-	-
Heavy	12	0	0	0		-	7	661	0	0		-	8	0	0	0		-	10	628	0	0		-	-	-
Heavy %	11.8%	0%	0%	0%		-	19.4%	9.9%	0%	0%		-	11.1%	0%	0%	0%		-	6.8%	9.7%	0%	0%		-	-	-
Bicycles	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-
Bicycle %	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-

Crozier & Associates
SUITE 301 40 HURON STREET
COLLINGWOOD ONTARIO, L9Y 4R3
CANADA

Peak Hour: 07:30 AM - 08:30 AM **Weather: Overcast Clouds (0.5 °C)**

Start Time	N Approach BRENNAN LINE						E Approach HWY 11						S Approach MENOKE BEACH RD						W Approach HWY 11						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
07:30:00	5	0	0	0	0	5	0	273	0	0	0	273	4	0	0	0	0	4	1	169	0	0	0	170	452
07:45:00	9	0	0	0	0	9	1	254	0	0	0	255	3	0	0	0	0	3	3	212	0	0	0	215	482
08:00:00	6	0	0	0	0	6	0	230	0	0	0	230	4	0	0	0	0	4	4	195	0	0	0	199	439
08:15:00	9	0	0	0	0	9	0	244	0	0	0	244	1	0	0	0	0	1	3	206	0	0	0	209	463
Grand Total	29	0	0	0	0	29	1	1001	0	0	0	1002	12	0	0	0	0	12	11	782	0	0	0	793	**1836**
Approach%	100%	0%	0%	0%		-	0.1%	99.9%	0%	0%		-	100%	0%	0%	0%		-	1.4%	98.6%	0%	0%		-	**-**
Totals %	1.6%	0%	0%	0%		1.6%	0.1%	54.5%	0%	0%		54.6%	0.7%	0%	0%	0%		0.7%	0.6%	42.6%	0%	0%		43.2%	**-**
PHF	0.81	0	0	0		0.81	0.25	0.92	0	0		0.92	0.75	0	0	0		0.75	0.69	0.92	0	0		0.92	**-**
Heavy	4	0	0	0		4	0	67	0	0		67	2	0	0	0		2	1	114	0	0		115	**-**
Heavy %	13.8%	0%	0%	0%		13.8%	0%	6.7%	0%	0%		6.7%	16.7%	0%	0%	0%		16.7%	9.1%	14.6%	0%	0%		14.5%	**-**
Lights	25	0	0	0		25	1	934	0	0		935	10	0	0	0		10	10	668	0	0		678	**-**
Lights %	86.2%	0%	0%	0%		86.2%	100%	93.3%	0%	0%		93.3%	83.3%	0%	0%	0%		83.3%	90.9%	85.4%	0%	0%		85.5%	**-**
Single-Unit Trucks	0	0	0	0		0	0	17	0	0		17	1	0	0	0		1	1	40	0	0		41	**-**
Single-Unit Trucks %	0%	0%	0%	0%		0%	0%	1.7%	0%	0%		1.7%	8.3%	0%	0%	0%		8.3%	9.1%	5.1%	0%	0%		5.2%	**-**
Buses	3	0	0	0		3	0	11	0	0		11	1	0	0	0		1	0	8	0	0		8	**-**
Buses %	10.3%	0%	0%	0%		10.3%	0%	1.1%	0%	0%		1.1%	8.3%	0%	0%	0%		8.3%	0%	1%	0%	0%		1%	**-**
Articulated Trucks	1	0	0	0		1	0	39	0	0		39	0	0	0	0		0	0	66	0	0		66	**-**
Articulated Trucks %	3.4%	0%	0%	0%		3.4%	0%	3.9%	0%	0%		3.9%	0%	0%	0%	0%		0%	0%	8.4%	0%	0%		8.3%	**-**

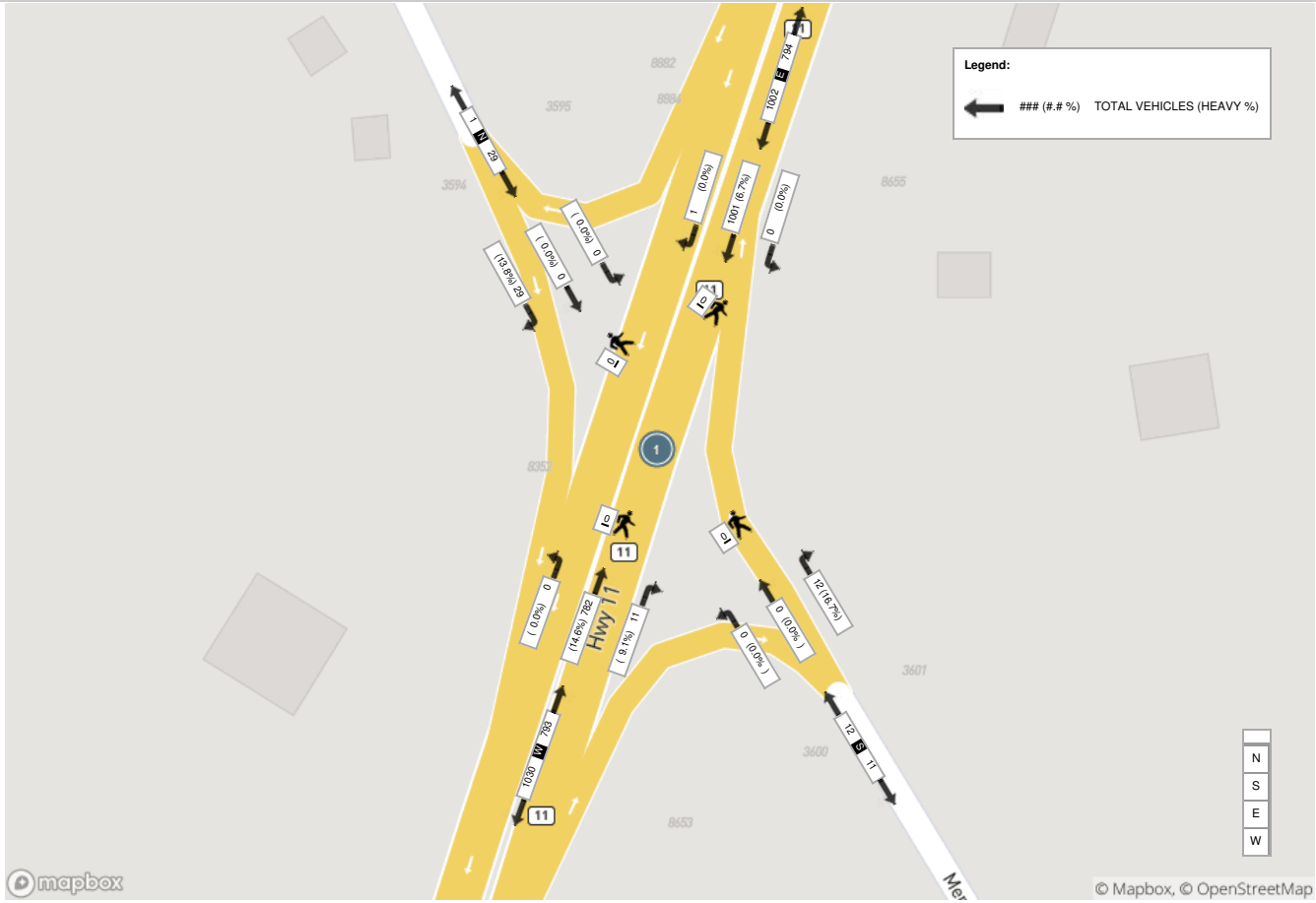
Crozier & Associates
SUITE 301 40 HURON STREET
COLLINGWOOD ONTARIO, L9Y 4R3
CANADA

Peak Hour: 04:15 PM - 05:15 PM Weather: Overcast Clouds (2.74 °C)

Start Time	N Approach BRENNAN LINE						E Approach HWY 11						S Approach MENOKE BEACH RD						W Approach HWY 11						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
16:15:00	2	0	0	0	0	2	4	260	0	0	0	264	2	0	0	0	0	2	10	304	0	0	0	314	582
16:30:00	2	0	0	0	0	2	1	266	0	0	0	267	1	0	0	0	0	1	6	286	0	0	0	292	562
16:45:00	4	0	0	0	0	4	1	269	0	0	0	270	1	0	0	0	0	1	11	307	0	0	0	318	593
17:00:00	5	0	0	0	0	5	3	262	0	0	0	265	3	0	0	0	0	3	9	301	0	0	0	310	583
Grand Total	13	0	0	0	0	13	9	1057	0	0	0	1066	7	0	0	0	0	7	36	1198	0	0	0	1234	**2320**
Approach%	100%	0%	0%	0%		-	0.8%	99.2%	0%	0%		-	100%	0%	0%	0%		-	2.9%	97.1%	0%	0%		-	**-**
Totals %	0.6%	0%	0%	0%		0.6%	0.4%	45.6%	0%	0%		45.9%	0.3%	0%	0%	0%		0.3%	1.6%	51.6%	0%	0%		53.2%	**-**
PHF	0.65	0	0	0		0.65	0.56	0.98	0	0		0.99	0.58	0	0	0		0.58	0.82	0.98	0	0		0.97	**-**
Heavy	1	0	0	0		1	1	89	0	0		90	1	0	0	0		1	1	47	0	0		48	**-**
Heavy %	7.7%	0%	0%	0%		7.7%	11.1%	8.4%	0%	0%		8.4%	14.3%	0%	0%	0%		14.3%	2.8%	3.9%	0%	0%		3.9%	**-**
Lights	12	0	0	0		12	8	968	0	0		976	6	0	0	0		6	35	1151	0	0		1186	**-**
Lights %	92.3%	0%	0%	0%		92.3%	88.9%	91.6%	0%	0%		91.6%	85.7%	0%	0%	0%		85.7%	97.2%	96.1%	0%	0%		96.1%	**-**
Single-Unit Trucks	0	0	0	0		0	1	27	0	0		28	0	0	0	0		0	0	8	0	0		8	**-**
Single-Unit Trucks %	0%	0%	0%	0%		0%	11.1%	2.6%	0%	0%		2.6%	0%	0%	0%	0%		0%	0%	0.7%	0%	0%		0.6%	**-**
Buses	0	0	0	0		0	0	7	0	0		7	1	0	0	0		1	1	3	0	0		4	**-**
Buses %	0%	0%	0%	0%		0%	0%	0.7%	0%	0%		0.7%	14.3%	0%	0%	0%		14.3%	2.8%	0.3%	0%	0%		0.3%	**-**
Articulated Trucks	1	0	0	0		1	0	55	0	0		55	0	0	0	0		0	0	36	0	0		36	**-**
Articulated Trucks %	7.7%	0%	0%	0%		7.7%	0%	5.2%	0%	0%		5.2%	0%	0%	0%	0%		0%	0%	3%	0%	0%		2.9%	**-**

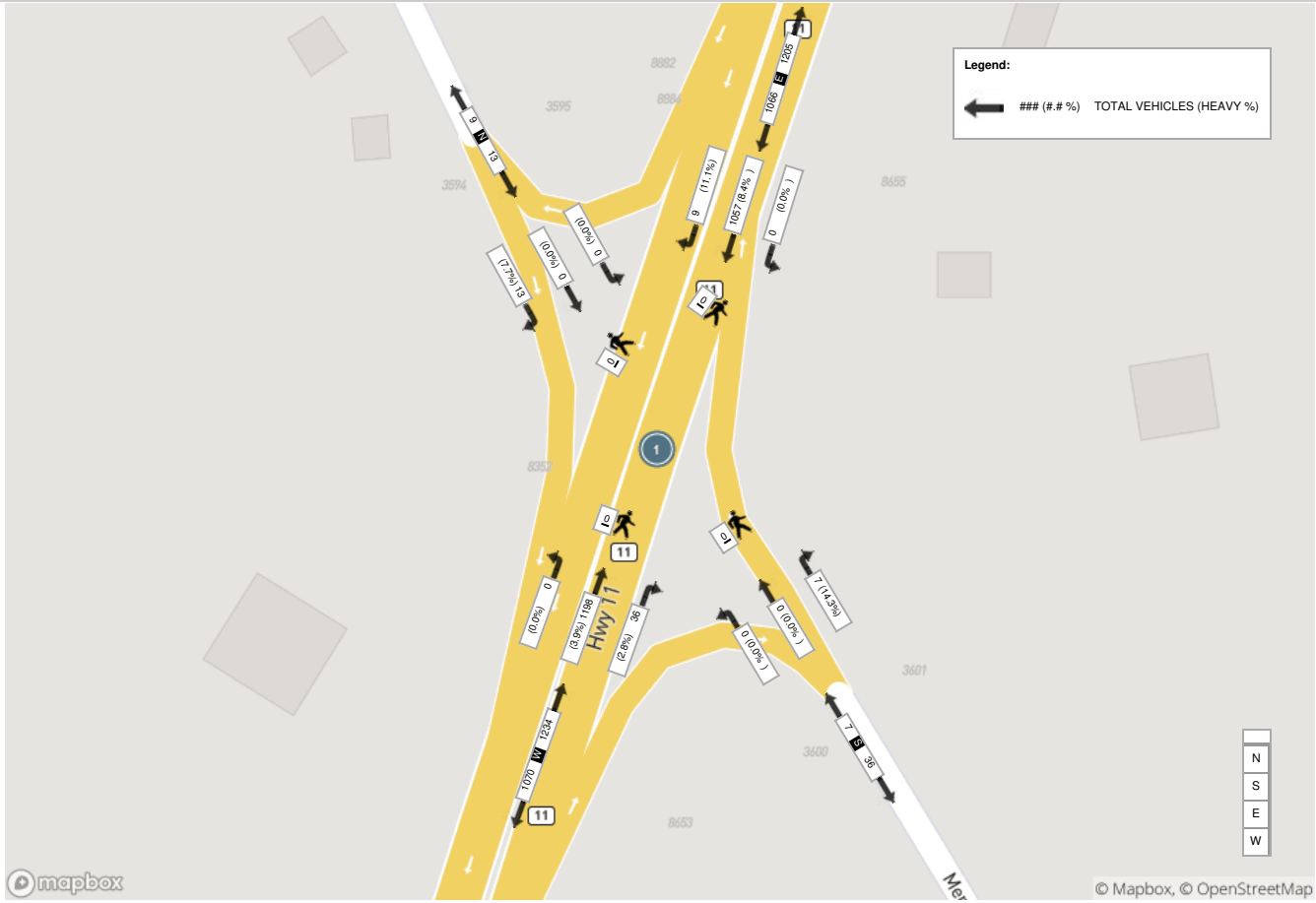
Crozier & Associates
SUITE 301 40 HURON STREET
COLLINGWOOD ONTARIO, L9Y 4R3
CANADA

Peak Hour: 07:30 AM - 08:30 AM **Weather: Overcast Clouds (0.5 °C)**



Crozier & Associates
SUITE 301 40 HURON STREET
COLLINGWOOD ONTARIO, L9Y 4R3
CANADA

Peak Hour: 04:15 PM - 05:15 PM **Weather: Overcast Clouds (2.74 °C)**



Crozier & Associates
SUITE 301 40 HURON STREET
COLLINGWOOD ONTARIO, L9Y 4R3
CANADA

Turning Movement Count (3 . SOULES RD / TELFORD LINE & HIGHWAY 11)

Start Time	N Approach TELFORD LINE				E Approach HIGHWAY 11					S Approach SOULES RD				W Approach HWY 11					Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	UTurn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	UTurn E:E	Peds E:	Approach Total	Right S:E	UTurn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	UTurn W:W	Peds W:	Approach Total		
06:00:00	16	0	0	16	1	82	0	0	83	4	0	0	4	7	86	0	0	93	196	
06:15:00	15	0	0	15	4	121	0	0	125	4	0	0	4	11	99	0	0	110	254	
06:30:00	25	0	0	25	7	153	0	0	160	10	0	0	10	9	116	0	0	125	320	
06:45:00	20	0	0	20	1	134	0	0	135	9	0	0	9	10	132	0	0	142	306	1076
07:00:00	10	0	0	10	7	167	0	0	174	14	0	0	14	5	149	0	0	154	352	1232
07:15:00	18	0	0	18	8	219	0	0	227	21	0	0	21	12	163	0	0	175	441	1419
07:30:00	21	0	0	21	8	256	0	0	264	6	0	0	6	6	173	0	0	179	470	1569
07:45:00	29	0	0	29	10	254	0	0	264	18	0	0	18	15	191	0	0	206	517	1780
08:00:00	20	0	0	20	10	231	0	0	241	12	0	0	12	5	198	0	0	203	476	1904
08:15:00	31	0	0	31	10	234	0	0	244	17	0	0	17	10	194	0	0	204	496	1959
08:30:00	26	0	0	26	9	190	0	0	199	15	0	0	15	11	167	0	0	178	418	1907
08:45:00	15	0	0	15	7	220	0	0	227	14	0	0	14	13	161	0	0	174	430	1820
09:00:00	9	0	0	9	11	201	0	0	212	13	0	0	13	6	165	0	0	171	405	1749
09:15:00	17	0	0	17	7	222	0	0	229	7	0	0	7	13	172	0	0	185	438	1691
09:30:00	24	0	0	24	12	223	0	0	235	9	0	0	9	13	175	0	0	188	456	1729
09:45:00	26	0	0	26	6	220	0	0	226	11	0	0	11	14	141	0	0	155	418	1717
BREAK																				
15:00:00	20	0	0	20	11	201	0	0	212	13	0	0	13	15	235	0	0	250	495	
15:15:00	18	0	0	18	12	224	0	0	236	13	0	0	13	17	244	0	0	261	528	
15:30:00	10	0	0	10	17	232	0	0	249	15	0	0	15	23	254	0	0	277	551	
15:45:00	22	0	0	22	15	223	0	0	238	17	0	0	17	25	243	0	0	268	545	2119
16:00:00	19	0	0	19	14	236	0	0	250	21	0	0	21	24	293	0	0	317	607	2231
16:15:00	20	0	0	20	14	238	0	0	252	21	0	0	21	30	282	0	0	312	605	2308
16:30:00	19	0	0	19	14	259	0	0	273	16	0	0	16	25	273	0	0	298	606	2363
16:45:00	21	0	0	21	18	256	0	0	274	24	0	0	24	25	294	0	0	319	638	2456
17:00:00	15	0	0	15	6	260	0	0	266	16	0	0	16	20	291	0	0	311	608	2457
17:15:00	20	0	0	20	17	240	0	0	257	14	0	0	14	30	255	0	0	285	576	2428
17:30:00	12	0	0	12	15	205	0	0	220	13	0	0	13	12	217	0	0	229	474	2296
17:45:00	19	0	0	19	8	196	0	0	204	11	0	0	11	13	188	0	0	201	435	2093
18:00:00	14	0	0	14	7	153	0	0	160	8	0	0	8	19	207	0	0	226	408	1893
18:15:00	10	0	0	10	3	150	0	0	153	8	0	0	8	15	164	0	0	179	350	1667
18:30:00	7	0	0	7	5	132	0	0	137	9	0	0	9	10	142	0	0	152	305	1498
18:45:00	10	0	0	10	6	113	0	0	119	4	0	0	4	9	136	0	0	145	278	1341
Grand Total	578	0	0	578	300	6445	0	0	6745	407	0	0	407	472	6200	0	0	6672	**14402**	-
Approach%	100%	0%		-	4.4%	95.6%	0%		-	100%	0%		-	7.1%	92.9%	0%		-	**-**	-

Totals %	4%	0%	4%	2.1%	44.8%	0%	46.8%	2.8%	0%	2.8%	3.3%	43%	0%	46.3%	**-**	-
Heavy	26	0	-	26	639	0	-	30	0	-	30	611	0	-	**-**	-
Heavy %	4.5%	0%	-	8.7%	9.9%	0%	-	7.4%	0%	-	6.4%	9.9%	0%	-	**-**	-
Bicycles	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**-**	-
Bicycle %	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**-**	-

Crozier & Associates
SUITE 301 40 HURON STREET
COLLINGWOOD ONTARIO, L9Y 4R3
CANADA

Peak Hour: 07:30 AM - 08:30 AM Weather: Overcast Clouds (0.5 °C)

Start Time	N Approach TELFORD LINE				E Approach HIGHWAY 11					S Approach SOULES RD				W Approach HWY 11					Int. Total (15 min)
	Right	UTurn	Peds	Approach Total	Right	Thru	UTurn	Peds	Approach Total	Right	UTurn	Peds	Approach Total	Right	Thru	UTurn	Peds	Approach Total	
07:30:00	21	0	0	21	8	256	0	0	264	6	0	0	6	6	173	0	0	179	470
07:45:00	29	0	0	29	10	254	0	0	264	18	0	0	18	15	191	0	0	206	517
08:00:00	20	0	0	20	10	231	0	0	241	12	0	0	12	5	198	0	0	203	476
08:15:00	31	0	0	31	10	234	0	0	244	17	0	0	17	10	194	0	0	204	496
Grand Total	101	0	0	101	38	975	0	0	1013	53	0	0	53	36	756	0	0	792	**1959**
Approach%	100%	0%		-	3.8%	96.2%	0%		-	100%	0%		-	4.5%	95.5%	0%		-	**-**
Totals %	5.2%	0%		5.2%	1.9%	49.8%	0%		51.7%	2.7%	0%		2.7%	1.8%	38.6%	0%		40.4%	**-**
PHF	0.81	0		0.81	0.95	0.95	0		0.96	0.74	0		0.74	0.6	0.95	0		0.96	**-**
Heavy	2	0		2	3	71	0		74	4	0		4	4	103	0		107	**-**
Heavy %	2%	0%		2%	7.9%	7.3%	0%		7.3%	7.5%	0%		7.5%	11.1%	13.6%	0%		13.5%	**-**
Lights	99	0		99	35	904	0		939	49	0		49	32	653	0		685	**-**
Lights %	98%	0%		98%	92.1%	92.7%	0%		92.7%	92.5%	0%		92.5%	88.9%	86.4%	0%		86.5%	**-**
Single-Unit Trucks	1	0		1	2	19	0		21	3	0		3	2	34	0		36	**-**
Single-Unit Trucks %	1%	0%		1%	5.3%	1.9%	0%		2.1%	5.7%	0%		5.7%	5.6%	4.5%	0%		4.5%	**-**
Buses	1	0		1	1	11	0		12	0	0		0	2	8	0		10	**-**
Buses %	1%	0%		1%	2.6%	1.1%	0%		1.2%	0%	0%		0%	5.6%	1.1%	0%		1.3%	**-**
Articulated Trucks	0	0		0	0	41	0		41	1	0		1	0	61	0		61	**-**
Articulated Trucks %	0%	0%		0%	0%	4.2%	0%		4%	1.9%	0%		1.9%	0%	8.1%	0%		7.7%	**-**

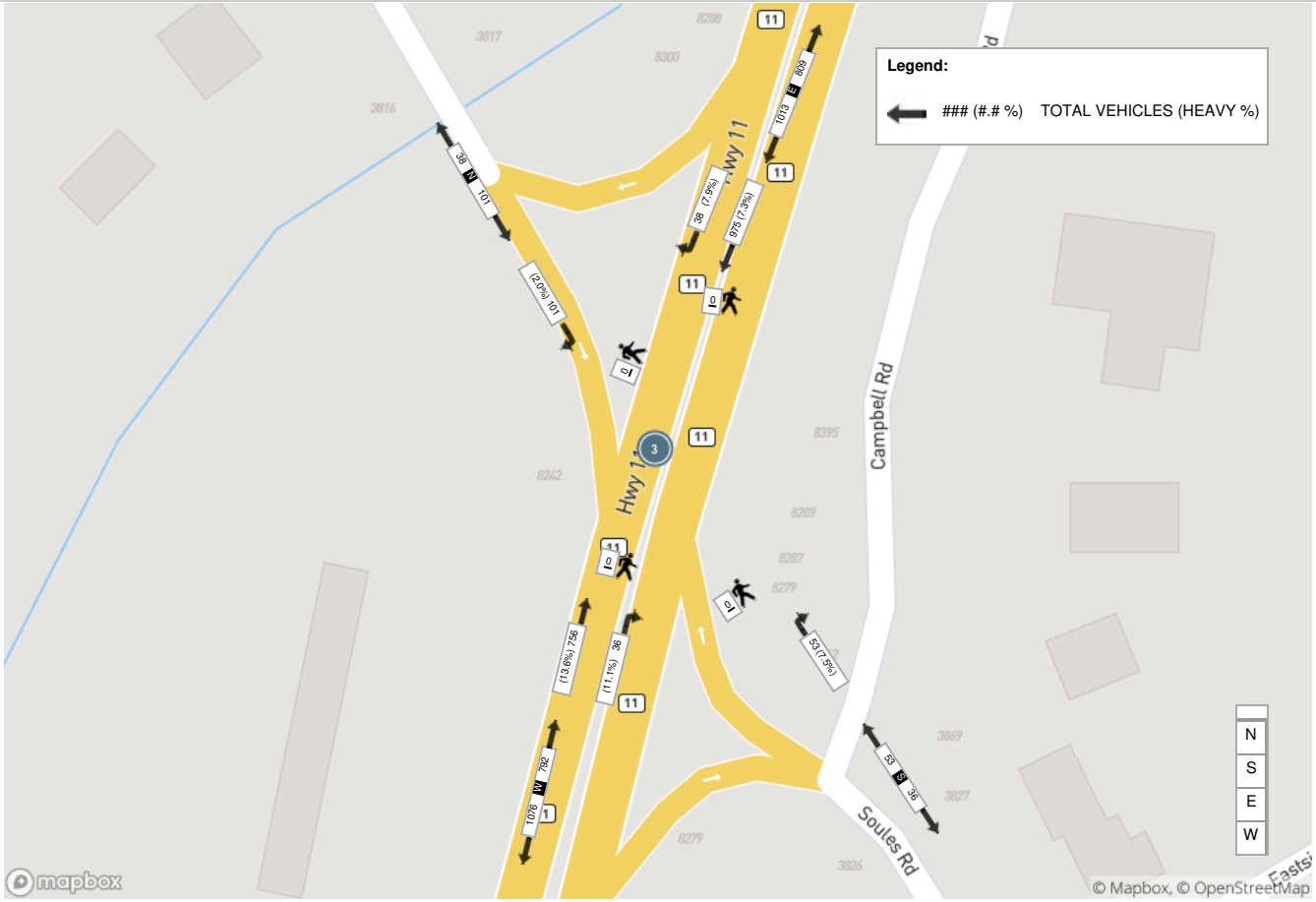
Crozier & Associates
SUITE 301 40 HURON STREET
COLLINGWOOD ONTARIO, L9Y 4R3
CANADA

Peak Hour: 04:15 PM - 05:15 PM Weather: Overcast Clouds (2.74 °C)

Start Time	N Approach TELFORD LINE				E Approach HIGHWAY 11					S Approach SOULES RD				W Approach HWY 11					Int. Total (15 min)
	Right	UTurn	Peds	Approach Total	Right	Thru	UTurn	Peds	Approach Total	Right	UTurn	Peds	Approach Total	Right	Thru	UTurn	Peds	Approach Total	
16:15:00	20	0	0	20	14	238	0	0	252	21	0	0	21	30	282	0	0	312	605
16:30:00	19	0	0	19	14	259	0	0	273	16	0	0	16	25	273	0	0	298	606
16:45:00	21	0	0	21	18	256	0	0	274	24	0	0	24	25	294	0	0	319	638
17:00:00	15	0	0	15	6	260	0	0	266	16	0	0	16	20	291	0	0	311	608
Grand Total	75	0	0	75	52	1013	0	0	1065	77	0	0	77	100	1140	0	0	1240	**2457**
Approach%	100%	0%		-	4.9%	95.1%	0%		-	100%	0%		-	8.1%	91.9%	0%		-	**-**
Totals %	3.1%	0%		3.1%	2.1%	41.2%	0%		43.3%	3.1%	0%		3.1%	4.1%	46.4%	0%		50.5%	**-**
PHF	0.89	0		0.89	0.72	0.97	0		0.97	0.8	0		0.8	0.83	0.97	0		0.97	**-**
Heavy	1	0		1	2	88	0		90	1	0		1	1	47	0		48	**-**
Heavy %	1.3%	0%		1.3%	3.8%	8.7%	0%		8.5%	1.3%	0%		1.3%	1%	4.1%	0%		3.9%	**-**
Lights	74	0		74	50	925	0		975	76	0		76	99	1093	0		1192	**-**
Lights %	98.7%	0%		98.7%	96.2%	91.3%	0%		91.5%	98.7%	0%		98.7%	99%	95.9%	0%		96.1%	**-**
Single-Unit Trucks	0	0		0	1	25	0		26	0	0		0	0	8	0		8	**-**
Single-Unit Trucks %	0%	0%		0%	1.9%	2.5%	0%		2.4%	0%	0%		0%	0%	0.7%	0%		0.6%	**-**
Buses	0	0		0	0	6	0		6	0	0		0	1	4	0		5	**-**
Buses %	0%	0%		0%	0%	0.6%	0%		0.6%	0%	0%		0%	1%	0.4%	0%		0.4%	**-**
Articulated Trucks	1	0		1	1	57	0		58	1	0		1	0	35	0		35	**-**
Articulated Trucks %	1.3%	0%		1.3%	1.9%	5.6%	0%		5.4%	1.3%	0%		1.3%	0%	3.1%	0%		2.8%	**-**

Crozier & Associates
SUITE 301 40 HURON STREET
COLLINGWOOD ONTARIO, L9Y 4R3
CANADA

Peak Hour: 07:30 AM - 08:30 AM Weather: Overcast Clouds (0.5 °C)



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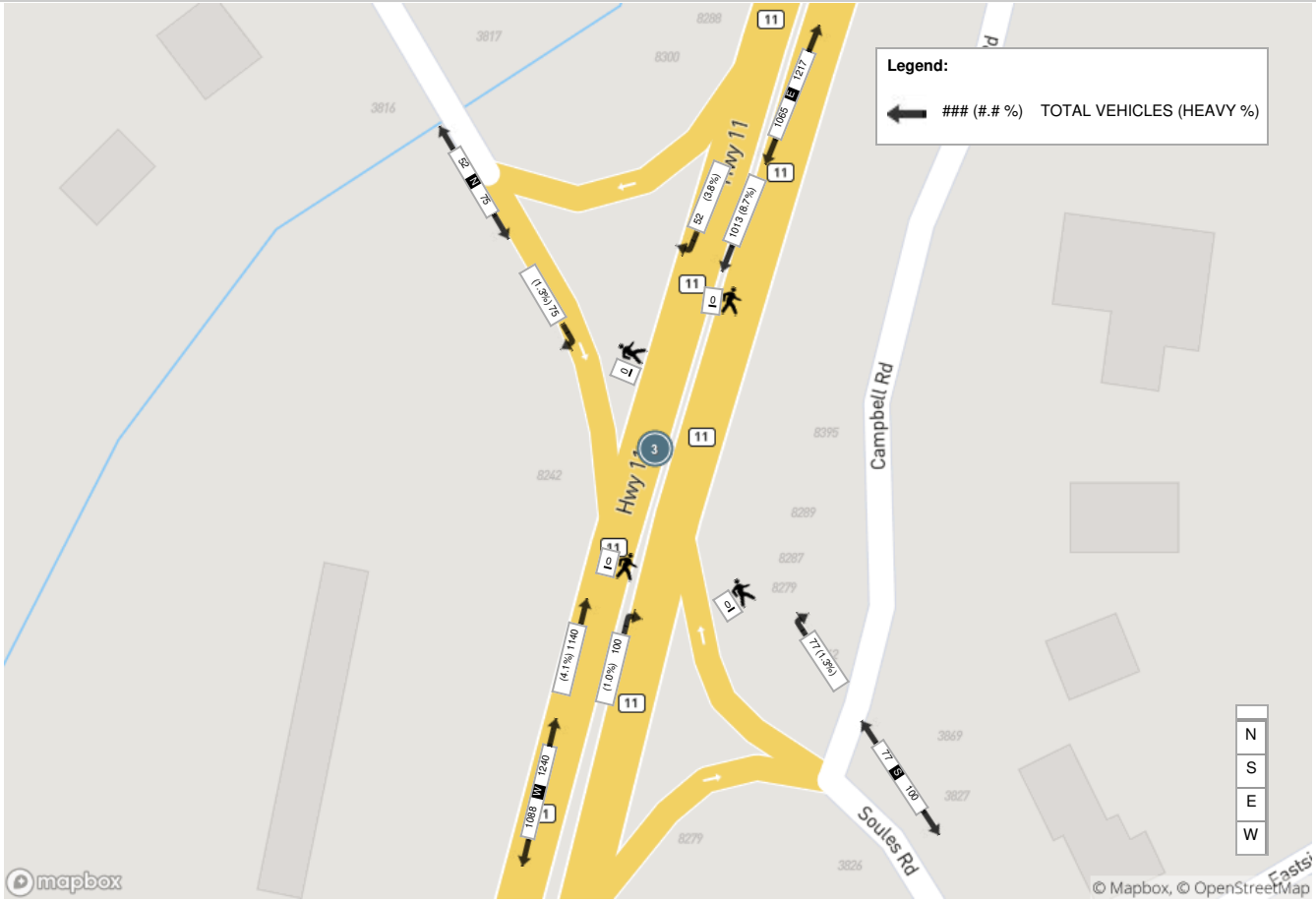
SUITE 301 40 HURON STREET
COLLINGWOOD ONTARIO, L9Y 4R3
CANADA

