

TRAFFIC IMPACT STUDY

125 ARTHUR STREET

**TOWN OF THE BLUE MOUNTAINS
GREY COUNTY**

PREPARED FOR:

THE BLUE MEADOWS INC.



PREPARED BY:

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REVISION NUMBER	DATE	COMMENTS
Rev. 0	February 24, 2022	Submission to the Town of Blue Mountains

1.0 EXECUTIVE SUMMARY

C.F. Crozier & Associates Inc. (Crozier) was retained by Blue Meadows Inc. (the Client) to complete a Traffic Impact Study (TIS) in support of the Draft Plan Application for a mixed use commercial and residential development located at 125 Arthur Street (the site) in the Town of the Blue Mountains (Town).

The analysis contained within this report was based on a previous version of the Draft Plan which proposed 125 townhouse units, 58 apartment units, and 2,660 m² (28,632 ft²) of commercial space. The final Draft Plan contains 116 townhouse units, 75 apartment units, and 2,641 m² (28,427 ft²) of commercial space. Both draft plans propose the same full move accesses on Arthur Street and Alice Street and utilize the existing Louisa Street West right-of-way. The revisions to the Draft Plan result in a trip generation increase of 3 and 2 two-way trips in the a.m. and p.m. peak hours, respectively. As such, the findings and conclusions contained within this report remain valid when considering the final Draft Plan prepared by Montgomery Philip King Architect Inc, dated February 16, 2021.

The following intersections were assessed in the TIS:

- Lansdowne Street South and Arthur Street
- Lansdowne Street South and Louisa Street West
- Lansdowne Street South, Beaver Street, and Alice Street
- Alice Street and Peel Street
- The proposed Site Accesses

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

- All study intersections are operating at a Level of Service (LOS) "A" during the weekday a.m. and p.m. peak hours with the exception of Lansdowne Street South and Arthur Street which is expected to operate at a LOS of "C".
- Synchro is unable to analyze a 5 legged intersection, so the intersection of Lansdowne Street South, Beaver Street and Alice Street was modeled as a 4 way stop. To do this, volumes on the section of Beaver Street between Alice Street and Louisa Street were redistributed to other applicable legs.

Horizon years of 2026, 2031 and 2041 were assessed, per the agreed upon Terms of Reference. The future background traffic volumes were forecasted based on a growth rate of 2 percent and included site generated traffic from the Towns of Thornbury and the Lora Bay Heights Developments.

Intersection analysis of the 2041 future background traffic volumes indicates the following:

- All study intersections are operating at a Level of Service (LOS) "A" during the weekday a.m. and p.m. peak hours with the exception of Lansdowne Street South and Arthur Street which is expected to operate at a LOS of "E" and "C" during the weekday a.m. and p.m. peak hours, respectively.
- The maximum control delay of 39.2 seconds and volume-to-capacity ratio of 0.33 (NB), both forecasted for Arthur Street and Lansdowne Street South in the p.m. peak hour, indicate that the boundary road network is operating acceptably with excess capacity for increases in traffic volumes.

The development is proposed to generate 115 and 149 two-way external primary trips in the weekday a.m. and p.m. peak hours, respectively, and 27 and 54 two-way pass-by trips in the a.m. and p.m. peak hours, respectively. As noted previously, the trip generation was forecasted based

on a previous version of the Draft Plan. The revised Draft Plan results in 3 and 2 more two-way trips in the a.m. and p.m. peak hours, respectively. As such, the findings and conclusions contained within this report remain valid when considering the final Draft Plan prepared by Montgomery Philip King Architect Inc, dated February 16, 2021.

The requirement for auxiliary left-turn lanes were reviewed for the eastbound and westbound movements on Arthur Street. At the intersection of Lansdowne Street South and Arthur Street both the eastbound and westbound movements warrant left-turn lanes with 25 m of storage under 2041 future background conditions. A westbound left-turn lane with 25 m of storage is also warranted at the intersection of Arthur Street with the proposed site access. The geometric details related to the proposed turn-lanes would be confirmed during detailed design, however it is noted that the westbound left-turn lane at Lansdowne Street South can be accommodated within the existing pavement width.

A signal warrant analysis was undertaken for the intersection of Lansdowne Street South and Arthur Street based on the 2041 future total traffic volumes. The analysis followed the procedures specified in Chapter 4 of the "Ontario Traffic Manual – Book 12", March 2012 for Justifications 1 to 3. Based on this approach, signals are not warranted at the intersection.

Intersection analysis of the 2041 future total traffic volumes indicates the following:

- The study intersections are anticipated to continue operating with a LOS "B" or better in the a.m. and p.m. peak hours, with the exception of the two Arthur Street intersections.
- Lansdowne Street South and Arthur Street is anticipated to operate with a LOS "D" and "F" in the a.m. and p.m. peak hours, respectively. And the proposed Arthur Street site access is anticipated to operate with a LOS "C" and "D" in the weekday a.m. and p.m. peak hours, respectively.
- The above metrics indicate that the increase in traffic volumes on Arthur Street as a result of background traffic growth is anticipated to result in higher delay for the minor road approaches.
 - This is not atypical, and it is expected that most accesses along Arthur Street would experience similar delays.
- It is recommended that ongoing monitoring of the study intersections should be completed as the future total volumes are based on a 20-year projection. Future consideration for a continuous two-way left-turn lane may be necessary for Arthur Street. This would allow for two-stage gap acceptance.

A sensitivity analysis was completed analyzing the traffic operations assuming all traffic volumes utilize the Arthur Street site access. The sensitivity analysis was completed the 2041 future total traffic volumes and the results indicate the following:

- The elimination of the Alice Street and Lansdowne Street South site accesses is anticipated to have a negligible impact on the operations of the intersection of Lansdowne Street South and Arthur Street.
- The proposed Arthur Street site access is anticipated to operate with a LOS "C" and "E" in the weekday a.m. and p.m. peak hours, respectively. This represents a maximum increase in control delay of 7.0 seconds when compared to the base 2041 future total scenario.

The available sight distances at the proposed site accesses exceed the minimum requirements outlined in the Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads (GDGCR). Accordingly, the proposed site accesses can be supported from a sight distance perspective.

It is concluded that the traffic generated by the 125 Arthur Street development can be supported by the boundary road network, with the noted improvements.

The analysis contained within this report was completed based on a previous version of the Draft Plan. The findings and conclusions contained within this report remain valid when considering the final Draft Plan, as prepared by Montgomery Philip King Architect Inc, dated February 16, 2021. Any minor changes to the Site Plan will not affect the conclusions contained within this report. The proposed Draft Plan Application can be supported from a traffic operations and safety perspective.

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3.0 INTRODUCTION

3.1 Background

C.F. Crozier & Associates Inc. (Crozier) was retained by Blue Meadows Inc. (the Client) to complete a Traffic Impact Study (TIS) in support of the Draft Plan Application for a mixed use commercial and residential development located at 125 Arthur Street (the site) in the Town of the Blue Mountains (Town).

3.2 Purpose

The purpose of the Traffic Impact Study is to review the impacts of the proposed development from a transportation engineering perspective by analyzing the following:

- Existing, future background, and future total traffic operations at the study intersections
- Forecasted trip generation of the proposed development
- Sight distance at the site proposed accesses
- Auxiliary Turning Lane Warrants
- Signal Warrants

The TIS has been prepared in accordance with the Terms of Reference established with the Town. **Appendix A** includes correspondence with Town staff.

3.3 Development Proposal

The Draft Plan proposes a combination of commercial and residential development including the following elements:

- 98 standard townhouse units
- 18 townhouse units with ground floor commercial
- 75 apartments above ground floor commercial
- 2,641 m² (28,427 ft²) GFA of commercial space
- 3 site accesses
 - 1 on Arthur Street (Access A)
 - 1 on Lansdowne Street South (Existing Louisa Street extension, Access B)
 - 1 on Alice Street (Access C)

Several residential units are proposed to have driveway accesses on Alice Street and Lansdowne Street South, all site generated traffic was assumed to utilize the proposed site accesses to provide a conservative analysis. **Figure 1** includes the proposed Draft Plan prepared by Montgomery Philip King Architect Inc.

The analysis contained within this report was based on a previous version of the Draft Plan which proposed 125 townhouse units, 58 apartment units, and 2,660 m² (28,632 ft²) of commercial space. The final Draft Plan contains 116 townhouse units, 75 apartment units, and 2,641 m² (28,427 ft²) of commercial space. Both draft plans propose the same full move accesses on Arthur Street and Alice Street and utilize the existing Louisa Street West right-of-way. The revisions to the Draft Plan result in a trip generation increase of 3 and 2 two-way trips in the a.m. and p.m. peak hours, respectively. As such, the findings and conclusions contained within this report remain valid when considering the final Draft Plan prepared by Montgomery Philip King Architect Inc, dated February 16, 2021.

4.0 EXISTING CONDITIONS

4.1 Development Lands

The proposed site is 5.2 ha and consists of open lots and two existing homes. The property is bounded by Arthur Street to the north, Lansdowne Street South to the east, Alice Street to the south, and Little Beaver Creek to the west. **Figure 2** illustrates the location of the site.

4.2 Key Intersections

Key study Intersections are as follows:

- Lansdowne Street South and Arthur Street
- Lansdowne Street South and Louisa Street West
- Lansdowne Street South, Beaver Street, and Alice Street
- Alice Street and Peel Street
- The proposed Site Accesses

Figure 3 illustrates the existing traffic controls.

4.3 Boundary Road Network

Table 1 outlines the boundary road network. The information included below was obtained from the Town of the Blue Mountains Official Plan "Schedule B-2 – Transportation Thornbury Clarksburg", included in **Appendix B**. **Figure 3** illustrates the existing traffic controls on the boundary road network. With skewed directions, the directional orientation of the road network is ambiguous. To provide clarity throughout this report, Arthur Street, Louisa Street and Alice Street have been given an east-west orientation, while Lansdowne Street South, Peel Street and Beaver Street have been given a north-south orientation.

Table 1: Boundary Road Network

Roadway	Arthur Street	Lansdowne Street South	Alice Street	Louisa Street	Peel Street	Beaver Street
Direction	East-West	North-South	East-West	East-West	North-South	East-West
Classification	Highway	Local	Local	Local	Local	Local
Jurisdiction	Town of the Blue Mountains (MTO Connecting Link)	Town of the Blue Mountains	Town of the Blue Mountains	Town of the Blue Mountains	Town of the Blue Mountains	Town of the Blue Mountains
Posted Speed Limit	50 km/h east of Lansdowne Street South and 70km/h to the west	50 km/h (Assumed)	50 km/h (Assumed)	50 km/h (Assumed)	80 km/h (Assumed)	40 km/h (Posted)
Total Number of Travel Lanes	2	2	2	2	2	2
Transit Facilities	GTR Bus Stop At Foodland	None	None	None	None	None
Pedestrian Facilities	1.8 m sidewalk on south side, east of Lansdowne Street South	None	None	None	None	1.5 m Sidewalk on southern side, south of Alice Street
Cycling Facilities	Georgian Trail (approx. 70 m north of Arthur Street running east-west)	None	None	None	None	None

4.4 Active Transportation

The development proposal includes new sidewalk on Alice Street and Lansdowne Street South along the property frontage, and the extension of the Arthur Street sidewalk to the western limits of the site.

The site is approximately 70 meters south of the Georgian Trail which supports cycling, walking, and running while connecting Meaford to Collingwood. **Appendix C** contains the Town's Georgian Trail map.

Grey Bruce regional transit stop is located at the Thornbury Foodland adjacent to the site. The Route runs from Meaford to the Town of the Blue Mountains with two trips in the A.M peak hour and two trips in the P.M peak hour with further opportunity to connect to Owen Sound and Collingwood. **Appendix D** contains transit maps and schedules.

4.5 Traffic Data

Turning movement counts for the study intersections were undertaken by Spectrum staff from 6:00 a.m. to 10:00 a.m., and 4:00 p.m. to 7:00 p.m. on Thursday, October 14th, 2021. **Appendix E** contains the turning movement counts, and **Figure 4** illustrates the weekday a.m. and p.m. peak hour traffic volumes.

Peak hour factors (PHF) associated with the weekday a.m. and p.m. peak hours were calculated for each intersection based on the existing traffic volumes. **Table 2** outlines the PHFs as calculated and applied to the model for the study intersections.

Table 2: Intersection Peak Hours

Intersection	Peak Hour	Peak Hour Factor
Lansdowne Street South and Arthur Street	8:45 – 9:45 A.M.	0.86
	3:30 – 4:30 P.M.	0.95
Lansdowne Street South and Louisa Street West	8:45 – 9:45 A.M.	0.69
	4:15 – 5:15 P.M.	0.73
Lansdowne Street South, Beaver Street, and Alice Street	8:45 – 9:45 A.M.	0.88
	4:30 – 5:30 P.M.	0.89
Alice Street and Peel Street	9:00 – 10:00 A.M.	0.50
	4:15 – 5:15 P.M.	0.56

4.6 Intersection Operations

The operations of the study intersections were analyzed based on the traffic volumes illustrated in **Figure 4. Appendix F and G** contain, Level of Service (LOS) definitions and detailed capacity analysis worksheets, respectively. **Table 3** outlines the existing traffic operations at the study intersections. In order to model the 5-legged intersection of Lansdowne Street South, Beaver Street and Alice Street, volumes were adjusted and merged to create a 4-legged all way stop.

Table 3: 2021 Existing Level of Service

Intersection	Control	Peak Hour	Level of Service ¹	Control Delay	Maximum v/c ratio ²
Lansdowne Street South and Arthur Street	Stop (Two-way)	A.M.	C	15.8 s	0.09 (NB)
		P.M.	C	17.8 s	0.10 (NB)
Lansdowne Street South and Louisa Street West	Stop (Two-way)	A.M.	A	9.7 s	0.01 (WB)
		P.M.	A	8.5 s	0.00 (WB) ³
Lansdowne Street South, Beaver Street, and Alice Street	Stop (All-way)	A.M.	A	7.0 s	0.03 (SB)
		P.M.	A	7.2 s	0.06 (SB)
Alice Street and Peel Street	Stop (T)	A.M.	A	8.6 s	0.00 (WB) ³
		P.M.	A	8.6 s	0.00 (WB) ³

Note¹: The Level of Service of a 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 delay per vehicle.

Note²: The maximum v/c ratio for two-way stop-controlled and all-way stop controlled intersections represents the maximum v/c for the minor road approach movements at the intersection.

Note³: Low approach volumes caused the volume-to-capacity ratio to round to 0.00.

The metrics above indicate that the intersections operate at a LOS “C” or better under existing traffic volume conditions. The maximum control delay was found to be 17.8 seconds and the maximum volume-to-capacity ratio was found to be 0.10. These metrics are associated with the northbound movements on Lansdowne Street South at the intersection with Arthur Street. These metrics indicate that the study intersections have reserve capacity for future increase in traffic volumes.

5.0 FUTURE BACKGROUND CONDITIONS

5.1 Horizon Years

It is anticipated that the proposed development will be completed by 2026. Accordingly, the horizon years of 2026, 2031, and 2041 have been analyzed, representing full build-out as well as 5 and 15 years beyond full build out, as requested by Town staff.

5.2 Growth Rate

A growth rate of 1.6% was calculated by analyzing MTO Arthur Street AADT data at the intersection with Peel Street from 2010 to 2016. Accordingly, a rate of 2% will be applied.

5.3 Roadway Improvements

The Town is undergoing the "Thornbury West Phase 1 Reconstruction Project". As part of this project, Beaver Street is proposed to be closed between Louisa Street and Victoria Street. A staff report was brought to council on June 15, 2021, which provided options for this closure or partial closure. Further to this report, a draft By-law will be presented to council this year to stop up and close Beaver Street.

As noted previously, in order to model the 5-legged intersection of Lansdowne Street South, Beaver Street and Alice Street, volumes were adjusted and merged to create a 4-legged all-way stop. This adjustment is consistent with the planned closure. **Attachment H** contains the Beaver Street closure plans (Tatham, 2021).

It is noted that based on the projected future background traffic volumes, auxiliary eastbound and westbound left-turn lanes are warranted at the intersection of Lansdowne Street South and Arthur Street. Accordingly, the intersection has been modelled with left-turn lanes through all horizon years in both the future background and future total scenarios. Section 7.2 contains detailed information on the auxiliary lane warrants.

5.4 Background Development Trip Generation & Assignments

5.4.1 Towns of Thornbury Development

Towns of Thornbury is a proposed residential development south of Louisa Street, between Lansdowne Street South and Beaver Street South. The Town provided relevant excerpts from a Traffic Brief prepared by Tatham. The Towns of Thornbury development is proposed to consist of 23 townhouse units. Relevant excerpts have been included in **Appendix I** for reference. The trip generation described in **Table 4** was calculated based on the 11th Edition of the ITE Trip Generation Manual.

Table 4: Towns of Thornbury Trip Generation

Land Use	Number of Units	Peak Hour	Number of Trips		
			Inbound	Outbound	Total
Townhouse (LUC 221)	23	Weekday A.M.	2	7	9
		Weekday P.M.	7	5	12

The trips generated by the Towns of Thornbury development have been assigned to the boundary road network based on the trip distribution described in **Section 5.2** of this report. **Figure 5** illustrates the Towns of Thornbury trip assignment.

5.4.2. Lora Bay Heights Development

Lora Bay Heights is a proposed residential development on the north side of Arthur Street directly east of Peel Street. Per correspondence with Town Staff this development will consist of 2 single detached homes and 22 townhouse units. For the purpose of this analysis, it has been assumed that the development will be built out by 2026. **Table 5** outlines the forecasted trip generation based on the ITE Trip Generation Manual, 11th Edition data.

Table 5: Lora Bay Heights Trip Generation

Land Use	Number of Units	Peak Hour	Number of Trips		
			Inbound	Outbound	Total
Townhouse (LUC 221)	22	Weekday A.M.	2	7	9
		Weekday P.M.	7	4	11
Single Family (LUC 210)	2	Weekday A.M.	0	1	1
		Weekday P.M.	1	1	2
TOTAL		Weekday A.M.	2	8	10
		Weekday P.M.	8	5	13

The trips generated by the Towns of Thornbury development have been assigned to the boundary road network based on the trip distribution described in **Section 5.2** of this report. **Appendix A** includes correspondence with the Town confirming unit counts. **Appendix J** contains relevant excerpts from the ITE Trip Generation Manual, 11th Edition. **Figure 6** illustrates the Lora Bay Heights trip assignment.

5.5 Intersection Operations

Figure 7-9 illustrate the 2026, 2031, and 2041 future background traffic volumes, respectively. **Table 6, Table 7, and Table 8** illustrate the 2026, 2031, and 2041 future background operations for each horizon year, respectively. **Appendix F and G** contain the Level of Service (LOS) definitions and detailed capacity analysis worksheets, respectively.

Table 6: 2026 Future Background Volumes

Intersection	Control	Peak Hour	Level of Service ¹	Control Delay	Maximum v/c ratio ²
Lansdowne Street South and Arthur Street	Stop (Two-way)	A.M.	C	16.6 s	0.07 (NB)
		P.M.	C	20.5 s	0.14 (NB)
Lansdowne Street South and Louisa Street West	Stop (Two-way)	A.M.	A	9.8 s	0.01 (WB)
		P.M.	A	8.5 s	0.00 (WB) ³
Lansdowne Street South, Beaver Street, and Alice Street	Stop (All-way)	A.M.	A	7.0 s	0.03 (NB/SB)
		P.M.	A	7.2 s	0.07 (SB)
Alice Street and Peel Street	Stop (T)	A.M.	A	8.6 s	0.00 (WB) ³
		P.M.	A	8.6 s	0.00 (WB) ³

Note¹: The Level of Service of a 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 delay per vehicle.

Note²: The maximum v/c ratio for two-way stop-controlled and all-way stop controlled intersections represents the maximum v/c for the minor road approach movements at the intersection.

Note³: Low approach volumes caused the volume-to-capacity ratio to round to 0.00.

Table 7: 2031 Future Background Volumes

Intersection	Control	Peak Hour	Level of Service ¹	Control Delay	Maximum v/c ratio ²
Lansdowne Street South and Arthur Street	Stop (Two-way)	A.M.	C	18.5 s	0.08 (NB)
		P.M.	C	24.2 s	0.19 (NB)
Lansdowne Street South and Louisa Street West	Stop (Two-way)	A.M.	A	9.8 s	0.01 (WB)
		P.M.	A	8.5 s	0.00 (WB) ³
Lansdowne Street South, Beaver Street, and Alice Street	Stop (All-way)	A.M.	A	7.0 s	0.04 (NB)
		P.M.	A	7.3 s	0.07 (SB)
Alice Street and Peel Street	Stop (T)	A.M.	A	8.6 s	0.00 (WB) ³
		P.M.	A	8.6 s	0.00 (WB) ³

Note¹: The Level of Service of a 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 delay per vehicle.

Note²: The maximum v/c ratio for two-way stop-controlled and all-way stop controlled intersections represents the maximum v/c for the minor road approach movements at the intersection.

Note³: Low approach volumes caused the volume-to-capacity ratio to round to 0.00.

Table 8: 2041 Future Background Volumes

Intersection	Control	Peak Hour	Level of Service ¹	Control Delay	Maximum v/c ratio ²
Lansdowne Street South and Arthur Street	Stop (Two-way)	A.M.	C	23.8 s	0.12 (NB)
		P.M.	E	39.2 s	0.33 (NB)
Lansdowne Street South and Louisa Street West	Stop (Two-way)	A.M.	A	9.9 s	0.01 (WB)
		P.M.	A	8.6 s	0.00 (WB) ³
Lansdowne Street South, Beaver Street, and Alice Street	Stop (All-way)	A.M.	A	7.1 s	0.05 (SB)
		P.M.	A	7.4 s	0.09 (SB)
Alice Street and Peel Street	Stop (T)	A.M.	A	8.6 s	0.00 (WB) ³
		P.M.	A	8.6 s	0.00 (WB) ³

Note¹: The Level of Service of a 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 delay per vehicle.

Note²: The maximum v/c ratio for two-way stop-controlled and all-way stop controlled intersections represents the maximum v/c for the minor road approach movements at the intersection.

Note³: Low approach volumes caused the volume-to-capacity ratio to round to 0.00.

The intersection of Lansdowne Street South and Arthur Street is expected to operate with a LOS "E" or better under 2041 future background traffic volume conditions. The maximum control delay of 39.2 seconds and maximum volume-to-capacity ratio of 0.33 (SB) indicates that the intersection has reserve capacity for increases in traffic volumes.

Other study intersections are expected to operate with a LOS "A" or better under 2041 future background traffic volume conditions. The maximum control delay of 9.9 seconds and maximum volume-to-capacity ratio of 0.09 (SB) indicates that the remaining study intersections are expected to operate well with reserve capacity for increases in traffic volumes.

6.0 SITE GENERATED TRAFFIC

The proposed development will result in additional vehicles on the boundary road network that previously did not exist.

The analysis contained within this report was based on a previous version of the Draft Plan which proposed 125 townhouse units, 58 apartment units, and 2,660 m² (28,632 ft²) of commercial space. The final Draft Plan contains 116 townhouse units, 75 apartment units, and 2,641 m² (28,427 ft²) of commercial space. Both draft plans propose the same full move accesses on Arthur Street and Alice Street and utilize the existing Louisa Street West right-of-way. The revisions to the Draft Plan result in a trip generation increase of 3 and 2 two-way trips in the a.m. and p.m. peak hours, respectively. As such, the findings and conclusions contained within this report remain valid when considering the final Draft Plan prepared by Montgomery Philip King Architect Inc, dated February 16, 2021.

The unadjusted trip generation of the proposed development was forecasted using the fitted curve equations and average rates provided in the ITE Trip Generation Manual, 11th Edition for the following land uses:

- LUC 220: Multifamily Housing (Low-Rise)
- LUC 221: Multifamily Housing (Mid-Rise)
- LUC 822: Strip Retail Plaza (<40K)

6.1 Internal Trip Synergies

The ITE Trip Generation Handbook, 3rd Edition, provides internal trip synergy rates for individual land uses for mixed-use developments. Internal trip synergy is expected between the retail and residential components of the proposed development. **Appendix J** includes relevant excerpts from the ITE Trip Generation Manual, 11th Edition and Handbook, 3rd Edition, as well as the internal and external trip calculations. **Table 9** summarizes the unadjusted trips forecasted to be generated by the development.

Table 9: Unadjusted Total Trips Generated

Use	Peak Hour	Number of Trips		
		Inbound	Outbound	Total
LUC 220: Multifamily Housing (Low-Rise) 125 Dwelling Units	Weekday A.M.	15	47	62
	Weekday P.M.	47	27	74
LUC 221: Multifamily Housing (Mid-Rise) 58 Dwelling Units	Weekday A.M.	3	11	14
	Weekday P.M.	14	9	23
TOTAL RESIDENTAIL	Weekday A.M.	18	58	76
	Weekday P.M.	61	36	97
LUC 822: Strip retail Plaza (<40,000 ft ² GFA) 28,632 ft ² GFA	Weekday A.M.	41	27	68
	Weekday P.M.	82	82	164

Table 10 includes the adjusted trip generation with the internal trip capture and the external trips tabulated separately.

Table 10: Adjusted (Total) Trip Generation

Land Use	Trip Type	Peak Hour	Trips Generated		
			Inbound	Outbound	Total
Residential	Internal	Weekday A.M.	0	1	1
		Weekday P.M.	21	8	29
	External	Weekday A.M.	18	57	75
		Weekday P.M.	40	28	68
Retail	Internal	Weekday A.M.	1	0	1
		Weekday P.M.	8	21	29
	External	Weekday A.M.	40	27	67
		Weekday P.M.	74	61	135
Total	Internal	Weekday A.M.	1	1	2
		Weekday P.M.	29	29	58
	External	Weekday A.M.	58	84	142
		Weekday P.M.	114	89	203

6.2 Pass-by Trip Generation

As defined by the ITE Trip Generation Handbook, 3rd Edition, primary trips are made for the specific purpose of visiting the generator. Pass-by trips are made as intermediate stops on the way from an origin to a primary destination without a route diversion. The Handbook does not provide a rate of LUC 822, but it does provide a rate of 40% based on p.m. peak hour data for LUC 821 "Shopping Plaza (40-150k)". A pass-by rate is not provided for the a.m. peak hour, accordingly the 40% was applied to the a.m. peak hour as well. **Table 11** illustrates the overall site trip generation.

Table 11: Trip Generation

Land Use	Trip Type	Peak Hour	Trips Generated		
			Inbound	Outbound	Total
Residential	Pass-by	Weekday A.M.	0	0	0
		Weekday P.M.	0	0	0
	Primary	Weekday A.M.	18	57	75
		Weekday P.M.	40	28	68
Retail	Pass-by	Weekday A.M.	16	11	27
		Weekday P.M.	30	24	54
	Primary	Weekday A.M.	24	16	40
		Weekday P.M.	44	37	81
Total	Pass-by	Weekday A.M.	16	11	27
		Weekday P.M.	30	24	54
	Primary	Weekday A.M.	42	73	115
		Weekday P.M.	84	65	149

6.3 Trip Distribution

The residential and commercial trips generated by the proposed development were distributed to the boundary road network based on existing travel patterns and the location of nearby residential, employment, retail, and service destinations. The downtown core of Thornbury and the Town of Collingwood are east of the site, while Owen Sound and Meaford are to the west of the site. The trips were distributed as follows:

- 55% to/from downtown Thornbury and Collingwood
 - 45% via Arthur Street
 - 5% via Lansdowne St. South
 - 5% via Alice Street
- 45% to/from Owen Sound/Meaford Area
 - 40% via Arthur Street
 - 5% via Peel Street

The distribution between the proposed site accesses was selected to reflect the layout and density of residential areas within the site. For a conservative analysis it was assumed that the trips generated by homes on Alice Street would utilize the southern site access (Access C) and the trips generated by homes on Lansdowne Street South would utilize the Louisa Street Access (Access C). The residential trip distribution and corresponding assignment are illustrated in **Figures 9 and 13**, respectively.

The pass-by trips generated by the proposed commercial development were distributed to the boundary road network based on the existing volume of traffic passing the proposed development on Arthur Street. Accordingly, 55 percent of the pass-by trips were assigned to and from the east on Arthur Street and 45 percent were applied to and from the west on Arthur Street. **Figures 11 and 14** illustrates the commercial primary trip distribution and trip assignment, respectively. **Figures 12 and 15** illustrates the pass-by trip distribution and trip assignment, respectively.

7.0 TOTAL FUTURE CONDITIONS

7.1 Basis of Assessment

The traffic impacts arising from the proposed development were assessed on the basis of the site generated traffic illustrated in **Figure 13 to 15** being superimposed on the future background traffic volumes in **Figures 7, 8, and 9**. The resulting total traffic volumes for the weekday a.m. and p.m. peak hours are illustrated in **Figures 16, 17, and 18** for the 2026, 2031, and 2041 horizon years, respectively.

7.2 Auxiliary Lane Warrant Assessment

An auxiliary left-turn lane warrant was completed at the intersection of Arthur Street and the proposed site access and Lansdowne Street South and Arthur Street based on the methodology described in the MTO Design Supplement for the Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads (GDGCR). Arthur Street has a posted speed limit of 70 km/h west of Lansdowne Street South, and 50 km/h to the east. Accordingly, design speeds of 60 and 90 km/h were used for the portions of Arthur Street to the east and west of Lansdowne Street South, respectively. **Appendix K** contains auxiliary left-turn lane warrant charts. **Table 12** summarizes the results of the left-turn lane warrants.

Table 12: Auxiliary Turn-Lane Warrants

Intersection & Approach	Horizon Year	Peak Hour	V _A	V _O	%LT in V _A	Storage	Reference & Design speed
WB - Lansdowne Street South and Arthur Street	2026 Future Background	A.M.	335	409	3%	✖	Exhibit 9A-7 & 60 km/h
		P.M.	559	451	3%	✓ (15 m)	
EB - Lansdowne Street South and Arthur Street		A.M.	409	335	1%	✖	Exhibit 9A-19 & 90 km/h
		P.M.	451	559	1%	✓ (15 m)	
WB - Lansdowne Street South and Arthur Street	2041 Future Background	A.M.	449	550	2%	✖	Exhibit 9A-7 & 60 km/h
		P.M.	750	604	3%	✓ (25 m)	
EB - Lansdowne Street South and Arthur Street		A.M.	550	449	1%	✓ (15 m)	Exhibit 9A-19 & 90 km/h
		P.M.	604	750	1%	✓ (25 m)	
WB - Lansdowne Street South and Arthur Street	2026 Future Total	A.M.	354	435	5%	✖	Exhibit 9A-7 & 60 km/h
		P.M.	597	479	5%	✓ (15 m)	
EB - Lansdowne Street South and Arthur Street		A.M.	435	354	1%	✖	Exhibit 9A-19 & 90 km/h
		P.M.	479	597	1%	✓ (15 m)	
WB - Arthur Street and Site Access		P.M.	599	485	7%	✓ (25 m)	
WB - Lansdowne Street South and Arthur Street	2041 Future Total	A.M.	468	576	4%	✓ (15 m)	Exhibit 9A-7 & 60 km/h
		P.M.	788	632	4%	✓ (25 m)	
EB - Lansdowne Street South and Arthur Street		P.M.	632	788	1%	✓ (25+ m)	Exhibit 9A-19 & 90 km/h

As summarized, auxiliary left-turn lanes are warranted at Lansdowne Street South and Arthur Street in the 2026 future background horizon year. It is noted that Arthur Street was previously widened to Lansdowne Street to accommodate the Foodland left-turn lanes. Accordingly, a westbound left-turn lane at Lansdowne Street South and Arthur Street can be accommodated within the existing pavement width through pavement marking adjustments.

The proposed Arthur Street site access is approximately 90 m west of Lansdowne Street. Accordingly, the eastbound left-turn lane at Lansdowne Street and the westbound left-turn lane at the proposed site access will be designed as back-to-back left-turn lanes. Geometric design elements will be confirmed during detailed design.

The turn-lane warrant described above accounts for the speed limit increase from 50 km/h to 70 km/h at Lansdowne Street. It is recommended that a speed limit reduction to the west limits of the site be considered given the proposed residential and commercial units. Regardless of a speed limit reduction, a westbound left-turn lane would be warranted at the proposed Arthur Street site access.

7.3 Signal Justification

A signal warrant analysis was undertaken for the intersection of Lansdowne Street South and Arthur Street based on the 2041 future total traffic volumes. The analysis followed the procedures specified in Chapter 4 of the "Ontario Traffic Manual – Book 12", March 2012 for Justifications 1 (Minimum Vehicle Volume), 2 (Delay to Cross Traffic) and 3 (Volume/Delay Combination). The future total peak hour volumes were assigned to the 8-hours based on the percentage of the peak hour traffic volumes established from the existing 8-hour traffic data.

The results of the signal warrant analyses are summarized in **Table 13** the warrant sheets have been included in **Appendix L**. Signals are not warranted the intersection of Lansdowne Street South and Arthur Street under 2041 future total traffic volume conditions. The requirement for signals should continue to be monitored by the Town as new developments are constructed and occupied within the study area.

Table 13: Signal Warrant Analysis Results
2041 Traffic Volume Conditions at Lansdowne Street and Arthur Street

Justification		Section Percent	Signal Justified
1. Minimum Vehicular Volume	A. Total Volume	94%	No
	B. Crossing volume	31%	
2. Delay to Cross Traffic	A. Main Road	93%	No
	B. Crossing Road	40%	
3. Combination	A. Justification 1	31%	No
	B. Justification 2	40%	

7.4 Intersection Operations

The 2026, 2036, and 2041 future total traffic operations are summarized in **Table 14, Table 15, and Table 16**, respectively. The operations were based on the future background traffic volumes illustrated in **Figures 16, 17, and 18**. This analysis assumed the construction of the warranted left-hand turning lanes. **Appendix F and G** contain, Level of Service (LOS) definitions and detailed capacity analysis worksheets, respectively.

Table 14: 2026 Future Total Volumes

Intersection	Control	Peak Hour	Level of Service ¹	Control Delay	Maximum v/c ratio ²
Lansdowne Street South and Arthur Street	Stop (Two-way)	A.M.	C	17.6 s	0.13 (NB)
		P.M.	C	23.6 s	0.22 (NB)
Lansdowne Street South and Louisa Street West/Site Access B	Stop (Two-way)	A.M.	B	10.1 s	0.04 (EB)
		P.M.	A	9.2 s	0.04 (EB)
Lansdowne Street South, Beaver Street, and Alice Street	Stop (All-way)	A.M.	A	7.1 s	0.04 (SB)
		P.M.	A	7.3 s	0.08 (SB)
Alice Street and Peel Street	Stop (T)	A.M.	A	8.6 s	0.01 (WB)
		P.M.	A	8.6 s	0.01 (WB)
Arthur Street and Site Access A	Stop (Two-way)	A.M.	C	15.7 s	0.16 (NB)
		P.M.	C	19.9 s	0.22 (NB)
Alice Street and Site Access C	Stop (Two-way)	A.M.	A	8.5 s	0.01 (SB)
		P.M.	A	8.5 s	0.00 (SB)

Note¹: The Level of Service of a 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 delay per vehicle.

Note²: The maximum v/c ratio for two-way stop-controlled and all-way stop controlled intersections represents the maximum v/c for the minor road approach movements at the intersection.

Note³: Low approach volumes caused the volume-to-capacity ratio to round to 0.00.

Table 15: 2031 Future Total Volumes

Intersection	Control	Peak Hour	Level of Service ¹	Control Delay	Maximum v/c ratio ²
Lansdowne Street South and Arthur Street	Stop (Two-way)	A.M.	C	19.7 s	0.15 (NB)
		P.M.	D	28.8 s	0.29 (NB)
Lansdowne Street South and Louisa Street West/Site Access B	Stop (Two-way)	A.M.	B	10.1 s	0.04 (EB)
		P.M.	A	9.2 s	0.04 (EB)
Lansdowne Street South, Beaver Street, and Alice Street	Stop (All-way)	A.M.	A	7.1 s	0.04 (SB)
		P.M.	A	7.3 s	0.08 (SB)
Alice Street and Peel Street	Stop (T)	A.M.	A	8.6 s	0.01 (WB)
		P.M.	A	8.6 s	0.01 (WB)
Arthur Street and Site Access A	Stop (Two-way)	A.M.	C	17.1 s	0.18 (NB)
		P.M.	C	22.7 s	0.25 (NB)
Alice Street and Site Access C	Stop (Two-way)	A.M.	A	8.5 s	0.01 (SB)
		P.M.	A	8.5 s	0.00 (SB)

Note¹: The Level of Service of a 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 delay per vehicle.

Note²: The maximum v/c ratio for two-way stop-controlled and all-way stop controlled intersections represents the maximum v/c for the minor road approach movements at the intersection.

Note³: Low approach volumes caused the volume-to-capacity ratio to round to 0.00.

Table 16: 2041 Future Total Volumes

Intersection	Control	Peak Hour	Level of Service ¹	Control Delay	Maximum v/c ratio ²
Lansdowne Street South and Arthur Street	Stop (Two-way)	A.M.	D	26.2 s	0.22 (NB)
		P.M.	F	53.5 s	0.49 (NB)
Lansdowne Street South and Louisa Street West/Site Access B	Stop (Two-way)	A.M.	B	10.2 s	0.04 (EB)
		P.M.	A	9.3 s	0.04 (EB)
Lansdowne Street South, Beaver Street, and Alice Street	Stop (All-way)	A.M.	A	7.1 s	0.05 (SB)
		P.M.	A	7.4 s	0.10 (SB)
Alice Street and Peel Street	Stop (T)	A.M.	A	8.6 s	0.01 (WB)
		P.M.	A	8.6 s	0.01 (WB)
Arthur Street and Site Access A	Stop (Two-way)	A.M.	C	21.4 s	0.22 (NB)
		P.M.	D	32.4 s	0.34 (NB)
Alice Street and Site Access C	Stop (Two-way)	A.M.	A	8.5 s	0.01 (SB)
		P.M.	A	8.5 s	0.00 (SB)

Note¹: The Level of Service of a 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 delay per vehicle.

Note²: The maximum v/c ratio for two-way stop-controlled and all-way stop controlled intersections represents the maximum v/c for the minor road approach movements at the intersection.

Note³: Low approach volumes caused the volume-to-capacity ratio to round to 0.00.

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 Lansdowne Street South and Arthur Street which is anticipated to operate at a LOS "F" in the p.m. peak hour. The site generated traffic is anticipated to result in a maximum increase in control delay of 14.3 seconds and a maximum increase of volume-to-capacity ratio of 0.16 at the intersection of Lansdowne Street South and Arthur Street.

The Alice Street site access is anticipated to operate at a LOS "A" and minimal control delay. The Arthur Street site access is anticipated to operate at a LOS "D" or better, with a maximum control delay of 32.4 seconds and a maximum volume-to-capacity ratio of 0.34. It is noted that a departure taper will be constructed opposite the westbound left-turn lane. This can allow for 2-stage gap acceptance which could reduce the delay for the northbound left-turn movement.

The above metrics indicate that the increase in traffic volumes on Arthur Street as a result of background traffic growth is anticipated to result in higher delay for the minor road approaches. This is not atypical, and it is expected that most accesses along Arthur Street would experience similar delays. It is recommended that ongoing monitoring of the study intersections should be completed as the future total volumes are based on a 20-year projection. Future consideration for a continuous two-way left-turn lane may be necessary for Arthur Street. This would allow for two-stage gap acceptance.

8.0 SENSITIVITY ANALYSIS: ARTHUR STREET ACCESS ONLY

As requested, by Town staff, a sensitivity analysis was completed analyzing the traffic operations assuming all traffic volumes utilize the Arthur Street site access. For consistency, the turn-lane dimensions utilized in the future total analysis were maintained for the sensitivity analysis.

Figures 19, 20 and 21 illustrate the sensitivity analysis trip distribution, trip assignment and 2041 future total traffic volumes, respectively. The 2041 future total traffic operations are summarized in **Table 17**. **Appendix F and G** contain, Level of Service (LOS) definitions and detailed capacity analysis worksheets, respectively.

Table 17: Sensitivity Analysis 2041 Future Total Volumes

Intersection	Control	Peak Hour	Level of Service ¹	Control Delay	Maximum v/c ratio ²
Lansdowne Street South and Arthur Street	Stop (Two-way)	A.M.	D	27.7 s	0.16 (NB)
		P.M.	F	54.2 s	0.45 (NB)
Lansdowne Street South and Louisa Street West	Stop (Two-way)	A.M.	A	9.9 s	0.04 (EB)
		P.M.	A	8.6 s	0.04 (EB)
Lansdowne Street South, Beaver Street, and Alice Street	Stop (All-way)	A.M.	A	7.1 s	0.05 (SB)
		P.M.	A	7.4 s	0.10 (SB)
Alice Street and Peel Street	Stop (T)	A.M.	A	8.6 s	0.01 (NB)
		P.M.	A	8.6 s	0.01 (WB)
Arthur Street and Site Access A	Stop (Two-way)	A.M.	C	24.4 s	0.35 (NB)
		P.M.	E	39.4 s	0.47 (NB)

Note¹: The Level of Service of a 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 delay per vehicle.