Peak Hour: 04:15 PM - 05:15 PM Weather: Overcast Clouds (2.74 °C)



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SUITE 301 40 HURON STREET
COLLINGWOOD ONTARIO, L9Y 4R3
CANADA

Turning Movement Count (5 . SOULES RD & CENTER AVE)

Start Time	N Approach SOULES RD					S Approach SOULES RD					W Approach CENTRE AVE					Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	UTurn N:N	Peds N:	Approach Total	Thru S:N	Left S:W	UTurn S:S	Peds S:	Approach Total	Right W:S	Left W:N	UTurn W:W	Peds W:	Approach Total		
06:00:00	12	0	0	0	12	1	1	0	0	2	0	2	0	0	2	16	
06:15:00	15	0	0	0	15	0	3	0	0	3	0	4	0	0	4	22	
06:30:00	16	0	0	0	16	0	3	0	0	3	0	13	0	0	13	32	
06:45:00	17	0	0	0	17	1	4	0	0	5	0	7	0	0	7	29	99
07:00:00	6	1	0	0	7	1	2	0	0	3	0	16	0	0	16	26	109
07:15:00	15	1	0	0	16	2	4	0	0	6	0	17	0	0	17	39	126
07:30:00	21	1	0	0	22	2	2	0	0	4	0	10	0	0	10	36	130
07:45:00	23	0	0	0	23	2	4	0	0	6	1	18	0	0	19	48	149
08:00:00	18	0	0	0	18	2	5	0	0	7	1	15	0	0	16	41	164
08:15:00	23	1	0	0	24	1	9	0	0	10	0	15	0	0	15	49	174
08:30:00	22	0	0	0	22	2	3	0	0	5	1	15	0	0	16	43	181
08:45:00	13	0	0	0	13	0	1	0	0	1	2	20	0	0	22	36	169
09:00:00	8	0	0	0	8	0	3	0	0	3	2	15	0	0	17	28	156
09:15:00	15	0	0	0	15	0	4	0	0	4	1	7	0	0	8	27	134
09:30:00	23	0	0	0	23	1	5	0	0	6	0	9	0	0	9	38	129
09:45:00	20	0	0	0	20	1	5	0	0	6	1	10	0	0	11	37	130
BREAK																	
15:00:00	20	1	0	0	21	1	0	0	0	1	0	16	0	0	16	38	
15:15:00	22	0	0	0	22	0	1	0	1	1	0	18	0	0	18	41	
15:30:00	25	2	0	0	27	1	2	0	0	3	1	23	0	0	24	54	
15:45:00	27	1	0	0	28	1	9	0	0	10	2	21	0	0	23	61	194
16:00:00	19	1	0	0	20	0	4	0	0	4	4	22	0	0	26	50	206
16:15:00	33	1	0	0	34	0	4	0	0	4	0	21	0	0	21	59	224
16:30:00	32	1	0	0	33	2	4	0	0	6	1	23	0	0	24	63	233
16:45:00	24	0	0	0	24	0	7	0	0	7	2	24	0	1	26	57	229
17:00:00	21	0	0	0	21	0	2	0	0	2	0	18	0	0	18	41	220
17:15:00	35	1	1	0	37	0	0	0	0	0	1	13	0	0	14	51	212
17:30:00	12	0	0	0	12	0	3	0	0	3	3	18	0	0	21	36	185
17:45:00	24	0	0	0	24	1	1	0	0	2	4	14	0	0	18	44	172
18:00:00	15	2	0	0	17	0	0	0	0	0	1	10	0	0	11	28	159
18:15:00	16	0	0	0	16	0	2	0	0	2	0	9	0	0	9	27	135
18:30:00	17	0	0	0	17	0	1	0	0	1	0	10	0	0	10	28	127
18:45:00	11	0	0	0	11	0	0	0	0	0	0	5	0	0	5	16	99

Crozier & Associates
SUITE 301 40 HURON STREET
COLLINGWOOD ONTARIO, L9Y 4R3
CANADA

Grand Total	620	14	1	0	635	22	98	0	1	120	28	458	0	1	486	**1241**	-
Approach%	97.6%	2.2%	0.2%		-	18.3%	81.7%	0%		-	5.8%	94.2%	0%		-	**-**	-
Totals %	50%	1.1%	0.1%		51.2%	1.8%	7.9%	0%		9.7%	2.3%	36.9%	0%		39.2%	**-**	-
Heavy	31	3	0		-	2	0	0		-	2	35	0		-	**-**	-
Heavy %	5%	21.4%	0%		-	9.1%	0%	0%		-	7.1%	7.6%	0%		-	**-**	-
Bicycles	-	-	-		-	-	-	-		-	-	-	-		-	**-**	-
Bicycle %	-	-	-		-	-	-	-		-	-	-	-		-	**-**	-

Crozier & Associates
SUITE 301 40 HURON STREET
COLLINGWOOD ONTARIO, L9Y 4R3
CANADA

Peak Hour: 07:45 AM - 08:45 AM Weather: Overcast Clouds (0.5 °C)

Start Time	N Approach SOULES RD					S Approach SOULES RD					W Approach CENTRE AVE					Int. Total (15 min)
	Right	Thru	UTurn	Peds	Approach Total	Thru	Left	UTurn	Peds	Approach Total	Right	Left	UTurn	Peds	Approach Total	
07:45:00	23	0	0	0	23	2	4	0	0	6	1	18	0	0	19	48
08:00:00	18	0	0	0	18	2	5	0	0	7	1	15	0	0	16	41
08:15:00	23	1	0	0	24	1	9	0	0	10	0	15	0	0	15	49
08:30:00	22	0	0	0	22	2	3	0	0	5	1	15	0	0	16	43
Grand Total	86	1	0	0	87	7	21	0	0	28	3	63	0	0	66	**181**
Approach%	98.9%	1.1%	0%		-	25%	75%	0%		-	4.5%	95.5%	0%		-	**-**
Totals %	47.5%	0.6%	0%		48.1%	3.9%	11.6%	0%		15.5%	1.7%	34.8%	0%		36.5%	**-**
PHF	0.93	0.25	0		0.91	0.88	0.58	0		0.7	0.75	0.88	0		0.87	**-**
Heavy	10	0	0		10	1	0	0		1	0	5	0		5	**-**
Heavy %	11.6%	0%	0%		11.5%	14.3%	0%	0%		3.6%	0%	7.9%	0%		7.6%	**-**
Lights	76	1	0		77	6	21	0		27	3	58	0		61	**-**
Lights %	88.4%	100%	0%		88.5%	85.7%	100%	0%		96.4%	100%	92.1%	0%		92.4%	**-**
Single-Unit Trucks	5	0	0		5	0	0	0		0	0	3	0		3	**-**
Single-Unit Trucks %	5.8%	0%	0%		5.7%	0%	0%	0%		0%	0%	4.8%	0%		4.5%	**-**
Buses	4	0	0		4	1	0	0		1	0	1	0		1	**-**
Buses %	4.7%	0%	0%		4.6%	14.3%	0%	0%		3.6%	0%	1.6%	0%		1.5%	**-**
Articulated Trucks	1	0	0		1	0	0	0		0	0	1	0		1	**-**
Articulated Trucks %	1.2%	0%	0%		1.1%	0%	0%	0%		0%	0%	1.6%	0%		1.5%	**-**
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	0%		-	-	-	0%		-	-	-	0%		**-**

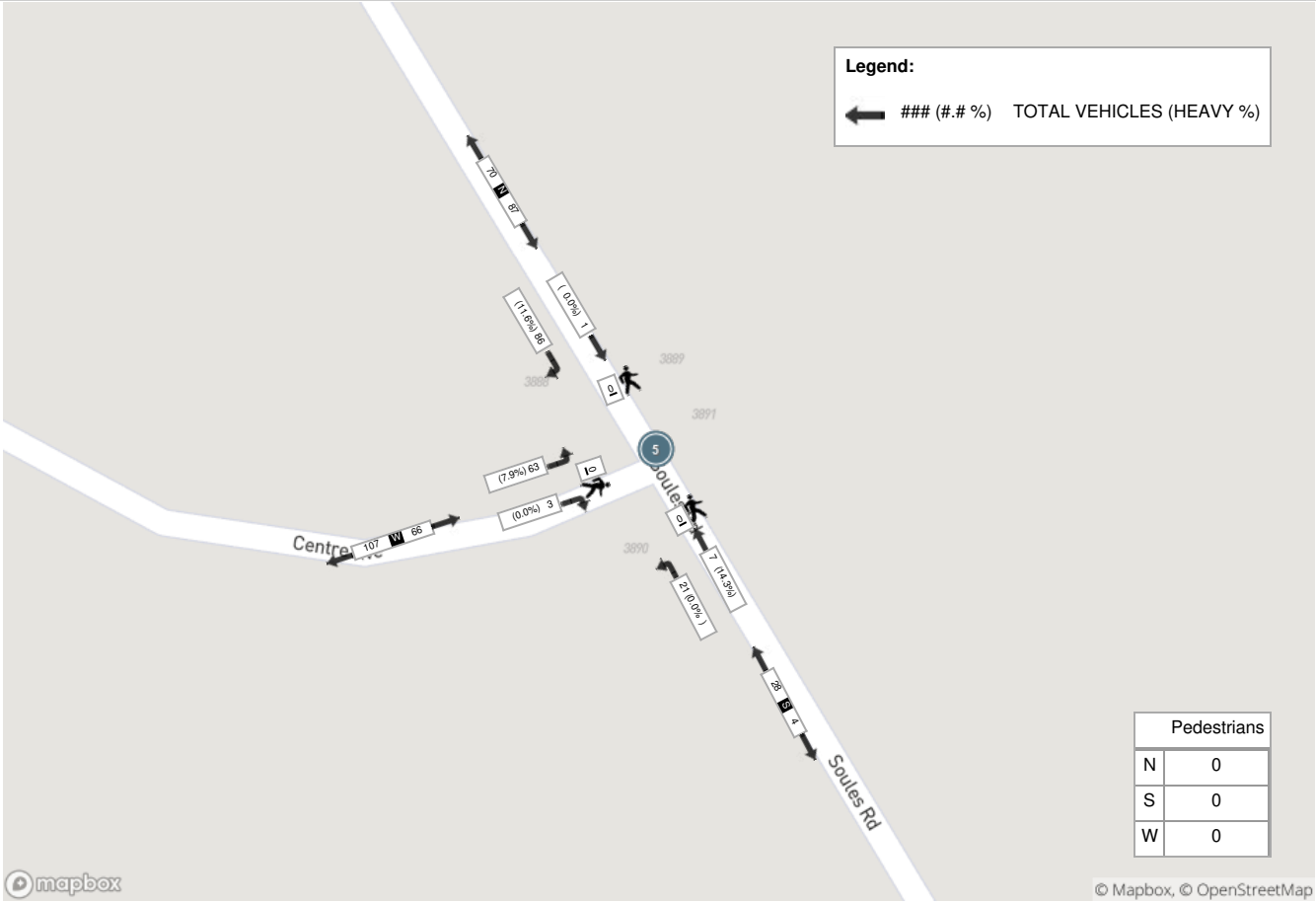
Crozier & Associates
SUITE 301 40 HURON STREET
COLLINGWOOD ONTARIO, L9Y 4R3
CANADA

Peak Hour: 03:45 PM - 04:45 PM Weather: Overcast Clouds (2.74 °C)

Start Time	N Approach SOULES RD					S Approach SOULES RD					W Approach CENTRE AVE					Int. Total (15 min)
	Right	Thru	UTurn	Peds	Approach Total	Thru	Left	UTurn	Peds	Approach Total	Right	Left	UTurn	Peds	Approach Total	
15:45:00	27	1	0	0	28	1	9	0	0	10	2	21	0	0	23	61
16:00:00	19	1	0	0	20	0	4	0	0	4	4	22	0	0	26	50
16:15:00	33	1	0	0	34	0	4	0	0	4	0	21	0	0	21	59
16:30:00	32	1	0	0	33	2	4	0	0	6	1	23	0	0	24	63
Grand Total	111	4	0	0	115	3	21	0	0	24	7	87	0	0	94	**233**
Approach%	96.5%	3.5%	0%		-	12.5%	87.5%	0%		-	7.4%	92.6%	0%		-	**-**
Totals %	47.6%	1.7%	0%		49.4%	1.3%	9%	0%		10.3%	3%	37.3%	0%		40.3%	**-**
PHF	0.84	1	0		0.85	0.38	0.58	0		0.6	0.44	0.95	0		0.9	**-**
Heavy	5	0	0		5	1	0	0		1	0	7	0		7	**-**
Heavy %	4.5%	0%	0%		4.3%	33.3%	0%	0%		4.2%	0%	8%	0%		7.4%	**-**
Lights	106	4	0		110	2	21	0		23	7	80	0		87	**-**
Lights %	95.5%	100%	0%		95.7%	66.7%	100%	0%		95.8%	100%	92%	0%		92.6%	**-**
Single-Unit Trucks	2	0	0		2	0	0	0		0	0	0	0		0	**-**
Single-Unit Trucks %	1.8%	0%	0%		1.7%	0%	0%	0%		0%	0%	0%	0%		0%	**-**
Buses	3	0	0		3	1	0	0		1	0	6	0		6	**-**
Buses %	2.7%	0%	0%		2.6%	33.3%	0%	0%		4.2%	0%	6.9%	0%		6.4%	**-**
Articulated Trucks	0	0	0		0	0	0	0		0	0	1	0		1	**-**
Articulated Trucks %	0%	0%	0%		0%	0%	0%	0%		0%	0%	1.1%	0%		1.1%	**-**
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	**-**
Pedestrians%	-	-	-	0%		-	-	-	0%		-	-	-	0%		**-**

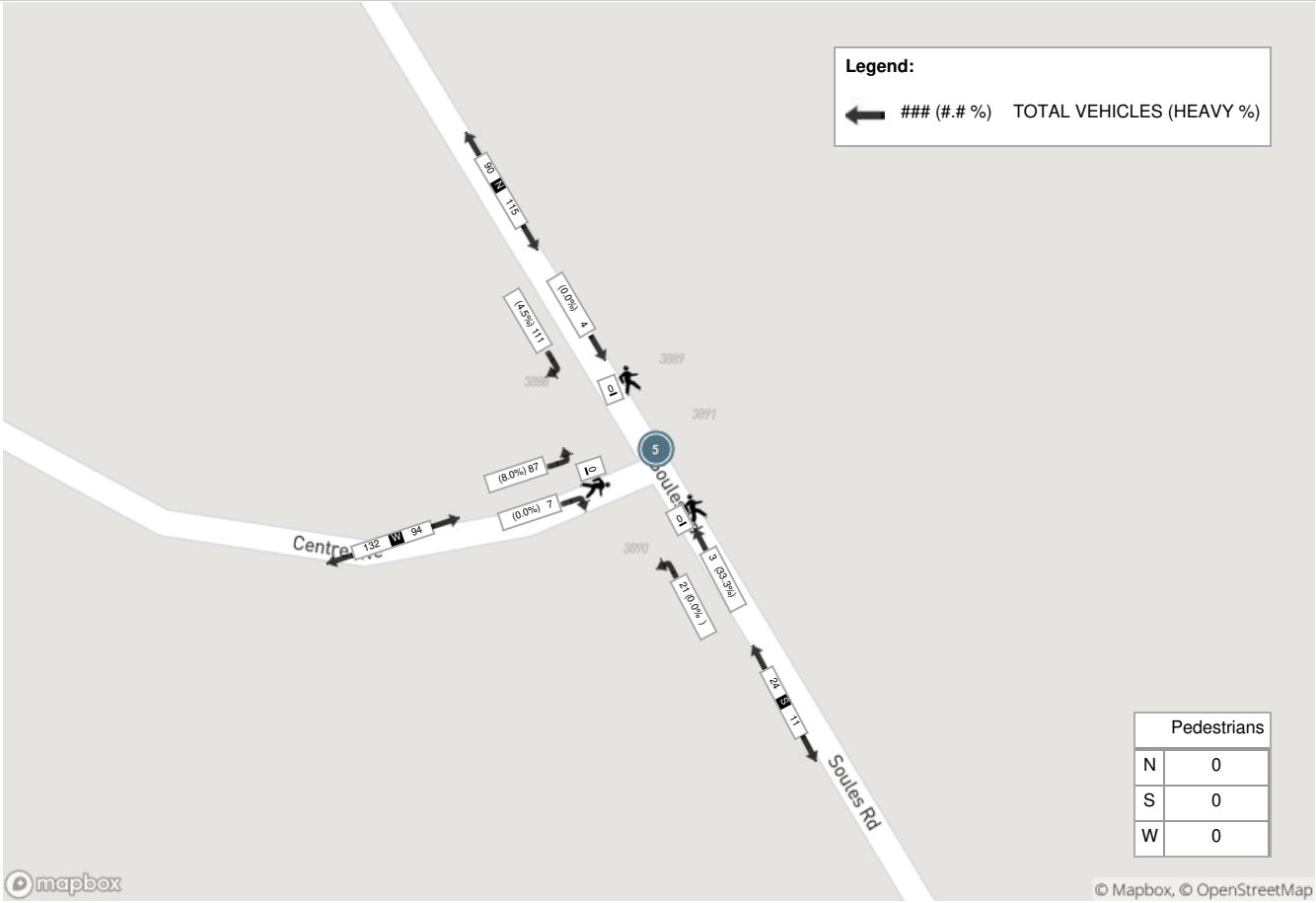
Crozier & Associates
SUITE 301 40 HURON STREET
COLLINGWOOD ONTARIO, L9Y 4R3
CANADA

Peak Hour: 07:45 AM - 08:45 AM Weather: Overcast Clouds (0.5 °C)



Crozier & Associates
SUITE 301 40 HURON STREET
COLLINGWOOD ONTARIO, L9Y 4R3
CANADA

Peak Hour: 03:45 PM - 04:45 PM Weather: Overcast Clouds (2.74 °C)



APPENDIX G

Level of Service Definitions

Level of Service Definitions

Two-Way Stop Controlled Intersections

Level of Service	Control Delay per Vehicle (seconds)	Interpretation
A	≤ 10	EXCELLENT. Large and frequent gaps in traffic on the main roadway. Queuing on the minor street is rare.
B	> 10 and ≤ 15	VERY GOOD. Many gaps exist in traffic on the main roadway. Queuing on the minor street is minimal.
C	> 15 and ≤ 25	GOOD. Fewer gaps exist in traffic on the main roadway. Delay on minor approach becomes more noticeable.
D	> 25 and ≤ 35	FAIR. Infrequent and shorter gaps in traffic on the main roadway. Queue lengths develop on the minor street.
E	> 35 and ≤ 50	POOR. Very infrequent gaps in traffic on the main roadway. Queue lengths become noticeable.
F	> 50	UNSATISFACTORY. Very few gaps in traffic on the main roadway. Excessive delay with significant queue lengths on the minor street.

Adapted from Highway Capacity Manual 2000, Transportation Research Board

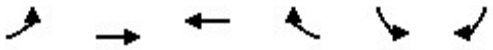
APPENDIX H

Detailed Capacity Analysis

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	17	0	18	12	4	6
Future Volume (Veh/h)	17	0	18	12	4	6
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.69	0.69	0.69	0.69	0.69	0.69
Hourly flow rate (vph)	25	0	26	17	6	9
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			25		94	25
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			25		94	25
tC, single (s)			4.2		6.4	6.5
tC, 2 stage (s)						
tF (s)			2.3		3.5	3.6
p0 queue free %			98		99	99
cM capacity (veh/h)			1564		896	968

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	25	43	15
Volume Left	0	26	6
Volume Right	0	0	9
cSH	1700	1564	938
Volume to Capacity	0.01	0.02	0.02
Queue Length 95th (m)	0.0	0.4	0.4
Control Delay (s)	0.0	4.5	8.9
Lane LOS		A	A
Approach Delay (s)	0.0	4.5	8.9
Approach LOS			A

Intersection Summary			
Average Delay		3.9	
Intersection Capacity Utilization		18.3%	ICU Level of Service A
Analysis Period (min)		15	



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	1	40	60	8	37	1
Future Volume (Veh/h)	1	40	60	8	37	1
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82
Hourly flow rate (vph)	1	49	73	10	45	1
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	83				129	78
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	83				129	78
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				95	100
cM capacity (veh/h)	1527				858	988

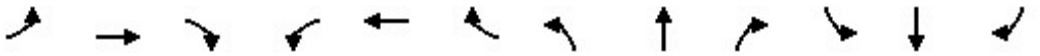
Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	50	83	46
Volume Left	1	0	45
Volume Right	0	10	1
cSH	1527	1700	860
Volume to Capacity	0.00	0.05	0.05
Queue Length 95th (m)	0.0	0.0	1.4
Control Delay (s)	0.2	0.0	9.4
Lane LOS	A		A
Approach Delay (s)	0.2	0.0	9.4
Approach LOS			A

Intersection Summary			
Average Delay		2.5	
Intersection Capacity Utilization		13.6%	ICU Level of Service A
Analysis Period (min)		15	

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1	86	21	7	63	3
Future Volume (Veh/h)	1	86	21	7	63	3
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	93	23	8	68	3
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			94		102	48
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			94		102	48
tC, single (s)			4.1		6.5	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			98		92	100
cM capacity (veh/h)			1513		869	1027

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	94	31	71
Volume Left	0	23	68
Volume Right	93	0	3
cSH	1700	1513	875
Volume to Capacity	0.06	0.02	0.08
Queue Length 95th (m)	0.0	0.4	2.1
Control Delay (s)	0.0	5.5	9.5
Lane LOS		A	A
Approach Delay (s)	0.0	5.5	9.5
Approach LOS			A

Intersection Summary			
Average Delay		4.3	
Intersection Capacity Utilization		18.5%	ICU Level of Service
Analysis Period (min)		15	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	24	6	35	3	0	14	1	85	2	1	0
Future Volume (Veh/h)	0	24	6	35	3	0	14	1	85	2	1	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	0	25	6	36	3	0	14	1	88	2	1	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	3			31			104	103	28	192	106	3
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	3			31			104	103	28	192	106	3
tC, single (s)	4.1			4.2			7.2	6.5	6.3	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.6	4.0	3.4	3.5	4.0	3.3
p0 queue free %	100			98			98	100	92	100	100	100
cM capacity (veh/h)	1619			1525			833	772	1036	694	769	1087

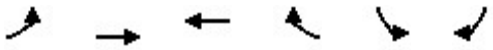
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	31	39	103	3
Volume Left	0	36	14	2
Volume Right	6	0	88	0
cSH	1619	1525	999	717
Volume to Capacity	0.00	0.02	0.10	0.00
Queue Length 95th (m)	0.0	0.6	2.7	0.1
Control Delay (s)	0.0	6.9	9.0	10.0
Lane LOS		A	A	B
Approach Delay (s)	0.0	6.9	9.0	10.0
Approach LOS			A	B

Intersection Summary				
Average Delay	7.0			
Intersection Capacity Utilization	21.4%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	34	2	13	9	3	8
Future Volume (Veh/h)	34	2	13	9	3	8
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.72	0.72	0.72	0.72	0.72	0.72
Hourly flow rate (vph)	47	3	18	12	4	11
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			50		96	48
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			50		96	48
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		100	99
cM capacity (veh/h)			1570		897	1020

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	50	30	15
Volume Left	0	18	4
Volume Right	3	0	11
cSH	1700	1570	984
Volume to Capacity	0.03	0.01	0.02
Queue Length 95th (m)	0.0	0.3	0.4
Control Delay (s)	0.0	4.4	8.7
Lane LOS		A	A
Approach Delay (s)	0.0	4.4	8.7
Approach LOS			A

Intersection Summary			
Average Delay	2.8		
Intersection Capacity Utilization	17.9%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	7	94	79	10	24	3
Future Volume (Veh/h)	7	94	79	10	24	3
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	8	106	89	11	27	3
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	100				216	94
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	100				216	94
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				97	100
cM capacity (veh/h)	1505				772	968

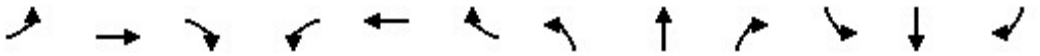
Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	114	100	30
Volume Left	8	0	27
Volume Right	0	11	3
cSH	1505	1700	788
Volume to Capacity	0.01	0.06	0.04
Queue Length 95th (m)	0.1	0.0	0.9
Control Delay (s)	0.6	0.0	9.7
Lane LOS	A		A
Approach Delay (s)	0.6	0.0	9.7
Approach LOS			A

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	20.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	4	111	21	3	87	7
Future Volume (Veh/h)	4	111	21	3	87	7
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	121	23	3	95	8
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			125		114	64
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			125		114	64
tC, single (s)			4.2		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.3		3.5	3.3
p0 queue free %			98		89	99
cM capacity (veh/h)			1391		873	1005

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	125	26	103
Volume Left	0	23	95
Volume Right	121	0	8
cSH	1700	1391	882
Volume to Capacity	0.07	0.02	0.12
Queue Length 95th (m)	0.0	0.4	3.2
Control Delay (s)	0.0	6.8	9.6
Lane LOS		A	A
Approach Delay (s)	0.0	6.8	9.6
Approach LOS			A

Intersection Summary			
Average Delay	4.6		
Intersection Capacity Utilization	19.9%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	18	9	52	5	1	55	2	60	3	3	2
Future Volume (Veh/h)	2	18	9	52	5	1	55	2	60	3	3	2
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	2	20	10	58	6	1	61	2	67	3	3	2
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	7			30			155	152	25	220	156	6
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	7			30			155	152	25	220	156	6
tC, single (s)	4.1			4.2			7.2	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.6	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			96			92	100	94	100	100	100
cM capacity (veh/h)	1627			1533			773	714	1043	671	710	1082

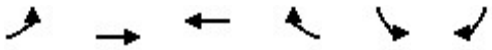
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	32	65	130	8
Volume Left	2	58	61	3
Volume Right	10	1	67	2
cSH	1627	1533	890	759
Volume to Capacity	0.00	0.04	0.15	0.01
Queue Length 95th (m)	0.0	0.9	4.1	0.3
Control Delay (s)	0.5	6.7	9.7	9.8
Lane LOS	A	A	A	A
Approach Delay (s)	0.5	6.7	9.7	9.8
Approach LOS			A	A

Intersection Summary				
Average Delay	7.6			
Intersection Capacity Utilization	26.3%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	43	0	96	39	5	15
Future Volume (Veh/h)	43	0	96	39	5	15
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.69	0.69	0.69	0.69	0.69	0.69
Hourly flow rate (vph)	62	0	139	57	7	22
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			62		397	62
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			62		397	62
tC, single (s)			4.2		6.4	6.5
tC, 2 stage (s)						
tF (s)			2.3		3.5	3.6
p0 queue free %			91		99	98
cM capacity (veh/h)			1516		556	922

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	62	196	29
Volume Left	0	139	7
Volume Right	0	0	22
cSH	1700	1516	796
Volume to Capacity	0.04	0.09	0.04
Queue Length 95th (m)	0.0	2.4	0.9
Control Delay (s)	0.0	5.6	9.7
Lane LOS		A	A
Approach Delay (s)	0.0	5.6	9.7
Approach LOS			A

Intersection Summary			
Average Delay	4.8		
Intersection Capacity Utilization	24.0%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	2	43	64	17	116	2
Future Volume (Veh/h)	2	43	64	17	116	2
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82
Hourly flow rate (vph)	2	52	78	21	141	2
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	99				144	88
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	99				144	88
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				83	100
cM capacity (veh/h)	1507				840	975

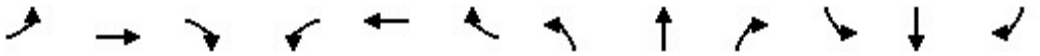
Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	54	99	143
Volume Left	2	0	141
Volume Right	0	21	2
cSH	1507	1700	841
Volume to Capacity	0.00	0.06	0.17
Queue Length 95th (m)	0.0	0.0	4.9
Control Delay (s)	0.3	0.0	10.2
Lane LOS	A		B
Approach Delay (s)	0.3	0.0	10.2
Approach LOS			B

Intersection Summary			
Average Delay	5.0		
Intersection Capacity Utilization	17.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	2	168	23	8	75	4
Future Volume (Veh/h)	2	168	23	8	75	4
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	183	25	9	82	4
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			185		152	94
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			185		152	94
tC, single (s)			4.1		6.5	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			98		90	100
cM capacity (veh/h)			1402		811	969

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	185	34	86
Volume Left	0	25	82
Volume Right	183	0	4
cSH	1700	1402	817
Volume to Capacity	0.11	0.02	0.11
Queue Length 95th (m)	0.0	0.4	2.8
Control Delay (s)	0.0	5.6	9.9
Lane LOS		A	A
Approach Delay (s)	0.0	5.6	9.9
Approach LOS			A

Intersection Summary			
Average Delay	3.4		
Intersection Capacity Utilization	28.2%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	26	7	45	4	0	15	2	167	3	2	0
Future Volume (Veh/h)	0	26	7	45	4	0	15	2	167	3	2	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	0	27	7	46	4	0	15	2	172	3	2	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	4			34			128	126	30	300	130	4
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	4			34			128	126	30	300	130	4
tC, single (s)	4.1			4.2			7.2	6.5	6.3	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.6	4.0	3.4	3.5	4.0	3.3
p0 queue free %	100			97			98	100	83	99	100	100
cM capacity (veh/h)	1618			1521			798	745	1032	534	741	1085

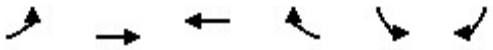
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	34	50	189	5
Volume Left	0	46	15	3
Volume Right	7	0	172	0
cSH	1618	1521	1005	601
Volume to Capacity	0.00	0.03	0.19	0.01
Queue Length 95th (m)	0.0	0.7	5.5	0.2
Control Delay (s)	0.0	6.9	9.4	11.0
Lane LOS		A	A	B
Approach Delay (s)	0.0	6.9	9.4	11.0
Approach LOS			A	B

Intersection Summary				
Average Delay	7.8			
Intersection Capacity Utilization	27.2%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	122	3	64	27	4	38
Future Volume (Veh/h)	122	3	64	27	4	38
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.72	0.72	0.72	0.72	0.72	0.72
Hourly flow rate (vph)	169	4	89	38	6	53
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			173		387	171
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			173		387	171
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			94		99	94
cM capacity (veh/h)			1416		581	873

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	173	127	59
Volume Left	0	89	6
Volume Right	4	0	53
cSH	1700	1416	830
Volume to Capacity	0.10	0.06	0.07
Queue Length 95th (m)	0.0	1.6	1.8
Control Delay (s)	0.0	5.6	9.7
Lane LOS		A	A
Approach Delay (s)	0.0	5.6	9.7
Approach LOS			A