Note²: The maximum v/c ratio for two-way stop-controlled and all-way stop controlled intersections represents the maximum v/c for the minor road approach movements at the intersection.

Note³: Low approach volumes caused the volume-to-capacity ratio to round to 0.00.

The intersection of Lansdowne Street South and Arthur Street is anticipated to continue operating at a LOS "F" in the p.m. peak hour. Compared to the base 2041 future total scenario operations summarized in **Table 16**, these operations represent an increase in control delay of 0.7 seconds and no change to the volume-to-capacity ratio.

The Arthur Street site access is anticipated to operate at a LOS "E" or better under 2041 future total traffic volume conditions. The Arthur Street site access is anticipated to operate with a maximum control delay of 39.4 s and a maximum volume-to-capacity ratio of 0.47. Compared to the base 2041 future total scenario operations described in **Table 16**, these operations represent an increase in control delay of 7.0 seconds and a change in volume-to-capacity ratio of 0.13.

These metrics indicate that the proposed development can be supported based on the single access scenario.

9.0 SIGHT DISTANCE ANALYSIS

A sight distance assessment was completed to demonstrate that the proposed site accesses to Alice Street and Arthur Street provide sufficient stopping and intersection sight distance. The minimum stopping sight distance requirements were obtained from the Transportation Association of Canada's (TAC) Geometric Design Guide for Canadian Roads (GDGCR). All streets have either an assumed or posted speed limit of 50 or 70 km/h, which corresponds to a design speed of 60 or 90 km/h.

Section 2.5 of the TAC GDGCR provides stopping sight distances for various design speeds on level roadways. For design speeds of 60 km/h and 90km/h, stopping sight distances of 85 meters and 160 meters are required, respectively.

Section 9.9 of the TAC GDGCR provides intersection sight distance for different intersection control types. For these accesses, the applicable case "Case B1 – Left turns from the minor road" has the greatest sight distance requirement of 130 metres for 60 km/h design speed roads and 190 meters for 90 km/h roads.

Relevant excerpts from TAC GDGCR have been included as **Appendix M**. The minimum and available sight distances are summarized in **Table 18**.

Table 18: Minimum Sight Distance Requirements

Proposed Access	Design Speed	Oncoming Traffic	Stopping Sight Distance		Intersection Sight Distance	
			Minimum Standard	Available Distance	Minimum Standard	Available Distance
Arthur Street	90 km/h	Eastbound	160 m	+200 m	190 m	+200 m
		Westbound	160 m	+200 m	190 m	+200 m
Alice Street	60 km/h	Eastbound	85 m	+200m	130 m	+200m
		Westbound	85 m	+200 m	130 m	+200 m

Based on the above, the proposed Alice Street and Arthur Street entrances can be supported from a sight distance perspective.

10.0 RECOMMENDATIONS

The enclosed analysis results in the following key recommendations:

- Construct eastbound and westbound left-turn lanes at Arthur Street and Lansdowne Street
- Construct a westbound left turn lane at the proposed Arthur Street site access
- Consider extending the 50 km/h speed limit zone to the western limits of the proposed development
- Ongoing monitoring of intersection operations along Arthur Street and future consideration for a two-way centre left-turn lane to allow for two-stage gap acceptance.

11.0 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" during the weekday a.m. and p.m. peak hours with the exception of Lansdowne Street South and Arthur Street which is expected to operate at a LOS of "C".
 - Synchro is unable to analyze a 5 legged intersection, so the intersection of Lansdowne Street South, Beaver Street and Alice Street was modeled as a 4 way stop. To do this, volumes on the section of Beaver Street between Alice Street and Louisa Street were redistributed to other applicable legs.
- Intersection analysis of the 2026 through 2041 future background traffic volumes indicates the following:
 - All study intersections are operating at a Level of Service (LOS) "A" during the weekday a.m. and p.m. peak hours with the exception of Lansdowne Street South and Arthur Street which is expected to operate at a LOS of "E" and "C" during the weekday a.m. and p.m. peak hours, respectively.
 - The maximum control delay of 39.2 seconds and volume-to-capacity ratio of 0.33 (NB), both forecasted for Arthur Street and Lansdowne Street South in the p.m. peak hour, indicate that the boundary road network is operating acceptably with excess capacity for increases in traffic volumes.
- The development is proposed to generate 115 and 149 two-way external primary trips in the weekday a.m. and p.m. peak hours, respectively, and 27 and 54 two-way pass-by trips in the a.m. and p.m. peak hours, respectively. As noted previously, the trip generation calculations were based on a previous version of the Draft Plan, which resulted in a forecasted trip generation of 3 and 2 less two-way trips in the a.m. and p.m. peak hours, respectively. As such, the findings and conclusions contained within this report remain valid when considering the final Draft Plan prepared by Montgomery Philip King Architect Inc, dated February 16, 2021.
- The requirement for auxiliary left-turn lanes were reviewed for the eastbound and westbound movements on Arthur Street. At the intersection of Lansdowne Street South and Arthur Street both the eastbound and westbound movements warrant left-turn lanes with 25 m of storage under 2041 future background conditions. A westbound left-turn lane with 25 m of storage is also warranted at the intersection of Arthur Street with the proposed site access. The geometric details related to the proposed turn-lanes would be confirmed during detailed design, however it is noted that the westbound left-turn lane at Lansdowne Street South can be accommodated within the existing pavement width.
- A signal warrant analysis was undertaken for the intersection of Lansdowne Street South and Arthur Street based on the 2041 future total traffic volumes. The analysis followed the procedures specified in Chapter 4 of the "Ontario Traffic Manual – Book 12", March 2012 for Justifications 1 to 3. Based on this approach, signals are not warranted at the intersection.
- Intersection analysis of the 2041 future total traffic volumes indicates the following:
 - The study intersections are anticipated to continue operating with a LOS "B" or better in the a.m. and p.m. peak hours, with the exception of the two Arthur Street intersections.

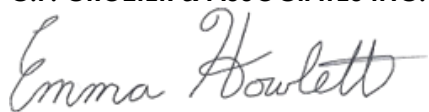
- Lansdowne Street South and Arthur Street is anticipated to operate with a LOS "D" and "F" in the a.m. and p.m. peak hours, respectively. And the proposed Arthur Street site access is anticipated to operate with a LOS "C" and "D" in the weekday a.m. and p.m. peak hours, respectively.
 - The above metrics indicate that the increase in traffic volumes on Arthur Street as a result of background traffic growth is anticipated to result in higher delay for the minor road approaches.
 - This is not atypical, and it is expected that most accesses along Arthur Street would experience similar delays.
 - It is recommended that ongoing monitoring of the study intersections should be completed as the future total volumes are based on a 20-year projection. Future consideration for a continuous two-way left-turn lane may be necessary for Arthur Street. This would allow for two-stage gap acceptance.
- A sensitivity analysis was completed analyzing the traffic operations assuming all traffic volumes utilize the Arthur Street site access. The sensitivity analysis was completed the 2041 future total traffic volumes and the results indicate the following:
 - The elimination of the Alice Street and Lansdowne Street South site accesses is anticipated to have a negligible impact on the operations of the intersection of Lansdowne Street South and Arthur Street.
 - The proposed Arthur Street site access is anticipated to operate with a LOS "C" and "E" in the weekday a.m. and p.m. peak hours, respectively. This represents a maximum increase in control delay of 7.0 seconds when compared to the base 2041 future total scenario.
 - The available sight distances at the proposed site accesses exceed the minimum requirements outlined in the Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads (GDGCR). Accordingly, the proposed site accesses can be supported from a sight distance perspective.

It is concluded that the traffic generated by the 125 Arthur Street development can be supported by the boundary road network, with the noted improvements.

The analysis contained within this report was completed based on a previous version of the Draft Plan. The findings and conclusions contained within this report remain valid when considering the final Draft Plan, as prepared by Montgomery Philip King Architect Inc, dated February 16, 2021. The proposed Draft Plan Application can be supported from a traffic operations and safety

Prepared by,

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Madeleine Ferguson, P.Eng.
Manager of Transportation

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APPENDIX A

Terms of Reference Correspondence

Emma Howlett

From: Shaquille Cousins <scousins@thebluemountains.ca>
Sent: July 26, 2021 3:44 PM
To: Emma Howlett
Cc: Deanna Vickery; Madeleine Ferguson
Subject: Terms of Reference: 125 Arthur Street
Attachments: Traffic Brief 1 of 4.PNG; Traffic Brief 2 of 4.PNG; Traffic Brief 3 of 4.PNG; Traffic Brief 4 of 4.PNG

Good Afternoon Emma,

Please see my responses to your inquiries below in red.

Study intersections

The TIS will review the following intersections:

- Lansdowne Street South and Arthur Street;
- Lansdowne Street South and Louisa Street West; and
- the Site Accesses

Note the 5-legged intersection of Beaver Street, Lansdowne St S and Alice St W cannot be analyzed with the Highway Capacity Manual therefore has been omitted from this study. We will commission turning movement counts from a specialty traffic counting firm. The cameras will be deployed on private property owned by the Client.

-Please include the intersection of Alice Street/Peel Street in your review. With an additional entrance proposed on Alice Street please review and consider any upgrades that may be required at the afore mentioned intersection due to the increased traffic from the proposed site.

-As the 5-legged intersection of Beaver Street, Lansdowne St S and Alice St W will not be included in the modelling, traffic is not to be considered as traveling there... volumes are to be shown travelling along other routes.

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.
- It is assumed that the development will be constructed within 5-years. Accordingly, horizon years of full build-out (2026) and 5 years beyond (2031) will be assessed.
- A growth rate of 1.62%, and 1% was established by studying MTO AADT and SADT data, respectively, on Highway 26 at Peel Street from 2010 to 2016. Accordingly, a growth rate of 1.5% compounded annually will be used to establish the future background traffic volumes.
- Please advise of any nearby developments that we should account for in our assessment.

-Please extend the horizon year analysis to include 15 years beyond the assumed full build-out (2041).

-Based on recent local growth it may be more appropriate to assume a 2% annual growth rate as opposed to the 1.5% suggested.

-Please include the Towns of Thornbury development in your assessment (see attached excerpts from traffic brief for information purposes).

-Please include the Lora Bay Heights development full buildout in the ultimate buildout scenario.

-Please include a scenario that analyzes traffic movements solely entering and exiting the site from the proposed Arthur Street entrance.

Please be aware that although the section of Arthur Street adjacent to the project site is owned by The Town of the Blue Mountains, an MTO encroachment permit and general approval will likely be required.

Feel free to reach out to me if you had any additional questions.

Best Regards,



Shaquille Cousins, C.Tech

Development Engineering Reviewer

Town of The Blue Mountains, 32 Mill Street, P.O. Box 310, Thornbury, ON N0H 2P0

Tel: 519-599-3131 ext. 279 | Fax: 519-599-7723

Email: scousins@thebluemountains.ca | Website: www.thebluemountains.ca

IMPORTANT INFORMATION

The Town of The Blue Mountains has reopened Town Hall to the public from 8:30 a.m. to 4:30 p.m. Monday to Friday. Customers are reminded that for in-depth service needs, such as planning services, building services, applying for a marriage license and the commissioning of documents, appointments are required. Appointments will need to be scheduled in advance by contacting the appropriate department. To contact a staff member, please call 519-599-3131 or email the appropriate department as listed on the staff directory of the Town website:

www.thebluemountains.ca/staff-directory.cfm. Online services can also be accessed 24/7 by visiting:














www.thebluemountains.ca/online-services.cfm. Council and Committee meetings will continue to take place virtually until further notice.

APPENDIX B

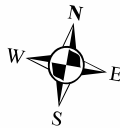
Town of the Blue Mountains Official Plan Excerpts

The Blue Mountains Official Plan Schedule 'B-2' Transportation Thornbury and Clarksburg

Designations

- | | |
|---|--|
|  Highway 26 |  Proposed Collector Roads |
|  County Roads |  Proposed Local Roads |
|  Major Collector Roads |  Bruce Trail - Existing Route |
|  Minor Collector Roads |  Georgian Trail |
|  Local Roads |  Trails |
|  Local Heritage Roads |  Community Gateway |
|  Private Roads | |

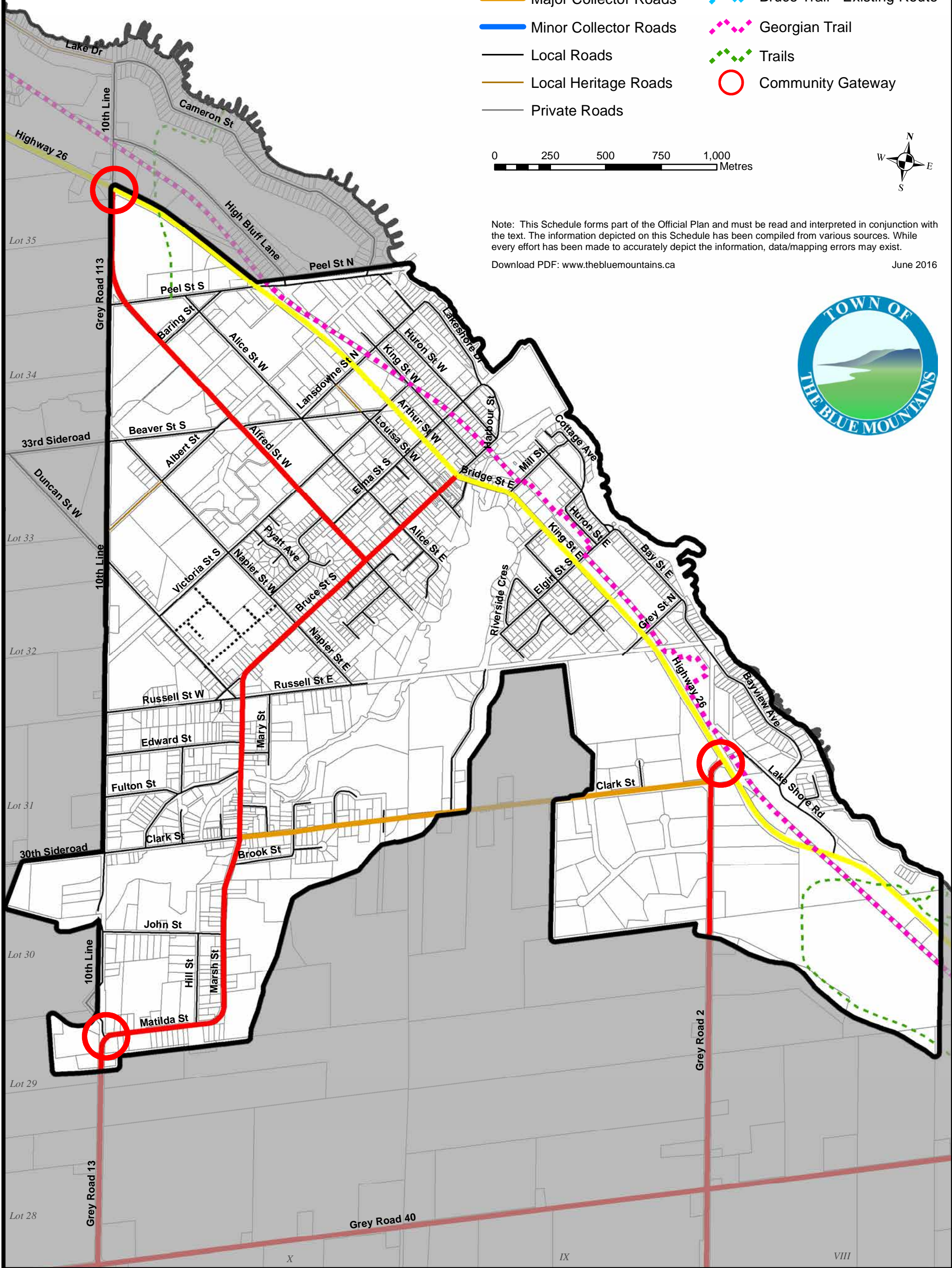
0 250 500 750 1,000 Metres



Note: This Schedule forms part of the Official Plan and must be read and interpreted in conjunction with the text. The information depicted on this Schedule has been compiled from various sources. While every effort has been made to accurately depict the information, data/mapping errors may exist.

Download PDF: www.thebluemountains.ca

June 2016



APPENDIX C

Georgian Trail Map



Tom Thomson Trail to Owen Sound begins at Raper Park

Meaford

Meaford Harbour
terminus (Bridge St.)

Memorial Park ▲

Christie Beach

P



Lora Bay Park

P

GOLF CLUB AT LORA B

Thornbury

Trestle Bridge &

Bayview Park

P



Fish Ladder

P



Clarksburg

P



Peasemash
Conservation Area

P



Council Beach

P



Delphi Point Park

P



Craigeleith
Prov. Park

P



Northwinds Beach

P



Collingwood

Harbourview Park terminus
(foot of Birch St.)

P



Little Ed's Bikes & Ski

Mountain Rd.

BLUE MOUNTAIN
GOLF CLUB

124

APPENDIX D

Transit Maps and Schedules



The Grey't Way To Travel

Route 3 & 4

Highway 26

Owen Sound to The Blue Mountains

Adult (18+): \$5.00

Adult (55+) and student (6-17):
\$4.50

Children 5 and under: Free

Operating:
Wednesday to Sunday



Telephone Number: 226-910-1001
Website: www.grey.ca/gtr

Grey Transit Route - Schedules

ROUTE 1 SOUTHBOUND (Owen Sound to Dundalk)

Monday - Friday

Owen Sound Transit Terminal 1020 3rd Ave E, Owen Sound	Departure 6:45 AM	Departure 10:44 AM	Departure 5:47 PM
Stone Tree 318085 Hwy 6-10, Owen Sound	6:54 AM	10:53 AM	5:56 PM
Chatsworth Arena 5Toronto St., Chatsworth	7:08 AM	11:07 AM	6:10 PM
King Edward Park 75 Walker St, Markdale	7:32 AM	11:31 AM	6:34 PM
Trail Parking Lot Main St West, @ Scotland St, Markdale	7:39 AM	11:38 AM	6:41 PM
Grey Gables 206 Toronto St S, Markdale	7:46 AM	11:45 AM	6:48 PM
Huron Bay Co-Operative 774794 ON-10, Flesherton	7:54 AM	11:53 AM	6:56 PM
Flesherton Arena 103 ON-10, Flesherton	8:05 AM	12:04 PM	7:07 PM
Dundalk Arena 550 Main St E, Dundalk	Arrival 8:19 AM	Arrival 12:18 PM	Arrival 7:21 PM

ROUTE 1 NORTHBOUND (Dundalk to Owen Sound)

Monday - Friday

Dundalk Arena 550 Main St E, Dundalk	Departure 8:34 AM	Departure 12:22 PM	Departure 7:25 PM
Flesherton Arena 103 ON-10, Flesherton	8:52 AM	12:40 PM	7:43 PM
Huron Bay Co-Operative 774794 ON-10, Flesherton	9:03 AM	12:51 PM	7:54 PM
Grey Gables 206 Toronto St S, Markdale	9:11 AM	12:59 PM	8:02 PM
Trail Parking Lot Main St West, @ Scotland St, Markdale	9:18 AM	1:06 PM	8:09 PM
King Edward Park 75 Walker St, Markdale	9:25 AM	1:13 PM	8:16 PM
Chatsworth Arena 5 Toronto St., Chatsworth	9:49 AM	1:37 PM	8:40 PM
Stone Tree 318085 Hwy 6-10, Owen Sound	10:03 AM	1:51 PM	8:54 PM
Owen Sound Transit Terminal 1020 3rd Ave E, Owen Sound	Arrival 10:08 AM	Arrival 1:56 PM	Arrival 8:59 PM

Book your ride with GTR | Call 226-910-1001 to reserve your ticket or book online.

All rides must be booked in advance to ensure capacity and safety.