Intersection Summary			
Average Delay	3.6		
Intersection Capacity Utilization	24.9%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	8	99	84	40	76	4
Future Volume (Veh/h)	8	99	84	40	76	4
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	9	111	94	45	85	4
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	139				246	116
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	139				246	116
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				89	100
cM capacity (veh/h)	1457				743	941

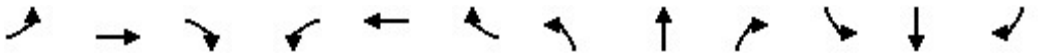
Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	120	139	89
Volume Left	9	0	85
Volume Right	0	45	4
cSH	1457	1700	750
Volume to Capacity	0.01	0.08	0.12
Queue Length 95th (m)	0.1	0.0	3.2
Control Delay (s)	0.6	0.0	10.4
Lane LOS	A		B
Approach Delay (s)	0.6	0.0	10.4
Approach LOS			B

Intersection Summary			
Average Delay	2.9		
Intersection Capacity Utilization	22.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	5	167	23	4	121	8
Future Volume (Veh/h)	5	167	23	4	121	8
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	182	25	4	132	9
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			187		150	96
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			187		150	96
tC, single (s)			4.2		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.3		3.5	3.3
p0 queue free %			98		84	99
cM capacity (veh/h)			1318		831	966

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	187	29	141
Volume Left	0	25	132
Volume Right	182	0	9
cSH	1700	1318	838
Volume to Capacity	0.11	0.02	0.17
Queue Length 95th (m)	0.0	0.5	4.8
Control Delay (s)	0.0	6.7	10.2
Lane LOS		A	B
Approach Delay (s)	0.0	6.7	10.2
Approach LOS			B

Intersection Summary			
Average Delay	4.6		
Intersection Capacity Utilization	31.1%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	19	10	84	6	2	58	3	114	4	4	3
Future Volume (Veh/h)	3	19	10	84	6	2	58	3	114	4	4	3
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	3	21	11	93	7	2	64	3	127	4	4	3
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	9			32			232	228	26	355	232	8
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	9			32			232	228	26	355	232	8
tC, single (s)	4.1			4.2			7.2	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.6	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			94			91	100	88	99	99	100
cM capacity (veh/h)	1624			1530			674	633	1041	503	630	1080

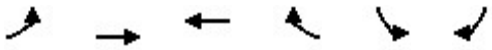
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	35	102	194	11
Volume Left	3	93	64	4
Volume Right	11	2	127	3
cSH	1624	1530	875	644
Volume to Capacity	0.00	0.06	0.22	0.02
Queue Length 95th (m)	0.0	1.6	6.8	0.4
Control Delay (s)	0.6	6.9	10.3	10.7
Lane LOS	A	A	B	B
Approach Delay (s)	0.6	6.9	10.3	10.7
Approach LOS			B	B

Intersection Summary				
Average Delay	8.3			
Intersection Capacity Utilization	31.5%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	44	0	97	40	5	15
Future Volume (Veh/h)	44	0	97	40	5	15
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.69	0.69	0.69	0.69	0.69	0.69
Hourly flow rate (vph)	64	0	141	58	7	22
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			64		404	64
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			64		404	64
tC, single (s)			4.2		6.4	6.5
tC, 2 stage (s)						
tF (s)			2.3		3.5	3.6
p0 queue free %			91		99	98
cM capacity (veh/h)			1513		550	920

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	64	199	29
Volume Left	0	141	7
Volume Right	0	0	22
cSH	1700	1513	791
Volume to Capacity	0.04	0.09	0.04
Queue Length 95th (m)	0.0	2.5	0.9
Control Delay (s)	0.0	5.6	9.7
Lane LOS		A	A
Approach Delay (s)	0.0	5.6	9.7
Approach LOS			A

Intersection Summary			
Average Delay	4.8		
Intersection Capacity Utilization	24.1%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	2	45	67	17	118	2
Future Volume (Veh/h)	2	45	67	17	118	2
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82
Hourly flow rate (vph)	2	55	82	21	144	2
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	103				152	92
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	103				152	92
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				83	100
cM capacity (veh/h)	1502				832	970

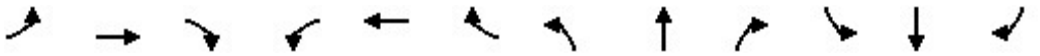
Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	57	103	146
Volume Left	2	0	144
Volume Right	0	21	2
cSH	1502	1700	834
Volume to Capacity	0.00	0.06	0.18
Queue Length 95th (m)	0.0	0.0	5.1
Control Delay (s)	0.3	0.0	10.2
Lane LOS	A		B
Approach Delay (s)	0.3	0.0	10.2
Approach LOS			B

Intersection Summary			
Average Delay	4.9		
Intersection Capacity Utilization	17.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	2	172	24	8	78	4
Future Volume (Veh/h)	2	172	24	8	78	4
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	187	26	9	85	4
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			189		156	96
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			189		156	96
tC, single (s)			4.1		6.5	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			98		89	100
cM capacity (veh/h)			1397		806	967

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	189	35	89
Volume Left	0	26	85
Volume Right	187	0	4
cSH	1700	1397	812
Volume to Capacity	0.11	0.02	0.11
Queue Length 95th (m)	0.0	0.5	2.9
Control Delay (s)	0.0	5.7	10.0
Lane LOS		A	A
Approach Delay (s)	0.0	5.7	10.0
Approach LOS			A

Intersection Summary			
Average Delay	3.5		
Intersection Capacity Utilization	28.7%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	27	7	47	4	0	16	2	171	3	2	0
Future Volume (Veh/h)	0	27	7	47	4	0	16	2	171	3	2	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	0	28	7	48	4	0	16	2	176	3	2	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	4			35			132	132	32	308	135	4
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	4			35			132	132	32	308	135	4
tC, single (s)	4.1			4.2			7.2	6.5	6.3	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.6	4.0	3.4	3.5	4.0	3.3
p0 queue free %	100			97			98	100	83	99	100	100
cM capacity (veh/h)	1618			1520			791	739	1031	523	736	1085

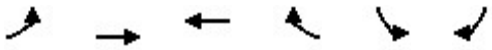
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	35	52	194	5
Volume Left	0	48	16	3
Volume Right	7	0	176	0
cSH	1618	1520	1002	592
Volume to Capacity	0.00	0.03	0.19	0.01
Queue Length 95th (m)	0.0	0.8	5.7	0.2
Control Delay (s)	0.0	6.9	9.5	11.1
Lane LOS		A	A	B
Approach Delay (s)	0.0	6.9	9.5	11.1
Approach LOS			A	B

Intersection Summary				
Average Delay	7.9			
Intersection Capacity Utilization	27.6%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	124	3	65	27	4	38
Future Volume (Veh/h)	124	3	65	27	4	38
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.72	0.72	0.72	0.72	0.72	0.72
Hourly flow rate (vph)	172	4	90	38	6	53
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			176		392	174
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			176		392	174
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			94		99	94
cM capacity (veh/h)			1412		577	869

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	176	128	59
Volume Left	0	90	6
Volume Right	4	0	53
cSH	1700	1412	827
Volume to Capacity	0.10	0.06	0.07
Queue Length 95th (m)	0.0	1.6	1.8
Control Delay (s)	0.0	5.6	9.7
Lane LOS		A	A
Approach Delay (s)	0.0	5.6	9.7
Approach LOS			A

Intersection Summary			
Average Delay		3.5	
Intersection Capacity Utilization		25.1%	ICU Level of Service A
Analysis Period (min)		15	



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	8	104	88	41	77	4
Future Volume (Veh/h)	8	104	88	41	77	4
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	9	117	99	46	87	4
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	145				257	122
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	145				257	122
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				88	100
cM capacity (veh/h)	1450				732	935

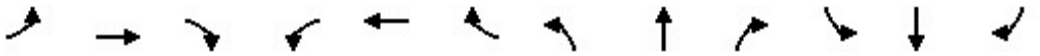
Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	126	145	91
Volume Left	9	0	87
Volume Right	0	46	4
cSH	1450	1700	739
Volume to Capacity	0.01	0.09	0.12
Queue Length 95th (m)	0.1	0.0	3.4
Control Delay (s)	0.6	0.0	10.6
Lane LOS	A		B
Approach Delay (s)	0.6	0.0	10.6
Approach LOS			B

Intersection Summary			
Average Delay	2.9		
Intersection Capacity Utilization	23.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	5	173	24	4	126	8
Future Volume (Veh/h)	5	173	24	4	126	8
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	188	26	4	137	9
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			193		155	99
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			193		155	99
tC, single (s)			4.2		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.3		3.5	3.3
p0 queue free %			98		83	99
cM capacity (veh/h)			1312		824	962

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	193	30	146
Volume Left	0	26	137
Volume Right	188	0	9
cSH	1700	1312	832
Volume to Capacity	0.11	0.02	0.18
Queue Length 95th (m)	0.0	0.5	5.1
Control Delay (s)	0.0	6.8	10.2
Lane LOS		A	B
Approach Delay (s)	0.0	6.8	10.2
Approach LOS			B

Intersection Summary			
Average Delay	4.6		
Intersection Capacity Utilization	31.8%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	20	10	87	6	2	61	3	117	4	4	3
Future Volume (Veh/h)	3	20	10	87	6	2	61	3	117	4	4	3
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	3	22	11	97	7	2	68	3	130	4	4	3
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	9			33			240	236	28	367	241	8
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	9			33			240	236	28	367	241	8
tC, single (s)	4.1			4.2			7.2	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.6	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			94			90	100	87	99	99	100
cM capacity (veh/h)	1624			1529			663	624	1039	491	621	1080

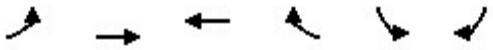
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	36	106	201	11
Volume Left	3	97	68	4
Volume Right	11	2	130	3
cSH	1624	1529	865	633
Volume to Capacity	0.00	0.06	0.23	0.02
Queue Length 95th (m)	0.0	1.6	7.2	0.4
Control Delay (s)	0.6	6.9	10.4	10.8
Lane LOS	A	A	B	B
Approach Delay (s)	0.6	6.9	10.4	10.8
Approach LOS			B	B

Intersection Summary				
Average Delay	8.4			
Intersection Capacity Utilization	32.2%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	45	0	98	40	5	15
Future Volume (Veh/h)	45	0	98	40	5	15
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.69	0.69	0.69	0.69	0.69	0.69
Hourly flow rate (vph)	65	0	142	58	7	22
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			65		407	65
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			65		407	65
tC, single (s)			4.2		6.4	6.5
tC, 2 stage (s)						
tF (s)			2.3		3.5	3.6
p0 queue free %			91		99	98
cM capacity (veh/h)			1512		547	919

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	65	200	29
Volume Left	0	142	7
Volume Right	0	0	22
cSH	1700	1512	789
Volume to Capacity	0.04	0.09	0.04
Queue Length 95th (m)	0.0	2.5	0.9
Control Delay (s)	0.0	5.6	9.7
Lane LOS		A	A
Approach Delay (s)	0.0	5.6	9.7
Approach LOS			A

Intersection Summary			
Average Delay	4.8		
Intersection Capacity Utilization	24.2%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	2	47	70	18	120	2
Future Volume (Veh/h)	2	47	70	18	120	2
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82
Hourly flow rate (vph)	2	57	85	22	146	2
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	107				157	96
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	107				157	96
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				82	100
cM capacity (veh/h)	1497				826	966

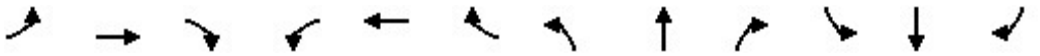
Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	59	107	148
Volume Left	2	0	146
Volume Right	0	22	2
cSH	1497	1700	828
Volume to Capacity	0.00	0.06	0.18
Queue Length 95th (m)	0.0	0.0	5.2
Control Delay (s)	0.3	0.0	10.3
Lane LOS	A		B
Approach Delay (s)	0.3	0.0	10.3
Approach LOS			B

Intersection Summary			
Average Delay	4.9		
Intersection Capacity Utilization	18.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	2	177	25	9	82	4
Future Volume (Veh/h)	2	177	25	9	82	4
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	192	27	10	89	4
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			194		162	98
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			194		162	98
tC, single (s)			4.1		6.5	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			98		89	100
cM capacity (veh/h)			1391		799	963

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	194	37	93
Volume Left	0	27	89
Volume Right	192	0	4
cSH	1700	1391	805
Volume to Capacity	0.11	0.02	0.12
Queue Length 95th (m)	0.0	0.5	3.1
Control Delay (s)	0.0	5.6	10.1
Lane LOS		A	B
Approach Delay (s)	0.0	5.6	10.1
Approach LOS			B

Intersection Summary			
Average Delay	3.5		
Intersection Capacity Utilization	29.2%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	28	7	49	4	0	17	2	176	3	2	0
Future Volume (Veh/h)	0	28	7	49	4	0	17	2	176	3	2	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	0	29	7	51	4	0	18	2	181	3	2	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	4			36			140	138	32	320	142	4
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	4			36			140	138	32	320	142	4
tC, single (s)	4.1			4.2			7.2	6.5	6.3	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.6	4.0	3.4	3.5	4.0	3.3
p0 queue free %	100			97			98	100	82	99	100	100
cM capacity (veh/h)	1618			1519			782	731	1030	510	728	1085

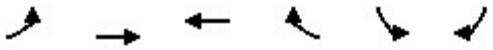
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	36	55	201	5
Volume Left	0	51	18	3
Volume Right	7	0	181	0
cSH	1618	1519	997	579
Volume to Capacity	0.00	0.03	0.20	0.01
Queue Length 95th (m)	0.0	0.8	6.0	0.2
Control Delay (s)	0.0	6.9	9.5	11.3
Lane LOS		A	A	B
Approach Delay (s)	0.0	6.9	9.5	11.3
Approach LOS			A	B

Intersection Summary			
Average Delay	7.9		
Intersection Capacity Utilization	28.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	126	3	66	28	4	39
Future Volume (Veh/h)	126	3	66	28	4	39
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.72	0.72	0.72	0.72	0.72	0.72
Hourly flow rate (vph)	175	4	92	39	6	54
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			179		400	177
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			179		400	177
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			93		99	94
cM capacity (veh/h)			1409		570	866

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	179	131	60
Volume Left	0	92	6
Volume Right	4	0	54
cSH	1700	1409	823
Volume to Capacity	0.11	0.07	0.07
Queue Length 95th (m)	0.0	1.7	1.9
Control Delay (s)	0.0	5.6	9.7
Lane LOS		A	A
Approach Delay (s)	0.0	5.6	9.7
Approach LOS			A

Intersection Summary			
Average Delay	3.6		
Intersection Capacity Utilization	25.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	9	110	92	41	78	4
Future Volume (Veh/h)	9	110	92	41	78	4
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	10	124	103	46	88	4
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	149				270	126
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	149				270	126
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				88	100
cM capacity (veh/h)	1445				719	930

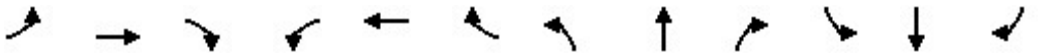
Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	134	149	92
Volume Left	10	0	88
Volume Right	0	46	4
cSH	1445	1700	726
Volume to Capacity	0.01	0.09	0.13
Queue Length 95th (m)	0.2	0.0	3.5
Control Delay (s)	0.6	0.0	10.7
Lane LOS	A		B
Approach Delay (s)	0.6	0.0	10.7
Approach LOS			B

Intersection Summary			
Average Delay	2.8		
Intersection Capacity Utilization	24.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	5	179	25	4	131	9
Future Volume (Veh/h)	5	179	25	4	131	9
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	195	27	4	142	10
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			200		160	102
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			200		160	102
tC, single (s)			4.2		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.3		3.5	3.3
p0 queue free %			98		83	99
cM capacity (veh/h)			1304		818	958

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	200	31	152
Volume Left	0	27	142
Volume Right	195	0	10
cSH	1700	1304	826
Volume to Capacity	0.12	0.02	0.18
Queue Length 95th (m)	0.0	0.5	5.4
Control Delay (s)	0.0	6.8	10.3
Lane LOS		A	B
Approach Delay (s)	0.0	6.8	10.3
Approach LOS			B

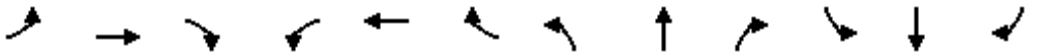
Intersection Summary			
Average Delay	4.7		
Intersection Capacity Utilization	32.5%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	21	11	90	6	2	64	3	120	4	4	3
Future Volume (Veh/h)	3	21	11	90	6	2	64	3	120	4	4	3
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	3	23	12	100	7	2	71	3	133	4	4	3
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	9			35			248	244	29	378	249	8
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	9			35			248	244	29	378	249	8
tC, single (s)	4.1			4.2			7.2	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.6	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			93			89	100	87	99	99	100
cM capacity (veh/h)	1624			1526			654	617	1037	481	613	1080

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	38	109	207	11
Volume Left	3	100	71	4
Volume Right	12	2	133	3
cSH	1624	1526	857	624
Volume to Capacity	0.00	0.07	0.24	0.02
Queue Length 95th (m)	0.0	1.7	7.6	0.4
Control Delay (s)	0.6	6.9	10.5	10.9
Lane LOS	A	A	B	B
Approach Delay (s)	0.6	6.9	10.5	10.9
Approach LOS			B	B

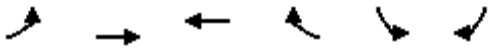
Intersection Summary			
Average Delay	8.4		
Intersection Capacity Utilization	32.9%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	43	35	96	39	0	9	15	15	0	136	11
Future Volume (Veh/h)	12	43	35	96	39	0	9	15	15	0	136	11
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.69	0.69	0.69	0.69	0.95	0.69	0.95	0.69	0.95	0.95	0.95
Hourly flow rate (vph)	13	62	51	139	57	0	13	16	22	0	143	12
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	57			113			532	448	88	478	474	57
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	57			113			532	448	88	478	474	57
tC, single (s)	4.1			4.2			7.1	6.5	6.5	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.5	4.0	3.6	3.5	4.0	3.3
p0 queue free %	99			90			96	96	98	100	67	99
cM capacity (veh/h)	1547			1452			315	453	892	435	438	1009

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	126	196	51	155
Volume Left	13	139	13	0
Volume Right	51	0	22	12
cSH	1547	1452	504	459
Volume to Capacity	0.01	0.10	0.10	0.34
Queue Length 95th (m)	0.2	2.5	2.7	11.8
Control Delay (s)	0.8	5.7	12.9	16.8
Lane LOS	A	A	B	C
Approach Delay (s)	0.8	5.7	12.9	16.8
Approach LOS			B	C

Intersection Summary				
Average Delay	8.5			
Intersection Capacity Utilization	30.7%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	2	43	64	36	287	2
Future Volume (Veh/h)	2	43	64	36	287	2
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82
Hourly flow rate (vph)	2	52	78	44	350	2
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	122				156	100
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	122				156	100
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				58	100
cM capacity (veh/h)	1478				827	961

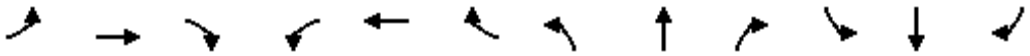
Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	54	122	352
Volume Left	2	0	350
Volume Right	0	44	2
cSH	1478	1700	828
Volume to Capacity	0.00	0.07	0.43
Queue Length 95th (m)	0.0	0.0	17.1
Control Delay (s)	0.3	0.0	12.5
Lane LOS	A		B
Approach Delay (s)	0.3	0.0	12.5
Approach LOS			B

Intersection Summary			
Average Delay	8.4		
Intersection Capacity Utilization	28.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	2	339	23	8	94	4
Future Volume (Veh/h)	2	339	23	8	94	4
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	368	25	9	102	4
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			370		245	186
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			370		245	186
tC, single (s)			4.1		6.5	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			98		86	100
cM capacity (veh/h)			1200		715	861

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	370	34	106
Volume Left	0	25	102
Volume Right	368	0	4
cSH	1700	1200	720
Volume to Capacity	0.22	0.02	0.15
Queue Length 95th (m)	0.0	0.5	4.1
Control Delay (s)	0.0	6.0	10.9
Lane LOS		A	B
Approach Delay (s)	0.0	6.0	10.9
Approach LOS			B

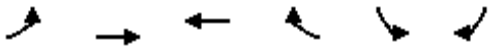
Intersection Summary			
Average Delay	2.7		
Intersection Capacity Utilization	33.2%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	26	7	64	4	0	15	2	338	3	2	0
Future Volume (Veh/h)	0	26	7	64	4	0	15	2	338	3	2	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	0	27	7	66	4	0	15	2	348	3	2	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	4			34			168	166	30	516	170	4
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	4			34			168	166	30	516	170	4
tC, single (s)	4.1			4.2			7.2	6.5	6.3	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.6	4.0	3.4	3.5	4.0	3.3
p0 queue free %	100			96			98	100	66	99	100	100
cM capacity (veh/h)	1618			1521			743	698	1032	303	695	1085

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	34	70	365	5
Volume Left	0	66	15	3
Volume Right	7	0	348	0
cSH	1618	1521	1014	391
Volume to Capacity	0.00	0.04	0.36	0.01
Queue Length 95th (m)	0.0	1.1	13.2	0.3
Control Delay (s)	0.0	7.1	10.5	14.3
Lane LOS		A	B	B
Approach Delay (s)	0.0	7.1	10.5	14.3
Approach LOS			B	B

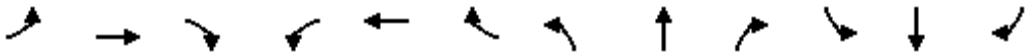
Intersection Summary				
Average Delay	9.3			
Intersection Capacity Utilization	38.8%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	46	55	54	4	35	45
Future Volume (Veh/h)	46	55	54	4	35	45
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	48	58	57	4	37	47
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	61				213	59
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	61				213	59
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				95	95
cM capacity (veh/h)	1542				751	1007

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	106	61	84
Volume Left	48	0	37
Volume Right	0	4	47
cSH	1542	1700	876
Volume to Capacity	0.03	0.04	0.10
Queue Length 95th (m)	0.8	0.0	2.5
Control Delay (s)	3.5	0.0	9.5
Lane LOS	A		A
Approach Delay (s)	3.5	0.0	9.5
Approach LOS			A

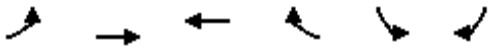
Intersection Summary			
Average Delay	4.7		
Intersection Capacity Utilization	23.5%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	39	122	26	64	27	0	17	51	38	0	90	8
Future Volume (Veh/h)	39	122	26	64	27	0	17	51	38	0	90	8
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.72	0.72	0.72	0.72	0.92	0.72	0.92	0.72	0.92	0.92	0.92
Hourly flow rate (vph)	42	169	36	89	38	0	24	55	53	0	98	9
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	38			205			545	487	187	568	505	38
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	38			205			545	487	187	568	505	38
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			94			93	87	94	100	77	99
cM capacity (veh/h)	1572			1378			345	438	855	343	428	1034

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	247	127	132	107
Volume Left	42	89	24	0
Volume Right	36	0	53	9
cSH	1572	1378	513	450
Volume to Capacity	0.03	0.06	0.26	0.24
Queue Length 95th (m)	0.7	1.7	8.1	7.3
Control Delay (s)	1.4	5.6	14.4	15.5
Lane LOS	A	A	B	C
Approach Delay (s)	1.4	5.6	14.4	15.5
Approach LOS			B	C

Intersection Summary				
Average Delay	7.6			
Intersection Capacity Utilization	32.8%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	8	99	84	104	189	4
Future Volume (Veh/h)	8	99	84	104	189	4
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	9	111	94	117	212	4
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	211				282	152
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	211				282	152
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				70	100
cM capacity (veh/h)	1372				708	899

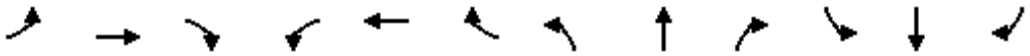
Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	120	211	216
Volume Left	9	0	212
Volume Right	0	117	4
cSH	1372	1700	711
Volume to Capacity	0.01	0.12	0.30
Queue Length 95th (m)	0.2	0.0	10.3
Control Delay (s)	0.6	0.0	12.3
Lane LOS	A		B
Approach Delay (s)	0.6	0.0	12.3
Approach LOS			B

Intersection Summary			
Average Delay	5.0		
Intersection Capacity Utilization	29.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	5	280	23	4	185	8
Future Volume (Veh/h)	5	280	23	4	185	8
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	304	25	4	201	9
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			309		211	157
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			309		211	157
tC, single (s)			4.2		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.3		3.5	3.3
p0 queue free %			98		74	99
cM capacity (veh/h)			1187		765	894

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	309	29	210
Volume Left	0	25	201
Volume Right	304	0	9
cSH	1700	1187	770
Volume to Capacity	0.18	0.02	0.27
Queue Length 95th (m)	0.0	0.5	8.9
Control Delay (s)	0.0	7.0	11.4
Lane LOS		A	B
Approach Delay (s)	0.0	7.0	11.4
Approach LOS			B

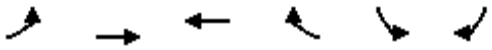
Intersection Summary			
Average Delay	4.7		
Intersection Capacity Utilization	37.4%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	19	10	148	6	2	58	3	227	4	4	3
Future Volume (Veh/h)	3	19	10	148	6	2	58	3	227	4	4	3
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	3	21	11	164	7	2	64	3	252	4	4	3
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	9			32			374	370	26	622	374	8
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	9			32			374	370	26	622	374	8
tC, single (s)	4.1			4.2			7.2	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.6	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			89			88	99	76	99	99	100
cM capacity (veh/h)	1624			1530			522	502	1041	278	499	1080

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	35	173	319	11
Volume Left	3	164	64	4
Volume Right	11	2	252	3
cSH	1624	1530	860	437
Volume to Capacity	0.00	0.11	0.37	0.03
Queue Length 95th (m)	0.0	2.9	13.8	0.6
Control Delay (s)	0.6	7.3	11.6	13.5
Lane LOS	A	A	B	B
Approach Delay (s)	0.6	7.3	11.6	13.5
Approach LOS			B	B

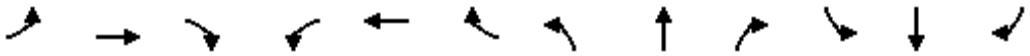
Intersection Summary				
Average Delay	9.6			
Intersection Capacity Utilization	41.5%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	154	163	38	13	23	30
Future Volume (Veh/h)	154	163	38	13	23	30
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	167	177	41	14	25	33
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	55				559	48
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	55				559	48
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	89				94	97
cM capacity (veh/h)	1550				437	1021

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	344	55	58
Volume Left	167	0	25
Volume Right	0	14	33
cSH	1550	1700	648
Volume to Capacity	0.11	0.03	0.09
Queue Length 95th (m)	2.9	0.0	2.3
Control Delay (s)	4.2	0.0	11.1
Lane LOS	A		B
Approach Delay (s)	4.2	0.0	11.1
Approach LOS			B

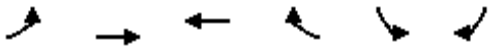
Intersection Summary			
Average Delay	4.5		
Intersection Capacity Utilization	33.8%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	58	43	0	96	39	0	9	15	15	0	171	11
Future Volume (Veh/h)	58	43	0	96	39	0	9	15	15	0	171	11
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.69	0.69	0.69	0.69	0.95	0.69	0.95	0.69	0.95	0.95	0.95
Hourly flow rate (vph)	61	62	0	139	57	0	13	16	22	0	180	12
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	57			62			621	519	62	549	519	57
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	57			62			621	519	62	549	519	57
tC, single (s)	4.1			4.2			7.1	6.5	6.5	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.5	4.0	3.6	3.5	4.0	3.3
p0 queue free %	96			91			94	96	98	100	55	99
cM capacity (veh/h)	1547			1516			235	402	922	382	402	1009

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	123	196	51	192
Volume Left	61	139	13	0
Volume Right	0	0	22	12
cSH	1547	1516	429	418
Volume to Capacity	0.04	0.09	0.12	0.46
Queue Length 95th (m)	1.0	2.4	3.2	18.8
Control Delay (s)	3.8	5.6	14.5	20.7
Lane LOS	A	A	B	C
Approach Delay (s)	3.8	5.6	14.5	20.7
Approach LOS			B	C

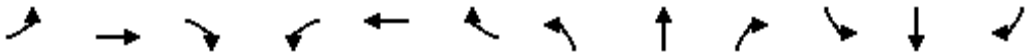
Intersection Summary				
Average Delay	11.2			
Intersection Capacity Utilization	26.4%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	101	54	4	0	45
Future Volume (Veh/h)	0	101	54	4	0	45
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	106	57	4	0	47
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	61				165	59
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	61				165	59
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	95
cM capacity (veh/h)	1542				826	1007

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	106	61	47
Volume Left	0	0	0
Volume Right	0	4	47
cSH	1542	1700	1007
Volume to Capacity	0.00	0.04	0.05
Queue Length 95th (m)	0.0	0.0	1.2
Control Delay (s)	0.0	0.0	8.8
Lane LOS			A
Approach Delay (s)	0.0	0.0	8.8
Approach LOS			A

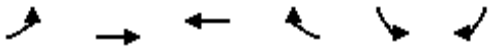
Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	15.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	193	122	3	64	27	0	17	51	38	0	113	8
Future Volume (Veh/h)	193	122	3	64	27	0	17	51	38	0	113	8
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.72	0.72	0.72	0.72	0.92	0.72	0.92	0.72	0.92	0.92	0.92
Hourly flow rate (vph)	210	169	4	89	38	0	24	55	53	0	123	9
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	38			173			878	807	171	888	809	38
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	38			173			878	807	171	888	809	38
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	87			94			83	79	94	100	52	99
cM capacity (veh/h)	1572			1416			145	256	873	178	255	1034

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	383	127	132	132
Volume Left	210	89	24	0
Volume Right	4	0	53	9
cSH	1572	1416	299	269
Volume to Capacity	0.13	0.06	0.44	0.49
Queue Length 95th (m)	3.7	1.6	17.2	20.2
Control Delay (s)	4.7	5.6	26.2	30.6
Lane LOS	A	A	D	D
Approach Delay (s)	4.7	5.6	26.2	30.6
Approach LOS			D	D

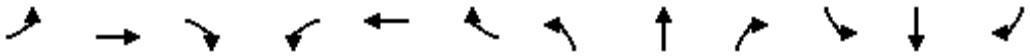
Intersection Summary				
Average Delay	12.9			
Intersection Capacity Utilization	41.3%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	317	38	13	0	30
Future Volume (Veh/h)	0	317	38	13	0	30
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	345	41	14	0	33
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	55				393	48
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	55				393	48
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	97
cM capacity (veh/h)	1550				611	1021

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	345	55	33
Volume Left	0	0	0
Volume Right	0	14	33
cSH	1550	1700	1021
Volume to Capacity	0.00	0.03	0.03
Queue Length 95th (m)	0.0	0.0	0.8
Control Delay (s)	0.0	0.0	8.6
Lane LOS			A
Approach Delay (s)	0.0	0.0	8.6
Approach LOS			A

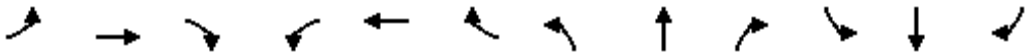
Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	26.7%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	58	43	0	96	39	0	5	19	15	0	171	56
Future Volume (Veh/h)	58	43	0	96	39	0	5	19	15	0	171	56
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.69	0.69	0.69	0.69	0.95	0.69	0.95	0.69	0.95	0.95	0.95
Hourly flow rate (vph)	61	62	0	139	57	0	7	20	22	0	180	59
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	57			62			668	519	62	551	519	57
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	57			62			668	519	62	551	519	57
tC, single (s)	4.1			4.2			7.1	6.5	6.5	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.5	4.0	3.6	3.5	4.0	3.3
p0 queue free %	96			91			97	95	98	100	55	94
cM capacity (veh/h)	1547			1516			209	402	922	377	402	1009

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	123	196	49	239
Volume Left	61	139	7	0
Volume Right	0	0	22	59
cSH	1547	1516	457	472
Volume to Capacity	0.04	0.09	0.11	0.51
Queue Length 95th (m)	1.0	2.4	2.9	22.4
Control Delay (s)	3.8	5.6	13.8	20.2
Lane LOS	A	A	B	C
Approach Delay (s)	3.8	5.6	13.8	20.2
Approach LOS			B	C

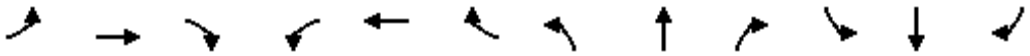
Intersection Summary				
Average Delay	11.6			
Intersection Capacity Utilization	28.8%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	193	122	3	64	27	0	4	64	38	0	113	38
Future Volume (Veh/h)	193	122	3	64	27	0	4	64	38	0	113	38
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.72	0.72	0.72	0.72	0.92	0.72	0.92	0.72	0.92	0.92	0.92
Hourly flow rate (vph)	210	169	4	89	38	0	6	70	53	0	123	41
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	38			173			910	807	171	895	809	38
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	38			173			910	807	171	895	809	38
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	87			94			96	73	94	100	52	96
cM capacity (veh/h)	1572			1416			134	256	873	167	255	1034

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	383	127	129	164
Volume Left	210	89	6	0
Volume Right	4	0	53	41
cSH	1572	1416	340	314
Volume to Capacity	0.13	0.06	0.38	0.52
Queue Length 95th (m)	3.7	1.6	13.8	22.7
Control Delay (s)	4.7	5.6	21.9	28.3
Lane LOS	A	A	C	D
Approach Delay (s)	4.7	5.6	21.9	28.3
Approach LOS			C	D

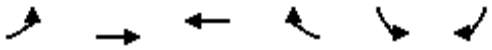
Intersection Summary				
Average Delay	12.4			
Intersection Capacity Utilization	34.7%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	44	35	97	40	0	9	15	15	0	136	11
Future Volume (Veh/h)	12	44	35	97	40	0	9	15	15	0	136	11
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.69	0.69	0.69	0.69	0.95	0.69	0.95	0.69	0.95	0.95	0.95
Hourly flow rate (vph)	13	64	51	141	58	0	13	16	22	0	143	12
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	58			115			539	456	90	486	481	58
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	58			115			539	456	90	486	481	58
tC, single (s)	4.1			4.2			7.1	6.5	6.5	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.5	4.0	3.6	3.5	4.0	3.3
p0 queue free %	99			90			96	96	98	100	67	99
cM capacity (veh/h)	1546			1449			310	448	889	429	434	1008

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	128	199	51	155
Volume Left	13	141	13	0
Volume Right	51	0	22	12
cSH	1546	1449	498	454
Volume to Capacity	0.01	0.10	0.10	0.34
Queue Length 95th (m)	0.2	2.6	2.7	12.0
Control Delay (s)	0.8	5.7	13.0	17.0
Lane LOS	A	A	B	C
Approach Delay (s)	0.8	5.7	13.0	17.0
Approach LOS			B	C

Intersection Summary				
Average Delay	8.5			
Intersection Capacity Utilization	30.8%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	2	45	67	36	289	2
Future Volume (Veh/h)	2	45	67	36	289	2
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82
Hourly flow rate (vph)	2	55	82	44	352	2
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	126				163	104
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	126				163	104
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				57	100
cM capacity (veh/h)	1473				820	956

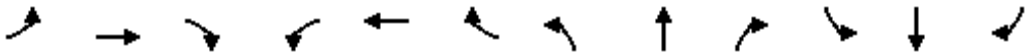
Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	57	126	354
Volume Left	2	0	352
Volume Right	0	44	2
cSH	1473	1700	820
Volume to Capacity	0.00	0.07	0.43
Queue Length 95th (m)	0.0	0.0	17.6
Control Delay (s)	0.3	0.0	12.7
Lane LOS	A		B
Approach Delay (s)	0.3	0.0	12.7
Approach LOS			B

Intersection Summary			
Average Delay	8.4		
Intersection Capacity Utilization	28.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	2	343	24	8	97	4
Future Volume (Veh/h)	2	343	24	8	97	4
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	373	26	9	105	4
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			375		250	188
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			375		250	188
tC, single (s)			4.1		6.5	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			98		85	100
cM capacity (veh/h)			1195		710	859

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	375	35	109
Volume Left	0	26	105
Volume Right	373	0	4
cSH	1700	1195	715
Volume to Capacity	0.22	0.02	0.15
Queue Length 95th (m)	0.0	0.5	4.3
Control Delay (s)	0.0	6.0	10.9
Lane LOS		A	B
Approach Delay (s)	0.0	6.0	10.9
Approach LOS			B

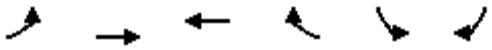
Intersection Summary			
Average Delay	2.7		
Intersection Capacity Utilization	33.7%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	27	7	66	4	0	16	2	342	3	2	0
Future Volume (Veh/h)	0	27	7	66	4	0	16	2	342	3	2	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	0	28	7	68	4	0	16	2	353	3	2	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	4			35			172	172	32	526	175	4
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	4			35			172	172	32	526	175	4
tC, single (s)	4.1			4.2			7.2	6.5	6.3	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.6	4.0	3.4	3.5	4.0	3.3
p0 queue free %	100			96			98	100	66	99	100	100
cM capacity (veh/h)	1618			1520			737	693	1031	295	690	1085

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	35	72	371	5
Volume Left	0	68	16	3
Volume Right	7	0	353	0
cSH	1618	1520	1011	383
Volume to Capacity	0.00	0.04	0.37	0.01
Queue Length 95th (m)	0.0	1.1	13.6	0.3
Control Delay (s)	0.0	7.1	10.6	14.5
Lane LOS		A	B	B
Approach Delay (s)	0.0	7.1	10.6	14.5
Approach LOS			B	B

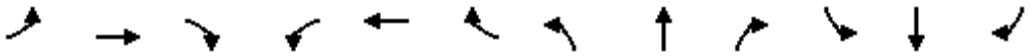
Intersection Summary				
Average Delay	9.4			
Intersection Capacity Utilization	39.2%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	46	56	55	4	35	45
Future Volume (Veh/h)	46	56	55	4	35	45
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	48	59	58	4	37	47
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	62				215	60
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	62				215	60
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				95	95
cM capacity (veh/h)	1541				749	1005

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	107	62	84
Volume Left	48	0	37
Volume Right	0	4	47
cSH	1541	1700	874
Volume to Capacity	0.03	0.04	0.10
Queue Length 95th (m)	0.8	0.0	2.5
Control Delay (s)	3.5	0.0	9.6
Lane LOS	A		A
Approach Delay (s)	3.5	0.0	9.6
Approach LOS			A

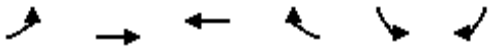
Intersection Summary			
Average Delay	4.6		
Intersection Capacity Utilization	23.5%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	39	124	26	65	27	0	17	51	38	0	90	8
Future Volume (Veh/h)	39	124	26	65	27	0	17	51	38	0	90	8
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.72	0.72	0.72	0.72	0.92	0.72	0.92	0.72	0.92	0.92	0.92
Hourly flow rate (vph)	42	172	36	90	38	0	24	55	53	0	98	9
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	38			208			550	492	190	572	510	38
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	38			208			550	492	190	572	510	38
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			93			93	87	94	100	77	99
cM capacity (veh/h)	1572			1375			341	434	852	340	424	1034

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	250	128	132	107
Volume Left	42	90	24	0
Volume Right	36	0	53	9
cSH	1572	1375	509	447
Volume to Capacity	0.03	0.07	0.26	0.24
Queue Length 95th (m)	0.7	1.7	8.2	7.4
Control Delay (s)	1.4	5.6	14.5	15.6
Lane LOS	A	A	B	C
Approach Delay (s)	1.4	5.6	14.5	15.6
Approach LOS			B	C

Intersection Summary				
Average Delay	7.6			
Intersection Capacity Utilization	33.1%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	8	104	88	105	190	4
Future Volume (Veh/h)	8	104	88	105	190	4
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	9	117	99	118	213	4
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	217				293	158
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	217				293	158
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				69	100
cM capacity (veh/h)	1365				697	893

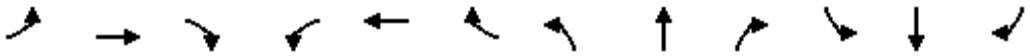
Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	126	217	217
Volume Left	9	0	213
Volume Right	0	118	4
cSH	1365	1700	700
Volume to Capacity	0.01	0.13	0.31
Queue Length 95th (m)	0.2	0.0	10.5
Control Delay (s)	0.6	0.0	12.4
Lane LOS	A		B
Approach Delay (s)	0.6	0.0	12.4
Approach LOS			B

Intersection Summary			
Average Delay	5.0		
Intersection Capacity Utilization	29.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	5	286	24	4	190	8
Future Volume (Veh/h)	5	286	24	4	190	8
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	311	26	4	207	9
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			316		216	160
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			316		216	160
tC, single (s)			4.2		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.3		3.5	3.3
p0 queue free %			98		73	99
cM capacity (veh/h)			1179		759	890

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	316	30	216
Volume Left	0	26	207
Volume Right	311	0	9
cSH	1700	1179	764
Volume to Capacity	0.19	0.02	0.28
Queue Length 95th (m)	0.0	0.5	9.3
Control Delay (s)	0.0	7.1	11.6
Lane LOS		A	B
Approach Delay (s)	0.0	7.1	11.6
Approach LOS			B

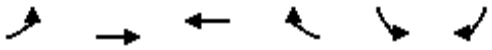
Intersection Summary			
Average Delay	4.8		
Intersection Capacity Utilization	38.5%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	20	10	151	6	2	61	3	230	4	4	3
Future Volume (Veh/h)	3	20	10	151	6	2	61	3	230	4	4	3
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	3	22	11	168	7	2	68	3	256	4	4	3
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	9			33			382	378	28	635	383	8
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	9			33			382	378	28	635	383	8
tC, single (s)	4.1			4.2			7.2	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.6	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			89			87	99	75	99	99	100
cM capacity (veh/h)	1624			1529			514	495	1039	270	492	1080

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	36	177	327	11
Volume Left	3	168	68	4
Volume Right	11	2	256	3
cSH	1624	1529	850	428
Volume to Capacity	0.00	0.11	0.38	0.03
Queue Length 95th (m)	0.0	3.0	14.6	0.6
Control Delay (s)	0.6	7.3	11.9	13.6
Lane LOS	A	A	B	B
Approach Delay (s)	0.6	7.3	11.9	13.6
Approach LOS			B	B

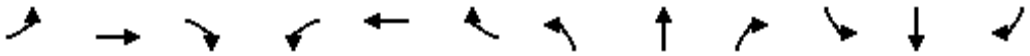
Intersection Summary				
Average Delay	9.7			
Intersection Capacity Utilization	42.1%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	154	165	39	13	23	30
Future Volume (Veh/h)	154	165	39	13	23	30
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	167	179	42	14	25	33
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	56				562	49
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	56				562	49
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	89				94	97
cM capacity (veh/h)	1549				436	1020

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	346	56	58
Volume Left	167	0	25
Volume Right	0	14	33
cSH	1549	1700	646
Volume to Capacity	0.11	0.03	0.09
Queue Length 95th (m)	2.9	0.0	2.4
Control Delay (s)	4.1	0.0	11.1
Lane LOS	A		B
Approach Delay (s)	4.1	0.0	11.1
Approach LOS			B

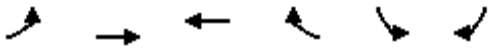
Intersection Summary			
Average Delay	4.5		
Intersection Capacity Utilization	33.9%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	58	44	0	97	40	0	9	15	15	0	171	11
Future Volume (Veh/h)	58	44	0	97	40	0	9	15	15	0	171	11
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.69	0.69	0.69	0.69	0.95	0.69	0.95	0.69	0.95	0.95	0.95
Hourly flow rate (vph)	61	64	0	141	58	0	13	16	22	0	180	12
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	58			64			628	526	64	556	526	58
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	58			64			628	526	64	556	526	58
tC, single (s)	4.1			4.2			7.1	6.5	6.5	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.5	4.0	3.6	3.5	4.0	3.3
p0 queue free %	96			91			94	96	98	100	55	99
cM capacity (veh/h)	1546			1513			231	398	920	377	398	1008

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	125	199	51	192
Volume Left	61	141	13	0
Volume Right	0	0	22	12
cSH	1546	1513	424	414
Volume to Capacity	0.04	0.09	0.12	0.46
Queue Length 95th (m)	1.0	2.5	3.3	19.1
Control Delay (s)	3.8	5.6	14.7	21.0
Lane LOS	A	A	B	C
Approach Delay (s)	3.8	5.6	14.7	21.0
Approach LOS			B	C

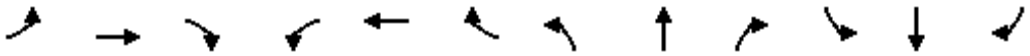
Intersection Summary				
Average Delay	11.2			
Intersection Capacity Utilization	26.6%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	102	55	4	0	45
Future Volume (Veh/h)	0	102	55	4	0	45
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	107	58	4	0	47
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	62				167	60
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	62				167	60
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	95
cM capacity (veh/h)	1541				823	1005

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	107	62	47
Volume Left	0	0	0
Volume Right	0	4	47
cSH	1541	1700	1005
Volume to Capacity	0.00	0.04	0.05
Queue Length 95th (m)	0.0	0.0	1.2
Control Delay (s)	0.0	0.0	8.8
Lane LOS			A
Approach Delay (s)	0.0	0.0	8.8
Approach LOS			A

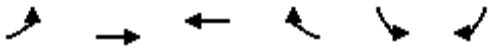
Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	15.4%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	193	124	3	65	27	0	17	51	38	0	113	8
Future Volume (Veh/h)	193	124	3	65	27	0	17	51	38	0	113	8
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.72	0.72	0.72	0.72	0.92	0.72	0.92	0.72	0.92	0.92	0.92
Hourly flow rate (vph)	210	172	4	90	38	0	24	55	53	0	123	9
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	38			176			882	812	174	892	814	38
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	38			176			882	812	174	892	814	38
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	87			94			83	78	94	100	51	99
cM capacity (veh/h)	1572			1412			143	254	869	177	253	1034

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	386	128	132	132
Volume Left	210	90	24	0
Volume Right	4	0	53	9
cSH	1572	1412	296	267
Volume to Capacity	0.13	0.06	0.45	0.49
Queue Length 95th (m)	3.7	1.6	17.4	20.4
Control Delay (s)	4.7	5.6	26.5	31.0
Lane LOS	A	A	D	D
Approach Delay (s)	4.7	5.6	26.5	31.0
Approach LOS			D	D

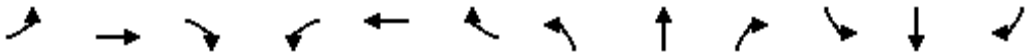
Intersection Summary			
Average Delay	13.0		
Intersection Capacity Utilization	41.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	319	39	13	0	30
Future Volume (Veh/h)	0	319	39	13	0	30
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	347	42	14	0	33
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	56				396	49
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	56				396	49
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	97
cM capacity (veh/h)	1549				609	1020

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	347	56	33
Volume Left	0	0	0
Volume Right	0	14	33
cSH	1549	1700	1020
Volume to Capacity	0.00	0.03	0.03
Queue Length 95th (m)	0.0	0.0	0.8
Control Delay (s)	0.0	0.0	8.6
Lane LOS			A
Approach Delay (s)	0.0	0.0	8.6
Approach LOS			A

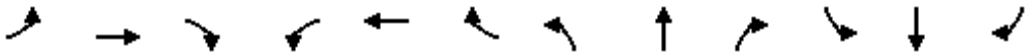
Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	26.8%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	58	44	0	97	40	0	5	19	15	0	171	56
Future Volume (Veh/h)	58	44	0	97	40	0	5	19	15	0	171	56
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.69	0.69	0.69	0.69	0.95	0.69	0.95	0.69	0.95	0.95	0.95
Hourly flow rate (vph)	61	64	0	141	58	0	7	20	22	0	180	59
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	58			64			675	526	64	558	526	58
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	58			64			675	526	64	558	526	58
tC, single (s)	4.1			4.2			7.1	6.5	6.5	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.5	4.0	3.6	3.5	4.0	3.3
p0 queue free %	96			91			97	95	98	100	55	94
cM capacity (veh/h)	1546			1513			205	398	920	373	398	1008

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	125	199	49	239
Volume Left	61	141	7	0
Volume Right	0	0	22	59
cSH	1546	1513	452	468
Volume to Capacity	0.04	0.09	0.11	0.51
Queue Length 95th (m)	1.0	2.5	2.9	22.8
Control Delay (s)	3.8	5.6	13.9	20.5
Lane LOS	A	A	B	C
Approach Delay (s)	3.8	5.6	13.9	20.5
Approach LOS			B	C

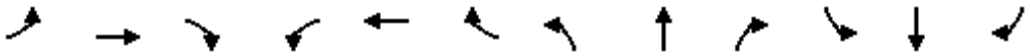
Intersection Summary				
Average Delay	11.7			
Intersection Capacity Utilization	29.0%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	193	124	3	65	27	0	4	64	38	0	113	38
Future Volume (Veh/h)	193	124	3	65	27	0	4	64	38	0	113	38
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.72	0.72	0.72	0.72	0.92	0.72	0.92	0.72	0.92	0.92	0.92
Hourly flow rate (vph)	210	172	4	90	38	0	6	70	53	0	123	41
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	38			176			914	812	174	900	814	38
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	38			176			914	812	174	900	814	38
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	87			94			95	72	94	100	51	96
cM capacity (veh/h)	1572			1412			132	254	869	165	253	1034

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	386	128	129	164
Volume Left	210	90	6	0
Volume Right	4	0	53	41
cSH	1572	1412	338	312
Volume to Capacity	0.13	0.06	0.38	0.53
Queue Length 95th (m)	3.7	1.6	13.9	23.0
Control Delay (s)	4.7	5.6	22.1	28.6
Lane LOS	A	A	C	D
Approach Delay (s)	4.7	5.6	22.1	28.6
Approach LOS			C	D

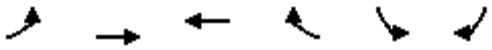
Intersection Summary				
Average Delay	12.5			
Intersection Capacity Utilization	34.7%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	45	35	98	40	0	9	15	15	0	136	11
Future Volume (Veh/h)	12	45	35	98	40	0	9	15	15	0	136	11
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.69	0.69	0.69	0.69	0.95	0.69	0.95	0.69	0.95	0.95	0.95
Hourly flow rate (vph)	13	65	51	142	58	0	13	16	22	0	143	12
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	58			116			542	458	90	488	484	58
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	58			116			542	458	90	488	484	58
tC, single (s)	4.1			4.2			7.1	6.5	6.5	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.5	4.0	3.6	3.5	4.0	3.3
p0 queue free %	99			90			96	96	98	100	67	99
cM capacity (veh/h)	1546			1448			308	446	888	427	432	1008

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	129	200	51	155
Volume Left	13	142	13	0
Volume Right	51	0	22	12
cSH	1546	1448	496	452
Volume to Capacity	0.01	0.10	0.10	0.34
Queue Length 95th (m)	0.2	2.6	2.7	12.1
Control Delay (s)	0.8	5.7	13.1	17.1
Lane LOS	A	A	B	C
Approach Delay (s)	0.8	5.7	13.1	17.1
Approach LOS			B	C

Intersection Summary				
Average Delay	8.5			
Intersection Capacity Utilization	30.8%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	2	47	70	37	291	2
Future Volume (Veh/h)	2	47	70	37	291	2
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82
Hourly flow rate (vph)	2	57	85	45	355	2
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	130				168	108
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	130				168	108
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				56	100
cM capacity (veh/h)	1468				814	952

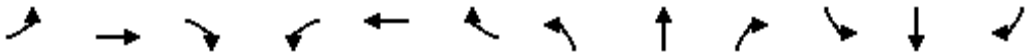
Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	59	130	357
Volume Left	2	0	355
Volume Right	0	45	2
cSH	1468	1700	814
Volume to Capacity	0.00	0.08	0.44
Queue Length 95th (m)	0.0	0.0	18.0
Control Delay (s)	0.3	0.0	12.8
Lane LOS	A		B
Approach Delay (s)	0.3	0.0	12.8
Approach LOS			B

Intersection Summary			
Average Delay	8.4		
Intersection Capacity Utilization	28.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	2	348	25	9	101	4
Future Volume (Veh/h)	2	348	25	9	101	4
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	378	27	10	110	4
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			380		255	191
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			380		255	191
tC, single (s)			4.1		6.5	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			98		84	100
cM capacity (veh/h)			1190		704	856

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	380	37	114
Volume Left	0	27	110
Volume Right	378	0	4
cSH	1700	1190	709
Volume to Capacity	0.22	0.02	0.16
Queue Length 95th (m)	0.0	0.6	4.6
Control Delay (s)	0.0	6.0	11.0
Lane LOS		A	B
Approach Delay (s)	0.0	6.0	11.0
Approach LOS			B

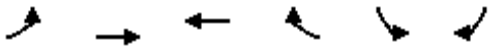
Intersection Summary			
Average Delay	2.8		
Intersection Capacity Utilization	34.9%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	28	7	68	4	0	17	2	347	3	2	0
Future Volume (Veh/h)	0	28	7	68	4	0	17	2	347	3	2	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	0	29	7	70	4	0	18	2	358	3	2	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	4			36			178	176	32	536	180	4
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	4			36			178	176	32	536	180	4
tC, single (s)	4.1			4.2			7.2	6.5	6.3	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.6	4.0	3.4	3.5	4.0	3.3
p0 queue free %	100			95			98	100	65	99	100	100
cM capacity (veh/h)	1618			1519			730	687	1030	288	684	1085

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	36	74	378	5
Volume Left	0	70	18	3
Volume Right	7	0	358	0
cSH	1618	1519	1007	375
Volume to Capacity	0.00	0.05	0.38	0.01
Queue Length 95th (m)	0.0	1.2	14.1	0.3
Control Delay (s)	0.0	7.1	10.7	14.7
Lane LOS		A	B	B
Approach Delay (s)	0.0	7.1	10.7	14.7
Approach LOS			B	B

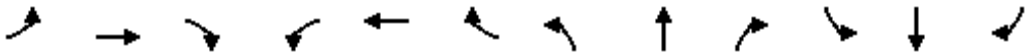
Intersection Summary				
Average Delay	9.4			
Intersection Capacity Utilization	39.7%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	46	57	56	4	35	45
Future Volume (Veh/h)	46	57	56	4	35	45
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	48	60	59	4	37	47
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	63				217	61
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	63				217	61
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				95	95
cM capacity (veh/h)	1540				747	1004

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	108	63	84
Volume Left	48	0	37
Volume Right	0	4	47
cSH	1540	1700	872
Volume to Capacity	0.03	0.04	0.10
Queue Length 95th (m)	0.8	0.0	2.5
Control Delay (s)	3.4	0.0	9.6
Lane LOS	A		A
Approach Delay (s)	3.4	0.0	9.6
Approach LOS			A

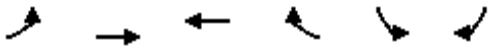
Intersection Summary			
Average Delay	4.6		
Intersection Capacity Utilization	23.6%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	39	126	26	66	28	0	17	51	39	0	90	8
Future Volume (Veh/h)	39	126	26	66	28	0	17	51	39	0	90	8
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.72	0.72	0.72	0.72	0.92	0.72	0.92	0.72	0.92	0.92	0.92
Hourly flow rate (vph)	42	175	36	92	39	0	24	55	54	0	98	9
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	39			211			558	500	193	582	518	39
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	39			211			558	500	193	582	518	39
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			93			93	87	94	100	77	99
cM capacity (veh/h)	1571			1372			336	429	849	334	419	1033

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	253	131	133	107
Volume Left	42	92	24	0
Volume Right	36	0	54	9
cSH	1571	1372	505	441
Volume to Capacity	0.03	0.07	0.26	0.24
Queue Length 95th (m)	0.7	1.7	8.4	7.5
Control Delay (s)	1.4	5.6	14.7	15.8
Lane LOS	A	A	B	C
Approach Delay (s)	1.4	5.6	14.7	15.8
Approach LOS			B	C

Intersection Summary				
Average Delay	7.6			
Intersection Capacity Utilization	33.5%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	9	110	92	105	191	4
Future Volume (Veh/h)	9	110	92	105	191	4
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	10	124	103	118	215	4
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	221				306	162
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	221				306	162
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				69	100
cM capacity (veh/h)	1360				685	888

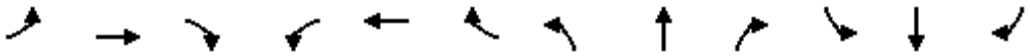
Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	134	221	219
Volume Left	10	0	215
Volume Right	0	118	4
cSH	1360	1700	688
Volume to Capacity	0.01	0.13	0.32
Queue Length 95th (m)	0.2	0.0	11.0
Control Delay (s)	0.6	0.0	12.7
Lane LOS	A		B
Approach Delay (s)	0.6	0.0	12.7
Approach LOS			B

Intersection Summary			
Average Delay	5.0		
Intersection Capacity Utilization	30.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	5	292	25	4	195	9
Future Volume (Veh/h)	5	292	25	4	195	9
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	317	27	4	212	10
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			322		222	164
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			322		222	164
tC, single (s)			4.2		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.3		3.5	3.3
p0 queue free %			98		72	99
cM capacity (veh/h)			1173		753	886

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	322	31	222
Volume Left	0	27	212
Volume Right	317	0	10
cSH	1700	1173	759
Volume to Capacity	0.19	0.02	0.29
Queue Length 95th (m)	0.0	0.6	9.8
Control Delay (s)	0.0	7.1	11.7
Lane LOS		A	B
Approach Delay (s)	0.0	7.1	11.7
Approach LOS			B

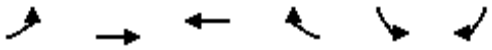
Intersection Summary			
Average Delay	4.9		
Intersection Capacity Utilization	39.7%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	21	11	154	6	2	64	3	233	4	4	3
Future Volume (Veh/h)	3	21	11	154	6	2	64	3	233	4	4	3
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	3	23	12	171	7	2	71	3	259	4	4	3
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	9			35			390	386	29	646	391	8
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	9			35			390	386	29	646	391	8
tC, single (s)	4.1			4.2			7.2	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.6	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			89			86	99	75	98	99	100
cM capacity (veh/h)	1624			1526			507	489	1037	264	485	1080

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	38	180	333	11
Volume Left	3	171	71	4
Volume Right	12	2	259	3
cSH	1624	1526	841	421
Volume to Capacity	0.00	0.11	0.40	0.03
Queue Length 95th (m)	0.0	3.0	15.3	0.6
Control Delay (s)	0.6	7.3	12.1	13.8
Lane LOS	A	A	B	B
Approach Delay (s)	0.6	7.3	12.1	13.8
Approach LOS			B	B

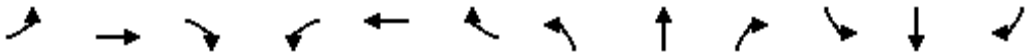
Intersection Summary				
Average Delay	9.8			
Intersection Capacity Utilization	42.8%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	154	167	39	13	23	30
Future Volume (Veh/h)	154	167	39	13	23	30
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	167	182	42	14	25	33
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	56				565	49
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	56				565	49
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	89				94	97
cM capacity (veh/h)	1549				434	1020

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	349	56	58
Volume Left	167	0	25
Volume Right	0	14	33
cSH	1549	1700	644
Volume to Capacity	0.11	0.03	0.09
Queue Length 95th (m)	2.9	0.0	2.4
Control Delay (s)	4.1	0.0	11.1
Lane LOS	A		B
Approach Delay (s)	4.1	0.0	11.1
Approach LOS			B

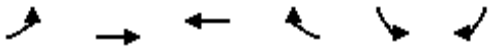
Intersection Summary			
Average Delay	4.5		
Intersection Capacity Utilization	34.0%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	58	45	0	98	40	0	9	15	15	0	171	11
Future Volume (Veh/h)	58	45	0	98	40	0	9	15	15	0	171	11
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.69	0.69	0.69	0.69	0.95	0.69	0.95	0.69	0.95	0.95	0.95
Hourly flow rate (vph)	61	65	0	142	58	0	13	16	22	0	180	12
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	58			65			631	529	65	559	529	58
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	58			65			631	529	65	559	529	58
tC, single (s)	4.1			4.2			7.1	6.5	6.5	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.5	4.0	3.6	3.5	4.0	3.3
p0 queue free %	96			91			94	96	98	100	55	99
cM capacity (veh/h)	1546			1512			229	396	919	375	396	1008

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	126	200	51	192
Volume Left	61	142	13	0
Volume Right	0	0	22	12
cSH	1546	1512	421	412
Volume to Capacity	0.04	0.09	0.12	0.47
Queue Length 95th (m)	1.0	2.5	3.3	19.3
Control Delay (s)	3.8	5.6	14.7	21.2
Lane LOS	A	A	B	C
Approach Delay (s)	3.8	5.6	14.7	21.2
Approach LOS			B	C

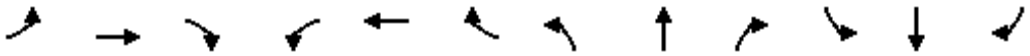
Intersection Summary				
Average Delay	11.3			
Intersection Capacity Utilization	26.7%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	103	56	4	0	45
Future Volume (Veh/h)	0	103	56	4	0	45
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	108	59	4	0	47
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	63				169	61
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	63				169	61
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	95
cM capacity (veh/h)	1540				821	1004

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	108	63	47
Volume Left	0	0	0
Volume Right	0	4	47
cSH	1540	1700	1004
Volume to Capacity	0.00	0.04	0.05
Queue Length 95th (m)	0.0	0.0	1.2
Control Delay (s)	0.0	0.0	8.8
Lane LOS			A
Approach Delay (s)	0.0	0.0	8.8
Approach LOS			A

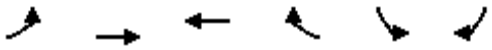
Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	15.4%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	193	126	3	66	28	0	17	51	39	0	113	8
Future Volume (Veh/h)	193	126	3	66	28	0	17	51	39	0	113	8
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.72	0.72	0.72	0.72	0.92	0.72	0.92	0.72	0.92	0.92	0.92
Hourly flow rate (vph)	210	175	4	92	39	0	24	55	54	0	123	9
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	39			179			890	820	177	902	822	39
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	39			179			890	820	177	902	822	39
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	87			93			83	78	94	100	51	99
cM capacity (veh/h)	1571			1409			140	251	866	173	250	1033

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	389	131	133	132
Volume Left	210	92	24	0
Volume Right	4	0	54	9
cSH	1571	1409	294	264
Volume to Capacity	0.13	0.07	0.45	0.50
Queue Length 95th (m)	3.7	1.7	17.9	20.8
Control Delay (s)	4.7	5.6	27.0	31.6
Lane LOS	A	A	D	D
Approach Delay (s)	4.7	5.6	27.0	31.6
Approach LOS			D	D

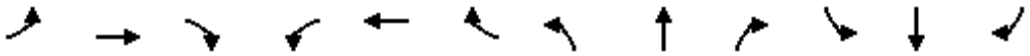
Intersection Summary				
Average Delay	13.1			
Intersection Capacity Utilization	41.5%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	321	39	13	0	30
Future Volume (Veh/h)	0	321	39	13	0	30
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	349	42	14	0	33
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	56				398	49
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	56				398	49
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	97
cM capacity (veh/h)	1549				607	1020

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	349	56	33
Volume Left	0	0	0
Volume Right	0	14	33
cSH	1549	1700	1020
Volume to Capacity	0.00	0.03	0.03
Queue Length 95th (m)	0.0	0.0	0.8
Control Delay (s)	0.0	0.0	8.6
Lane LOS			A
Approach Delay (s)	0.0	0.0	8.6
Approach LOS			A

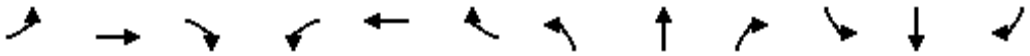
Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	26.9%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	58	45	0	98	40	0	5	19	15	0	171	56
Future Volume (Veh/h)	58	45	0	98	40	0	5	19	15	0	171	56
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.69	0.69	0.69	0.69	0.95	0.69	0.95	0.69	0.95	0.95	0.95
Hourly flow rate (vph)	61	65	0	142	58	0	7	20	22	0	180	59
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	58			65			678	529	65	561	529	58
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	58			65			678	529	65	561	529	58
tC, single (s)	4.1			4.2			7.1	6.5	6.5	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.5	4.0	3.6	3.5	4.0	3.3
p0 queue free %	96			91			97	95	98	100	55	94
cM capacity (veh/h)	1546			1512			203	396	919	371	396	1008

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	126	200	49	239
Volume Left	61	142	7	0
Volume Right	0	0	22	59
cSH	1546	1512	450	466
Volume to Capacity	0.04	0.09	0.11	0.51
Queue Length 95th (m)	1.0	2.5	2.9	23.0
Control Delay (s)	3.8	5.6	14.0	20.6
Lane LOS	A	A	B	C
Approach Delay (s)	3.8	5.6	14.0	20.6
Approach LOS			B	C

Intersection Summary				
Average Delay	11.7			
Intersection Capacity Utilization	29.2%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	193	126	3	66	28	0	4	64	39	0	113	38
Future Volume (Veh/h)	193	126	3	66	28	0	4	64	39	0	113	38
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.72	0.72	0.72	0.72	0.92	0.72	0.92	0.72	0.92	0.92	0.92
Hourly flow rate (vph)	210	175	4	92	39	0	6	70	54	0	123	41
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	39			179			922	820	177	909	822	39
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	39			179			922	820	177	909	822	39
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	87			93			95	72	94	100	51	96
cM capacity (veh/h)	1571			1409			129	251	866	162	250	1033

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	389	131	130	164
Volume Left	210	92	6	0
Volume Right	4	0	54	41
cSH	1571	1409	335	309
Volume to Capacity	0.13	0.07	0.39	0.53
Queue Length 95th (m)	3.7	1.7	14.2	23.4
Control Delay (s)	4.7	5.6	22.4	29.2
Lane LOS	A	A	C	D
Approach Delay (s)	4.7	5.6	22.4	29.2
Approach LOS			C	D

Intersection Summary			
Average Delay	12.6		
Intersection Capacity Utilization	34.9%	ICU Level of Service	A
Analysis Period (min)	15		

APPENDIX I

Menoke Beach TIS Addendum (Tatham Engineering, 2020)

TATHAM ENGINEERING

10 Diana Drive, Building 8, Unit 7
Orillia, Ontario L3V 8K8

T 705-325-1753
E info@tathameng.com
tathameng.com

File 304844-9

October 2, 2020

Andrea Woodrow, MCIP, RPP
Director of Planning & Development
Township of Severn
1024 Hurlwood Lane
Orillia, Ontario L3V 6J3
awoodrow@townshipofsevern.com

Re: Menoke Beach Subdivision, Phase 2, Township of Severn
Traffic Impact Study (TIS) Addendum

Dear Andrea:

On behalf of Menoke Beach Developments, we have prepared this addendum to the *Orsi Development Traffic Impact Study*[1], with a focus on Phase 2 of the proposed Menoke Beach subdivision development.