<https://www.grey.ca/grey-transit-route> | <https://driverseatinc.com/greytransitroute/>

**ROUTE 2 SOUTHBOUND
(Dundalk to Orangeville)**

Monday - Friday

Dundalk Arena 550 Main St E, Dundalk	Departure 6:30 AM	Departure 8:34 AM	Departure 12:22 PM	Departure 5:21 PM
Fiddle Park Ln @ Greenwood Crescent, Shelburne	6:49 AM	8:53 AM	12:41 PM	5:40 PM
Victoria St. @ Red Front Store Ln. Shelburne	6:56 AM	9:00 AM	12:48 PM	5:47 PM
Hansen Blvd. @ First St. (Orangeville Mall & GO Bus) Orangeville	7:22 AM	9:26 AM	1:14 PM	6:13 PM
Broadway & Fourth Street (Transit Transfer Station) Orangeville	Arrival 7:28 AM	Arrival 9:32 AM	Arrival 1:20 PM	Arrival 6:19 PM

**ROUTE 2 NORTHBOUND
(Orangeville to Dundalk)**

Monday - Friday

Broadway & Fourth Street (Transit Transfer Station) Orangeville	Departure 7:32 AM	Departure 9:36 AM	Departure 1:24 PM	Departure 6:23 PM
Hansen Blvd. @ First St. (Orangeville Mall & GO Bus) Orangeville	7:42 AM	9:46 AM	1:34 PM	6:33 PM
Victoria St. @ Red Front Store Ln. Shelburne	8:08 AM	10:12 AM	2:00 PM	6:59 PM
Fiddle Park Ln @ Greenwood Crescent Shelburne	8:15 AM	10:19 AM	2:07 PM	7:06 PM
Dundalk Arena 550 Main St. E., Dundalk	Arrival 8:30 AM	Arrival 10:34 AM	Arrival 2:22 PM	Arrival 7:21 PM



**ROUTE 3 EASTBOUND
(Owen Sound to Meaford)**

Wednesday - Sunday

Owen Sound Transit Terminal 1020 3rd Ave. E., Owen Sound	Departure 6:30 AM	Departure 8:06 AM	Departure 9:39 AM	Departure 11:21 AM	Departure 4:30 PM	Departure 6:06 PM
Woodford Community Center 107 Woodford Cres, Owen Sound	<i>express (no stop)</i>	8:27 AM	10:00 AM	<i>express (no stop)</i>	<i>express (no stop)</i>	6:27 PM
Don Bumstead & Family Medical Clinic 206106, ON-26, Meaford	<i>express (no stop)</i>	8:39 AM	10:12 AM	<i>express (no stop)</i>	<i>express (no stop)</i>	6:39 PM
N Sykes St. @ Nelson St W, Meaford	Arrival 7:00 AM	Arrival 8:42 AM	Arrival 10:15 AM	Arrival 11:51 AM	Arrival 5:00 PM	Arrival 6:42 PM

**ROUTE 3 WESTBOUND
(Meaford to Owen Sound)**

Wednesday - Sunday

N Sykes St. @ Nelson St W, Meaford	Departure 8:46 AM	Departure 10:28 AM	Departure 11:55 AM	No Stop	Departure 6:46 PM
Don Bumstead & Family Medical Centre 206106, ON-26, Meaford	8:53 AM	10:35 AM	12:02 PM	No Stop	6:53 PM
Smart Centres Bus Stop 16th St E @ 18th Ave E, Owen Sound	9:16 AM	10:58 AM	12:25 PM	Pick Up Only 4:15 PM	7:16 PM
Grey Bruce Health Services Owen Sound Hospital 1800 8th St E, Owen Sound	9:23 AM	11:05 AM	12:32 PM	Pick Up Only 4:18 PM	7:23 PM
Georgian College 8th St. E., Owen Sound	9:30 AM	11:12 AM	12:39 PM	Pick Up Only 4:21 PM	7:30 PM
Owen Sound Transit Terminal 1020 3rd Ave. E., Owen Sound	Arrival 9:35 AM	Arrival 11:17 AM	Arrival 12:44 PM	Arrival 4:26 PM	Arrival 7:35 PM

Book your ride with GTR | Call 226-910-1001 to reserve your ticket or book online.

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<https://www.grey.ca/grey-transit-route> | <https://driverseatinc.com/greytransitroute/>

**ROUTE 4 EASTBOUND
(Meaford to Town of the Blue Mountains)**

Wednesday - Sunday

Downtown Meaford N Sykes St. @ Nelson St W, Meaford	Departure 7:04 AM	Departure 8:46 AM	Departure 5:04 PM	Departure 6:46 PM
Masse's Independent 206497 ON-26, Meaford	7:11 AM	8:53 AM	5:11 PM	6:53 PM
Thornbury Foodland 105 Arthur St W, Thornbury	7:21 AM	9:03 AM	5:21 PM	7:03 PM
Town of Blue Mountains Municipal Office 32 Mill St, The Blue Mountains	7:27 AM	9:09 AM	5:27 PM	7:09 PM
Blue Mountain Community Health Centre 78 King St E, Thornbury	7:34 AM	9:16 AM	5:34 PM	7:16 PM
Blue Mountain Village 156 Jozo Weider Blvd.	Arrival 7:51 AM	Arrival 9:33 AM	Arrival 5:51 PM	Arrival 7:33 PM

**ROUTE 4 WESTBOUND
(Town of the Blue Mountains to Meaford)**

Wednesday - Sunday

Blue Mountain Village 156 Jozo Weider Blvd.	Departure 7:55 AM	Departure 9:37 AM	Departure 5:55 PM	Departure 7:37 PM
Blue Mountain Community Health Centre 78 King St E, Thornbury	8:16 AM	9:58 AM	6:16 PM	7:58 PM
Town of Blue Mountains Municipal Office 32 Mill St, The Blue Mountains	8:23 AM	10:05 AM	6:23 PM	8:05 PM
Thornbury Foodland 105 Arthur St W, Thornbury	8:29 AM	10:11 AM	6:29 PM	8:11 PM
Masse's Independent 206497 ON-26, Meaford	8:39 AM	10:21 AM	6:39 PM	8:21 PM
Downtown Meaford N Sykes St. @ Nelson St W, Meaford	Arrival 8:42 AM	Arrival 10:24 AM	Arrival 6:42 PM	8:28 PM
Owen Sound Transit Terminal 1020 3rd Ave. E., Owen Sound				Arrival 8:58 PM



ROUTE 5 NORTHBOUND
(Owen Sound to Wiarton to Sauble Beach)

Friday – Monday (May 21 to September 6, 2021 *Including Holiday Mondays*)

Owen Sound Transit Terminal 1020 3rd Ave E, Owen Sound	Departure 7:17 AM	Departure 12:17 PM	Departure 8:17 PM
Bergen's No Frills 1020 10th St W, Owen Sound	7:27 AM	12:27 PM	8:27 PM
Shallow Lake & District Community Centre 550 Princess St, Shallow Lake	7:41 AM	12:41 PM	8:41 PM
South Bruce Peninsula Visitor Centre 50 ON-6, Hepworth	7:47 AM	12:47 PM	8:47 PM
Warton Foodland 425 Berford St, Warton	7:59 AM	12:59 PM	express (no stop)
Downtown Warton Louisa St, @ George St, Warton	8:07 AM	1:07 PM	express (no stop)
Sauble Beach 104 2nd Ave N, Sauble Beach	Arrival 8:31 AM	Arrival 1:31 PM	Arrival 9:02 PM

ROUTE 5 SOUTHBOUND
(Sauble Beach to Warton to Owen Sound)

Friday – Monday (May 21 to September 6, 2021 *Including Holiday Mondays*)

Sauble Beach 104 2nd Ave N, Sauble Beach	Departure 8:33 AM	Departure 1:33 PM	Departure 9:04 PM
Downtown Warton Louisa St, @ George St, Warton	express (no stop)	1:59 PM	9:30 PM
Warton Foodland 425 Berford St, Warton	express (no stop)	2:07 PM	9:38 PM
South Bruce Peninsula Visitor Centre 50 ON-6, Hepworth	8:45 AM	2:19 PM	9:50 PM
Shallow Lake & District Community Centre 550 Princess St, Shallow Lake	8:51 AM	2:25 PM	9:56 PM
Bergen's No Frills 1020 10th St W, Owen Sound	9:05 AM	2:39 PM	10:10 PM
Owen Sound Transit Terminal 1020 3rd Ave E, Owen Sound	Arrival 9:13 AM	Arrival 2:47 PM	Arrival 10:18 PM

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All rides must be booked in advance to ensure capacity and safety.

<https://www.grey.ca/grey-transit-route> | <https://driverseatinc.com/greytransitroute/>

ROUTE 6 WESTBOUND
(Flesherton / Durham - Walkerton)

Monday and Friday

Flesherton Arena 103 ON-10, Flesherton	Departure 8:05 AM	Departure 12:41 PM	Departure 5:04 PM
Durham Credit Union 118 Queen St S, Durham	8:29 AM	1:05 PM	5:25 PM
Hanover Municipal Office 341 10th St, Hanover	8:50 AM	1:26 PM	5:46 PM
Downtown Walkerton 306 Scott St, Walkerton	Arrival 9:03 AM	Arrival 1:39 PM	Arrival 5:59 PM

ROUTE 6 EASTBOUND
(Walkerton - Durham / Flesherton)

Monday and Friday

Downtown Walkerton 306 Scott St, Walkerton	Departure 7:03 AM	Departure 9:07 AM	Departure 1:43 PM	Departure 6:03 PM
Hanover Municipal Office 341 10th St, Hanover	7:20 AM	9:24 AM	2:00 PM	6:20 PM
Durham Credit Union 118 Queen St S, Durham	7:41 AM	9:45 AM	2:21 PM	6:41 PM
Flesherton Arena 103 ON-10, Flesherton	Arrival 8:01 AM	Arrival 10:05 AM	Arrival 2:41 PM	Arrival 7:01 PM



APPENDIX E

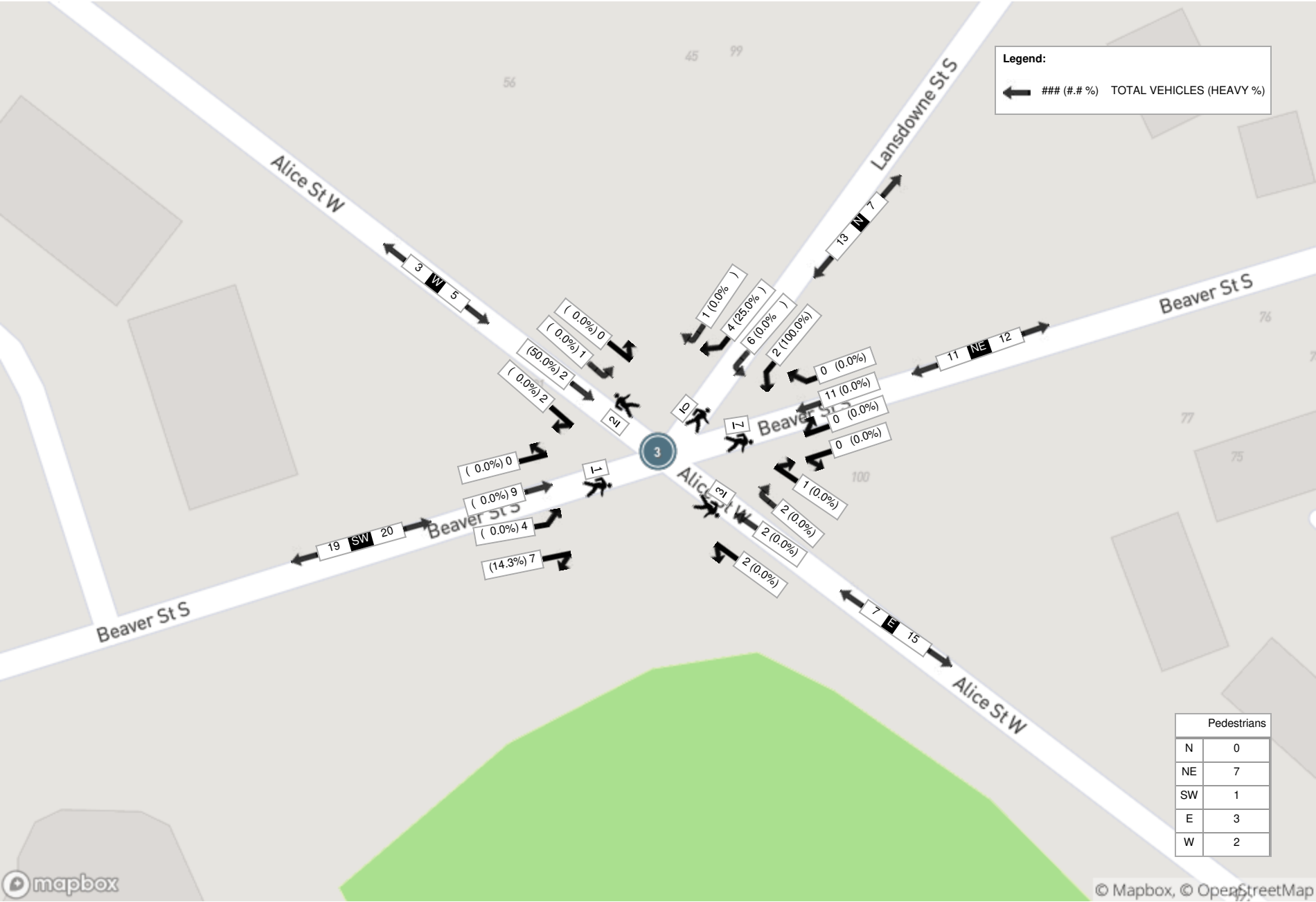
Traffic Data

Turning Movement Count (3 . ALICE ST & BEAVER ST / LANSDOWN ST S)																																					
Start Time	N Approach LANSDOWNE ST S							NE Approach BEAVER ST							E Approach ALICE ST							W Approach ALICE ST							SW Approach BEAVER ST							Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Bear Right N:SW	Bear Left N:NE	Left N:E	UTurn N:N	Peds N:	Approach Total	Hard Right NE:W	Bear Right NE:N	Thru NE:SW	Hard Left NE:E	UTurn NE:NE	Peds NE:	Approach Total	Hard Right E:NE	Right E:N	Thru E:W	Hard Left E:SW	UTurn E:E	Peds E:	Approach Total	Hard Right W:SW	Thru W:E	Left W:N	Hard Left W:NE	UTurn W:W	Peds W:	Approach Total	Hard Right SW:E	Thru SW:NE	Bear Left SW:N	Hard Left SW:W	UTurn SW:SW	Peds SW:	Approach Total		
06:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	1	2	
06:15:00	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	2	3	
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BREAK																																					
15:00:00	1	6	0	1	0	0	8	0	0	4	0	0	0	4	1	0	1	1	0	0	3	0	1	0	0	0	1	1	6	1	0	0	0	8	24		
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16:00:00	0	1	0	2	0	0	3	1	0	5	1	0	0	7	0	4	2	3	0	2	9	0	0	1	0	0	0	1	0	5	0	1	0	1	6	26	97
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Grand Total	4	64	5	24	0	15	97	4	3	108	7	0	31	122	14	20	23	30	0	18	87	2	11	2	1	0	5	16	26	88	43	2	1	10	160	482	-
Approach%	4.1%	66%	5.2%	24.7%	0%		-	3.3%	2.5%	88.5%	5.7%	0%		-	16.1%	23%	26.4%	34.5%	0%		-	12.5%	68.8%	12.5%	6.3%	0%		-	16.3%	55%	26.9%	1.3%	0.6%		-	-	
Totals %	0.8%	13.3%	1%	5%	0%		20.1%	0.8%	0.6%	22.4%	1.5%	0%		25.3%	2.9%	4.1%	4.8%	6.2%	0%		18%	0.4%	2.3%	0.4%	0.2%	0%		3.3%	5.4%	18.3%	8.9%	0.4%	0.2%		33.2%	-	-
Heavy	0	2	3	1	0		-	1	0	4	0	0		-	1	0	1	0	0		-	0	1	0	0	0		-	2	6	0	1	0		-	-	-
Heavy %	0%	3.1%	60%	4.2%	0%		-	25%	0%	3.7%	0%	0%		-	7.1%	0%	4.3%	0%	0%		-	0%	9.1%	0%	0%	0%		-	7.7%	6.8%	0%	50%	0%		-	-	-
Bicycles	-	-	-	-	-		-	-	-	-	-	-		-	-	-	-	-	-		-	-	-	-	-	-		-	-	-	-	-	-		-	-	-
Bicycle %	-	-	-	-	-		-	-	-	-	-	-		-	-	-	-	-	-		-	-	-	-	-	-		-	-	-	-	-	-		-	-	-

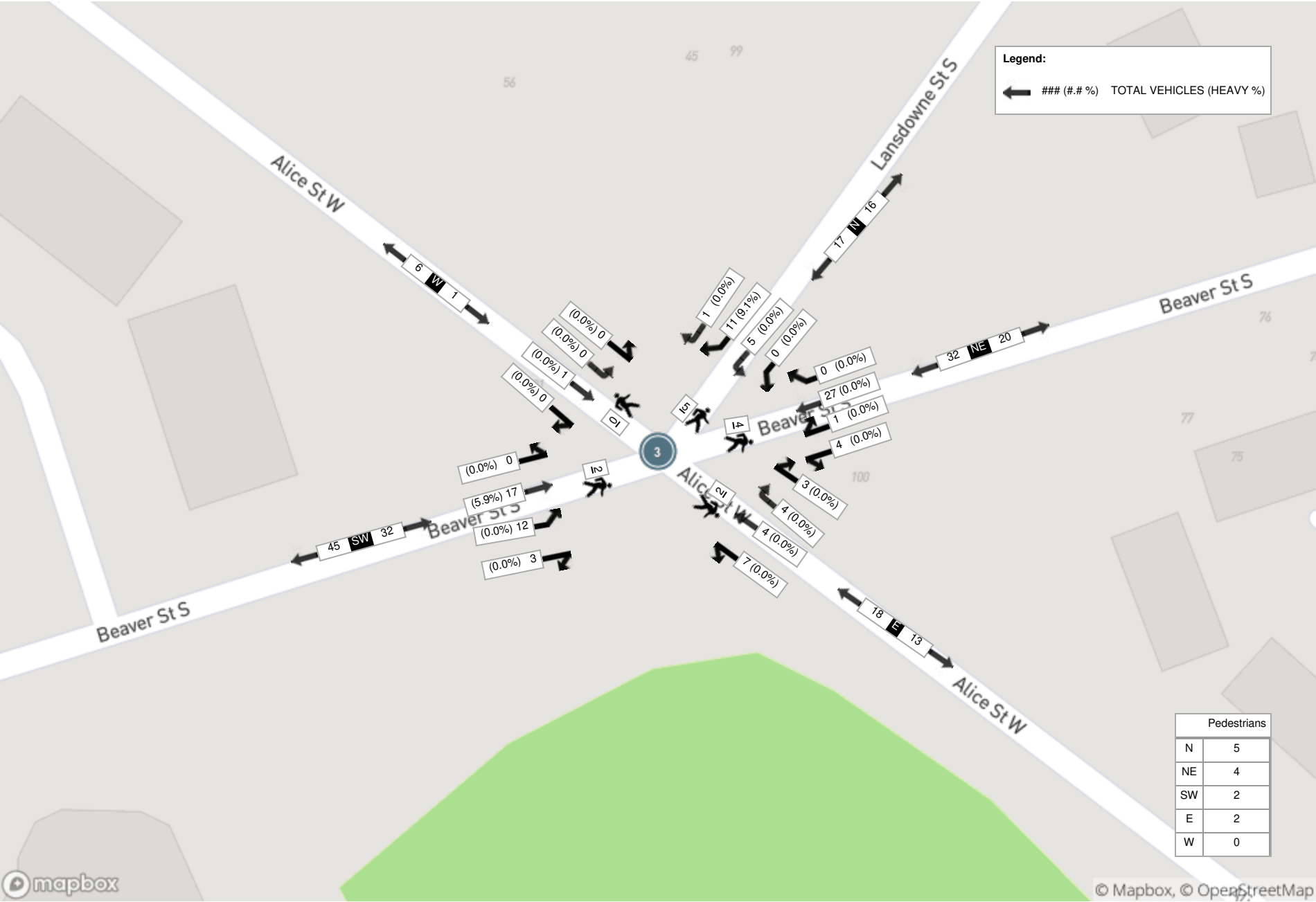
Peak Hour: 08:45 AM - 09:45 AM Weather: Broken Clouds (15.17 °C)																																				
Start Time	N Approach LANSDOWNE ST S							NE Approach BEAVER ST							E Approach ALICE ST							W Approach ALICE ST							SW Approach BEAVER ST							Int. Total (15 min)
	Right	Bear Right	Bear Left	Left	UTurn	Peds	Approach Total	Hard Right	Bear Right	Thru	Hard Left	UTurn	Peds	Approach Total	Hard Right	Right	Thru	Hard Left	UTurn	Peds	Approach Total	Hard Right	Thru	Left	Hard Left	UTurn	Peds	Approach Total	Hard Right	Thru	Bear Left	Hard Left	UTurn	Peds	Approach Total	
08:45:00	0	1	1	2	0	0	4	0	0	3	0	0	2	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	2	0	0	1	6	13
09:00:00	0	1	0	1	0	0	2	0	0	3	0	0	3	3	0	1	2	1	0	2	4	0	0	0	0	0	2	0	2	1	0	0	0	3	12	
09:15:00	0	1	1	2	0	0	4	0	0	3	0	0	0	3	0	0	0	1	0	0	1	0	1	0	0	0	0	1	1	4	1	0	0	0	6	15
09:30:00	1	1	0	1	0	0	3	0	0	2	0	0	2	2	1	1	0	0	0	1	2	2	1	1	0	0	0	4	3	1	1	0	0	0	5	16
Grand Total	1	4	2	6	0	0	13	0	0	11	0	0	7	11	1	2	2	2	0	3	7	2	2	1	0	0	2	5	7	9	4	0	0	1	20	56
Approach%	7.7%	30.8%	15.4%	46.2%	0%		-	0%	0%	100%	0%	0%		-	14.3%	28.6%	28.6%	28.6%	0%		-	40%	40%	20%	0%	0%		-	35%	45%	20%	0%	0%		-	-
Totals %	1.8%	7.1%	3.6%	10.7%	0%		23.2%	0%	0%	19.6%	0%	0%		19.6%	1.8%	3.6%	3.6%	3.6%	0%		12.5%	3.6%	3.6%	1.8%	0%	0%		8.9%	12.5%	16.1%	7.1%	0%	0%		35.7%	-
PHF	0.25	1	0.5	0.75	0		0.81	0	0	0.92	0	0		0.92	0.25	0.5	0.25	0.5	0		0.44	0.25	0.5	0.25	0	0		0.31	0.58	0.56	0.5	0	0		0.83	-
Heavy	0	1	2	0	0		3	0	0	0	0	0		0	0	0	0	0	0		0	0	1	0	0	0		1	1	0	0	0	0		1	-
Heavy %	0%	25%	100%	0%	0%		23.1%	0%	0%	0%	0%	0%		0%	0%	0%	0%	0%	0%		0%	0%	50%	0%	0%	0%		20%	14.3%	0%	0%	0%	0%		5%	-
Lights	1	3	0	6	0		10	0	0	11	0	0		11	1	2	2	2	0		7	1	1	1	0	0		3	6	8	3	0	0		17	-
Lights %	100%	75%	0%	100%	0%		76.9%	0%	0%	100%	0%	0%		100%	100%	100%	100%	100%	0%		100%	50%	50%	100%	0%	0%		60%	85.7%	88.9%	75%	0%	0%		85%	-
Single-Unit Trucks	0	1	2	0	0		3	0	0	0	0	0		0	0	0	0	0	0		0	0	1	0	0	0		1	0	0	0	0	0		0	-
Single-Unit Trucks %	0%	25%	100%	0%	0%		23.1%	0%	0%	0%	0%	0%		0%	0%	0%	0%	0%	0%		0%	0%	50%	0%	0%	0%		20%	0%	0%	0%	0%	0%		0%	-
Buses	0	0	0	0	0		0	0	0	0	0	0		0	0	0	0	0	0		0	0	0	0	0	0		0	1	0	0	0	0		1	-
Buses %	0%	0%	0%	0%	0%		0%	0%	0%	0%	0%	0%		0%	0%	0%	0%	0%	0%		0%	0%	0%	0%	0%	0%		0%	14.3%	0%	0%	0%	0%		5%	-
Articulated Trucks	0	0	0	0	0		0	0	0	0	0	0		0	0	0	0	0	0		0	0	0	0	0	0		0	0	0	0	0	0		0	-
Articulated Trucks %	0%	0%	0%	0%	0%		0%	0%	0%	0%	0%	0%		0%	0%	0%	0%	0%	0%		0%	0%	0%	0%	0%	0%		0%	0%	0%	0%	0%	0%		0%	-
Bicycles on Road	0	0	0	0	0		0	0	0	0	0	0		0	0	0	0	0	0		0	1	0	0	0	0		1	0	1	1	0	0		2	-
Bicycles on Road %	0%	0%	0%	0%	0%		0%	0%	0%	0%	0%	0%		0%	0%	0%	0%	0%	0%		0%	50%	0%	0%	0%	0%		20%	0%	11.1%	25%	0%	0%		10%	-
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	-	7	-	-	-	-	-	-	3	-	-	-	-	-	-	2	-	-	-	-	-	-	1	-	-
Pedestrians%	-	-	-	-	-	0%		-	-	-	-	-	53.8%		-	-	-	-	-	23.1%		-	-	-	-	-	15.4%		-	-	-	-	-	7.7%		-