LOCATION

As illustrated in Figure 1, the proposed development is located on Menoke Beach Road between Amigo Drive and Couchiching Avenue, on the east side of Highway 11.

DEVELOPMENT PLAN

In the 2005 Traffic Impact Study, the Menoke Beach subdivision was proposed to include a total of 271 units, comprised of the following:

- 203 single family detached units; and
- 68 units in seventeen 4-plex units.177 townhouse units (Phases 1 and 2);

Subsequent to this, the subdivision proposal has evolved and 4.4 ha of land was transferred to the Township for a proposed recreation centre. The remaining lands are to support 189 units, as follows:

- 92 single family detached units in Phase 1; and
- 83 single family units and 14 townhouse units in Phase 2.

Given the above, the total residential unit count has been reduced from 271 to 189 units. The corresponding development plans are illustrated in Figure 2 and Figure 3.

[1] *Orsi Development Traffic Impact Study.* Cansult Tatham Transportation Consultants, December 2005.

Phase 1 is currently under construction with all underground infrastructure in place and home construction anticipated to commence soon. The revised Phase 2 is in the design stage.

SITE ACCESS

Initially, 4 new access points to Menoke Beach Road were proposed (via the new subdivision road system).

As part of the current development plan, there are 2 proposed access points to Menoke Beach Road (1 in each of Phase 1 and Phase 2) in addition to a connection to Couchiching Avenue (also in Phase 1). The following access/intersection spacings are noted (as illustrated in Figure 3):

- Quayside Drive (Phase 1 access to Menoke Beach Road) is approximately 250 metres north of Couchiching Avenue (measured centre to centre); and
- Sunbank Crescent (Phase 2 access to Menoke Beach Road) is approximately 260 metres north of Quayside Drive and 125 metres south of Amigo Drive.

Given the local road nature of Menoke Beach Road, Quayside Drive and Sunbank Crescent, the relatively minor traffic volumes on each, and their expected stop-control on the minor street configuration, the noted spacings are considered appropriate.

SITE TRAFFIC

Trip Generation

The change in the number of units within the Menoke Beach subdivision will result in a reduction in the number of trips being generated. Table 1 illustrates the associated trip estimates from the initial development plan and traffic study, whereas Table 2 reflects the revised plan taking into account the recent changes in the overall development size and unit count.

The revised development levels represent a reduction of 30% in the total unit yield (189 vs 271 units) and a reduction of 25% in the associated peak hour traffic volumes. As noted, the site will generate 46 fewer trips in the AM peak hour and 61 fewer trips in the PM peak hour.

Table 1: Site Generated Traffic - Initial Development Plan

LAND USE	SIZE	AM PEAK HOUR			PM PEAK HOUR		
		IN	OUT	TOTAL	IN	OUT	TOTAL
4-plexes (17 bldgs)	68 units	5	25	30	25	12	37
single family	203 units	38	114	152	131	74	205
Total	**271 units**	**43**	**139**	**182**	**156**	**86**	**242**

Table 2: Site Generated Traffic - Current Development Plan

LAND USE	SIZE	AM PEAK HOUR			PM PEAK HOUR		
		IN	OUT	TOTAL	IN	OUT	TOTAL
Phase 1 singles	92 units	17	51	68	57	34	91
Phase 2 singles	83 units	15	46	61	52	30	82
Phase 2 towns	14 units	1	5	6	5	3	8
Total	**189 units**	**34**	**102**	**136**	**114**	**67**	**181**
Reduction in Trips		**9**	**37**	**46**	**42**	**19**	**61**

In considering only Phase 2 traffic (in that Phase 1 is under construction), an additional 67 trips will be generated during the AM peak hour and 90 trips during the PM peak hour, which translates to approximately 1 to 1.5 trips per minute.

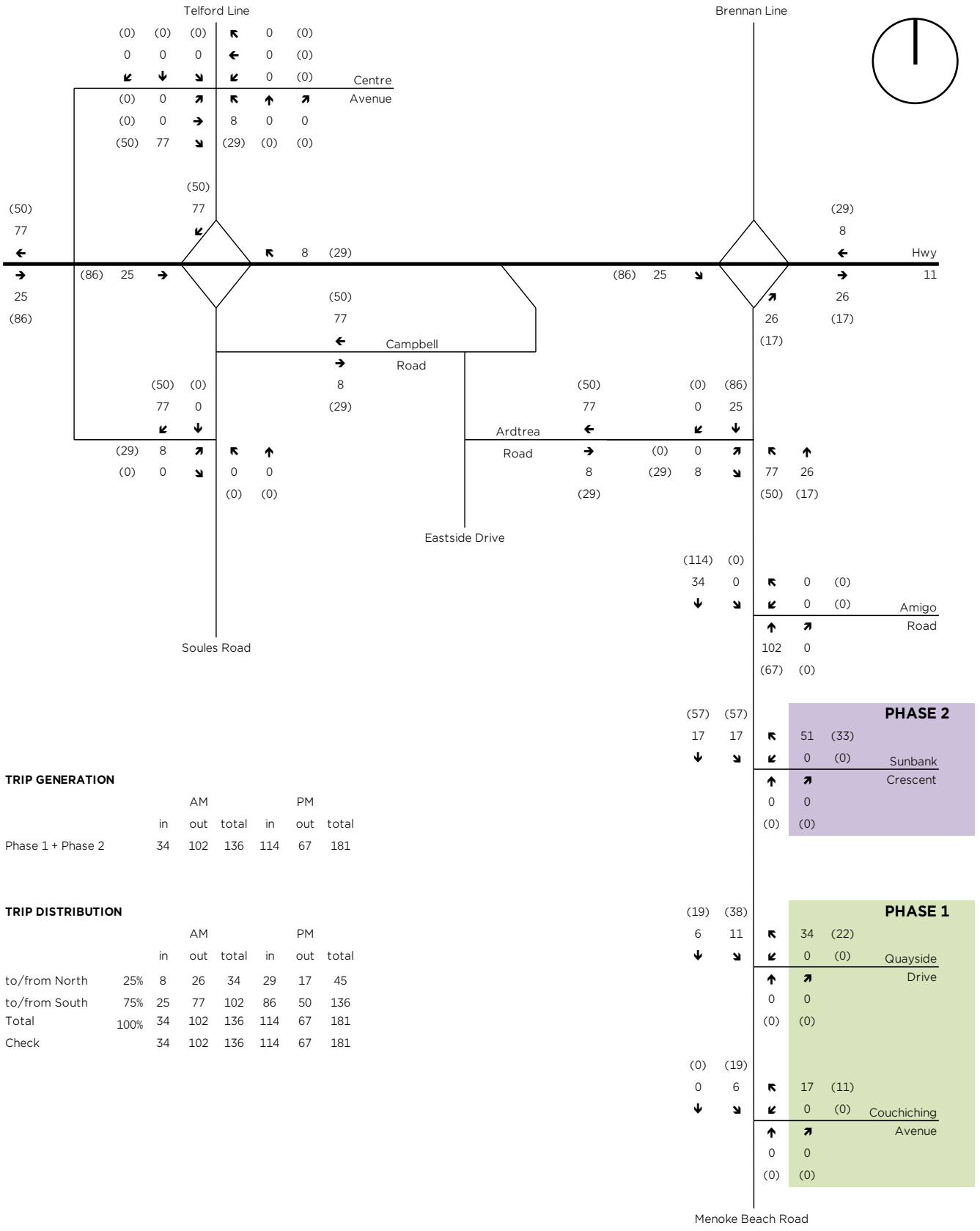
Trip Distribution & Assignment

As employed in the initial 2005 Traffic Impact Study, the following distribution of traffic has been assumed:

- 25% to/from the north; and
- 75% of traffic to/from the south.

This is considered reasonable and appropriate for this study given that the closest urban centres (major trip attractors) are the cities of Orillia and Barrie, located just south of the site.

Traffic was assigned to the site access points in consideration of the phase of development (ie. Phase 1 traffic was assigned to Quayside Drive and Lakepoint Crossing (via Couchiching Avenue); Phase 2 traffic was assigned to Sunbank Crescent). Beyond the site, traffic was assigned to the area road system in consideration of the noted distributions and means of access, recognizing that Menoke Beach Road is limited to a right-in/right-out only with Highway 11 (traffic from the north and to the south must otherwise use the Telford Line/Soules Road interchange with Highway 11). The resulting assignment of the site generated traffic to the area road system is illustrated in Figure 4 for Phase 1, Figure 5 for Phase 2 and Figure 6 for Phase 1 plus Phase 2. It is reiterated that Phase 1 servicing and roads have been constructed, with house construction to commence in the near future.



TRIP GENERATION

	AM			PM		
	in	out	total	in	out	total
Phase 1 + Phase 2	34	102	136	114	67	181

TRIP DISTRIBUTION

		AM			PM		
		in	out	total	in	out	total
to/from North	25%	8	26	34	29	17	45
to/from South	75%	25	77	102	86	50	136
Total	100%	34	102	136	114	67	181
Check		34	102	136	114	67	181

MENOKE BEACH SUBDIVISION

Figure 6: Phase 1 + Phase 2 Site Traffic

APPENDIX J

ITE 11th Edition Trip Generation Excerpts

Land Use: 210
Single-Family Detached Housing

Description

A single-family detached housing site includes any single-family detached home on an individual lot. A typical site surveyed is a suburban subdivision.

Specialized Land Use

Data have been submitted for several single-family detached housing developments with homes that are commonly referred to as patio homes. A patio home is a detached housing unit that is located on a small lot with little (or no) front or back yard. In some subdivisions, communal maintenance of outside grounds is provided for the patio homes. The three patio home sites total 299 dwelling units with overall weighted average trip generation rates of 5.35 vehicle trips per dwelling unit for weekday, 0.26 for the AM adjacent street peak hour, and 0.47 for the PM adjacent street peak hour. These patio home rates based on a small sample of sites are lower than those for single-family detached housing (Land Use 210), lower than those for single-family attached housing (Land Use 251), and higher than those for senior adult housing -- single-family (Land Use 251). Further analysis of this housing type will be conducted in a future edition of *Trip Generation Manual*.

Additional Data

The technical appendices provide supporting information on time-of-day distributions for this land use. The appendices can be accessed through either the ITETripGen web app or the trip generation resource page on the ITE website (https://www.ite.org/technical-resources/topics/trip-and-parking-generation/).

For 30 of the study sites, data on the number of residents and number of household vehicles are available. The overall averages for the 30 sites are 3.6 residents per dwelling unit and 1.5 vehicles per dwelling unit.

The sites were surveyed in the 1980s, the 1990s, the 2000s, and the 2010s in Arizona, California, Connecticut, Delaware, Illinois, Indiana, Kentucky, Maryland, Massachusetts, Minnesota, Montana, New Jersey, North Carolina, Ohio, Ontario (CAN), Oregon, Pennsylvania, South Carolina, South Dakota, Tennessee, Vermont, Virginia, and West Virginia.

Source Numbers

100, 105, 114, 126, 157, 167, 177, 197, 207, 211, 217, 267, 275, 293, 300, 319, 320, 356, 357, 367, 384, 387, 407, 435, 522, 550, 552, 579, 598, 601, 603, 614, 637, 711, 716, 720, 728, 735, 868, 869, 903, 925, 936, 1005, 1007, 1008, 1010, 1033, 1066, 1077,1078, 1079

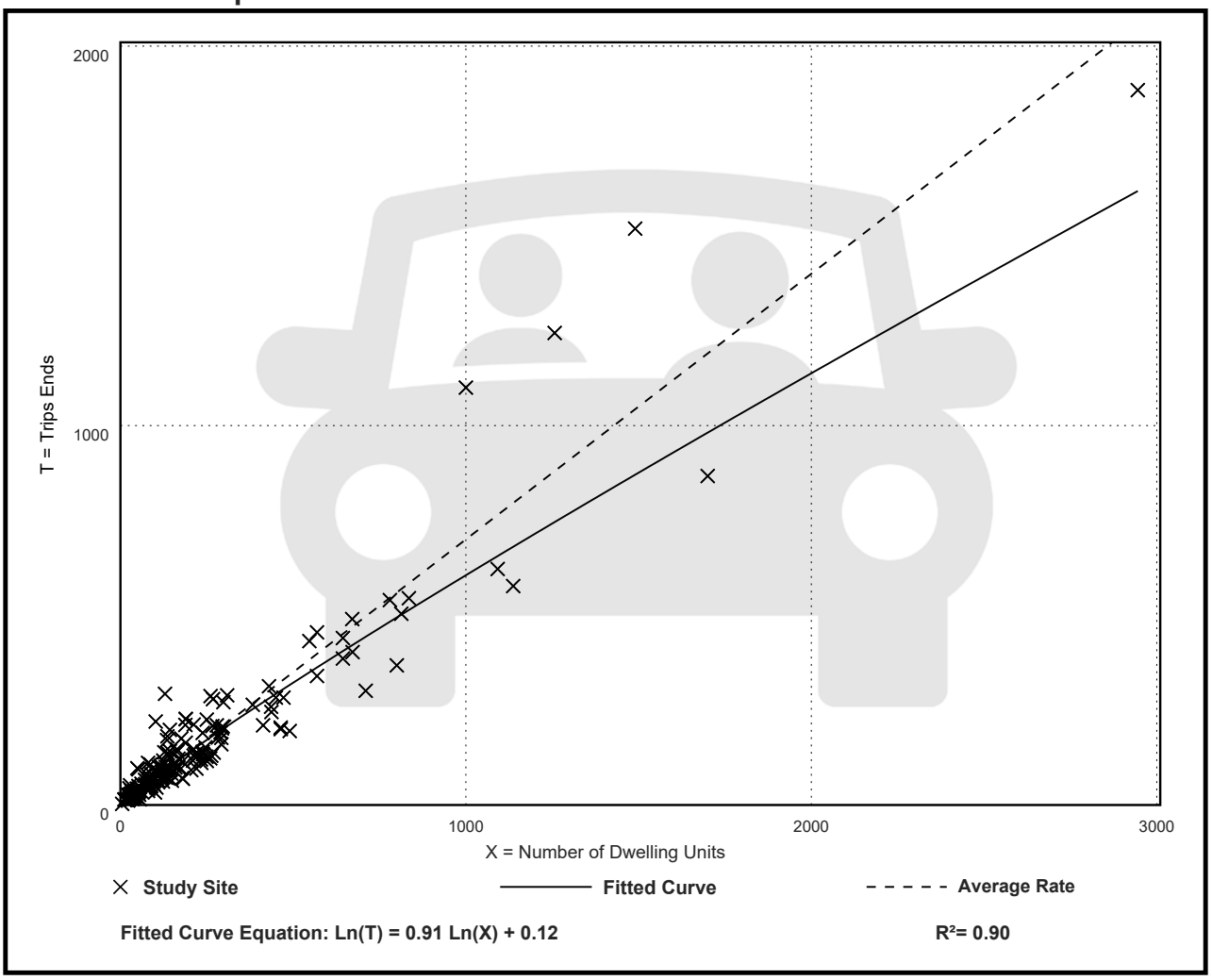
Single-Family Detached Housing
(210)

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: 192
Avg. Num. of Dwelling Units: 226
Directional Distribution: 26% entering, 74% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.70	0.27 - 2.27	0.24

Data Plot and Equation



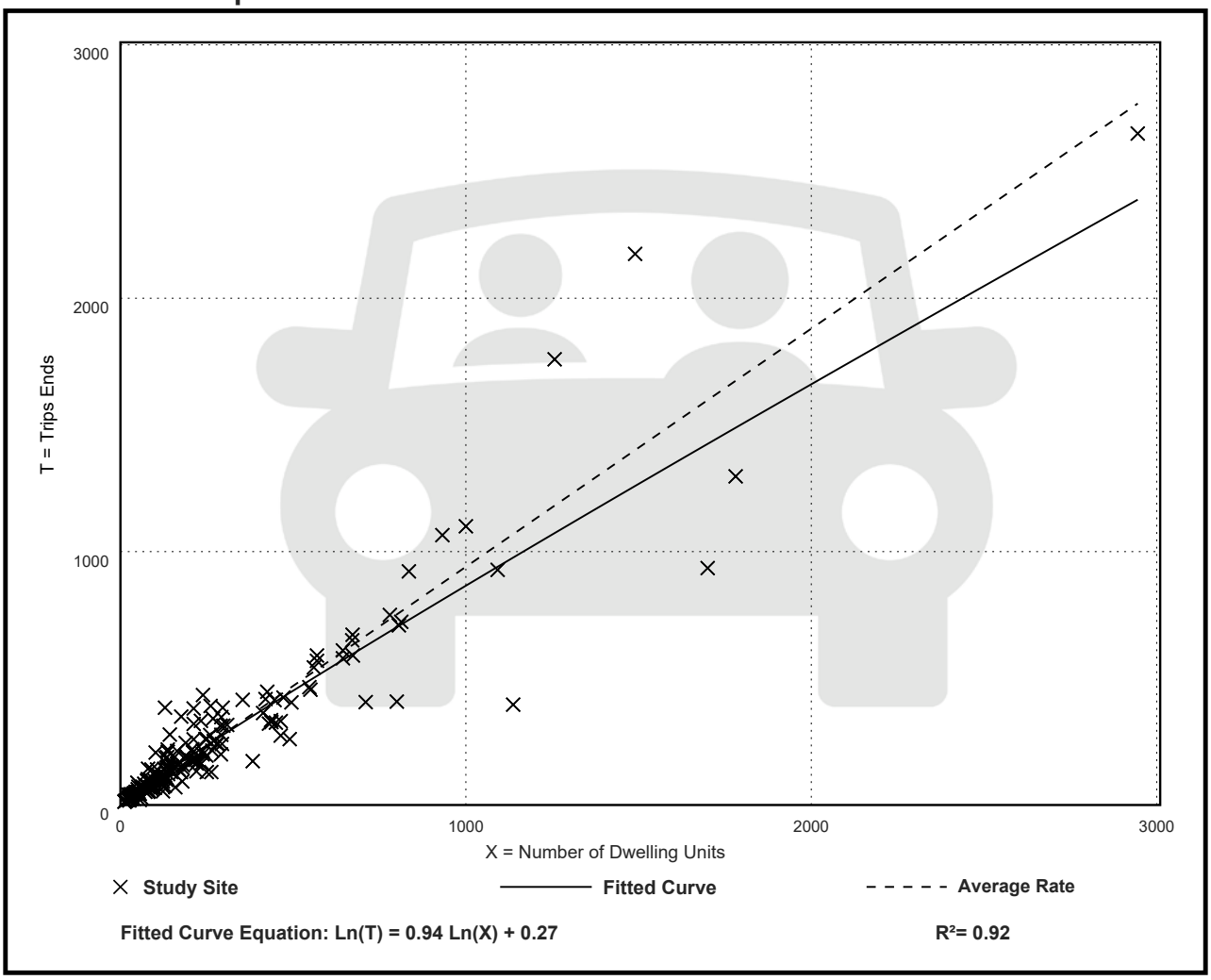
Single-Family Detached Housing
(210)

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: 208
Avg. Num. of Dwelling Units: 248
Directional Distribution: 63% entering, 37% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.94	0.35 - 2.98	0.31

Data Plot and Equation



Land Use: 220
Multifamily Housing (Low-Rise)

Description

Low-rise multifamily housing includes apartments, townhouses, and condominiums located within the same building with at least three other dwelling units and that have two or three floors (levels). Various configurations fit this description, including walkup apartment, mansion apartment, and stacked townhouse.

- A walkup apartment typically is two or three floors in height with dwelling units that are accessed by a single or multiple entrances with stairways and hallways.

- A mansion apartment is a single structure that contains several apartments within what appears to be a single-family dwelling unit.

- A fourplex is a single two-story structure with two matching dwelling units on the ground and second floors. Access to the individual units is typically internal to the structure and provided through a central entry and stairway.

- A stacked townhouse is designed to match the external appearance of a townhouse. But, unlike a townhouse dwelling unit that only shares walls with an adjoining unit, the stacked townhouse units share both floors and walls. Access to the individual units is typically internal to the structure and provided through a central entry and stairway.

Multifamily housing (mid-rise) (Land Use 221), multifamily housing (high-rise) (Land Use 222), affordable housing (Land Use 223), and off-campus student apartment (low-rise) (Land Use 225) are related land uses.

Land Use Subcategory

Data are presented for two subcategories for this land use: (1) not close to rail transit and (2) close to rail transit. A site is considered close to rail transit if the walking distance between the residential site entrance and the closest rail transit station entrance is ½ mile or less.

Additional Data

For the three sites for which both the number of residents and the number of occupied dwelling units were available, there were an average of 2.72 residents per occupied dwelling unit.

For the two sites for which the numbers of both total dwelling units and occupied dwelling units were available, an average of 96.2 percent of the total dwelling units were occupied.

The technical appendices provide supporting information on time-of-day distributions for this land use. The appendices can be accessed through either the ITETripGen web app or the trip

generation resource page on the ITE website (https://www.ite.org/technical-resources/topics/trip-and-parking-generation/).

For the three sites for which data were provided for both occupied dwelling units and residents, there was an average of 2.72 residents per occupied dwelling unit.

It is expected that the number of bedrooms and number of residents are likely correlated to the trips generated by a residential site. To assist in future analysis, trip generation studies of all multifamily housing should attempt to obtain information on occupancy rate and on the mix of residential unit sizes (i.e., number of units by number of bedrooms at the site complex).

The sites were surveyed in the 1980s, the 1990s, the 2000s, the 2010s, and the 2020s in British Columbia (CAN), California, Delaware, Florida, Georgia, Illinois, Indiana, Maine, Maryland, Massachusetts, Minnesota, New Jersey, Ontario (CAN), Oregon, Pennsylvania, South Carolina, South Dakota, Tennessee, Texas, Utah, and Washington.

Source Numbers

188, 204, 237, 300, 305, 306, 320, 321, 357, 390, 412, 525, 530, 579, 583, 638, 864, 866, 896, 901, 903, 904, 936, 939, 944, 946, 947, 948, 963, 964, 966, 967, 1012, 1013, 1014, 1036, 1047, 1056, 1071, 1076

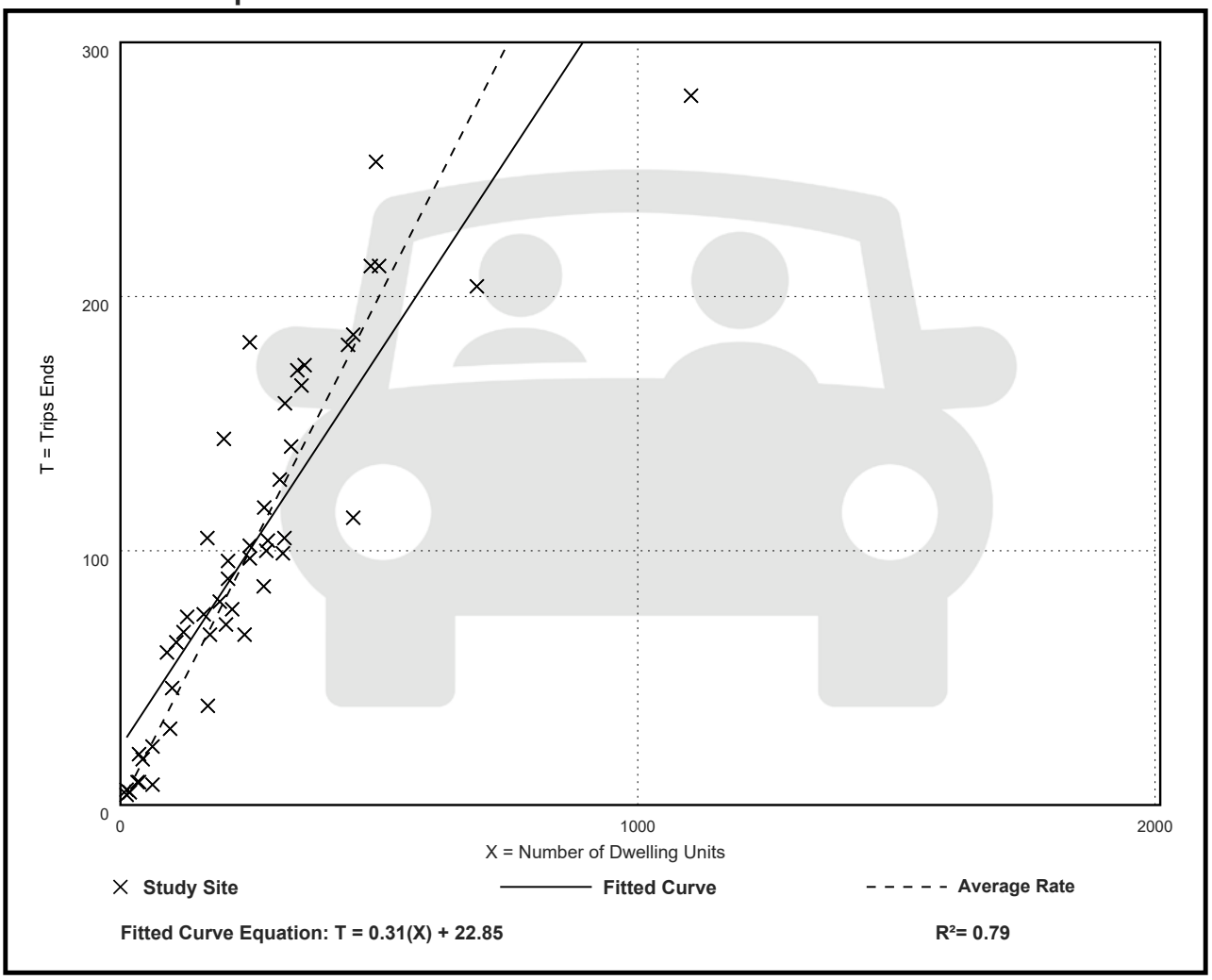
Multifamily Housing (Low-Rise)
Not Close to Rail Transit (220)

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: 49
Avg. Num. of Dwelling Units: 249
Directional Distribution: 24% entering, 76% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.40	0.13 - 0.73	0.12

Data Plot and Equation



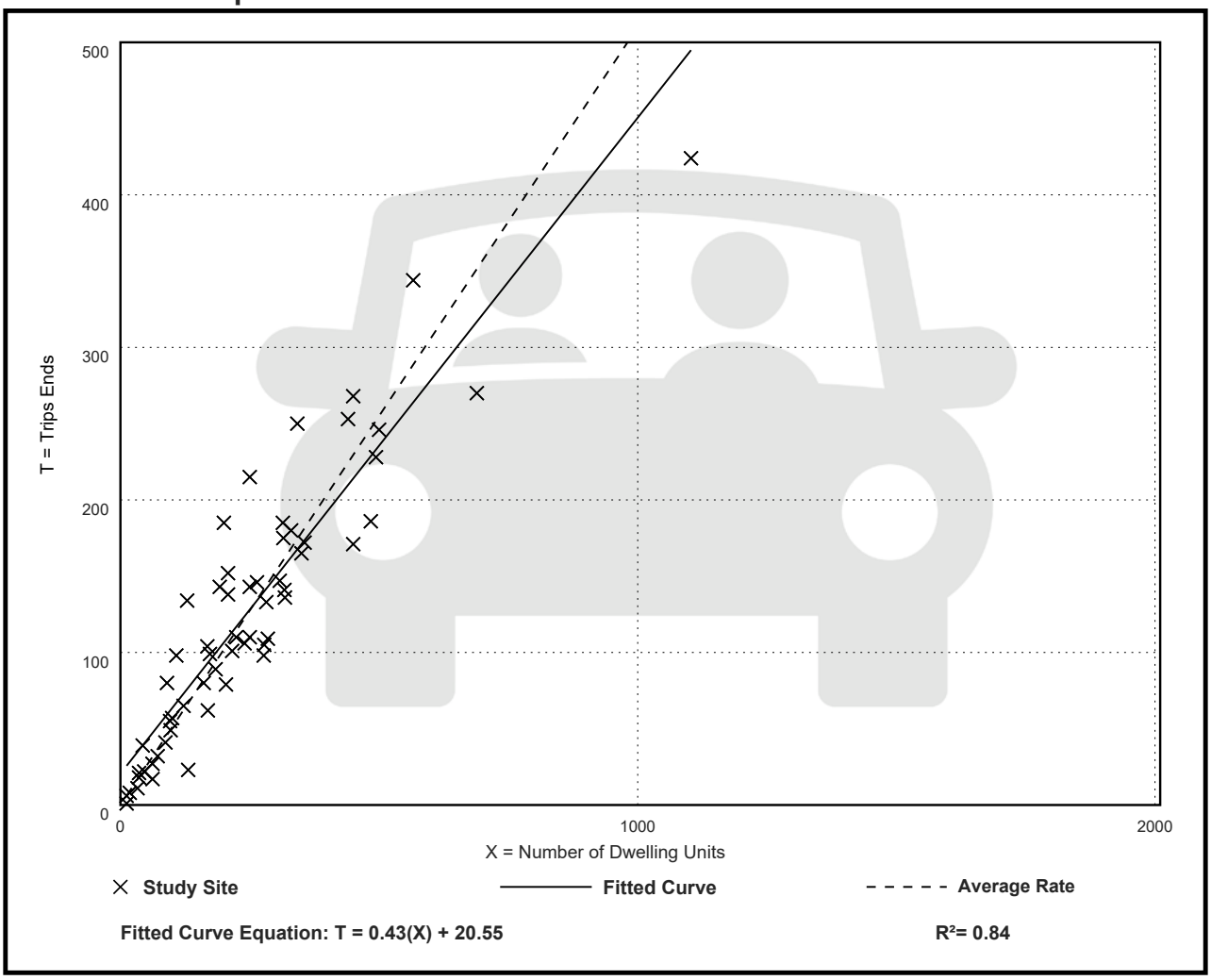
Multifamily Housing (Low-Rise)
Not Close to Rail Transit (220)