Peak Hour: 04:30 PM - 05:30 PM Weather: Overcast Clouds (22.45 °C)																																					
Start Time	N Approach LANSDOWNE ST S							NE Approach BEAVER ST							E Approach ALICE ST							W Approach ALICE ST							SW Approach BEAVER ST							Int. Total (15 min)	
	Right	Bear Right	Bear Left	Left	UTurn	Peds	Approach Total	Hard Right	Bear Right	Thru	Hard Left	UTurn	Peds	Approach Total	Hard Right	Right	Thru	Hard Left	UTurn	Peds	Approach Total	Hard Right	Thru	Left	Hard Left	UTurn	Peds	Approach Total	Hard Right	Thru	Bear Left	Hard Left	UTurn	Peds	Approach Total		
16:30:00	0	1	0	0	0	2	1	0	0	4	1	0	2	5	0	1	1	4	0	1	6	0	0	0	0	0	0	0	0	0	4	3	0	0	0	7	19
16:45:00	0	4	0	1	0	2	5	1	0	5	1	0	0	7	2	1	0	1	0	1	4	0	0	0	0	0	0	0	1	7	4	0	0	1	12	28	
17:00:00	1	4	0	2	0	0	7	0	0	5	0	0	2	5	0	2	2	1	0	0	5	0	0	0	0	0	0	0	0	3	5	0	0	0	8	25	
17:15:00	0	2	0	2	0	1	4	0	0	13	2	0	0	15	1	0	1	1	0	0	3	0	1	0	0	0	0	1	2	3	0	0	0	1	5	28	
Grand Total	1	11	0	5	0	5	17	1	0	27	4	0	4	32	3	4	4	7	0	2	18	0	1	0	0	0	0	1	3	17	12	0	0	2	32	100	
Approach%	5.9%	64.7%	0%	29.4%	0%	-	-	3.1%	0%	84.4%	12.5%	0%	-	-	16.7%	22.2%	22.2%	38.9%	0%	-	0%	100%	0%	0%	0%	-	9.4%	53.1%	37.5%	0%	0%	-	-	-	-		
Totals %	1%	11%	0%	5%	0%	17%	17%	1%	0%	27%	4%	0%	32%	32%	3%	4%	4%	7%	0%	18%	0%	1%	0%	0%	0%	1%	3%	17%	12%	0%	0%	32%	32%	-	-		
PHF	0.25	0.69	0	0.63	0	0.61	0.61	0.25	0	0.52	0.5	0	0.53	0.53	0.38	0.5	0.5	0.44	0	0.75	0	0.25	0	0	0	0.25	0.38	0.61	0.6	0	0	0.67	0.67	-	-		
Heavy	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	-		
Heavy %	0%	9.1%	0%	0%	0%	5.9%	5.9%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	5.9%	0%	0%	0%	3.1%	3.1%	-		
Lights	1	10	0	5	0	16	16	1	0	27	4	0	32	32	3	4	4	6	0	17	0	0	0	0	0	0	3	16	12	0	0	31	31	-	-		
Lights %	100%	90.9%	0%	100%	0%	94.1%	94.1%	100%	0%	100%	100%	0%	100%	100%	100%	100%	100%	85.7%	0%	94.4%	0%	0%	0%	0%	0%	0%	100%	94.1%	100%	0%	0%	96.9%	96.9%	-	-		
Single-Unit Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-		
Single-Unit Trucks %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-		
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-		
Buses %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-		
Articulated Trucks	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	-		
Articulated Trucks %	0%	9.1%	0%	0%	0%	5.9%	5.9%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	5.9%	0%	0%	0%	0%	3.1%	3.1%	-	-		
Bicycles on Road	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	1	0	0	1	0	0	0	0	0	0	0	0	-		
Bicycles on Road %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	14.3%	0%	5.6%	0%	100%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	0%	0%	-		
Pedestrians	-	-	-	-	-	5	-	-	-	-	-	-	4	-	-	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	-	2	-	-	-		
Pedestrians%	-	-	-	-	-	38.5%	-	-	-	-	-	-	30.8%	-	-	-	-	-	-	15.4%	-	-	-	-	-	0%	-	-	-	-	-	15.4%	-	-	-		

Peak Hour: 08:45 AM - 09:45 AM Weather: Broken Clouds (15.17 °C)



Peak Hour: 04:30 PM - 05:30 PM Weather: Overcast Clouds (22.45 °C)





Turning Movement Count (4 . ALICE ST & PEEL ST)

Start Time	N Approach PEEL ST					E Approach ALICE ST W					S Approach PEEL ST					Int. Total (15 min)	Int. Total (1 hr)
	Thru N:S	Left N:E	UTurn N:N	Peds N:	Approach Total	Right E:N	Left E:S	UTurn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	UTurn S:S	Peds S:	Approach Total		
06:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
06:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
06:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
06:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:00:00	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
07:15:00	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1
07:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
07:45:00	0	0	0	0	0	0	0	0	0	0	1	2	0	0	3	3	4
08:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
08:15:00	1	0	0	0	1	0	0	0	0	0	0	1	0	0	1	2	5
08:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
08:45:00	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	3
09:00:00	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	4
09:15:00	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	3
09:30:00	1	0	0	0	1	0	1	0	1	1	1	0	0	0	1	3	6
09:45:00	1	0	0	0	1	0	0	0	2	0	0	0	0	0	0	1	6
BREAK																	
15:00:00	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	
15:15:00	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	
15:30:00	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	
15:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
16:00:00	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	3
16:15:00	1	0	1	0	2	0	0	0	0	0	0	1	0	0	1	3	5
16:30:00	0	0	0	0	0	0	1	0	0	1	0	1	0	0	1	2	6
16:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
17:00:00	2	0	0	0	2	0	1	0	0	1	0	1	0	0	1	4	9
17:15:00	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	7
17:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
17:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
18:00:00	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	2	3
18:15:00	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	3
18:30:00	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	4
18:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4



Grand Total	10	1	1	0	12	0	3	0	4	3	4	12	0	0	16	31	-
Approach%	83.3%	8.3%	8.3%		-	0%	100%	0%		-	25%	75%	0%		-	-	-
Totals %	32.3%	3.2%	3.2%		38.7%	0%	9.7%	0%		9.7%	12.9%	38.7%	0%		51.6%	-	-
Heavy	0	0	0		-	0	0	0		-	0	2	0		-	-	-
Heavy %	0%	0%	0%		-	0%	0%	0%		-	0%	16.7%	0%		-	-	-
Bicycles	-	-	-		-	-	-	-		-	-	-	-		-	-	-
Bicycle %	-	-	-		-	-	-	-		-	-	-	-		-	-	-



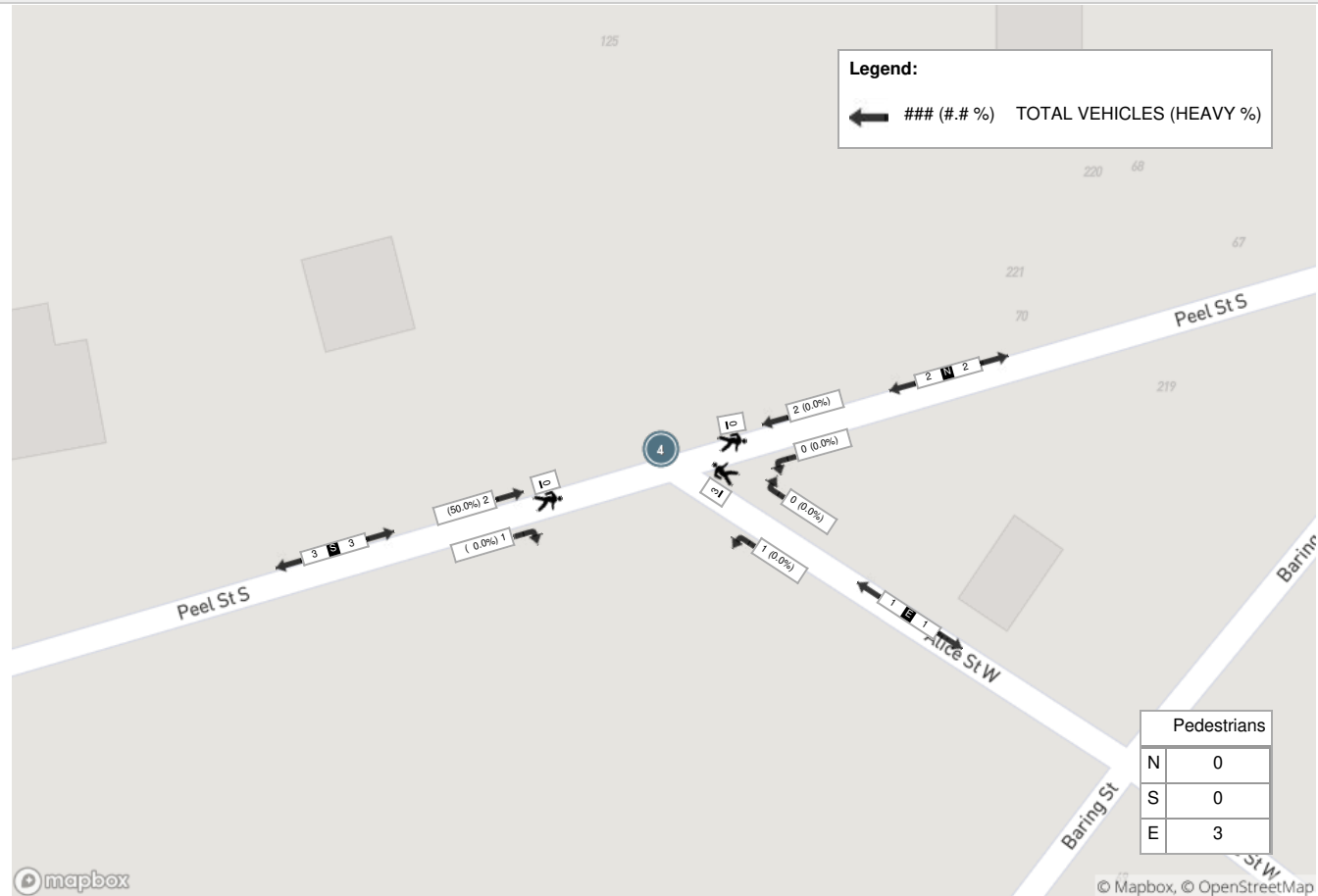
Peak Hour: 09:00 AM - 10:00 AM Weather: Broken Clouds (15.17 °C)

Start Time	N Approach PEEL ST					E Approach ALICE ST W					S Approach PEEL ST					Int. Total (15 min)
	Thru	Left	UTurn	Peds	Approach Total	Right	Left	UTurn	Peds	Approach Total	Right	Thru	UTurn	Peds	Approach Total	
09:00:00	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
09:15:00	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
09:30:00	1	0	0	0	1	0	1	0	1	1	1	0	0	0	1	3
09:45:00	1	0	0	0	1	0	0	0	2	0	0	0	0	0	0	1
Grand Total	2	0	0	0	2	0	1	0	3	1	1	2	0	0	3	6
Approach%	100%	0%	0%		-	0%	100%	0%		-	33.3%	66.7%	0%		-	-
Totals %	33.3%	0%	0%		33.3%	0%	16.7%	0%		16.7%	16.7%	33.3%	0%		50%	-
PHF	0.5	0	0		0.5	0	0.25	0		0.25	0.25	0.5	0		0.75	-
Heavy	0	0	0		0	0	0	0		0	0	1	0		1	-
Heavy %	0%	0%	0%		0%	0%	0%	0%		0%	0%	50%	0%		33.3%	-
Lights	2	0	0		2	0	1	0		1	0	1	0		1	-
Lights %	100%	0%	0%		100%	0%	100%	0%		100%	0%	50%	0%		33.3%	-
Single-Unit Trucks	0	0	0		0	0	0	0		0	0	1	0		1	-
Single-Unit Trucks %	0%	0%	0%		0%	0%	0%	0%		0%	0%	50%	0%		33.3%	-
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%	-
Bicycles on Road	0	0	0		0	0	0	0		0	1	0	0		1	-
Bicycles on Road %	0%	0%	0%		0%	0%	0%	0%		0%	100%	0%	0%		33.3%	-
Pedestrians	-	-	-	0	-	-	-	-	3	-	-	-	-	0	-	-
Pedestrians%	-	-	-	0%	-	-	-	-	100%	-	-	-	-	0%	-	-

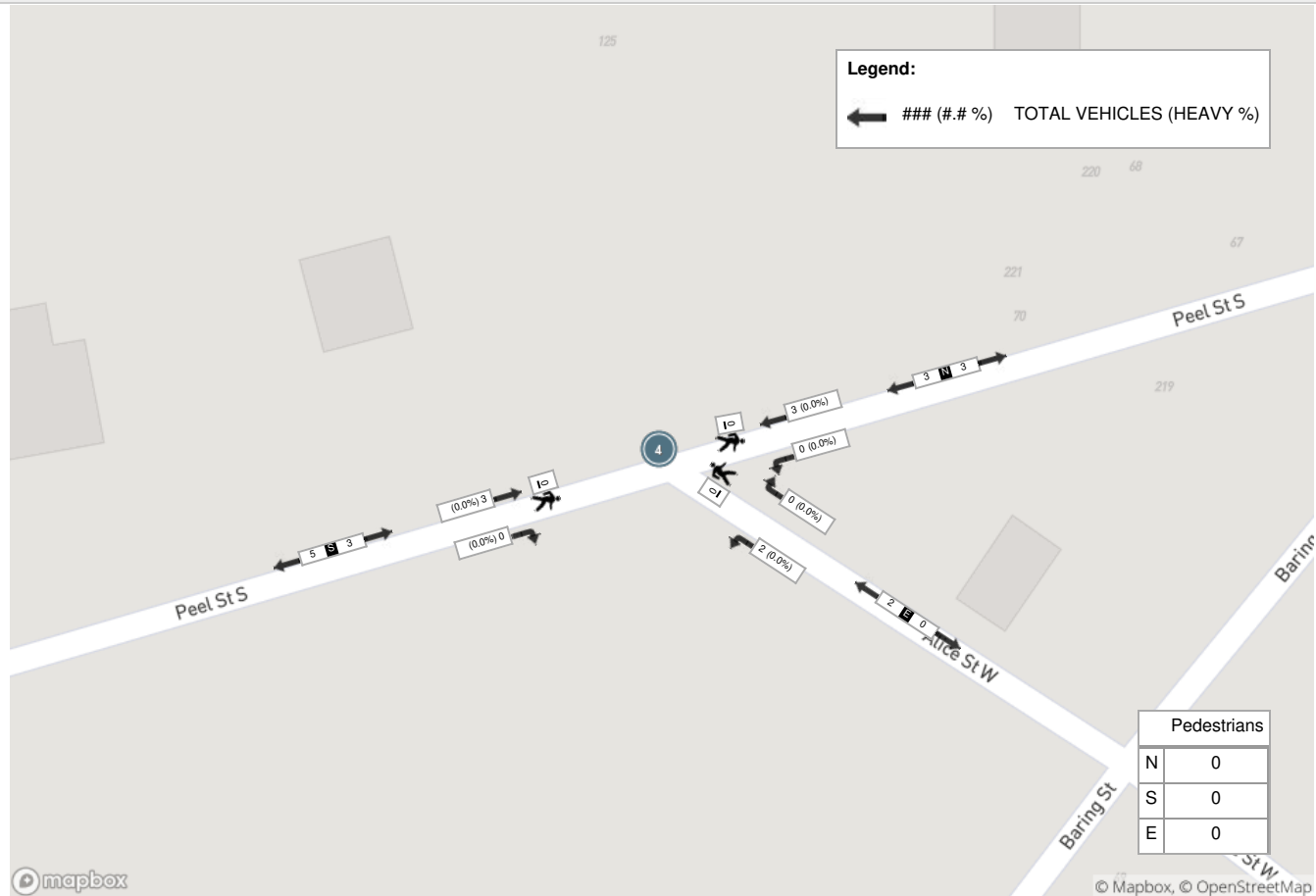
Peak Hour: 04:15 PM - 05:15 PM Weather: Overcast Clouds (22.45 °C)

Start Time	N Approach PEEL ST					E Approach ALICE ST W					S Approach PEEL ST					Int. Total (15 min)
	Thru	Left	UTurn	Peds	Approach Total	Right	Left	UTurn	Peds	Approach Total	Right	Thru	UTurn	Peds	Approach Total	
16:15:00	1	0	1	0	2	0	0	0	0	0	0	1	0	0	1	3
16:30:00	0	0	0	0	0	0	1	0	0	1	0	1	0	0	1	2
16:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00:00	2	0	0	0	2	0	1	0	0	1	0	1	0	0	1	4
Grand Total	3	0	1	0	4	0	2	0	0	2	0	3	0	0	3	9
Approach%	75%	0%	25%		-	0%	100%	0%		-	0%	100%	0%		-	-
Totals %	33.3%	0%	11.1%		44.4%	0%	22.2%	0%		22.2%	0%	33.3%	0%		33.3%	-
PHF	0.38	0	0.25		0.5	0	0.5	0		0.5	0	0.75	0		0.75	-
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	3	0	1		4	0	2	0		2	0	3	0		3	-
Lights %	100%	0%	100%		100%	0%	100%	0%		100%	0%	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%	-
Bicycles on Road	0	0	0		0	0	0	0		0	0	0	0		0	-
Bicycles on Road %	0%	0%	0%		0%	0%	0%	0%		0%	0%	0%	0%		0%	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
Pedestrians%	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-	-

Peak Hour: 09:00 AM - 10:00 AM Weather: Broken Clouds (15.17 °C)



Peak Hour: 04:15 PM - 05:15 PM Weather: Overcast Clouds (22.45 °C)





Turning Movement Count (1 . ARTHUR ST (HWY 26) & LANSDOWNE ST)

Start Time	N Approach LANSDOWNE ST S						E Approach ARTHUR ST (HWY 26)						S Approach LANSDOWNE ST S						W Approach ARTHUR ST (HWY 26)						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	0	0	1	0	0	1	0	12	0	0	0	12	0	0	0	0	0	0	0	21	0	0	0	21	34	
06:15:00	0	0	0	0	0	0	0	8	2	0	0	10	1	0	1	0	0	2	1	29	0	0	0	30	42	
06:30:00	0	0	0	0	0	0	0	26	1	0	0	27	1	0	1	0	0	2	1	37	0	0	1	38	67	
06:45:00	1	0	0	0	0	1	0	24	0	0	0	24	0	1	0	0	0	1	3	49	0	0	0	52	78	221
07:00:00	0	0	1	0	0	1	0	35	1	0	0	36	0	0	1	0	0	1	3	61	1	0	0	65	103	290
07:15:00	0	0	2	0	0	2	1	52	1	0	0	54	2	0	0	0	0	2	1	77	0	0	0	78	136	384
07:30:00	0	0	0	0	0	0	4	57	1	0	0	62	1	0	1	0	0	2	0	81	0	0	1	81	145	462
07:45:00	0	0	1	0	1	1	1	63	1	0	1	65	0	0	0	0	0	0	1	103	1	0	1	105	171	555
08:00:00	0	0	2	0	0	2	0	71	0	0	0	71	0	0	0	0	0	0	0	80	1	0	0	81	154	606
08:15:00	1	0	1	0	0	2	0	57	0	0	2	57	1	1	0	0	0	2	1	91	0	0	0	92	153	623
08:30:00	1	0	2	0	0	3	1	66	1	0	1	68	0	0	1	0	0	1	0	82	1	0	0	83	155	633
08:45:00	4	1	2	0	0	7	0	84	1	0	0	85	1	3	1	0	0	5	1	102	0	0	0	103	200	662
09:00:00	1	1	0	0	0	2	3	64	1	0	0	68	0	1	1	0	0	2	0	84	0	0	0	84	156	664
09:15:00	0	0	1	0	0	1	1	73	3	0	0	77	0	0	0	0	0	0	1	90	2	0	0	93	171	682
09:30:00	1	0	1	0	0	2	2	67	1	0	2	70	1	2	1	0	0	4	1	84	2	0	0	87	163	690
09:45:00	2	0	1	0	1	3	4	81	1	0	0	86	0	0	2	0	0	2	2	87	1	0	1	90	181	671
BREAK																										
15:00:00	2	0	4	0	0	6	1	86	5	0	0	92	1	0	2	0	0	3	1	94	4	0	0	99	200	
15:15:00	1	1	2	0	0	4	1	92	4	0	0	97	0	2	4	0	0	6	2	111	1	0	0	114	221	
15:30:00	1	1	4	0	0	6	0	122	2	0	0	124	2	1	1	0	0	4	1	92	2	0	0	95	229	
15:45:00	2	0	2	0	0	4	2	122	5	0	0	129	2	1	1	0	0	4	1	102	0	0	0	103	240	890
16:00:00	6	4	2	0	0	12	4	128	2	0	0	134	5	1	6	0	0	12	2	91	0	0	0	93	251	941
16:15:00	2	1	1	0	0	4	0	111	1	0	0	112	4	0	6	0	0	10	2	109	1	0	2	112	238	958
16:30:00	1	0	0	0	0	1	1	124	3	0	0	128	0	1	4	0	0	5	0	85	2	0	0	87	221	950
16:45:00	3	2	0	0	0	5	0	127	4	0	0	131	2	1	6	0	2	9	0	97	1	0	2	98	243	953
17:00:00	2	1	0	0	0	3	2	131	3	0	1	136	1	1	5	0	0	7	1	90	1	0	0	92	238	940
17:15:00	1	0	0	0	1	1	1	128	1	0	0	130	0	0	2	0	0	2	1	86	1	0	0	88	221	923
17:30:00	1	1	0	0	0	2	1	89	3	0	0	93	1	0	2	0	0	3	1	64	1	0	0	66	164	866
17:45:00	1	2	0	0	0	3	1	92	1	0	0	94	0	1	0	0	0	1	1	59	0	0	0	60	158	781
18:00:00	0	0	0	0	0	0	1	55	1	0	0	57	1	2	1	0	0	4	0	53	0	0	0	53	114	657
18:15:00	1	0	1	0	0	2	4	68	1	0	1	73	0	1	3	0	0	4	0	53	0	0	0	53	132	568
18:30:00	0	0	1	0	1	1	2	61	0	0	0	63	0	0	1	0	0	1	1	38	0	0	1	39	104	508
18:45:00	2	0	3	0	0	5	0	58	0	0	0	58	2	0	2	0	0	4	0	41	1	0	2	42	109	459
Grand Total	37	15	35	0	4	87	38	2434	51	0	8	2523	29	20	56	0	2	105	30	2423	24	0	11	2477	5192	-
Approach%	42.5%	17.2%	40.2%	0%		-	1.5%	96.5%	2%	0%		-	27.6%	19%	53.3%	0%		-	1.2%	97.8%	1%	0%		-	-	-
Totals %	0.7%	0.3%	0.7%	0%		1.7%	0.7%	46.9%	1%	0%		48.6%	0.6%	0.4%	1.1%	0%		2%	0.6%	46.7%	0.5%	0%		47.7%	-	-
Heavy	0	0	3	0		-	6	121	6	0		-	5	0	5	0		-	8	116	1	0		-	-	-
Heavy %	0%	0%	8.6%	0%		-	15.8%	5%	11.8%	0%		-	17.2%	0%	8.9%	0%		-	26.7%	4.8%	4.2%	0%		-	-	-
Bicycles	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-
Bicycle %	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-



Peak Hour: 08:45 AM - 09:45 AM Weather: Broken Clouds (15.17 °C)

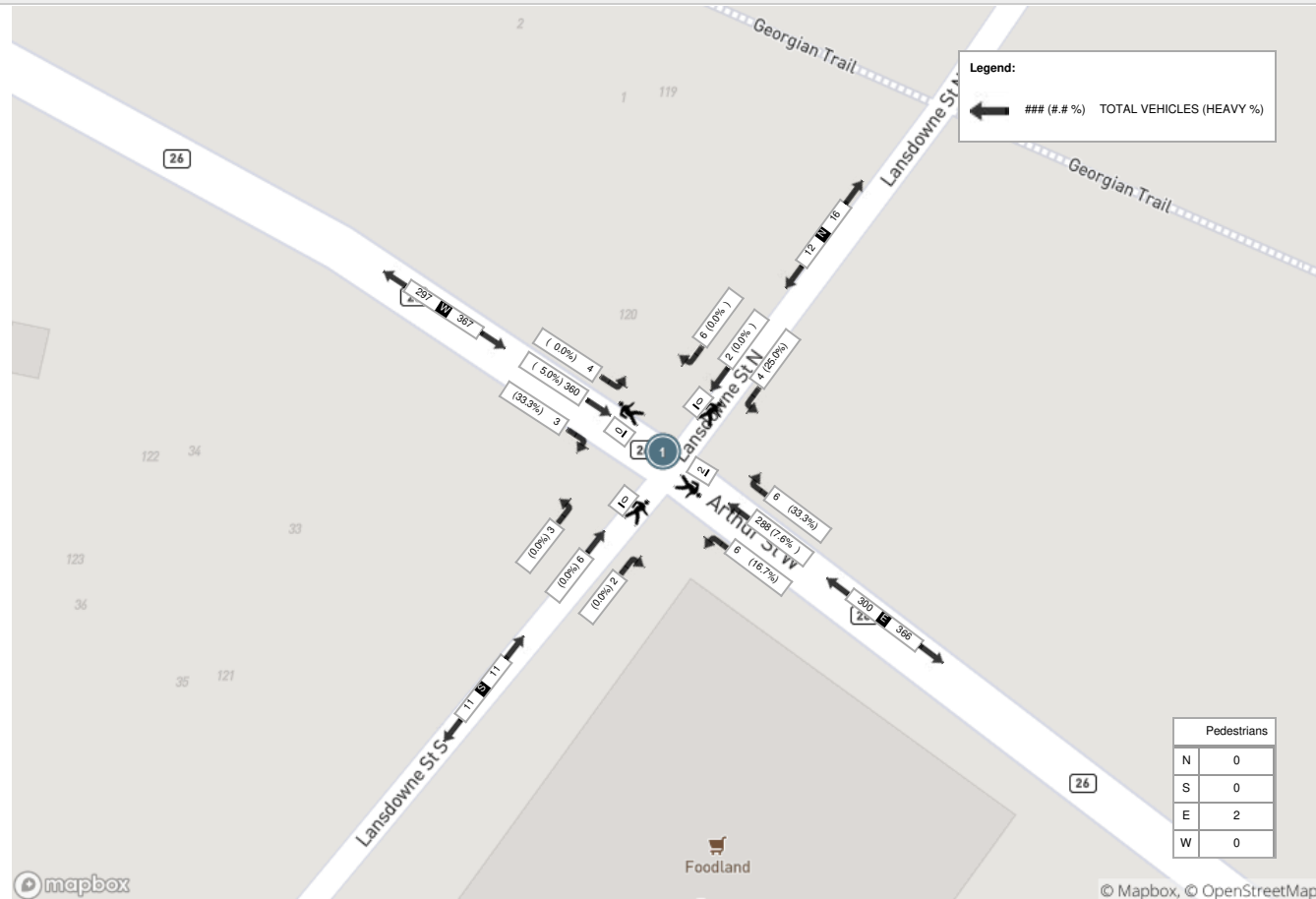
Start Time	N Approach LANSDOWNE ST S						E Approach ARTHUR ST (HWY 26)						S Approach LANSDOWNE ST S						W Approach ARTHUR ST (HWY 26)						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
08:45:00	4	1	2	0	0	7	0	84	1	0	0	85	1	3	1	0	0	5	1	102	0	0	0	103	200
09:00:00	1	1	0	0	0	2	3	64	1	0	0	68	0	1	1	0	0	2	0	84	0	0	0	84	156
09:15:00	0	0	1	0	0	1	1	73	3	0	0	77	0	0	0	0	0	0	1	90	2	0	0	93	171
09:30:00	1	0	1	0	0	2	2	67	1	0	2	70	1	2	1	0	0	4	1	84	2	0	0	87	163
Grand Total	6	2	4	0	0	12	6	288	6	0	2	300	2	6	3	0	0	11	3	360	4	0	0	367	690
Approach%	50%	16.7%	33.3%	0%		-	2%	96%	2%	0%		-	18.2%	54.5%	27.3%	0%		-	0.8%	98.1%	1.1%	0%		-	-
Totals %	0.9%	0.3%	0.6%	0%		1.7%	0.9%	41.7%	0.9%	0%		43.5%	0.3%	0.9%	0.4%	0%		1.6%	0.4%	52.2%	0.6%	0%		53.2%	-
PHF	0.38	0.5	0.5	0		0.43	0.5	0.86	0.5	0		0.88	0.5	0.5	0.75	0		0.55	0.75	0.88	0.5	0		0.89	-
Heavy	0	0	1	0		1	2	22	1	0		25	0	0	0	0		0	1	18	0	0		19	-
Heavy %	0%	0%	25%	0%		8.3%	33.3%	7.6%	16.7%	0%		8.3%	0%	0%	0%	0%		0%	33.3%	5%	0%	0%		5.2%	-
Lights	6	2	3	0		11	4	266	5	0		275	2	4	3	0		9	2	342	4	0		348	-
Lights %	100%	100%	75%	0%		91.7%	66.7%	92.4%	83.3%	0%		91.7%	100%	66.7%	100%	0%		81.8%	66.7%	95%	100%	0%		94.8%	-
Single-Unit Trucks	0	0	0	0		0	1	16	1	0		18	0	0	0	0		0	1	11	0	0		12	-
Single-Unit Trucks %	0%	0%	0%	0%		0%	16.7%	5.6%	16.7%	0%		6%	0%	0%	0%	0%		0%	33.3%	3.1%	0%	0%		3.3%	-
Buses	0	0	0	0		0	0	2	0	0		2	0	0	0	0		0	0	2	0	0		2	-
Buses %	0%	0%	0%	0%		0%	0%	0.7%	0%	0%		0.7%	0%	0%	0%	0%		0%	0%	0.6%	0%	0%		0.5%	-
Articulated Trucks	0	0	1	0		1	1	4	0	0		5	0	0	0	0		0	0	5	0	0		5	-
Articulated Trucks %	0%	0%	25%	0%		8.3%	16.7%	1.4%	0%	0%		1.7%	0%	0%	0%	0%		0%	0%	1.4%	0%	0%		1.4%	-
Bicycles on Road	0	0	0	0		0	0	0	0	0		0	0	2	0	0		2	0	0	0	0		0	-
Bicycles on Road %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	33.3%	0%	0%		18.2%	0%	0%	0%	0%		0%	-
Pedestrians	-	-	-	-	0	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-
Pedestrians%	-	-	-	-	0%	-	-	-	-	100%	-	-	-	-	0%	-	-	-	-	-	-	0%	-	-	-



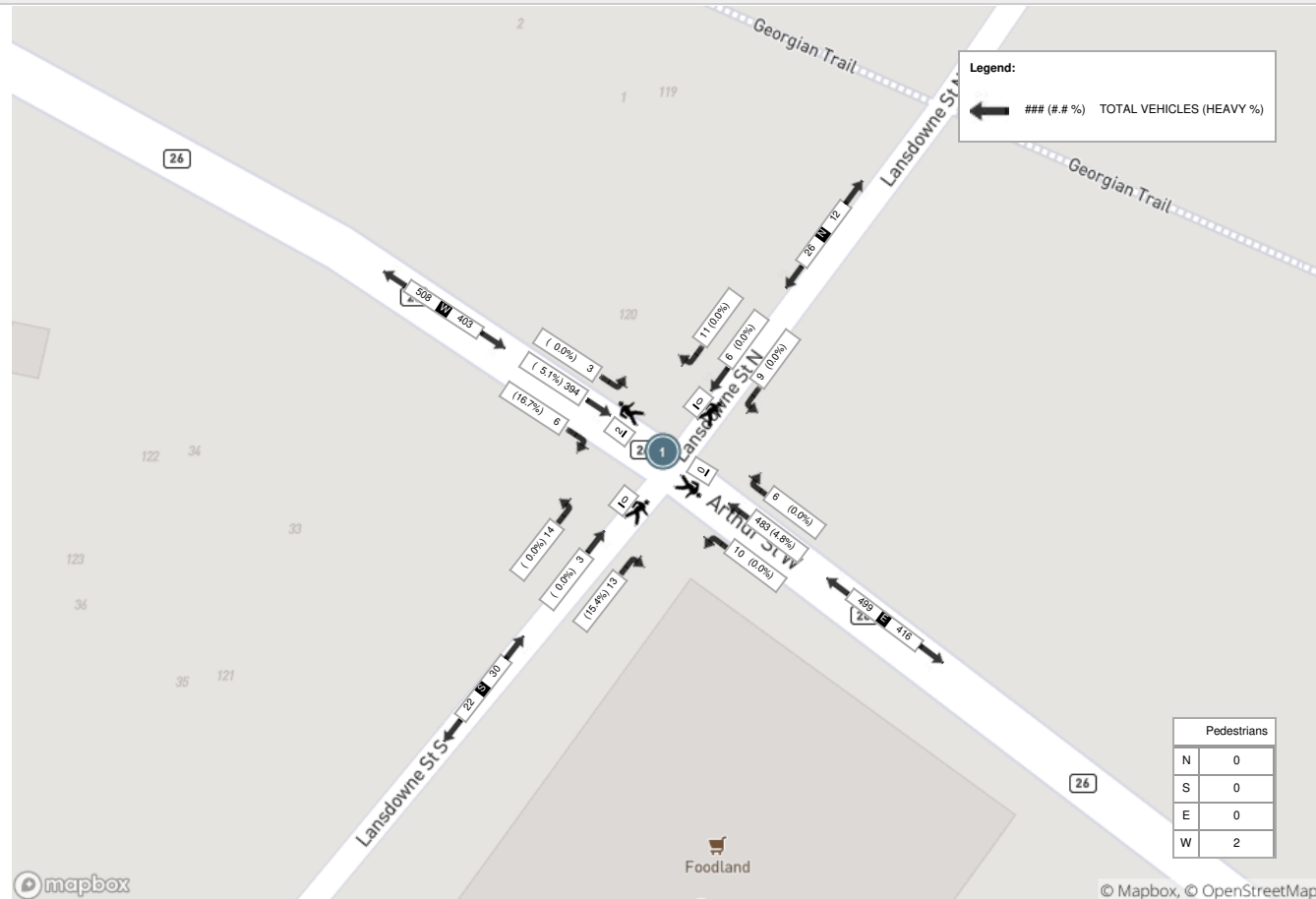
Peak Hour: 03:30 PM - 04:30 PM Weather: Overcast Clouds (22.45 °C)

Start Time	N Approach LANSDOWNE ST S						E Approach ARTHUR ST (HWY 26)						S Approach LANSDOWNE ST S						W Approach ARTHUR ST (HWY 26)						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	
15:30:00	1	1	4	0	0	6	0	122	2	0	0	124	2	1	1	0	0	4	1	92	2	0	0	95	229
15:45:00	2	0	2	0	0	4	2	122	5	0	0	129	2	1	1	0	0	4	1	102	0	0	0	103	240
16:00:00	6	4	2	0	0	12	4	128	2	0	0	134	5	1	6	0	0	12	2	91	0	0	0	93	251
16:15:00	2	1	1	0	0	4	0	111	1	0	0	112	4	0	6	0	0	10	2	109	1	0	2	112	238
Grand Total	11	6	9	0	0	26	6	483	10	0	0	499	13	3	14	0	0	30	6	394	3	0	2	403	958
Approach%	42.3%	23.1%	34.6%	0%		-	1.2%	96.8%	2%	0%		-	43.3%	10%	46.7%	0%		-	1.5%	97.8%	0.7%	0%		-	-
Totals %	1.1%	0.6%	0.9%	0%		2.7%	0.6%	50.4%	1%	0%		52.1%	1.4%	0.3%	1.5%	0%		3.1%	0.6%	41.1%	0.3%	0%		42.1%	-
PHF	0.46	0.38	0.56	0		0.54	0.38	0.94	0.5	0		0.93	0.65	0.75	0.58	0		0.63	0.75	0.9	0.38	0		0.9	-
Heavy	0	0	0	0		0	0	23	0	0		23	2	0	0	0		2	1	20	0	0		21	-
Heavy %	0%	0%	0%	0%		0%	0%	4.8%	0%	0%		4.6%	15.4%	0%	0%	0%		6.7%	16.7%	5.1%	0%	0%		5.2%	-
Lights	11	6	9	0		26	6	460	10	0		476	11	1	14	0		26	5	374	3	0		382	-
Lights %	100%	100%	100%	0%		100%	100%	95.2%	100%	0%		95.4%	84.6%	33.3%	100%	0%		86.7%	83.3%	94.9%	100%	0%		94.8%	-
Single-Unit Trucks	0	0	0	0		0	0	15	0	0		15	2	0	0	0		2	1	14	0	0		15	-
Single-Unit Trucks %	0%	0%	0%	0%		0%	0%	3.1%	0%	0%		3%	15.4%	0%	0%	0%		6.7%	16.7%	3.6%	0%	0%		3.7%	-
Buses	0	0	0	0		0	0	2	0	0		2	0	0	0	0		0	0	4	0	0		4	-
Buses %	0%	0%	0%	0%		0%	0%	0.4%	0%	0%		0.4%	0%	0%	0%	0%		0%	0%	1%	0%	0%		1%	-
Articulated Trucks	0	0	0	0		0	0	6	0	0		6	0	0	0	0		0	0	2	0	0		2	-
Articulated Trucks %	0%	0%	0%	0%		0%	0%	1.2%	0%	0%		1.2%	0%	0%	0%	0%		0%	0%	0.5%	0%	0%		0.5%	-
Bicycles on Road	0	0	0	0		0	0	0	0	0		0	0	2	0	0		2	0	0	0	0		0	-
Bicycles on Road %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	66.7%	0%	0%		6.7%	0%	0%	0%	0%		0%	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	2	-	-
Pedestrians%	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	100%	-	-