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: 59
Avg. Num. of Dwelling Units: 241
Directional Distribution: 63% entering, 37% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.51	0.08 - 1.04	0.15

Data Plot and Equation



APPENDIX K

Transportation Tomorrow Survey Results

Tue Dec 14 2021 09:29:05 GMT-0500 (Eastern Standard Time) - Run Time: 2384ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: Planning district of destination - pd_dest
Column: Planning district of origin - pd_orig

Filters:
Planning district of origin - pd_orig In 134
and
Start time of trip - start_time In 0600-1000

Trip 2016
Table:

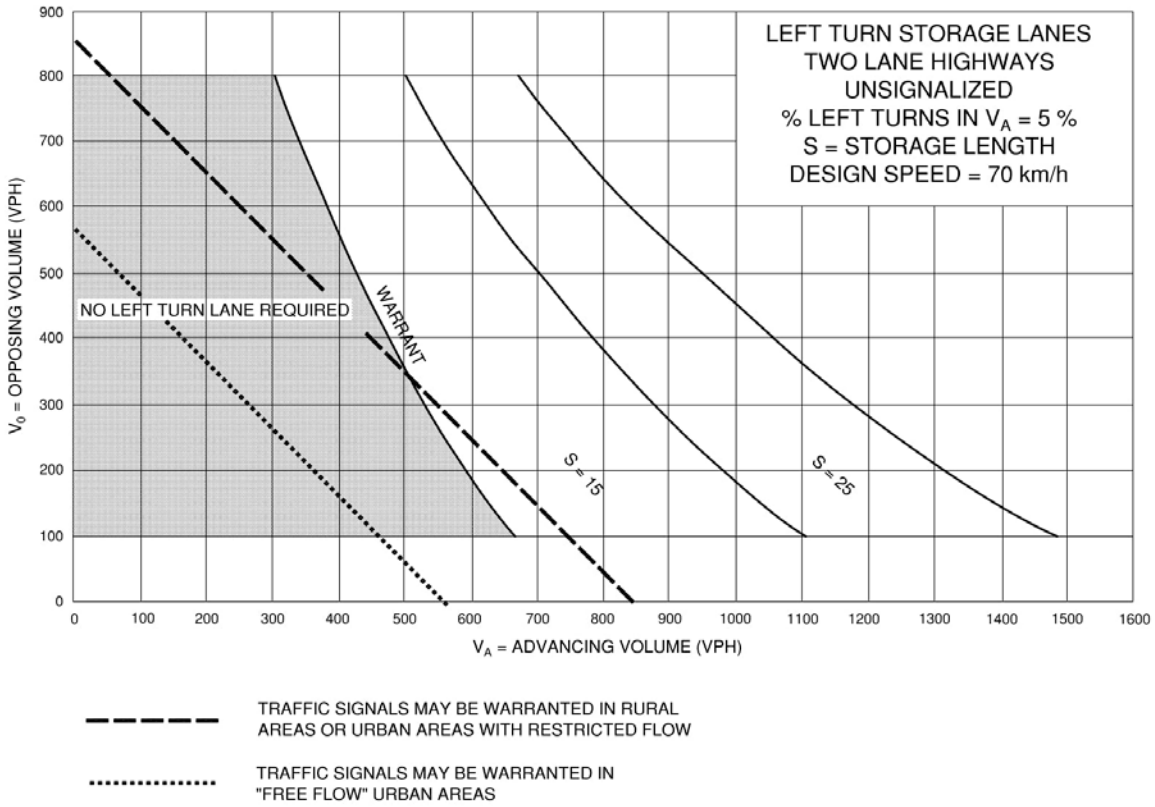
	Number	Direction	
PD 1 of Toronto	68	South	
PD 3 of Toronto	10	South	
PD 6 of Toronto	15	South	
Brock	15	South	
Whitby	19	South	
Georgina	37	South	
Newmarket	95	South	
Markham	33	South	
Vaughan	9	South	
Brampton	38	South	
Oakville	19	South	
Barrie	626	South	
Innisfil	55	South	
Essa	10	South	
Springwater	45	South	
Kawartha Lakes	12	North	
Muskoka	257	North	
Collingwood	27	South	
Penetanguishene	53	south	
Midland	49	South	
Oro-Medonte	377	South	
Severn	1138	North	
Ramara	69.6	North	60%
	46.4	South	40%
Orillia	3442	South	
External	152	North	

Direction	Sum of Number	Percent
North	1628.6	24%
South	5088.4	76%
Grand Total	**6717**	

APPENDIX L

Auxiliary Left-Turn Lane Warrants

Exhibit 9A-11



2036 - FT AM Full Moves

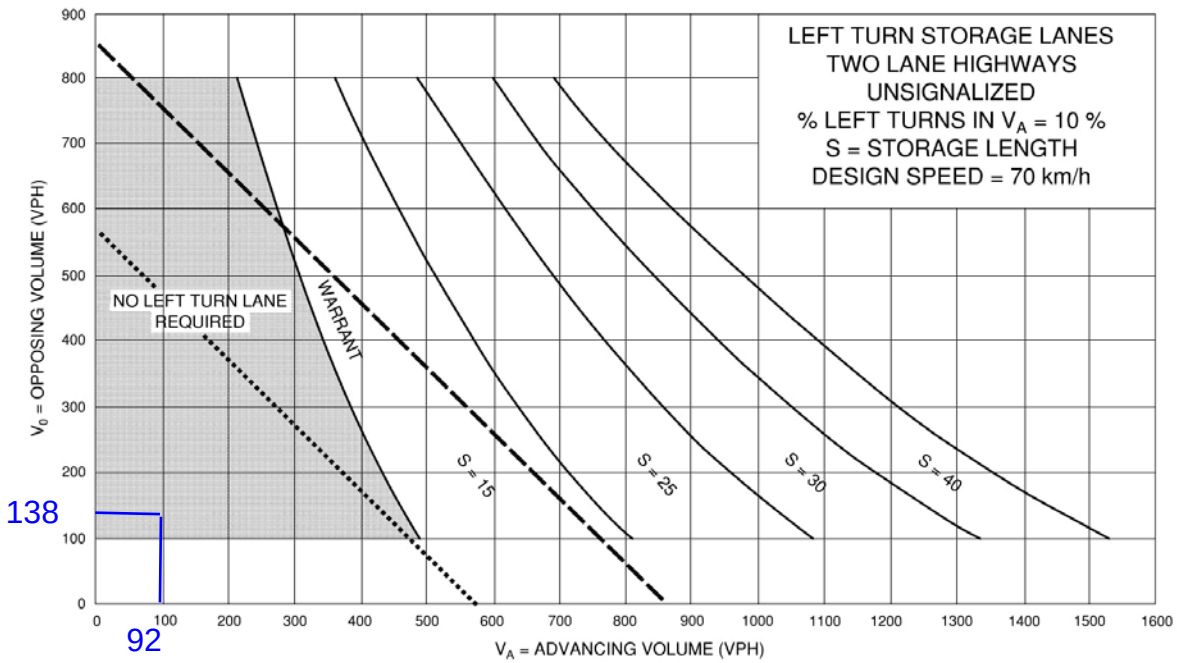
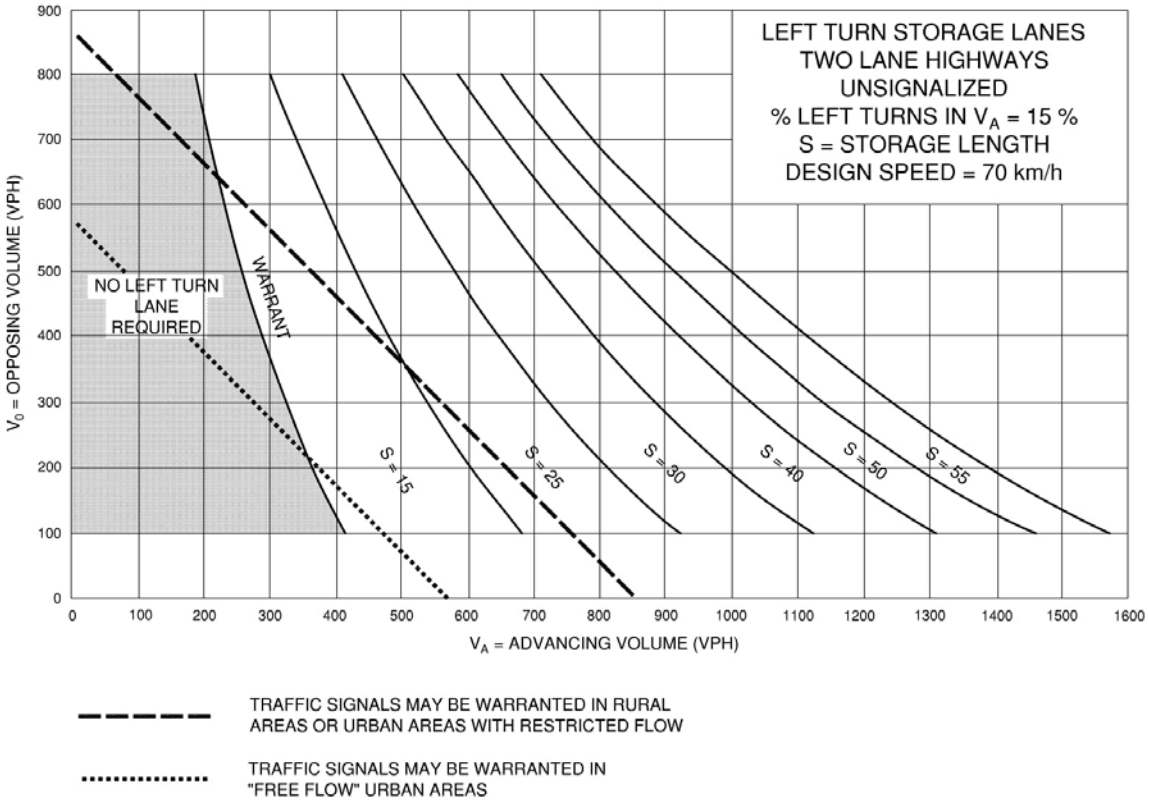
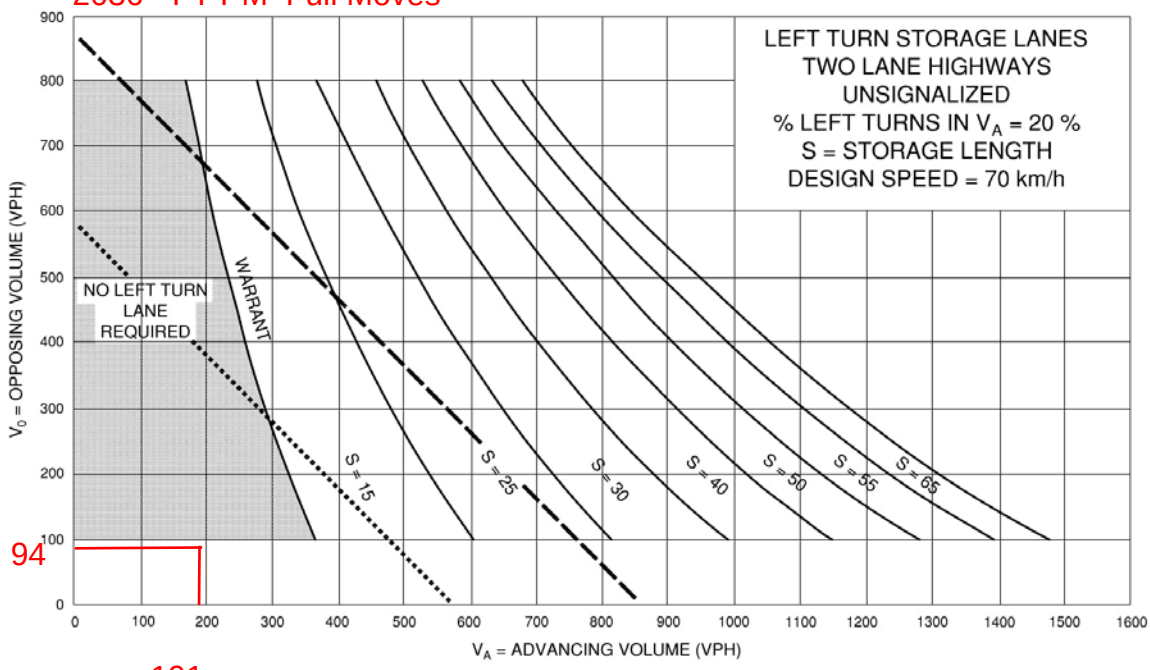


Exhibit 9A-12



2036 - FT PM Full Moves

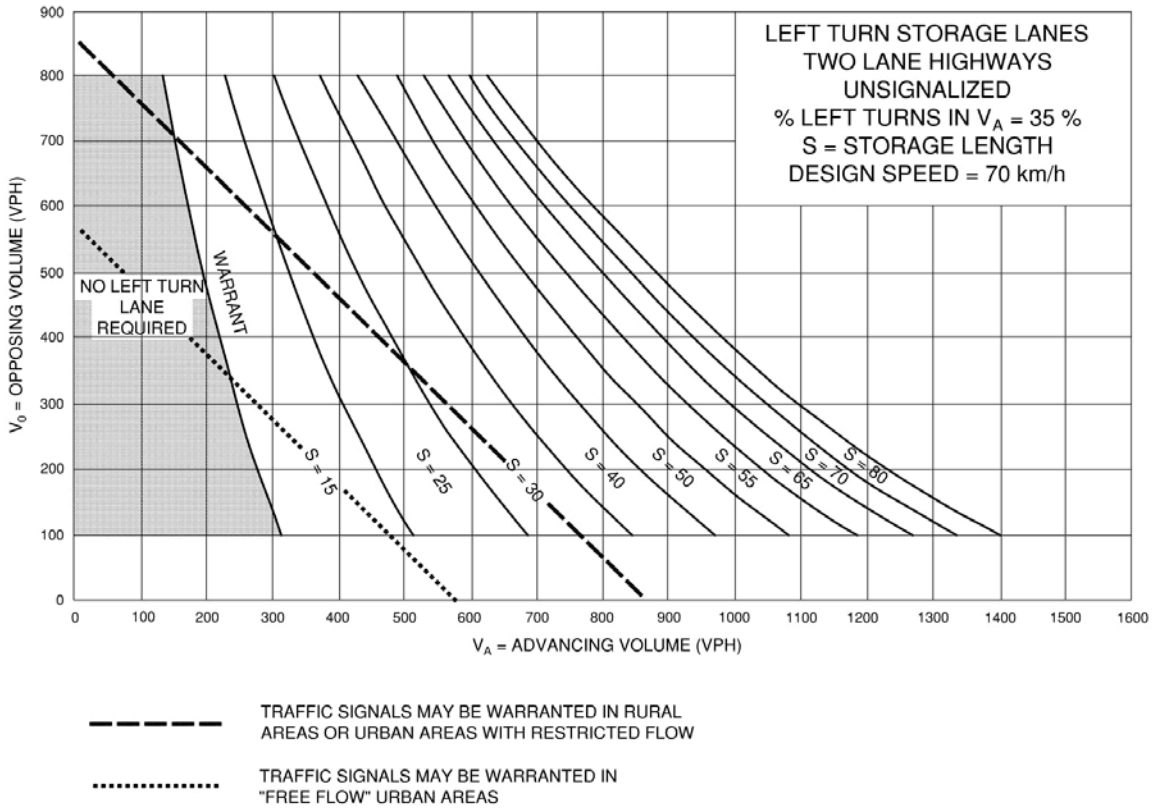


94

191

Ardtrea Drive and Menoke Beach Road - Two Full Moves - Westbound

Exhibit 9A-14



2036 - FT AM Full Moves

2036 - FT PM Full Moves

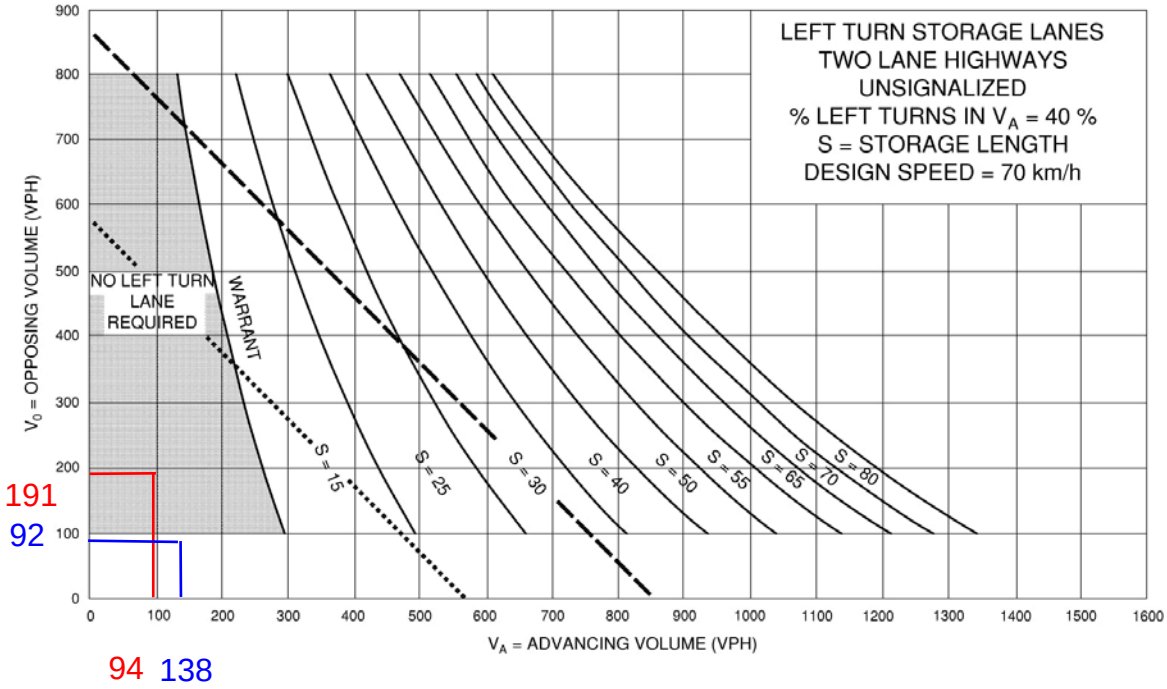
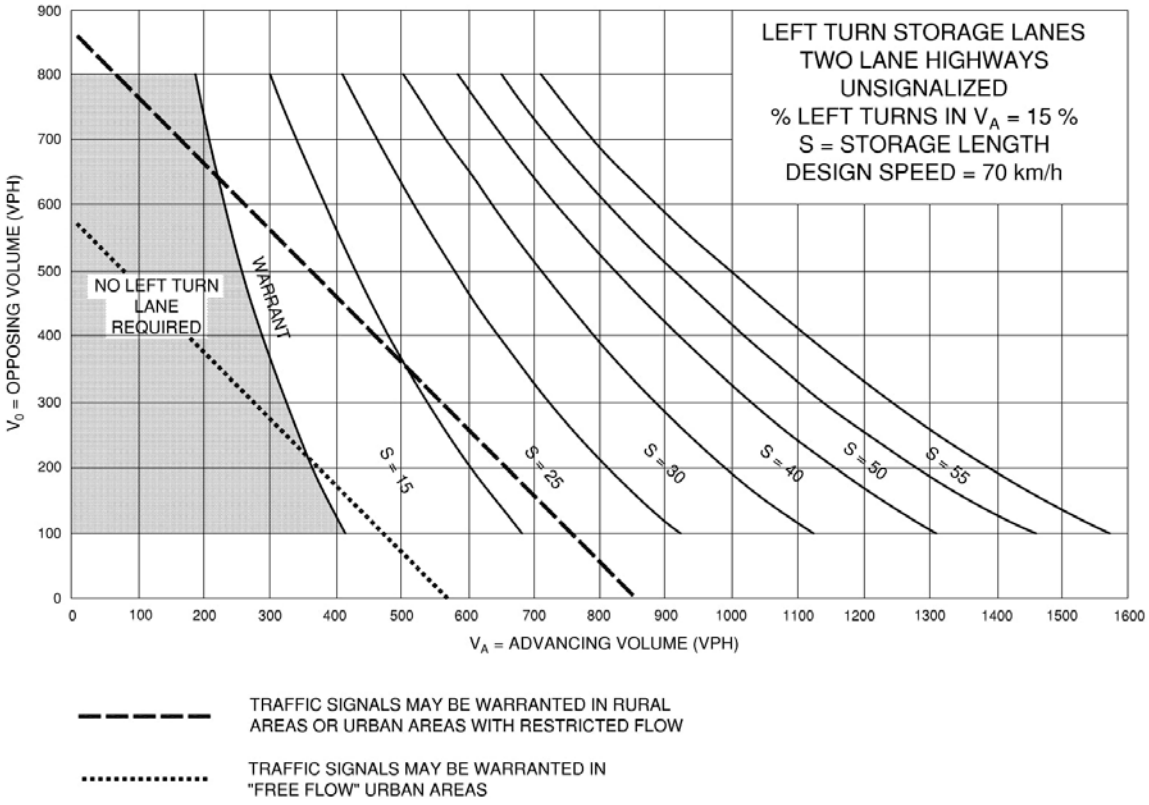
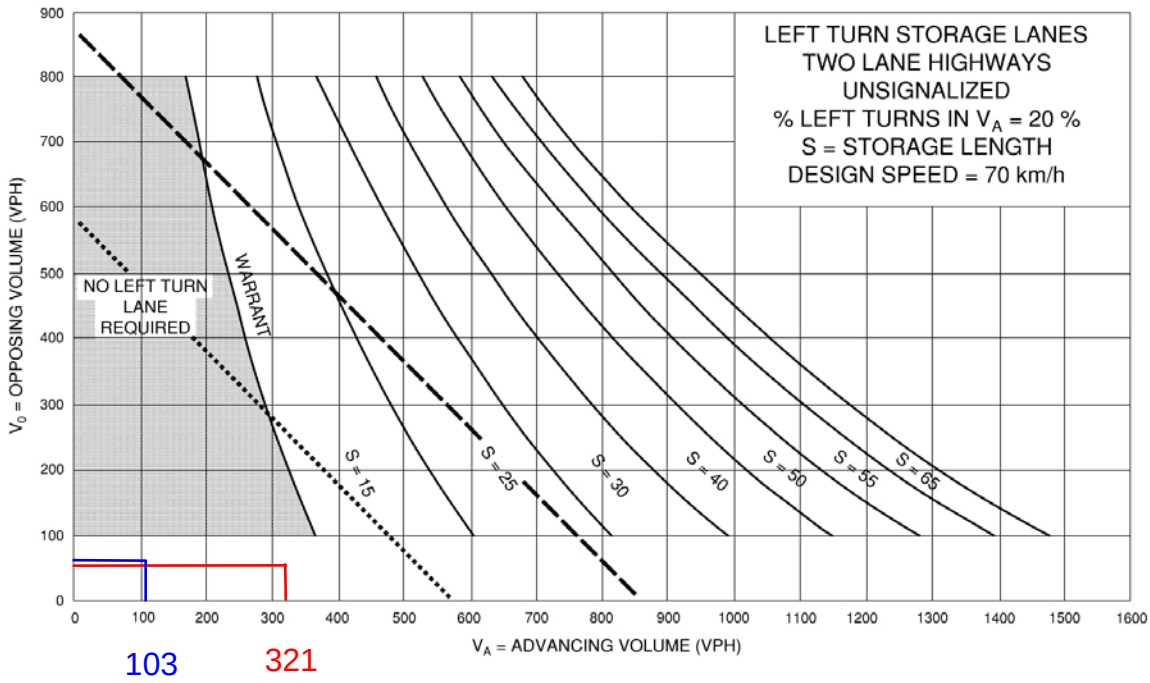


Exhibit 9A-12



2036 - FT AM EBL

2036 - FT PM EBL



60
52

103 321

Exhibit 9A-14

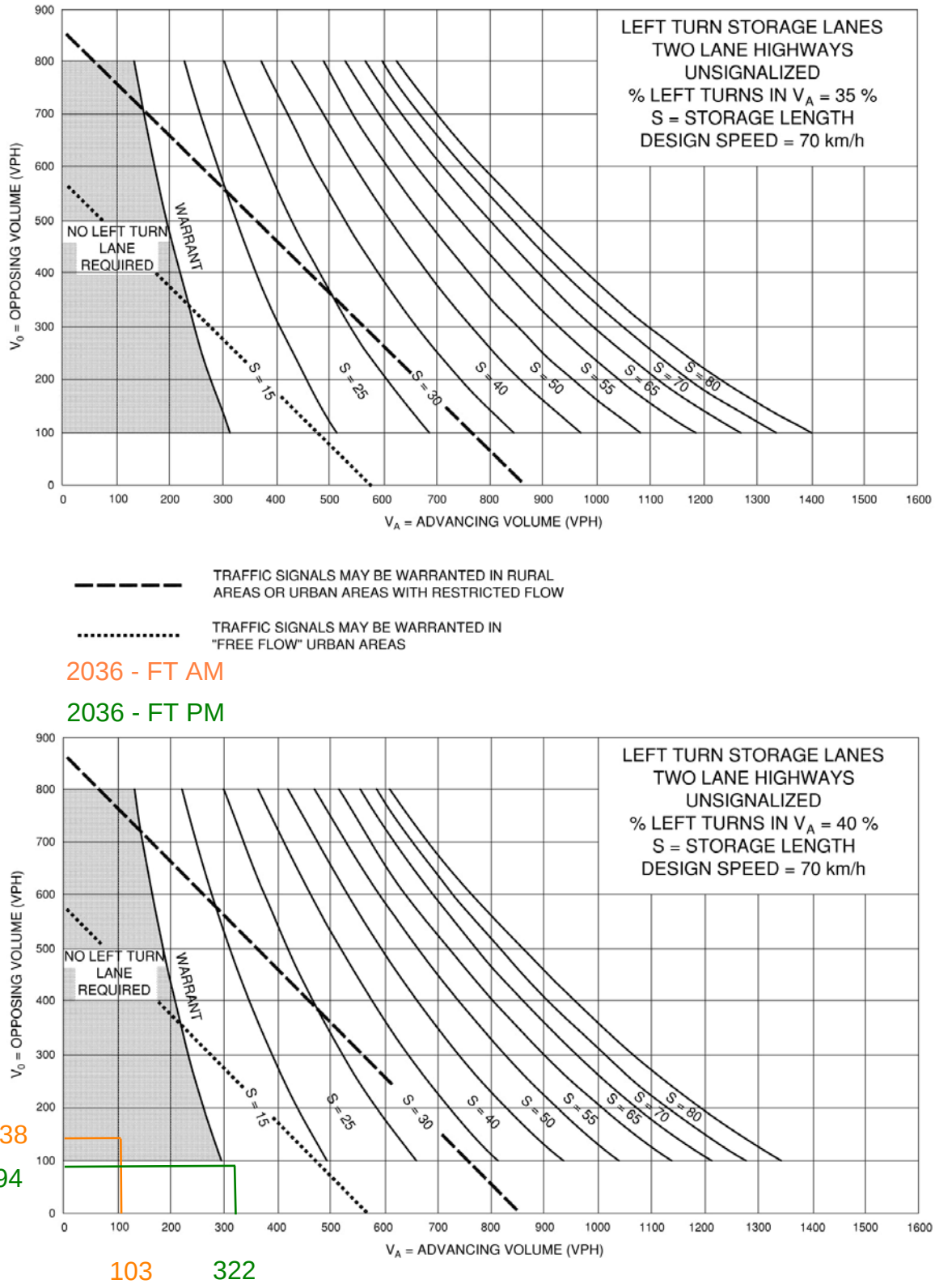
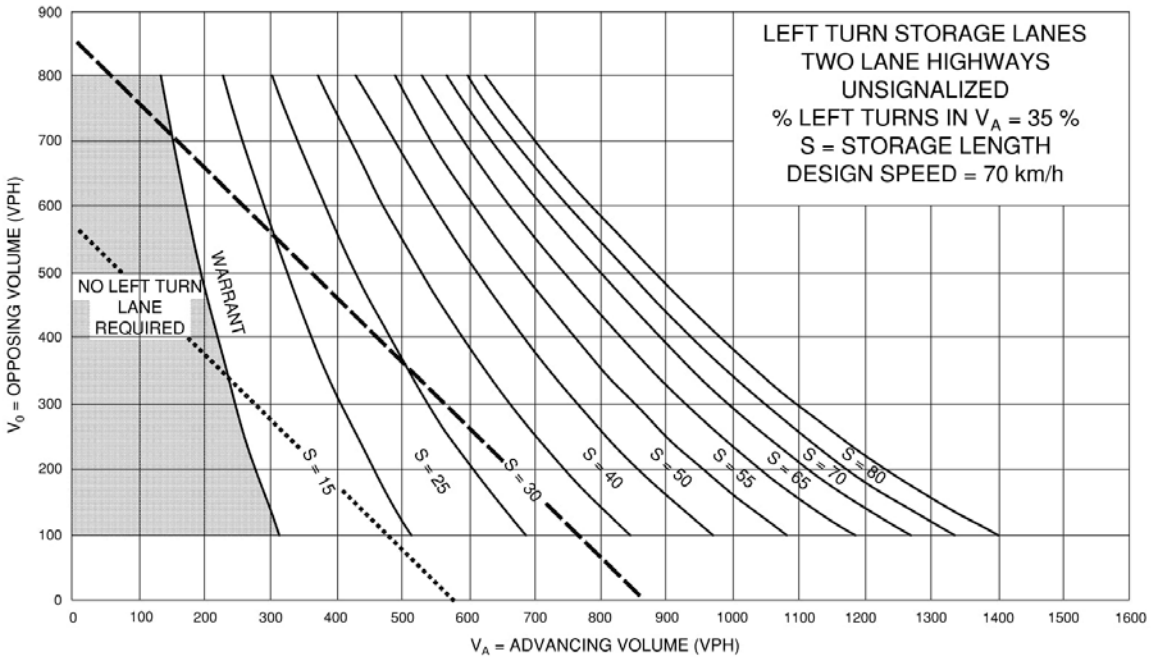


Exhibit 9A-14

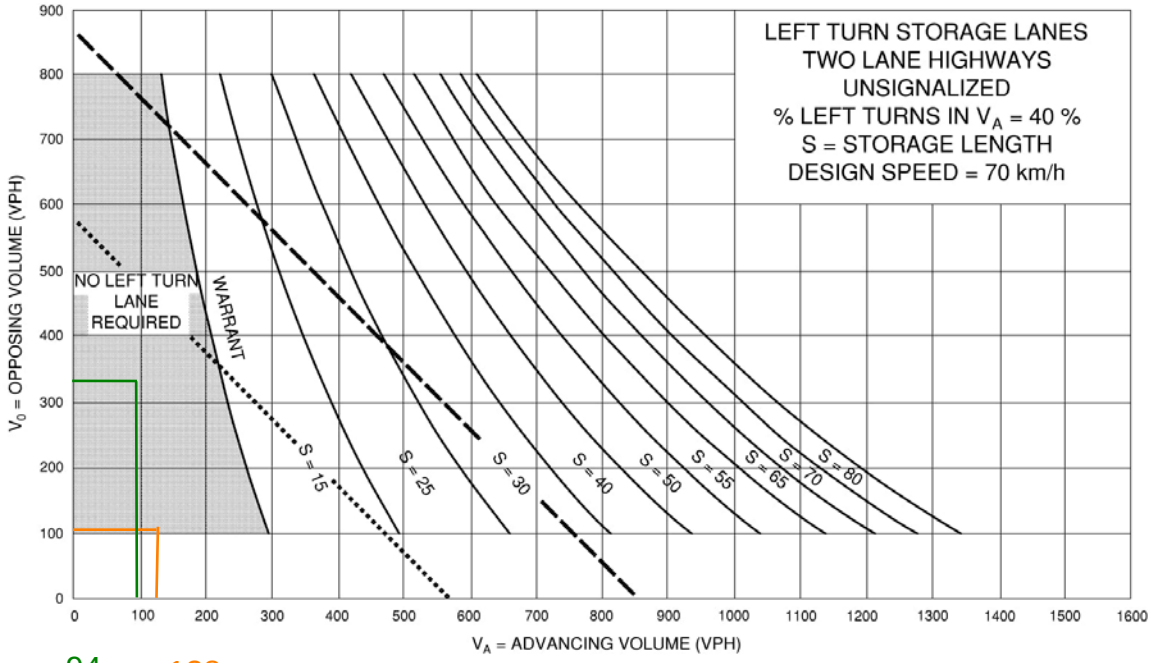


TRAFFIC SIGNALS MAY BE WARRANTED IN RURAL AREAS OR URBAN AREAS WITH RESTRICTED FLOW

TRAFFIC SIGNALS MAY BE WARRANTED IN "FREE FLOW" URBAN AREAS

2036 - FT AM WBL

2036 - FT PM WBL



322

103

94

138

APPENDIX M

TAC GDGCR Stopping Sight Distance

Stopping sight distance is the sum of the distance travelled during the perception and reaction time and the braking distance.

$$SSD = 0.278Vt + 0.039 \frac{V^2}{a} \quad (2.5.2)$$

Where:

SSD = Stopping sight distance (m)
t = Brake reaction time, 2.5 s
V = Design speed (km/h)
a = Deceleration rate (m/s^2)

Table 2.5.2 gives the minimum stopping sight distances on level grade, on wet pavement, for a range of design speeds. These values are used for vertical curve design, intersection geometry and the placement of traffic control devices. The stopping sight distances quoted in **Table 2.5.2** may need to be increased for a variety of reasons related to grade and vehicle type as noted below.