Peak Hour: 08:45 AM - 09:45 AM Weather: Broken Clouds (15.17 °C)



Peak Hour: 03:30 PM - 04:30 PM Weather: Overcast Clouds (22.45 °C)





Turning Movement Count (2 . LOUISA ST & LANSDOWNE ST)

Start Time	N Approach LANSDOWNE ST						E Approach LOUISA ST						S Approach LANSDOWNE ST						W Approach LOUISA ST						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	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	1	
06:15:00	0	1	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	2	
06:30:00	0	1	0	0	0	1	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0	0	1	0	3	
06:45:00	0	1	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	2	8
07:00:00	0	3	0	0	0	3	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	4	11
07:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	1	10
07:30:00	0	1	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	1	0	2	9
07:45:00	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	1	8
08:00:00	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	5
08:15:00	0	2	0	0	0	2	0	0	0	0	5	0	0	2	0	0	0	2	0	0	0	0	0	0	4	8
08:30:00	0	0	0	0	0	0	0	0	0	0	1	0	0	2	0	0	0	2	0	0	0	0	0	0	2	8
08:45:00	0	3	0	0	0	3	0	0	1	0	1	1	1	3	0	0	0	4	0	0	0	0	1	0	8	15
09:00:00	0	2	0	0	0	2	0	0	1	0	0	1	0	2	0	0	0	2	0	0	0	0	0	0	5	19
09:15:00	0	1	0	0	0	1	0	0	1	0	2	1	0	1	0	0	0	1	0	0	0	0	0	0	3	18
09:30:00	0	3	0	0	0	3	0	0	0	0	0	0	0	3	0	0	0	3	0	0	0	0	0	0	6	22
09:45:00	0	2	0	0	0	2	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	2	0	0	4	18
BREAK																										
15:00:00	0	8	0	0	0	8	1	0	0	0	0	1	0	1	0	0	0	1	0	0	0	0	0	0	10	
15:15:00	0	7	0	0	0	7	0	0	0	0	0	0	0	4	0	0	0	4	0	0	0	0	2	0	11	
15:30:00	0	3	0	0	0	3	0	0	0	0	0	0	0	5	0	0	0	5	0	0	0	0	0	0	8	
15:45:00	0	7	0	0	0	7	1	0	0	0	0	1	0	5	0	0	0	5	0	0	0	0	0	0	13	42
16:00:00	0	3	0	0	0	3	0	0	0	0	0	0	0	5	0	0	0	5	0	0	0	0	0	0	8	40
16:15:00	0	5	0	0	0	5	0	0	0	0	0	0	0	6	0	0	0	6	0	0	0	0	2	0	11	40
16:30:00	0	2	0	0	0	2	1	0	0	0	0	1	0	4	0	0	0	4	0	0	0	0	0	0	7	39
16:45:00	0	6	0	0	0	6	0	0	0	0	2	0	0	5	0	0	0	5	0	0	0	0	0	0	11	37
17:00:00	0	8	0	0	0	8	0	0	0	0	3	0	0	7	0	0	0	7	0	0	0	0	0	0	15	44
17:15:00	0	6	0	0	0	6	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	7	40
17:30:00	0	4	0	0	0	4	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	5	38
17:45:00	0	4	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	31
18:00:00	0	3	0	0	0	3	0	0	0	0	0	0	0	5	0	0	0	5	0	0	0	0	0	0	8	24
18:15:00	0	3	0	0	0	3	0	0	0	0	1	0	0	2	0	0	0	2	0	0	0	0	0	0	5	22
18:30:00	0	2	0	0	0	2	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	3	20
18:45:00	0	2	0	0	0	2	0	0	0	0	1	0	0	2	0	0	0	2	0	0	0	0	2	0	4	20
Grand Total	0	94	0	0	0	94	3	0	7	0	16	10	1	74	0	0	1	75	0	0	0	0	12	0	179	-
Approach%	0%	100%	0%	0%		-	30%	0%	70%	0%		-	1.3%	98.7%	0%	0%		-	0%	0%	0%	0%		-	-	-
Totals %	0%	52.5%	0%	0%		52.5%	1.7%	0%	3.9%	0%		5.6%	0.6%	41.3%	0%	0%		41.9%	0%	0%	0%	0%		0%	-	-
Heavy	0	4	0	0		-	0	0	5	0		-	1	1	0	0		-	0	0	0	0		-	-	-
Heavy %	0%	4.3%	0%	0%		-	0%	0%	71.4%	0%		-	100%	1.4%	0%	0%		-	0%	0%	0%	0%		-	-	-
Bicycles	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-
Bicycle %	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-



Peak Hour: 08:45 AM - 09:45 AM Weather: Broken Clouds (15.17 °C)

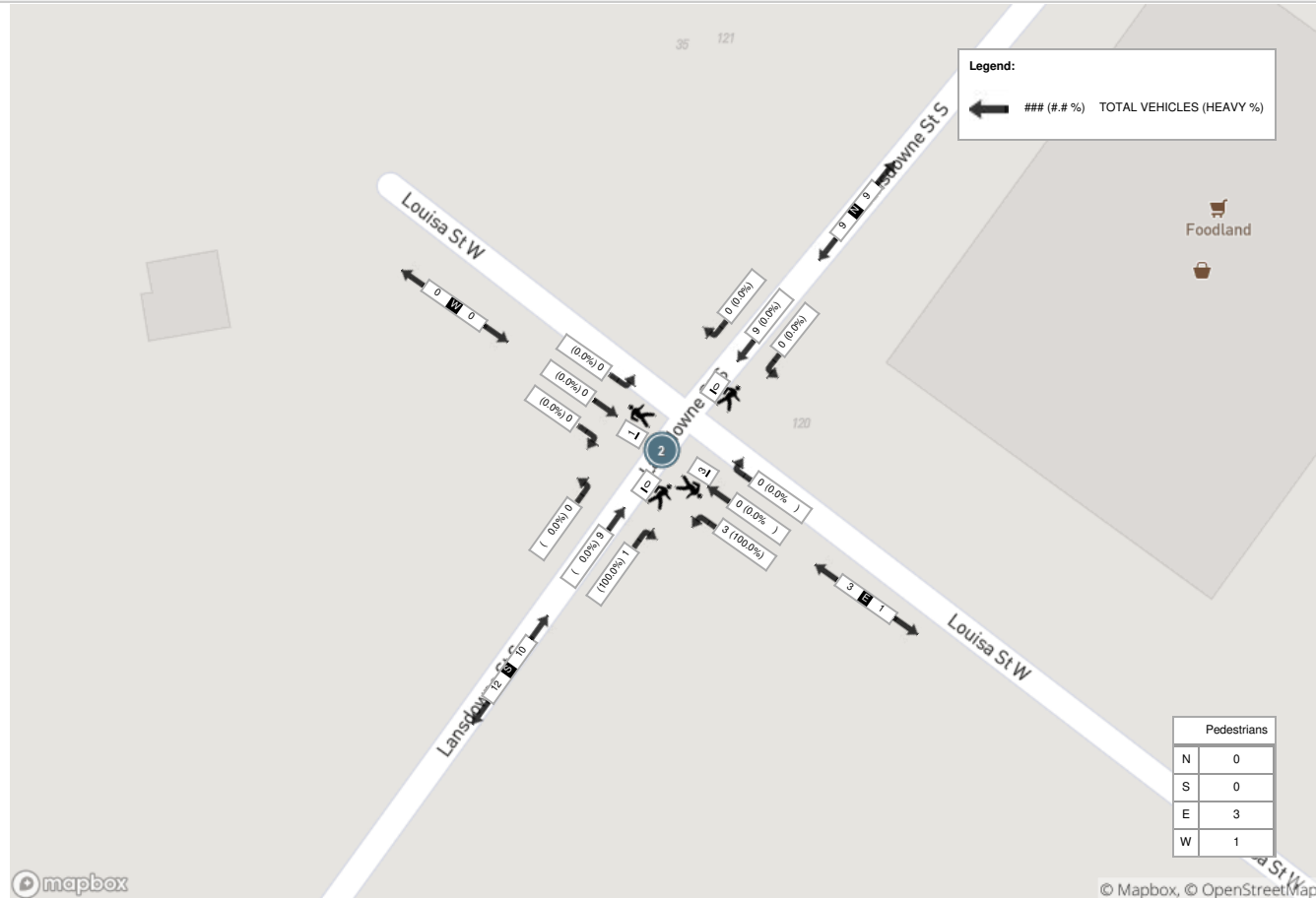
Start Time	N Approach LANSDOWNE ST						E Approach LOUISA ST						S Approach LANSDOWNE ST						W Approach LOUISA ST						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
08:45:00	0	3	0	0	0	3	0	0	1	0	1	1	1	3	0	0	0	4	0	0	0	0	1	0	8
09:00:00	0	2	0	0	0	2	0	0	1	0	0	1	0	2	0	0	0	2	0	0	0	0	0	0	5
09:15:00	0	1	0	0	0	1	0	0	1	0	2	1	0	1	0	0	0	1	0	0	0	0	0	0	3
09:30:00	0	3	0	0	0	3	0	0	0	0	0	0	0	3	0	0	0	3	0	0	0	0	0	0	6
Grand Total	0	9	0	0	0	9	0	0	3	0	3	3	1	9	0	0	0	10	0	0	0	0	1	0	22
Approach%	0%	100%	0%	0%		-	0%	0%	100%	0%		-	10%	90%	0%	0%		-	0%	0%	0%	0%		-	-
Totals %	0%	40.9%	0%	0%		40.9%	0%	0%	13.6%	0%		13.6%	4.5%	40.9%	0%	0%		45.5%	0%	0%	0%	0%		0%	-
PHF	0	0.75	0	0		0.75	0	0	0.75	0		0.75	0.25	0.75	0	0		0.63	0	0	0	0		0	-
Heavy	0	0	0	0		0	0	0	3	0		3	1	0	0	0		1	0	0	0	0		0	-
Heavy %	0%	0%	0%	0%		0%	0%	0%	100%	0%		100%	100%	0%	0%	0%		10%	0%	0%	0%	0%		0%	-
Lights	0	9	0	0		9	0	0	0	0		0	0	7	0	0		7	0	0	0	0		0	-
Lights %	0%	100%	0%	0%		100%	0%	0%	0%	0%		0%	0%	77.8%	0%	0%		70%	0%	0%	0%	0%		0%	-
Single-Unit Trucks	0	0	0	0		0	0	0	3	0		3	1	0	0	0		1	0	0	0	0		0	-
Single-Unit Trucks %	0%	0%	0%	0%		0%	0%	0%	100%	0%		100%	100%	0%	0%	0%		10%	0%	0%	0%	0%		0%	-
Buses	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	-
Buses %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	-
Articulated Trucks	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	-
Articulated Trucks %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	-
Bicycles on Road	0	0	0	0		0	0	0	0	0		0	0	2	0	0		2	0	0	0	0		0	-
Bicycles on Road %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	22.2%	0%	0%		20%	0%	0%	0%	0%		0%	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	3	-	-	-	-	-	0	-	-	-	-	-	1	-	-
Pedestrians%	-	-	-	-	0%	-	-	-	-	-	75%	-	-	-	-	-	0%	-	-	-	-	-	25%	-	-



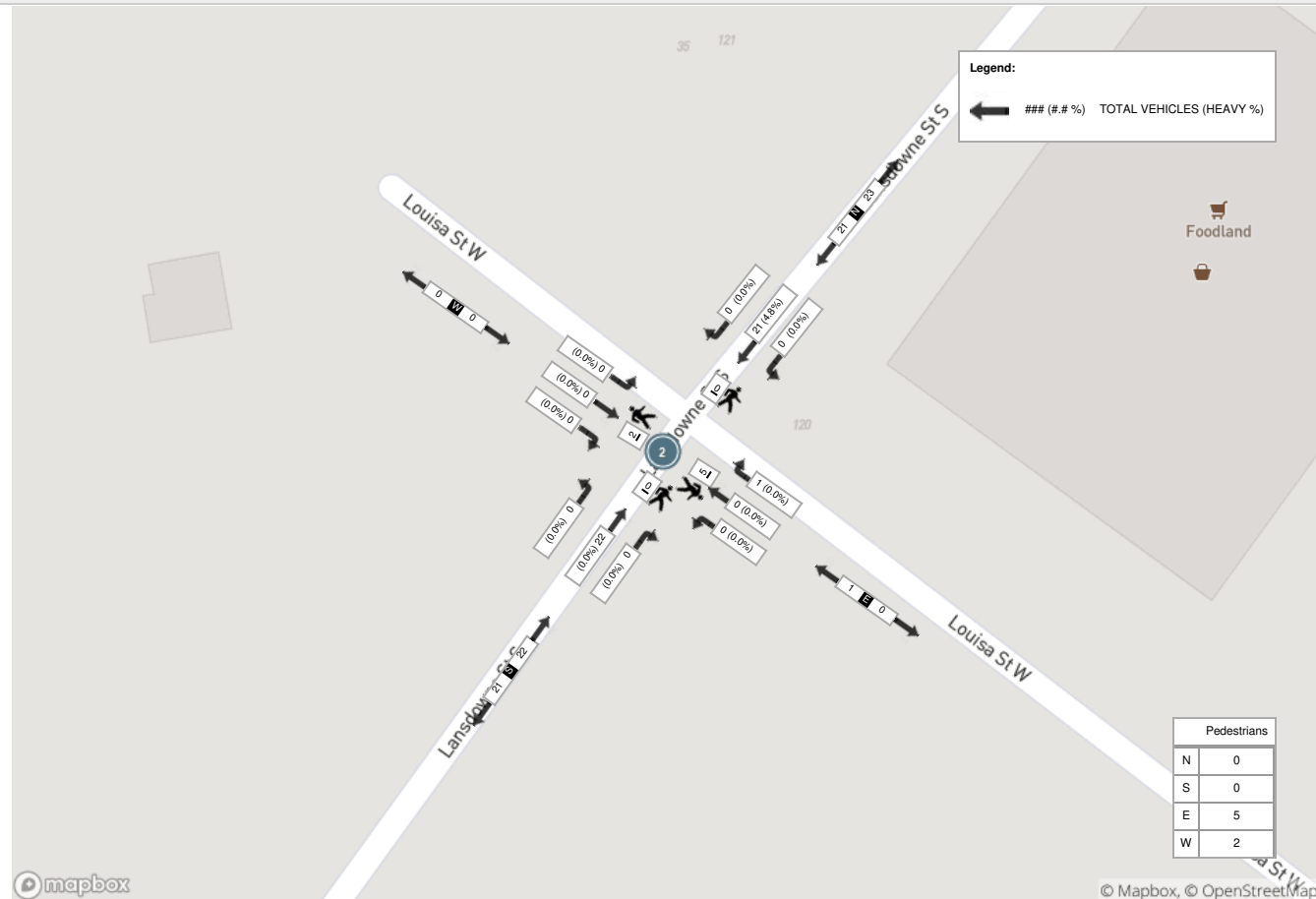
Peak Hour: 04:15 PM - 05:15 PM Weather: Overcast Clouds (22.45 °C)

Start Time	N Approach LANSDOWNE ST						E Approach LOUISA ST						S Approach LANSDOWNE ST						W Approach LOUISA ST						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	0	5	0	0	0	5	0	0	0	0	0	0	0	6	0	0	0	6	0	0	0	0	2	0	11
16:30:00	0	2	0	0	0	2	1	0	0	0	0	1	0	4	0	0	0	4	0	0	0	0	0	0	7
16:45:00	0	6	0	0	0	6	0	0	0	0	2	0	0	5	0	0	0	5	0	0	0	0	0	0	11
17:00:00	0	8	0	0	0	8	0	0	0	0	3	0	0	7	0	0	0	7	0	0	0	0	0	0	15
Grand Total	0	21	0	0	0	21	1	0	0	0	5	1	0	22	0	0	0	22	0	0	0	0	2	0	44
Approach%	0%	100%	0%	0%		-	100%	0%	0%	0%		-	0%	100%	0%	0%		-	0%	0%	0%	0%		-	-
Totals %	0%	47.7%	0%	0%		47.7%	2.3%	0%	0%	0%		2.3%	0%	50%	0%	0%		50%	0%	0%	0%	0%		0%	-
PHF	0	0.66	0	0		0.66	0.25	0	0	0		0.25	0	0.79	0	0		0.79	0	0	0	0		0	-
Heavy	0	1	0	0		1	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	-
Heavy %	0%	4.8%	0%	0%		4.8%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	-
Lights	0	20	0	0		20	1	0	0	0		1	0	22	0	0		22	0	0	0	0		0	-
Lights %	0%	95.2%	0%	0%		95.2%	100%	0%	0%	0%		100%	0%	100%	0%	0%		100%	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	-
Single-Unit Trucks %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	-
Buses	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	-
Buses %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	-
Articulated Trucks	0	1	0	0		1	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	-
Articulated Trucks %	0%	4.8%	0%	0%		4.8%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	-
Bicycles on Road	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	-
Bicycles on Road %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	5	-	-	-	-	-	0	-	-	-	-	-	2	-	-
Pedestrians%	-	-	-	-	0%	-	-	-	-	-	71.4%	-	-	-	-	-	0%	-	-	-	-	-	28.6%	-	-

Peak Hour: 08:45 AM - 09:45 AM Weather: Broken Clouds (15.17 °C)



Peak Hour: 04:15 PM - 05:15 PM Weather: Overcast Clouds (22.45 °C)



APPENDIX F

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 G

Detailed Capacity Analysis

HCM Unsignalized Intersection Capacity Analysis

1: Arthur Street West & Lansdowne Street North

















2021 A.M.
12-21-2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	360	3	6	288	6	3	6	2	4	2	6
Future Volume (Veh/h)	4	360	3	6	288	6	3	6	2	4	2	6
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	5	419	3	7	335	7	3	7	2	5	2	7
Pedestrians	2											
Lane Width (m)	3.6											
Walking Speed (m/s)	1.2											
Percent Blockage	0											
Right turn flare (veh)												
Median type	None			None								
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	342			422			788	786	422	789	784	338
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	342			422			788	786	422	789	784	338
tC, single (s)	4.1			4.3			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.4			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			99	98	100	98	99	99
cM capacity (veh/h)	1228			1061			304	323	635	302	324	708
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	5	422	7	342	12	14						
Volume Left	5	0	7	0	3	5						
Volume Right	0	3	0	7	2	7						
cSH	1228	1700	1061	1700	346	429						
Volume to Capacity	0.00	0.25	0.01	0.20	0.03	0.03						
Queue Length 95th (m)	0.1	0.0	0.2	0.0	0.9	0.8						
Control Delay (s)	7.9	0.0	8.4	0.0	15.8	13.7						
Lane LOS	A		A		C	B						
Approach Delay (s)	0.1		0.2		15.8	13.7						
Approach LOS					C	B						
Intersection Summary												
Average Delay				0.6								
Intersection Capacity Utilization				29.8%	ICU Level of Service				A			
Analysis Period (min)				15								