Table 2.5.2: Stopping Sight Distance on level roadways for Automobiles[54]

Design speed (km/h)	Brake reaction distance (m)	Braking distance on level (m)	Stopping sight distance	
			Calculated (m)	Design (m)
20	13.9	4.6	18.5	20
30	20.9	10.3	31.2	35
40	27.8	18.4	46.2	50
50	34.8	28.7	63.5	65
60	41.7	41.3	83.0	85
70	48.7	56.2	104.9	105
80	55.6	73.4	129.0	130
90	62.6	92.9	155.5	160
100	69.5	114.7	184.2	185
110	76.5	138.8	215.3	220
120	83.4	165.2	248.6	250
130	90.4	193.8	284.2	285

Note: Brake reaction distance predicated on a time of 2.5 s; deceleration rate of 3.4 m/s^2 used to determine calculated sight distance.

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

Notes: Time gaps are for a stopped vehicle to turn left onto a two-lane highway with no median and with grades of 3% or less. The table values should be adjusted as follows:

- For multi-lane highways: For left turns onto two-lane highways with more than two lanes, add 0.5 s for passenger cars and 0.7 s for trucks for each additional lane, from the left, in excess of one, to be crossed by the turning vehicle.
- For minor approach grades: If the approach grade is an upgrade that exceeds 3%, add 0.2 s for each percent grade for left turns.
- Some road authorities use higher values for certain specialized vehicles (e.g., Alberta uses 22 s for very long log trucks).

The intersection sight distance along the major road (distance b in **Figure 9.9.2**) is determined by:

$$ISD = 0.278\ V_{major}\ t_g \qquad (9.9.1)$$

Where:

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

For example, a passenger car turning left onto a two-lane major road should be provided sight distance equivalent to a time gap of 7.5 s in major-road traffic. If the design speed of the major road is 100 km/h, this corresponds to a sight distance of 0.278(100)(7.5) = 208.5 or 210 m, rounded for design.

A passenger car turning left onto a four-lane undivided roadway will need to cross two near lanes, rather than one. This increases the recommended gap in major-road traffic from 7.5 to 8.0 s. The corresponding value of sight distance for this example would be 223 m. If the minor-road approach to such an intersection is located on a 4% upgrade, then the time gap selected for intersection sight distance design for left turns should be increased from 8.0 to 8.8 s, equivalent to an increase of 0.2 s for each percent grade.

The design values for intersection sight distance for passenger cars are shown in **Table 9.9.4**. **Figure 9.9.4** includes design values, based on the time gaps for the design vehicles included in **Table 9.9.3**.

No adjustment of the recommended sight distance values for the major-road grade is generally needed because both the major- and minor-road vehicle will be on the same grade when departing from the intersection. However, if the minor-road design vehicle is a heavy truck and the intersection is located near a sag vertical curve with grades over 3%, then an adjustment to extend the recommended sight distance based on the major-road grade should be considered.

Table 9.9.4: Design Intersection Sight Distance – Case B1, Left Turn From Stop

Design Speed (km/h)	Stopping Sight Distance (m)	Intersection Sight Distance for Passenger Cars	
		Calculated (m)	Design (m)
20	20	41.7	45
30	35	62.6	65
40	50	83.4	85
50	65	104.3	105
60	85	125.1	130
70	105	146.0	150
80	130	166.8	170
90	160	187.7	190
100	185	208.5	210
110	220	229.4	230
120	250	250.2	255
130	285	271.1	275

Note: Intersection sight distance shown is for a stopped passenger car to turn left onto a two-lane highway with no median and grades 3% or less. For other conditions, the time gap should be adjusted and the sight distance recalculated.

Sight distance design for left turns at divided-highway intersections should consider multiple design vehicles and median width. If the design vehicle used to determine sight distance for a divided-highway intersection is larger than a passenger car, then sight distance for left turns will need to be checked for that selected design vehicle and for smaller design vehicles as well. If the divided-highway median is wide enough to store the design vehicle with a clearance to the through lanes of approximately 1 m at both ends of the vehicle, no separate analysis for the departure sight triangle for left turns is needed on the minor-road approach for the near roadway to the left. In most cases, the departure sight triangle for right turns (case B2) will provide sufficient sight distance for a passenger car to cross the near roadway to reach the median. Possible exceptions are addressed in the discussion of case B3.

The time gaps in **Table 9.9.3** can be decreased by 1.0 s for right-turn maneuvers without undue interference with major-road traffic. These adjusted time gaps for the right turn from the minor road are shown in **Table 9.9.5**. Design values based on these adjusted time gaps are shown in **Table 9.9.6** for passenger cars. **Figure 9.9.5** includes the design values for the design vehicles for each of the time gaps in **Table 9.9.5**.

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

Note: Time gaps are for a stopped vehicle to turn left onto a two-lane highway with no median and with grades of 3% or less. The table values should be adjusted as follows:

- For multi-lane highways: For left turns onto two-lane highways with more than two lanes, add 0.5 s for passenger cars and 0.7 s for trucks for each additional lane, from the left, in excess of one, to be crossed by the turning vehicle.
- For minor approach grades: If the approach grade is an upgrade that exceeds 3%, add 0.1 s for each percent grade for left turns.

Table 9.9.6: Design Intersection Sight Distance – Case B2, Right Turn from Stop, and Case B3, Crossing Maneuver

Design Speed (km/h)	Stopping Sight Distance (m)	Intersection Sight Distance for Passenger Cars	
		Calculated (m)	Design (m)
20	20	36.1	40
30	35	54.2	55
40	50	72.3	75
50	65	90.4	95
60	85	108.4	110
70	105	126.5	130
80	130	144.6	145
90	160	162.6	165
100	185	180.7	185
110	220	198.8	200
120	250	216.8	220
130	285	234.9	235

Note: Intersection sight distance shown is for a stopped passenger car to turn right onto or to cross a two-lane highway with no median and with grades of 3% or less. For other conditions, the time gap should be adjusted and the sight distance recalculated.

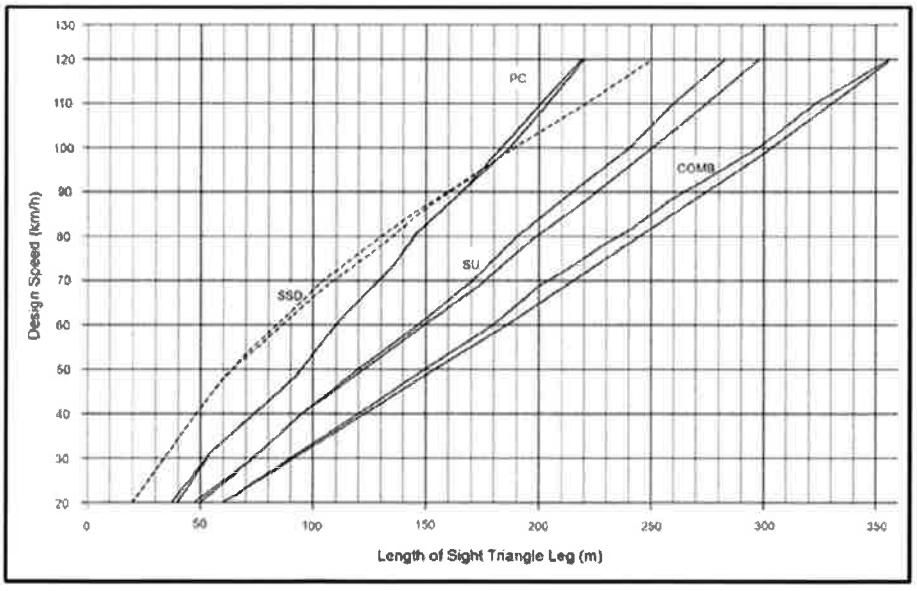


Figure 9.9.5: Intersection Sight Distance – Case B2, Right Turn from Stop, and Case B3, Crossing Maneuver (Calculated and Design Values Plotted)

LIST OF FIGURES

Legal Description

PART OF LOTS 3, 4, AND 5
CONCESSION 9 (NORTH DIVISION)
(GEOGRAPHIC TOWNSHIP OF NORTH ORILLIA)
NOW IN THE
TOWNSHIP OF SEVERN
COUNTY OF SIMCOE

Owner's Certificate

I HEREBY AUTHORIZE MACNAUGHTON HERMSEN BRITTON CLARKSON PLANNING LIMITED TO SUBMIT THIS PLAN FOR APPROVAL.

DATE: _____

_____
LIV Communities

Surveyor's Certificate

I HEREBY CERTIFY THAT THE BOUNDARIES OF THE LAND TO BE SUBDIVIDED ON THIS PLAN AND THEIR RELATIONSHIP TO THE ADJACENT LANDS ARE ACCURATELY AND CORRECTLY SHOWN.

DATE: _____

_____
PIER DE ROSA- O.L.S.
J.D. BARNES LIMITED

Revision No.	Date	Issued / Revision	By

Additional Information Required Under Section 51(17) of the Planning Act R.S.O. 1990, c.P.13 as Amended

A. As Shown
D. Residential, Parkland
G. As Shown
J. As Shown
L. As Shown
B. As Shown
E. As Shown
H. Municipal Water Supply (Piped)
K. All Services As Required
C. As Shown
F. As Shown
I. Tioga Loamy Sand
Lovering Silty Clay Loam
Alliston Sandy Loam

KEY PLAN

SUBJECT LANDS

NOT TO SCALE

County Signing Block

APPROVED IN ACCORDANCE WITH SECTION 51(31) OF THE PLANNING ACT RSO, 1990, CHAPTER P.13, AS AMENDED

THIS _____ DAY OF _____, 20____

_____
DIRECTOR OF PLANNING, DEVELOPMENT AND TOURISM
COUNTY OF SIMCOE

Area Schedule

Description	Lots/Blocks	Units	Area
11m (36') Single Detached	9-11, 44-91, 130-132, 135-140, 164-229, 232-233, 238-239, 242-265, 271-287	170	6.36 ha (15.70 ac)
12.2m (40') Single Detached	1-8, 12-43, 92-129, 133-134, 141-163, 230-231, 234-237, 240-241, 266-270, 288-318	149	6.94 ha (17.14 ac)
6.1m (20') Townhouses	Block 1-31	215	5.51 ha (13.62 ac)
Open Space	Block 33, 36, 37, 38, 39, 40, 42		1.07 ha (2.63 ac)
Pump Station	Block 47		0.10 ha (0.25 ac)
Environmental Protection Area	Block 32, 34, 35, 41, 45		13.83 ha (34.18 ac)
Stormwater Management Pond	Block 43, 44		3.07 ha (7.59 ac)
Waterfront Access	Block 46		0.15 ha (0.38 ac)
Street A-K			8.42 ha (20.80 ac)
Total		534	45.45 ha (112.31 ac)

MHBC PLANNING URBAN DESIGN & LANDSCAPE ARCHITECTURE
230-7050 WESTON ROAD WOODBRIDGE, ON, L4L 8G7 | P: 905 761 5588 F: 905 761 5589 | WWW.MHBCPLAN.COM

Stamp

Date	November 9, 2021
File No.	15226X
Plan Scale	1:2000 (Arch D)
Drawn By	T.H.
Checked By	E.T.
Other	

Project

8743 Highway 11
Draft Plan of Subdivision

File Name

DRAFT PLAN OF SUBDIVISION

Dwg No. 1 of 1

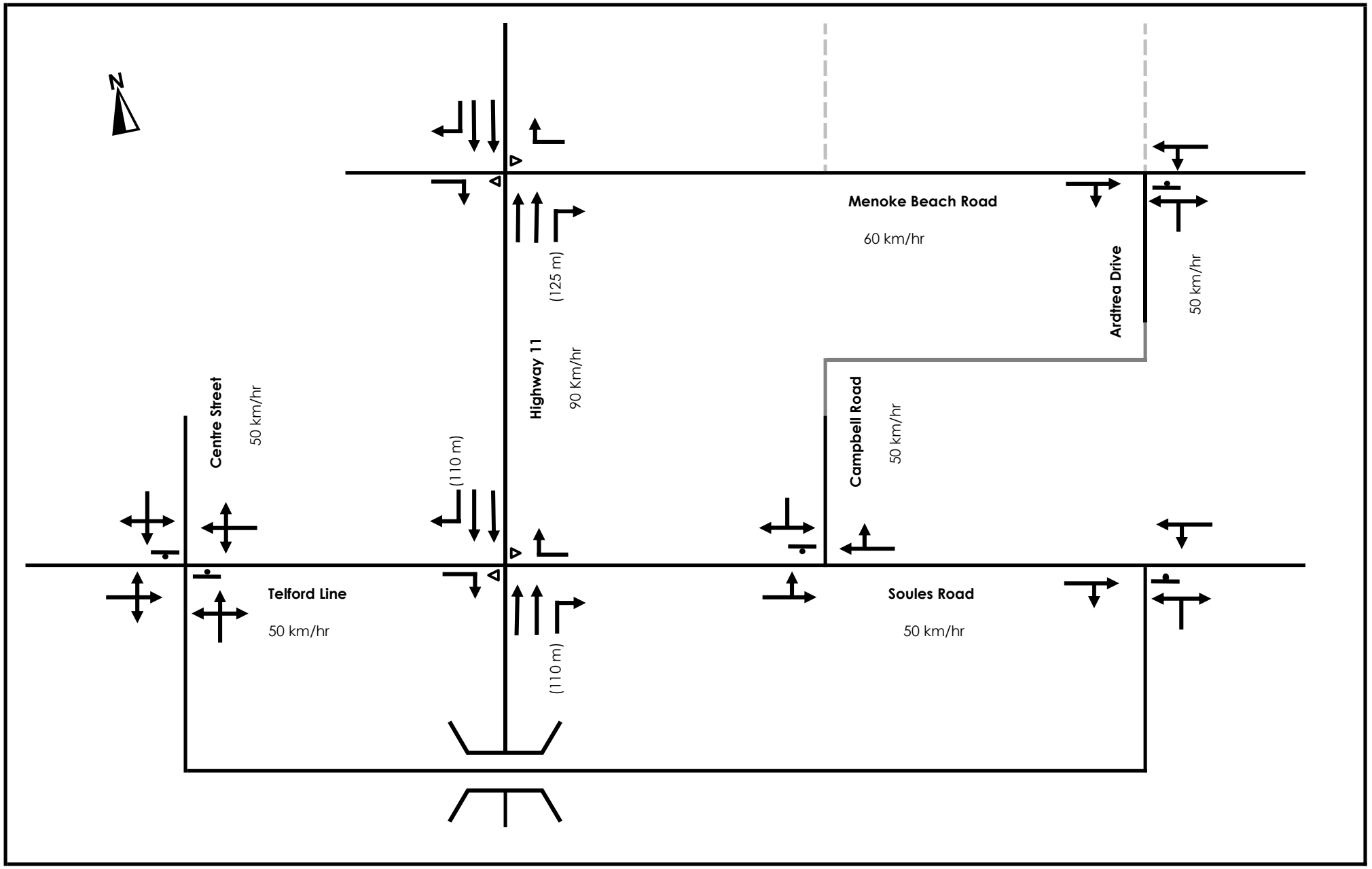
Scale Bar

0 25 50 100 200

MEASUREMENTS SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048

N:\15226\X – MBR Phase III – Shadow Creek, Severn\1 – MHBC Documents\Draft Plan\CAD\15226X- Draft Plan of Subdivision- 03 January 2022.dwg

Legend	Shadow Creek Subdivision	CROZIER CONSULTING ENGINEERS	Figure 2
Location of the Site	Site Location		Project No. 1935-6103 Date. Nov. 17th 2021 Analyst. E.H.



Legend

- Stop Control
- Yield Control
- XX Speed Limit
- (YY) Storage Length

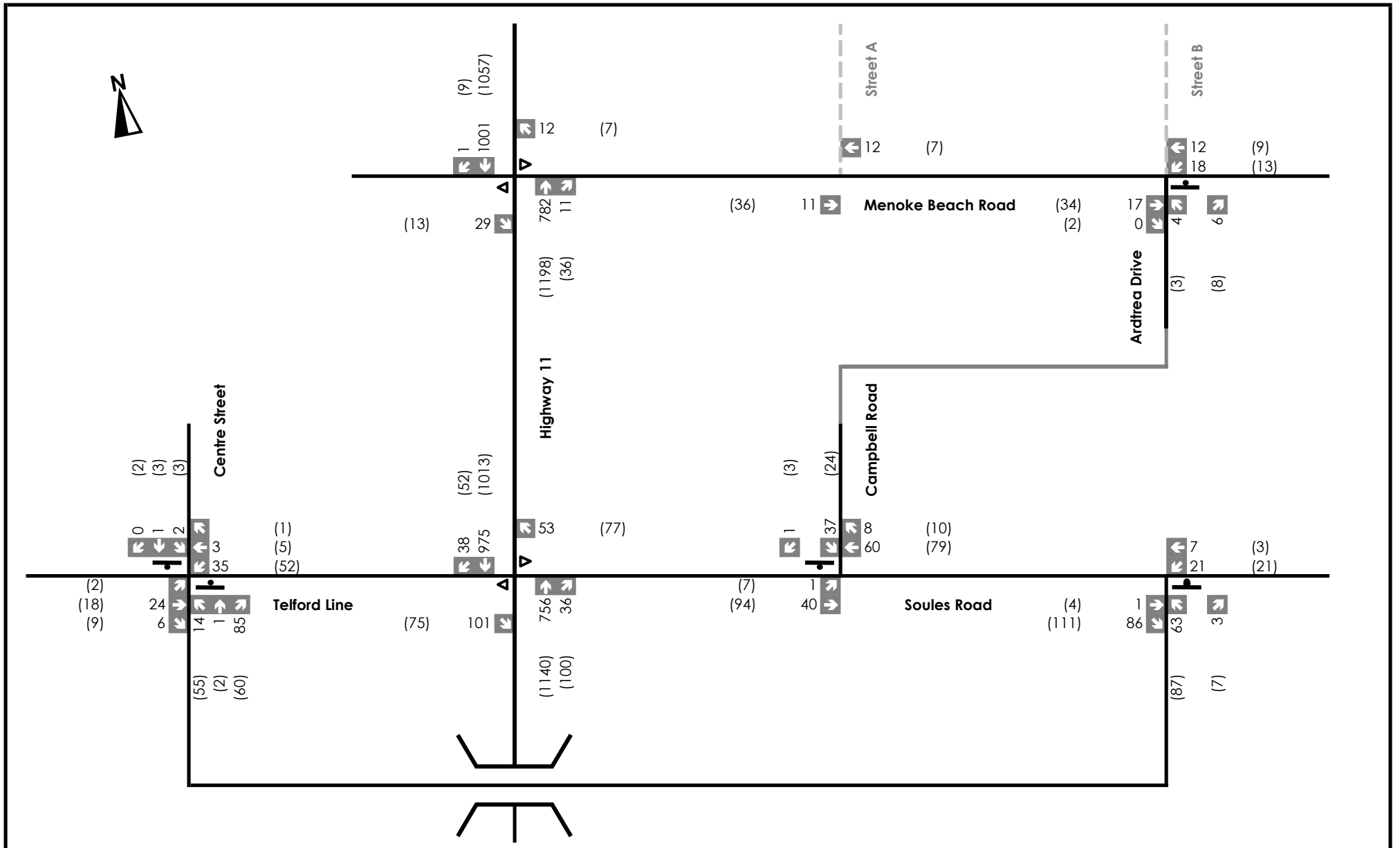
Shadow Creek Subdivision

Existing Traffic Control

CROZIER CONSULTING ENGINEERS

Figure 3

Project No. 1935-6103
Date. Nov. 17th 2021
Analyst. E.H.



Legend

XX A.M. Peak Hour Traffic Volumes
(YY) P.M. Peak Hour Traffic Volumes
Yield Control
Stop Control

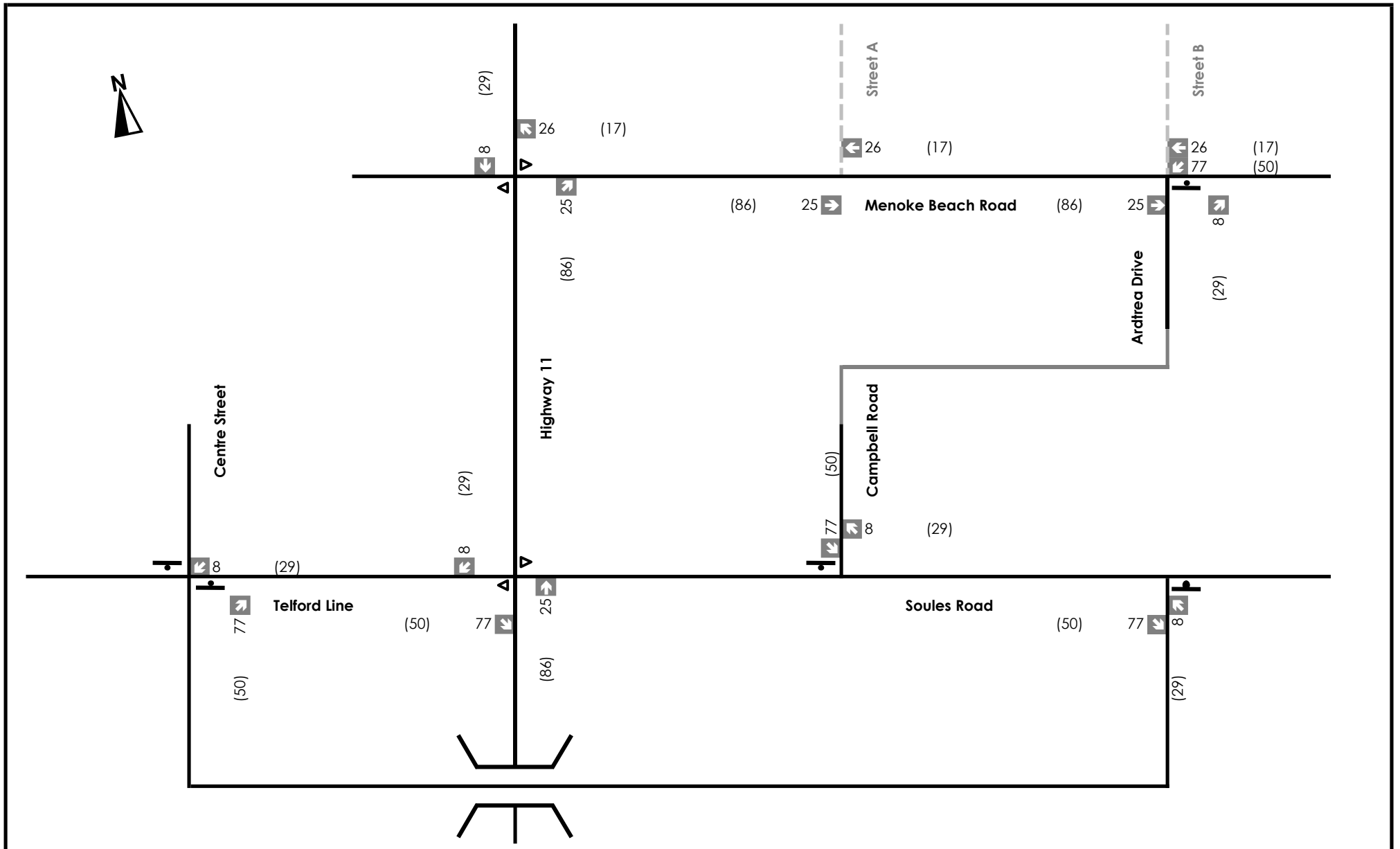
Shadow Creek Subdivision

Existing Volumes

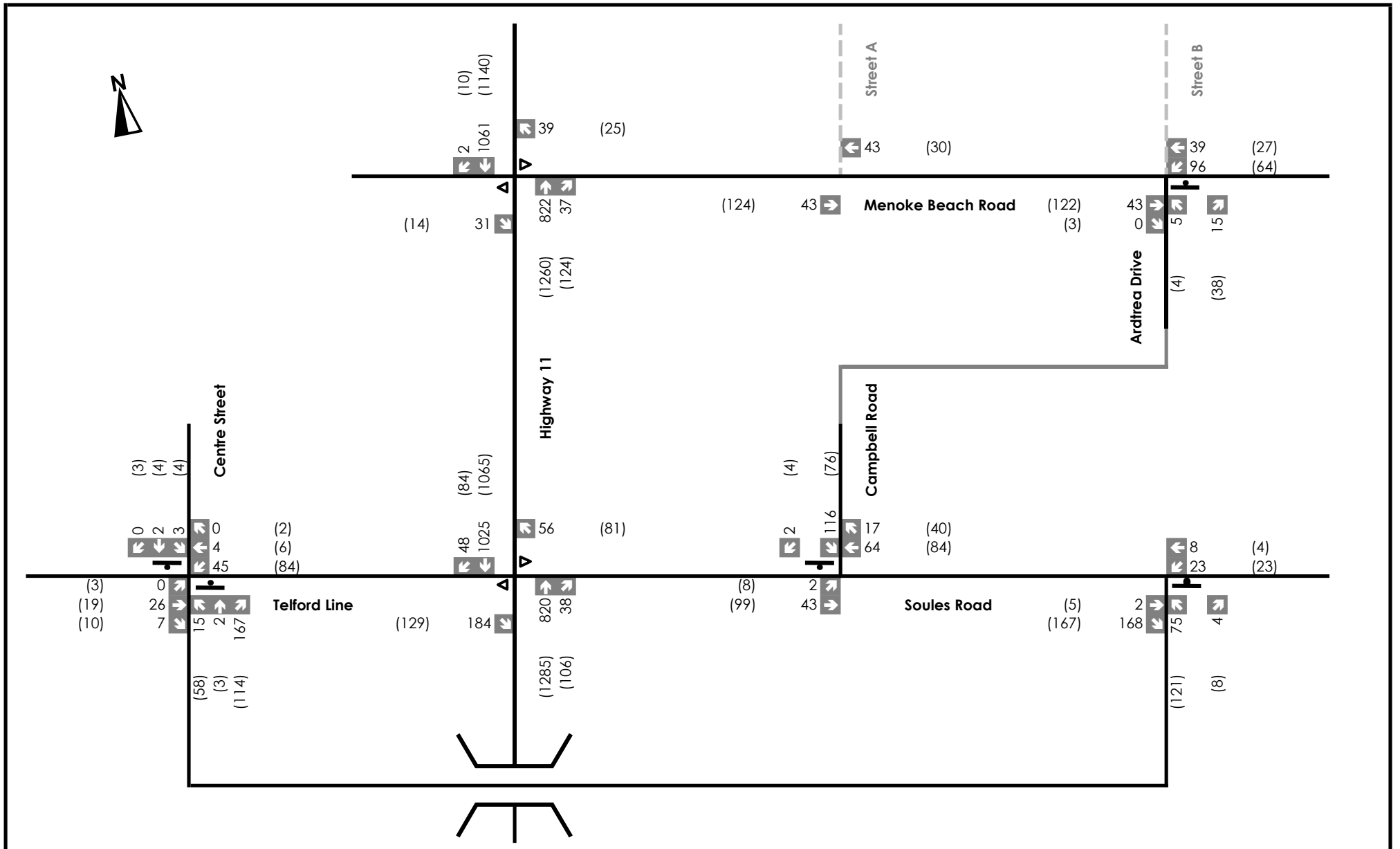
CROZIER CONSULTING ENGINEERS

Figure 4

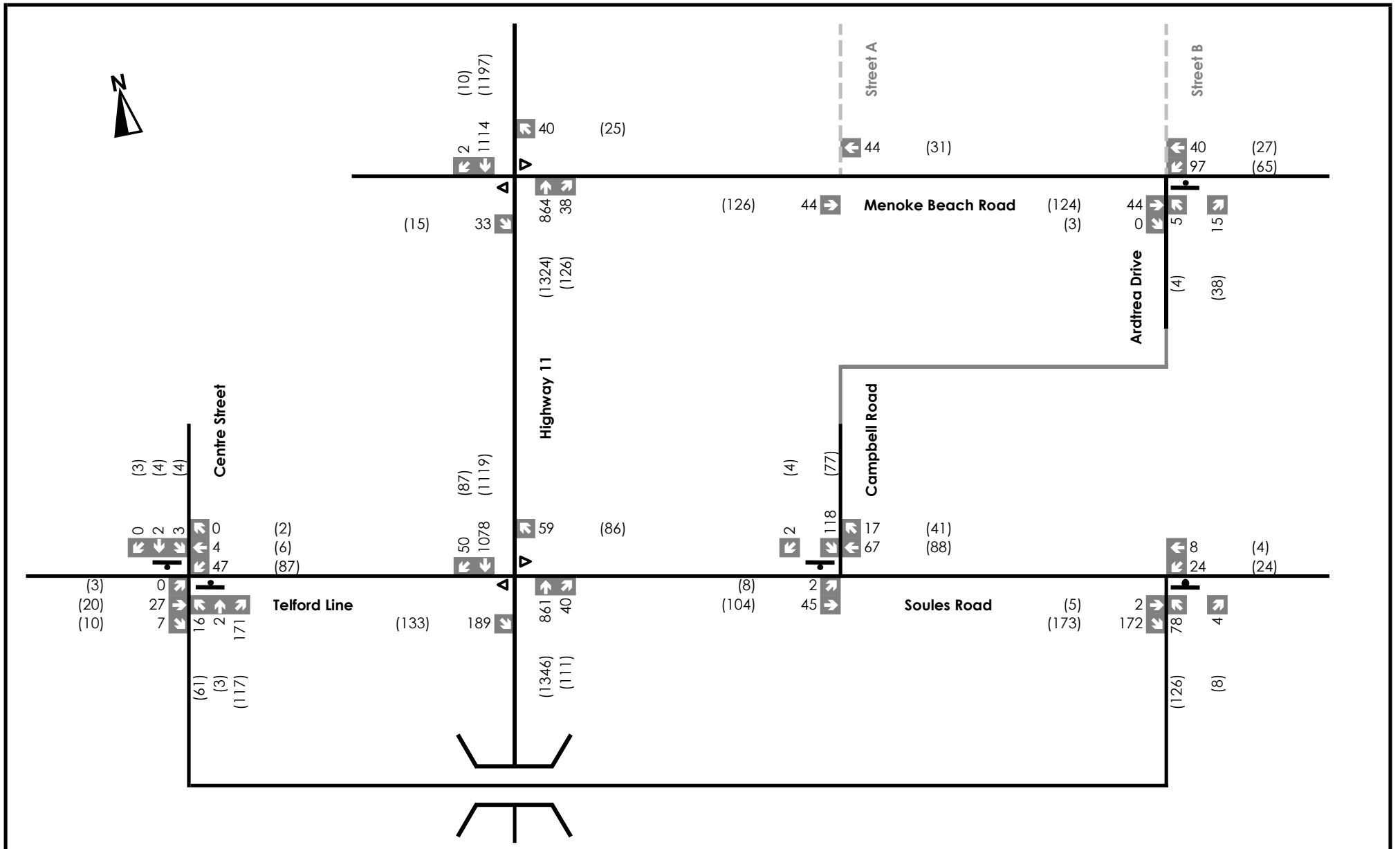
Project No. 1935-6103
Date. Nov. 17th 2021
Analyst. E.H.



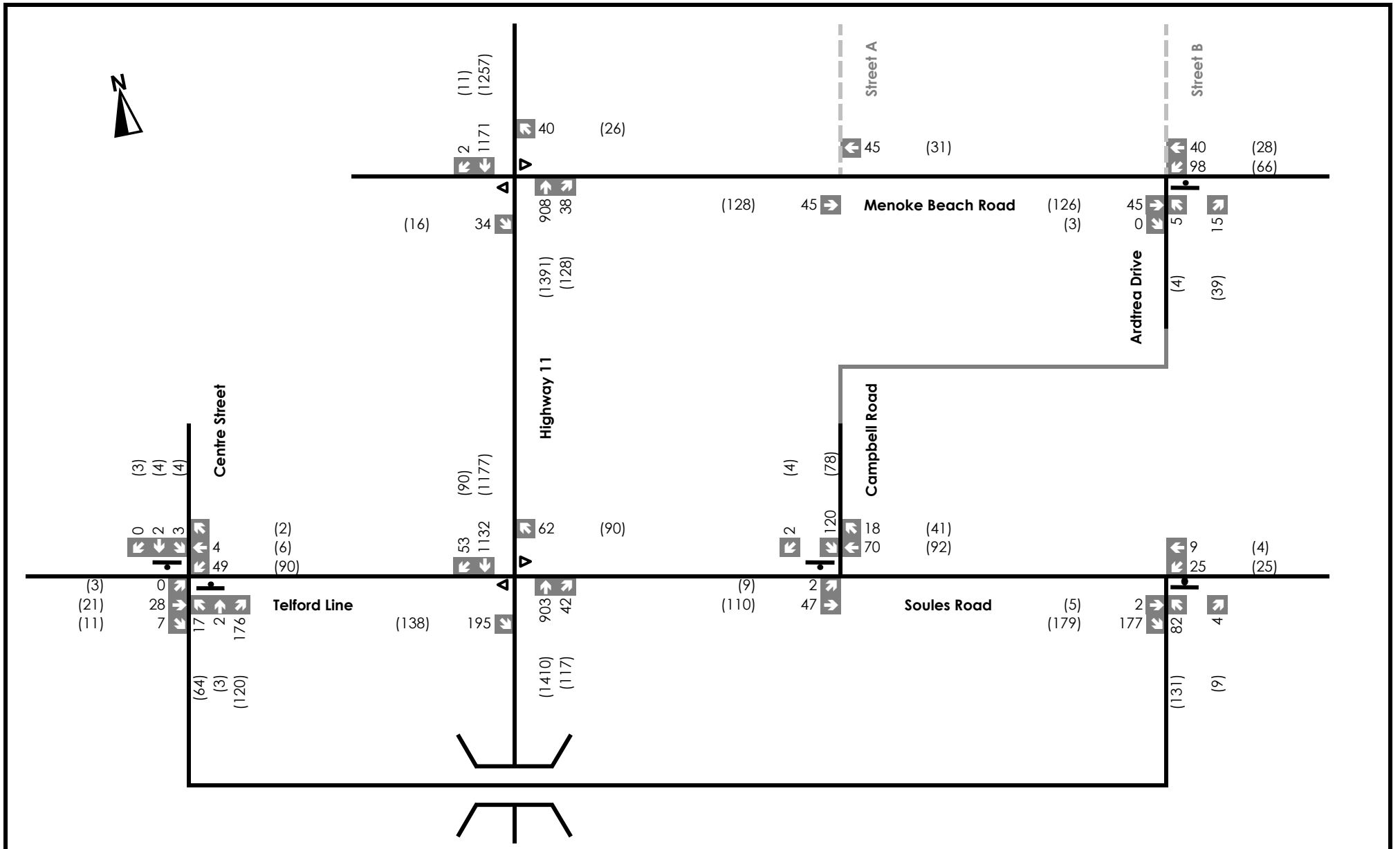
Legend	Shadow Creek Subdivision	CROZIER CONSULTING ENGINEERS	Figure 5
XX A.M. Peak Hour Traffic Volumes (YY) P.M. Peak Hour Traffic Volumes Yield Control Stop Control	Background Development Traffic Volumes		Project No. 1935-6103 Date. Nov. 17th 2021 Analyst. E.H.



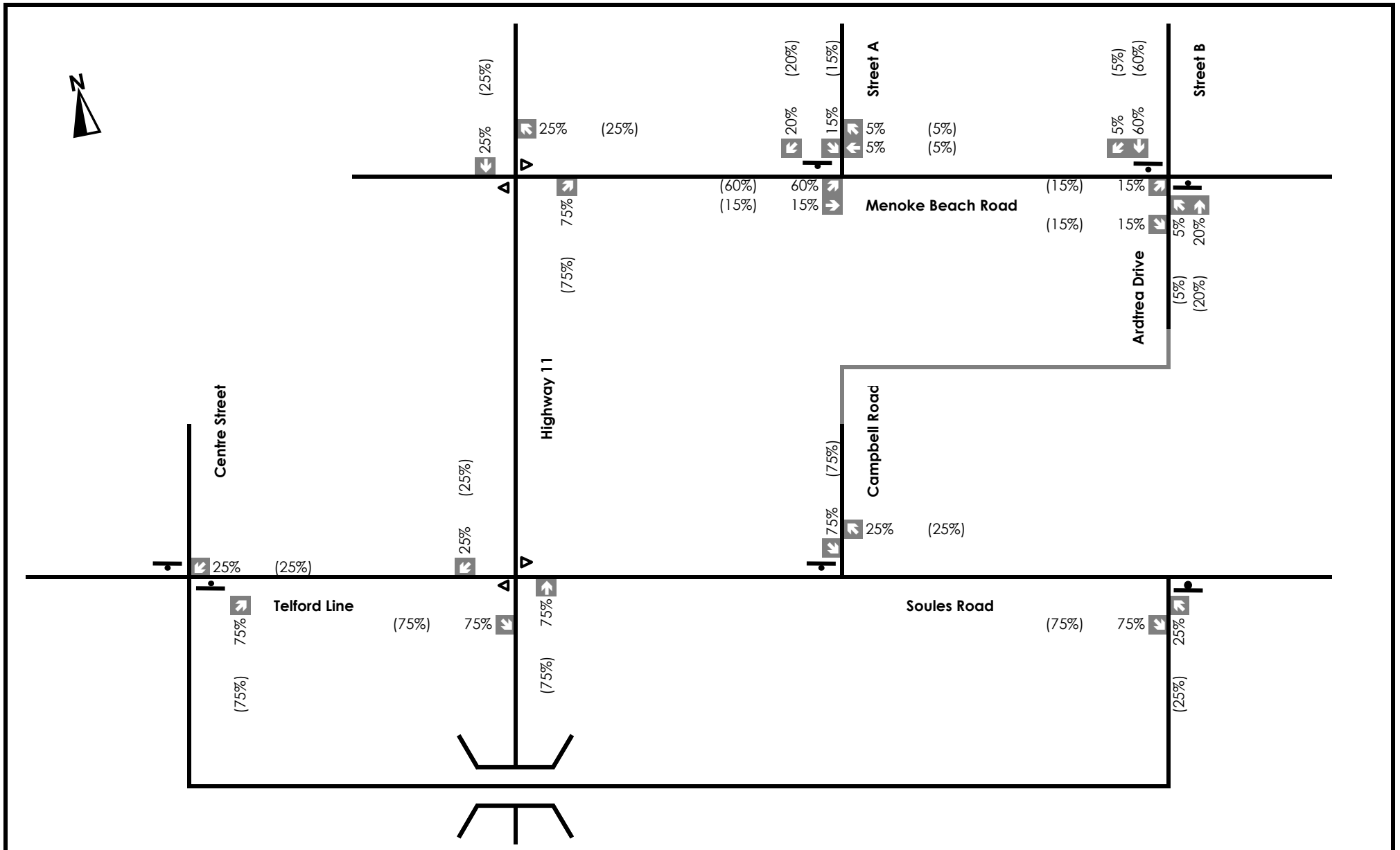
Legend	Shadow Creek Subdivision	CROZIER CONSULTING ENGINEERS	Figure 6
XX A.M. Peak Hour Traffic Volumes (YY) P.M. Peak Hour Traffic Volumes ▽ Yield Control ⊣ Stop Control	2026 Future Background Volumes		Project No. 1935-6103 Date. Nov. 17th 2021 Analyst. E.H.



Legend	Shadow Creek Subdivision	CROZIER CONSULTING ENGINEERS	Figure 7
XX A.M. Peak Hour Traffic Volumes (YY) P.M. Peak Hour Traffic Volumes Yield Control Stop Control	2031 Future Background Volumes		Project No. 1935-6103 Date. Nov. 17th 2021 Analyst. E.H.

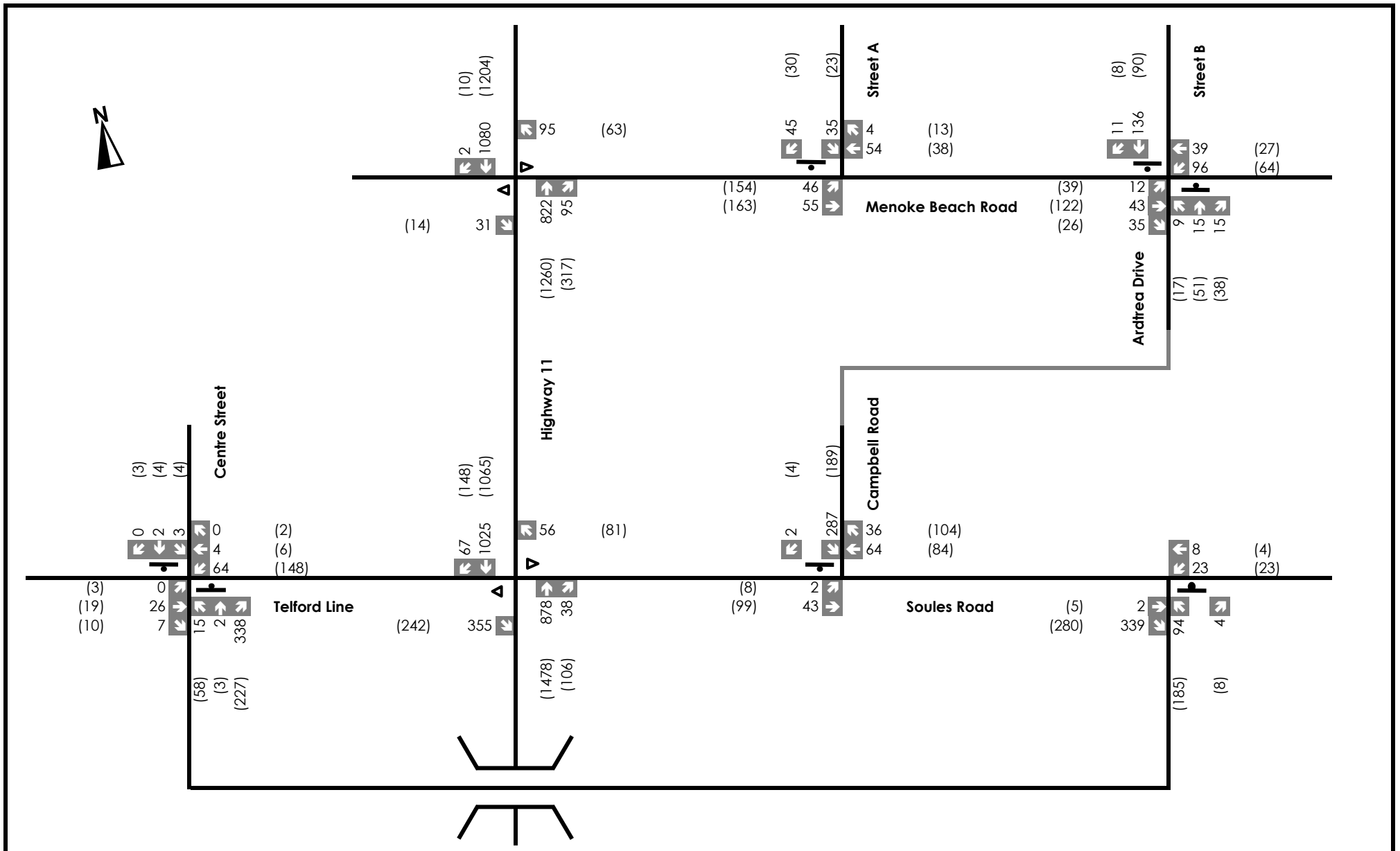


Legend	Shadow Creek Subdivision	CROZIER CONSULTING ENGINEERS	Figure 8
XX A.M. Peak Hour Traffic Volumes (YY) P.M. Peak Hour Traffic Volumes ▽ Yield Control ⊢ Stop Control	2036 Future Background Volumes		Project No. 1935-6103 Date. Nov. 17th 2021 Analyst. E.H.

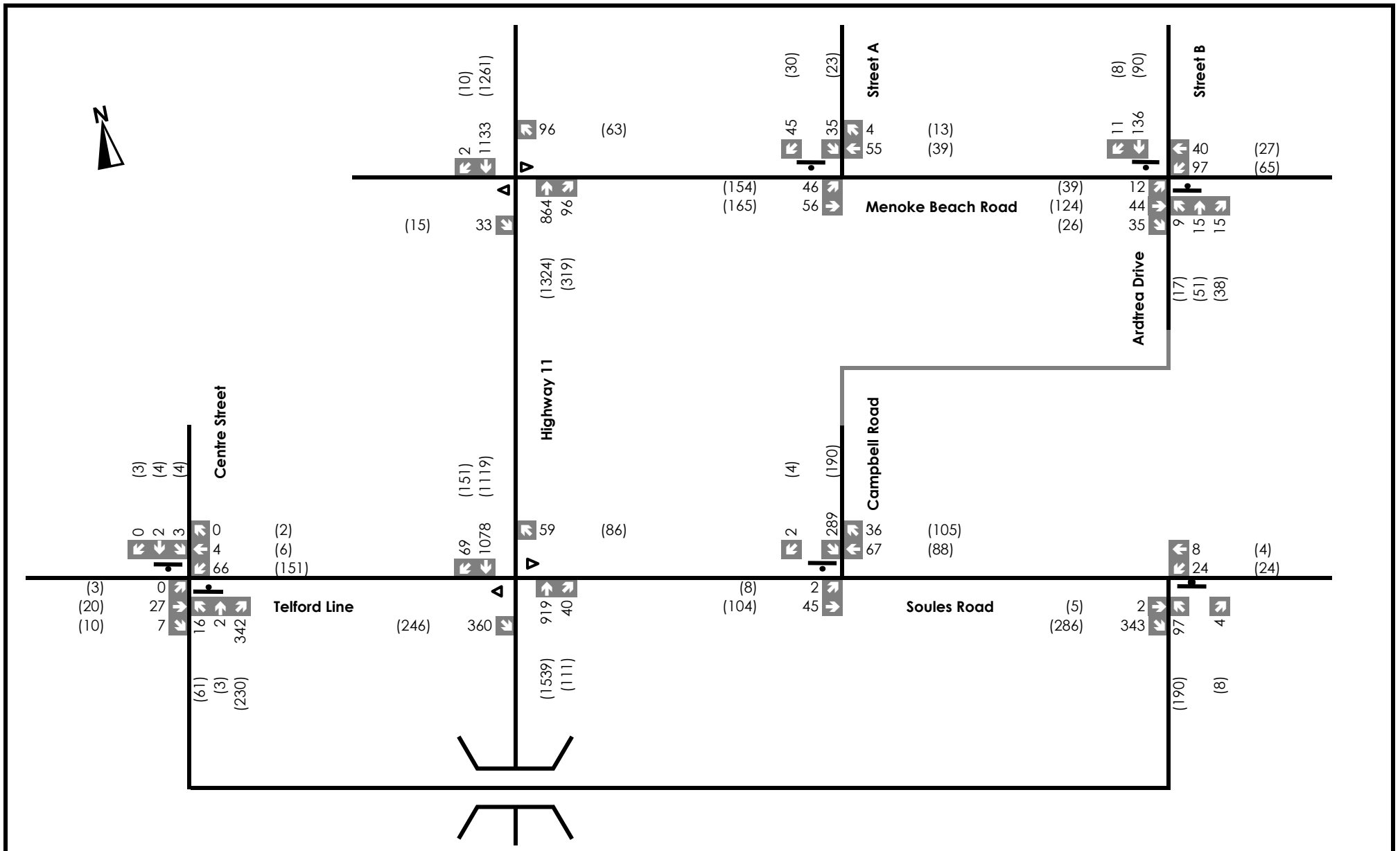


Legend	Shadow Creek Subdivision	CROZIER CONSULTING ENGINEERS	Figure 9
XX A.M. Peak Hour Traffic Volumes (YY) P.M. Peak Hour Traffic Volumes Yield Control Stop Control	Site Trip Distribution		Project No. 1935-6103 Date. Nov. 17th 2021 Analyst. E.H.

Legend	Shadow Creek Subdivision	CROZIER CONSULTING ENGINEERS	Figure 10
XX A.M. Peak Hour Traffic Volumes (YY) P.M. Peak Hour Traffic Volumes ▽ Yield Control ⊣ Stop Control	Site Trip Assignment		Project No. 1935-6103 Date. Nov. 17th 2021 Analyst. E.H.



Legend	Shadow Creek Subdivision	CROZIER CONSULTING ENGINEERS	Figure 11
XX A.M. Peak Hour Traffic Volumes (YY) P.M. Peak Hour Traffic Volumes Yield Control Stop Control	2026 Future Total Volumes		Project No. 1935-6103 Date. Nov. 17th 2021 Analyst. E.H.



Legend

XX A.M. Peak Hour Traffic Volumes
(YY) P.M. Peak Hour Traffic Volumes
Yield Control
Stop Control

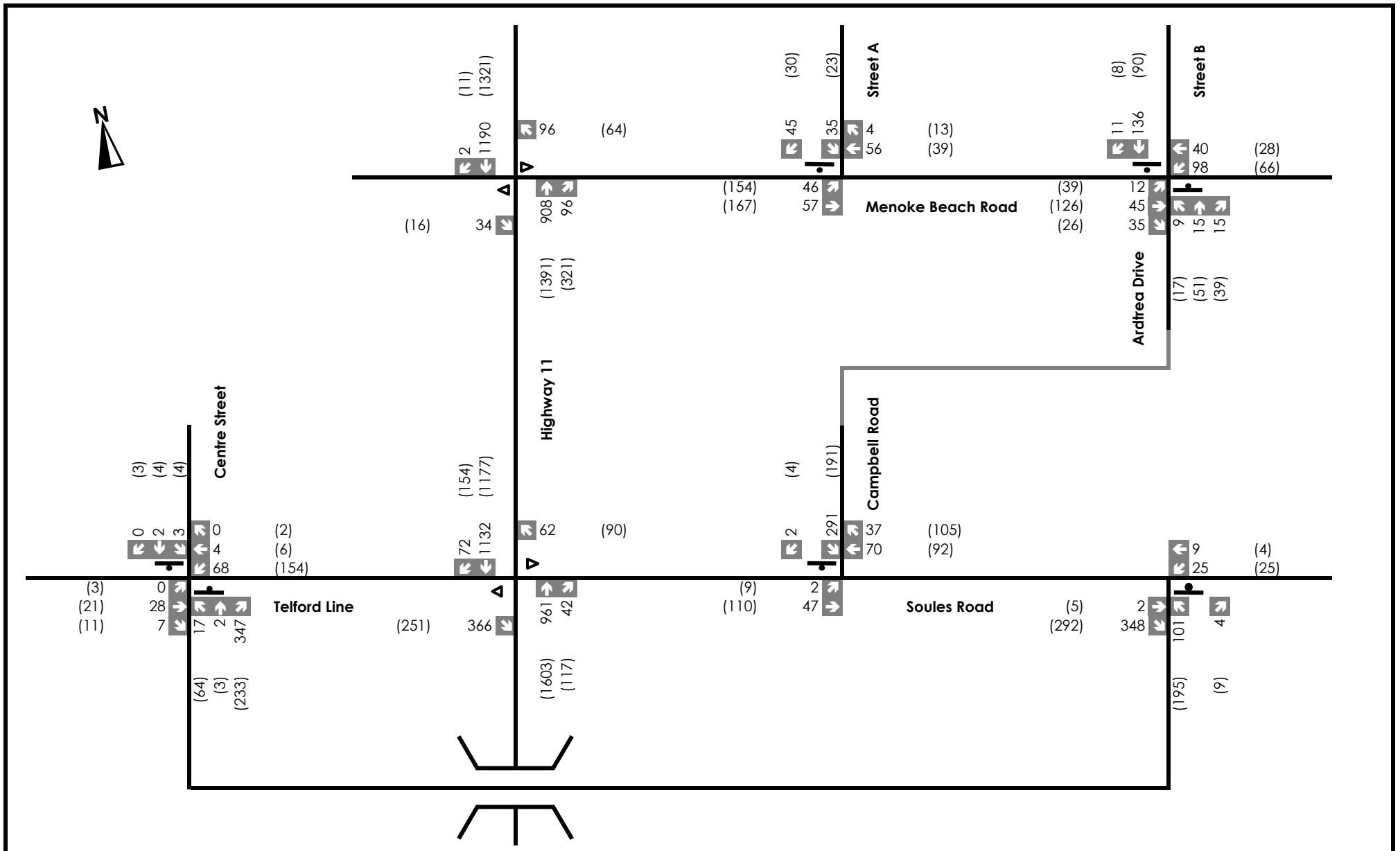
Shadow Creek Subdivision

2031 Future Total Volumes

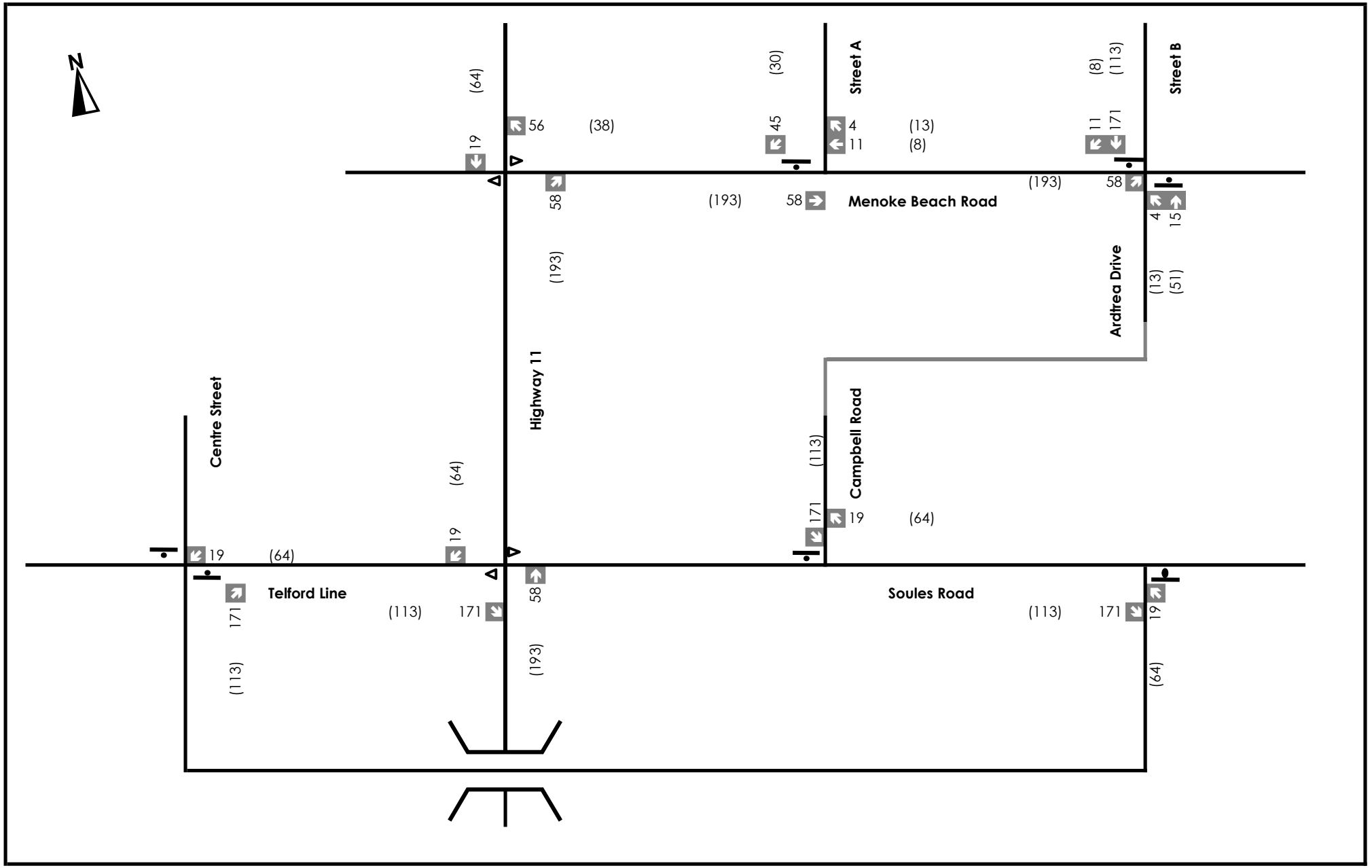
CROZIER CONSULTING ENGINEERS

Figure 12

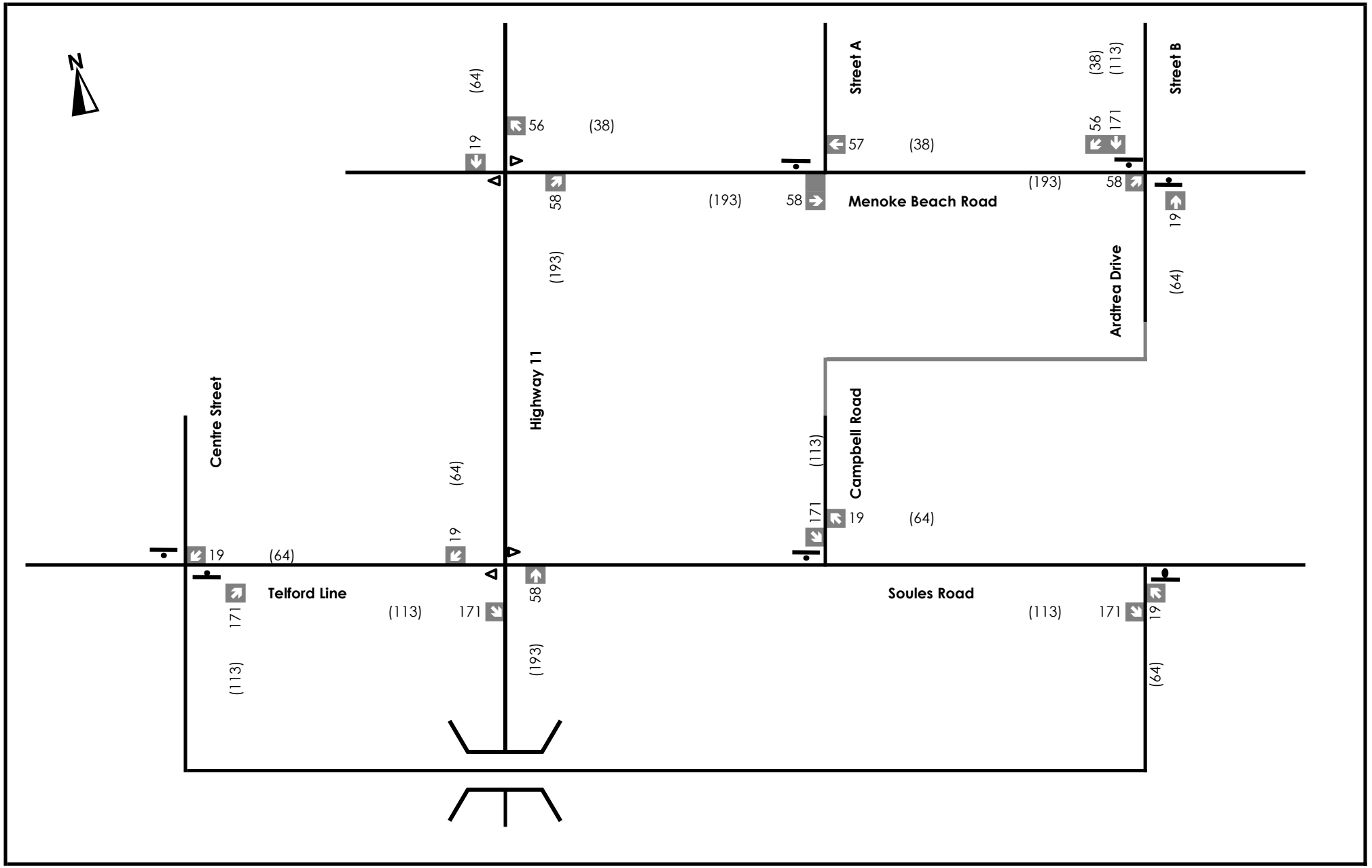
Project No. 1935-6103
Date. Nov. 17th 2021
Analyst. E.H.



Legend	Shadow Creek Subdivision	CROZIER CONSULTING ENGINEERS	Figure 13
XX A.M. Peak Hour Traffic Volumes (YY) P.M. Peak Hour Traffic Volumes Yield Control Stop Control	2036 Future Total Volumes		Project No. 1935-6103 Date. Nov. 17th 2021 Analyst. E.H.



Legend	Shadow Creek Subdivision	CROZIER CONSULTING ENGINEERS	Figure 14
XX A.M. Peak Hour Traffic Volumes (YY) P.M. Peak Hour Traffic Volumes Yield Control Stop Control	One RIRO and One Full MovesTrip Assignment		Project No. 1935-6103 Date. Nov. 17th 2021 Analyst. E.H.



Legend	Shadow Creek Subdivision	CROZIER CONSULTING ENGINEERS	Figure 15
XX A.M. Peak Hour Traffic Volumes (YY) P.M. Peak Hour Traffic Volumes Yield Control Stop Control	One Emergency Access and One Full Moves Site Trip Assignment		Project No. 1935-6103 Date. Nov. 17th 2021 Analyst. E.H.