HCM Unsignalized Intersection Capacity Analysis

2: Lansdowne Street South & Louisa Street West

















2021 A.M.
12-21-2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	3	0	0	0	9	1	0	9	0
Future Volume (Veh/h)	0	0	0	3	0	0	0	9	1	0	9	0
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69
Hourly flow rate (vph)	0	0	0	4	0	0	0	13	1	0	13	0
Pedestrians	1			3								
Lane Width (m)	3.6			3.6								
Walking Speed (m/s)	1.2			1.2								
Percent Blockage	0			0								
Right turn flare (veh)												
Median type							None			None		
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	28	31	14	30	30	16	14				17	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	28	31	14	30	30	16	14				17	
tC, single (s)	7.1	6.5	6.2	8.1	6.5	6.2	4.1				4.1	
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	4.4	4.0	3.3	2.2				2.2	
p0 queue free %	100	100	100	99	100	100	100				100	
cM capacity (veh/h)	979	859	1065	776	859	1066	1616				1609	
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	0	4	14	13								
Volume Left	0	4	0	0								
Volume Right	0	0	1	0								
cSH	1700	776	1616	1609								
Volume to Capacity	0.00	0.01	0.00	0.00								
Queue Length 95th (m)	0.0	0.1	0.0	0.0								
Control Delay (s)	0.0	9.7	0.0	0.0								
Lane LOS	A	A										
Approach Delay (s)	0.0	9.7	0.0	0.0								
Approach LOS	A	A										
Intersection Summary												
Average Delay				1.2								
Intersection Capacity Utilization				14.3%	ICU Level of Service				A			
Analysis Period (min)				15								

HCM Unsignalized Intersection Capacity Analysis

3: Alice Street West & Lansdowne Street South










2021 A.M.
12-21-2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control	Stop			Stop			Stop			Stop		
Traffic Volume (vph)	1	2	2	2	2	3	0	13	7	8	15	1
Future Volume (vph)	1	2	2	2	2	3	0	13	7	8	15	1
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	1	2	2	2	2	3	0	15	8	9	17	1
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	5	7	23	27								
Volume Left (vph)	1	2	0	9								
Volume Right (vph)	2	3	8	1								
Hadj (s)	-0.17	-0.17	-0.17	0.08								
Departure Headway (s)	3.8	3.8	3.8	4.0								
Degree Utilization, x	0.01	0.01	0.02	0.03								
Capacity (veh/h)	918	919	946	886								
Control Delay (s)	6.9	6.9	6.9	7.1								
Approach Delay (s)	6.9	6.9	6.9	7.1								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay				7.0								
Level of Service				A								
Intersection Capacity Utilization				20.0%	ICU Level of Service				A			
Analysis Period (min)				15								

HCM Unsignalized Intersection Capacity Analysis

4: Alice Street West & Peel Street




















2021 A.M.
12-21-2021

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	1	0	2	1	0	2
Future Volume (Veh/h)	1	0	2	1	0	2
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.50	0.50	0.50	0.50	0.50	0.50
Hourly flow rate (vph)	2	0	4	2	0	4
Pedestrians	3					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	12	8			9	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	12	8			9	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	1010	1077			1620	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	2	6	4			
Volume Left	2	0	0			
Volume Right	0	2	0			
cSH	1010	1700	1620			
Volume to Capacity	0.00	0.00	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	8.6	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	8.6	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay		1.4				
Intersection Capacity Utilization		14.3%		ICU Level of Service		A
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis

1: Arthur Street West & Lansdowne Street North

















2021 P.M.
12-21-2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	394	6	10	483	6	14	3	13	9	6	11
Future Volume (Veh/h)	3	394	6	10	483	6	14	3	13	9	6	11
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	3	415	6	11	508	6	15	3	14	9	6	12
Pedestrians	2											
Lane Width (m)	3.6											
Walking Speed (m/s)	1.2											
Percent Blockage	0											
Right turn flare (veh)												
Median type	None			None								
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	514			421			971	960	418	970	960	513
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	514			421			971	960	418	970	960	513
tC, single (s)	4.1			4.1			7.1	6.5	6.4	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.4	3.5	4.0	3.3
p0 queue free %	100			99			93	99	98	96	98	98
cM capacity (veh/h)	1062			1149			223	255	608	225	255	564
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	3	421	11	514	32	27						
Volume Left	3	0	11	0	15	9						
Volume Right	0	6	0	6	14	12						
cSH	1062	1700	1149	1700	313	319						
Volume to Capacity	0.00	0.25	0.01	0.30	0.10	0.08						
Queue Length 95th (m)	0.1	0.0	0.2	0.0	2.7	2.2						
Control Delay (s)	8.4	0.0	8.2	0.0	17.8	17.3						
Lane LOS	A		A		C	C						
Approach Delay (s)	0.1		0.2		17.8	17.3						
Approach LOS					C	C						
Intersection Summary												
Average Delay				1.1								
Intersection Capacity Utilization				36.4%	ICU Level of Service				A			
Analysis Period (min)				15								

HCM Unsignalized Intersection Capacity Analysis

2: Lansdowne Street South & Louisa Street West

















2021 P.M.
12-21-2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	0	0	1	0	22	0	0	21	0
Future Volume (Veh/h)	0	0	0	0	0	1	0	22	0	0	21	0
Sign Control	Stop				Stop				Free		Free	
Grade	0%				0%				0%		0%	
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73
Hourly flow rate (vph)	0	0	0	0	0	1	0	30	0	0	29	0
Pedestrians	2				5							
Lane Width (m)	3.6				3.6							
Walking Speed (m/s)	1.2				1.2							
Percent Blockage	0				0							
Right turn flare (veh)												
Median type							None			None		
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	62	66	31	64	66	35	31				35	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	62	66	31	64	66	35	31				35	
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1				4.1	
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2				2.2	
p0 queue free %	100	100	100	100	100	100	100				100	
cM capacity (veh/h)	926	820	1041	927	820	1039	1579				1570	
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	0	1	30	29								
Volume Left	0	0	0	0								
Volume Right	0	1	0	0								
cSH	1700	1039	1579	1570								
Volume to Capacity	0.00	0.00	0.00	0.00								
Queue Length 95th (m)	0.0	0.0	0.0	0.0								
Control Delay (s)	0.0	8.5	0.0	0.0								
Lane LOS	A	A										
Approach Delay (s)	0.0	8.5	0.0	0.0								
Approach LOS	A	A										
Intersection Summary												
Average Delay			0.1									
Intersection Capacity Utilization			14.9%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

3: Alice Street West & Lansdowne Street South










2021 P.M.
12-21-2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	0	1	0	7	4	8	0	29	3	9	38	1
Future Volume (vph)	0	1	0	7	4	8	0	29	3	9	38	1
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	0	1	0	8	4	9	0	33	3	10	43	1
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	1	21	36	54								
Volume Left (vph)	0	8	0	10								
Volume Right (vph)	0	9	3	1								
Hadj (s)	0.03	-0.15	-0.02	0.06								
Departure Headway (s)	4.1	3.9	4.0	4.0								
Degree Utilization, x	0.00	0.02	0.04	0.06								
Capacity (veh/h)	844	888	885	880								
Control Delay (s)	7.2	7.0	7.1	7.3								
Approach Delay (s)	7.2	7.0	7.1	7.3								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay				7.2								
Level of Service				A								
Intersection Capacity Utilization				25.1%	ICU Level of Service	A						
Analysis Period (min)				15								

HCM Unsignalized Intersection Capacity Analysis

4: Alice Street West & Peel Street




















2021 P.M.
12-21-2021

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	2	0	3	0	0	3
Future Volume (Veh/h)	2	0	3	0	0	3
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.56	0.56	0.56	0.56	0.56	0.56
Hourly flow rate (vph)	4	0	5	0	0	5
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	10	5			5	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	10	5			5	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	1015	1084			1630	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	4	5	5			
Volume Left	4	0	0			
Volume Right	0	0	0			
cSH	1015	1700	1630			
Volume to Capacity	0.00	0.00	0.00			
Queue Length 95th (m)	0.1	0.0	0.0			
Control Delay (s)	8.6	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	8.6	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay		2.4				
Intersection Capacity Utilization		13.3%		ICU Level of Service		A
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis

1: Arthur Street West & Lansdowne Street North

















2026 FB AM
12-21-2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	401	4	9	319	7	6	7	6	4	2	7
Future Volume (Veh/h)	4	401	4	9	319	7	6	7	6	4	2	7
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	5	466	5	10	371	8	7	8	7	5	2	8
Pedestrians	2											
Lane Width (m)	3.6											
Walking Speed (m/s)	1.2											
Percent Blockage	0											
Right turn flare (veh)												
Median type	None			None								
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	379			471			878	878	470	884	876	375
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	379			471			878	878	470	884	876	375
tC, single (s)	4.1			4.3			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.4			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			97	97	99	98	99	99
cM capacity (veh/h)	1191			1017			263	285	596	256	285	676
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	5	471	10	379	22	15						
Volume Left	5	0	10	0	7	5						
Volume Right	0	5	0	8	7	8						
cSH	1191	1700	1017	1700	331	391						
Volume to Capacity	0.00	0.28	0.01	0.22	0.07	0.04						
Queue Length 95th (m)	0.1	0.0	0.2	0.0	1.7	1.0						
Control Delay (s)	8.0	0.0	8.6	0.0	16.6	14.6						
Lane LOS	A		A		C	B						
Approach Delay (s)	0.1		0.2		16.6	14.6						
Approach LOS					C	B						
Intersection Summary												
Average Delay	0.8											
Intersection Capacity Utilization	32.0%			ICU Level of Service			A					
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis

2: Lansdowne Street South & Louisa Street West

















2026 FB AM
12-21-2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	3	0	0	0	17	1	0	12	0
Future Volume (Veh/h)	0	0	0	3	0	0	0	17	1	0	12	0
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69
Hourly flow rate (vph)	0	0	0	4	0	0	0	25	1	0	17	0
Pedestrians	1			3								
Lane Width (m)	3.6			3.6								
Walking Speed (m/s)	1.2			1.2								
Percent Blockage	0			0								
Right turn flare (veh)												
Median type							None			None		
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	44	47	18	46	46	28	18				29	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	44	47	18	46	46	28	18				29	
tC, single (s)	7.1	6.5	6.2	8.1	6.5	6.2	4.1				4.1	
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	4.4	4.0	3.3	2.2				2.2	
p0 queue free %	100	100	100	99	100	100	100				100	
cM capacity (veh/h)	956	842	1060	755	842	1050	1611				1593	
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	0	4	26	17								
Volume Left	0	4	0	0								
Volume Right	0	0	1	0								
cSH	1700	755	1611	1593								
Volume to Capacity	0.00	0.01	0.00	0.00								
Queue Length 95th (m)	0.0	0.1	0.0	0.0								
Control Delay (s)	0.0	9.8	0.0	0.0								
Lane LOS	A	A										
Approach Delay (s)	0.0	9.8	0.0	0.0								
Approach LOS	A	A										
Intersection Summary												
Average Delay				0.8								
Intersection Capacity Utilization				14.3%	ICU Level of Service				A			
Analysis Period (min)				15								

HCM Unsignalized Intersection Capacity Analysis

3: Alice Street West & Lansdowne Street South










2026 FB AM
12-21-2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	1	2	2	2	2	3	0	14	8	9	17	1
Future Volume (vph)	1	2	2	2	2	3	0	14	8	9	17	1
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	1	2	2	2	2	3	0	16	9	10	19	1
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	5	7	25	30								
Volume Left (vph)	1	2	0	10								
Volume Right (vph)	2	3	9	1								
Hadj (s)	-0.17	-0.17	-0.18	0.08								
Departure Headway (s)	3.9	3.9	3.8	4.0								
Degree Utilization, x	0.01	0.01	0.03	0.03								
Capacity (veh/h)	914	916	947	885								
Control Delay (s)	6.9	6.9	6.9	7.2								
Approach Delay (s)	6.9	6.9	6.9	7.2								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay				7.0								
Level of Service				A								
Intersection Capacity Utilization				20.2%	ICU Level of Service	A						
Analysis Period (min)				15								

HCM Unsignalized Intersection Capacity Analysis

4: Alice Street West & Peel Street




















2026 FB AM
12-21-2021

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	1	0	2	1	0	2
Future Volume (Veh/h)	1	0	2	1	0	2
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.50	0.50	0.50	0.50	0.50	0.50
Hourly flow rate (vph)	2	0	4	2	0	4
Pedestrians	3					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	12	8			9	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	12	8			9	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	1010	1077			1620	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	2	6	4			
Volume Left	2	0	0			
Volume Right	0	2	0			
cSH	1010	1700	1620			
Volume to Capacity	0.00	0.00	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	8.6	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	8.6	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay		1.4				
Intersection Capacity Utilization		14.3%		ICU Level of Service		A
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis

1: Arthur Street West & Lansdowne Street North

















2026 FB PM
12-21-2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	438	10	15	537	7	17	3	17	10	7	12
Future Volume (Veh/h)	3	438	10	15	537	7	17	3	17	10	7	12
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	3	461	11	16	565	7	18	3	18	11	7	13
Pedestrians	2											
Lane Width (m)	3.6											
Walking Speed (m/s)	1.2											
Percent Blockage	0											
Right turn flare (veh)												
Median type	None			None								
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	572			472			1088	1076	466	1087	1078	570
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	572			472			1088	1076	466	1087	1078	570
tC, single (s)	4.1			4.1			7.1	6.5	6.4	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.4	3.5	4.0	3.3
p0 queue free %	100			99			90	99	97	94	97	98
cM capacity (veh/h)	1011			1100			183	217	570	185	216	524
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	3	472	16	572	39	31						
Volume Left	3	0	16	0	18	11						
Volume Right	0	11	0	7	18	13						
cSH	1011	1700	1100	1700	271	266						
Volume to Capacity	0.00	0.28	0.01	0.34	0.14	0.12						
Queue Length 95th (m)	0.1	0.0	0.4	0.0	4.0	3.1						
Control Delay (s)	8.6	0.0	8.3	0.0	20.5	20.3						
Lane LOS	A		A		C	C						
Approach Delay (s)	0.1		0.2		20.5	20.3						
Approach LOS					C	C						
Intersection Summary												
Average Delay				1.4								
Intersection Capacity Utilization				39.3%	ICU Level of Service				A			
Analysis Period (min)				15								

HCM Unsignalized Intersection Capacity Analysis

2: Lansdowne Street South & Louisa Street West

















2026 FB PM
12-21-2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	0	0	1	0	29	0	0	30	0
Future Volume (Veh/h)	0	0	0	0	0	1	0	29	0	0	30	0
Sign Control	Stop				Stop				Free		Free	
Grade	0%				0%				0%		0%	
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73
Hourly flow rate (vph)	0	0	0	0	0	1	0	40	0	0	41	0
Pedestrians	2				5							
Lane Width (m)	3.6				3.6							
Walking Speed (m/s)	1.2				1.2							
Percent Blockage	0				0							
Right turn flare (veh)												
Median type							None			None		
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	84	88	43	86	88	45	43			45		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	84	88	43	86	88	45	43			45		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	100	100	100	100			100		
cM capacity (veh/h)	896	797	1026	897	797	1026	1563			1557		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	0	1	40	41								
Volume Left	0	0	0	0								
Volume Right	0	1	0	0								
cSH	1700	1026	1563	1557								
Volume to Capacity	0.00	0.00	0.00	0.00								
Queue Length 95th (m)	0.0	0.0	0.0	0.0								
Control Delay (s)	0.0	8.5	0.0	0.0								
Lane LOS	A	A										
Approach Delay (s)	0.0	8.5	0.0	0.0								
Approach LOS	A	A										
Intersection Summary												
Average Delay			0.1									
Intersection Capacity Utilization			14.9%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

3: Alice Street West & Lansdowne Street South










2026 FB PM
12-21-2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	0	1	0	8	4	9	0	32	3	10	42	1
Future Volume (vph)	0	1	0	8	4	9	0	32	3	10	42	1
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	0	1	0	9	4	10	0	36	3	11	47	1
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	1	23	39	59								
Volume Left (vph)	0	9	0	11								
Volume Right (vph)	0	10	3	1								
Hadj (s)	0.03	-0.15	-0.01	0.06								
Departure Headway (s)	4.2	4.0	4.0	4.0								
Degree Utilization, x	0.00	0.03	0.04	0.07								
Capacity (veh/h)	838	883	881	878								
Control Delay (s)	7.2	7.1	7.2	7.3								
Approach Delay (s)	7.2	7.1	7.2	7.3								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay				7.2								
Level of Service				A								
Intersection Capacity Utilization				25.7%	ICU Level of Service	A						
Analysis Period (min)				15								

HCM Unsignalized Intersection Capacity Analysis

4: Alice Street West & Peel Street

2026 FB PM
12-21-2021




















						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	2	0	3	0	0	3
Future Volume (Veh/h)	2	0	3	0	0	3
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.56	0.56	0.56	0.56	0.56	0.56
Hourly flow rate (vph)	4	0	5	0	0	5
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	10	5			5	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	10	5			5	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	1015	1084			1630	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	4	5	5			
Volume Left	4	0	0			
Volume Right	0	0	0			
cSH	1015	1700	1630			
Volume to Capacity	0.00	0.00	0.00			
Queue Length 95th (m)	0.1	0.0	0.0			
Control Delay (s)	8.6	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	8.6	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay		2.4				
Intersection Capacity Utilization		13.3%		ICU Level of Service		A
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis

1: Arthur Street West & Lansdowne Street North

2031 FB PM

















12-21-2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	483	10	16	593	7	19	4	19	11	7	13
Future Volume (Veh/h)	4	483	10	16	593	7	19	4	19	11	7	13
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	4	508	11	17	624	7	20	4	20	12	7	14
Pedestrians	2											
Lane Width (m)	3.6											
Walking Speed (m/s)	1.2											
Percent Blockage	0											
Right turn flare (veh)												
Median type	None			None								
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	631			519			1199	1186	514	1200	1188	630
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	631			519			1199	1186	514	1200	1188	630
tC, single (s)	4.1			4.1			7.1	6.5	6.4	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.4	3.5	4.0	3.3
p0 queue free %	100			98			87	98	96	92	96	97
cM capacity (veh/h)	961			1057			152	186	536	153	186	485
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	4	519	17	631	44	33						
Volume Left	4	0	17	0	20	12						
Volume Right	0	11	0	7	20	14						
cSH	961	1700	1057	1700	231	227						
Volume to Capacity	0.00	0.31	0.02	0.37	0.19	0.15						
Queue Length 95th (m)	0.1	0.0	0.4	0.0	5.5	4.0						
Control Delay (s)	8.8	0.0	8.5	0.0	24.2	23.5						
Lane LOS	A		A		C	C						
Approach Delay (s)	0.1		0.2		24.2	23.5						
Approach LOS					C	C						
Intersection Summary												
Average Delay				1.6								
Intersection Capacity Utilization				42.3%	ICU Level of Service				A			
Analysis Period (min)				15								

HCM Unsignalized Intersection Capacity Analysis

2: Lansdowne Street South & Louisa Street West

















2031 FB PM
12-21-2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	0	0	1	0	32	0	0	33	0
Future Volume (Veh/h)	0	0	0	0	0	1	0	32	0	0	33	0
Sign Control	Stop				Stop				Free			
Grade	0%				0%				0%			
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73
Hourly flow rate (vph)	0	0	0	0	0	1	0	44	0	0	45	0
Pedestrians	2				5							
Lane Width (m)	3.6				3.6							
Walking Speed (m/s)	1.2				1.2							
Percent Blockage	0				0							
Right turn flare (veh)												
Median type							None			None		
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	92	96	47	94	96	49	47				49	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	92	96	47	94	96	49	47				49	
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1				4.1	
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2				2.2	
p0 queue free %	100	100	100	100	100	100	100				100	
cM capacity (veh/h)	886	789	1020	886	789	1021	1558				1551	
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	0	1	44	45								
Volume Left	0	0	0	0								
Volume Right	0	1	0	0								
cSH	1700	1021	1558	1551								
Volume to Capacity	0.00	0.00	0.00	0.00								
Queue Length 95th (m)	0.0	0.0	0.0	0.0								
Control Delay (s)	0.0	8.5	0.0	0.0								
Lane LOS	A	A										
Approach Delay (s)	0.0	8.5	0.0	0.0								
Approach LOS	A	A										
Intersection Summary												
Average Delay			0.1									
Intersection Capacity Utilization			14.9%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

3: Alice Street West & Lansdowne Street South










2031 FB PM
12-21-2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	0	1	0	9	5	10	0	35	4	11	46	1
Future Volume (vph)	0	1	0	9	5	10	0	35	4	11	46	1
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	0	1	0	10	6	11	0	39	4	12	52	1
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	1	27	43	65								
Volume Left (vph)	0	10	0	12								
Volume Right (vph)	0	11	4	1								
Hadj (s)	0.03	-0.14	-0.02	0.06								
Departure Headway (s)	4.2	4.0	4.0	4.1								
Degree Utilization, x	0.00	0.03	0.05	0.07								
Capacity (veh/h)	831	874	879	874								
Control Delay (s)	7.2	7.1	7.2	7.4								
Approach Delay (s)	7.2	7.1	7.2	7.4								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay				7.3								
Level of Service				A								
Intersection Capacity Utilization				26.1%	ICU Level of Service	A						
Analysis Period (min)				15								

HCM Unsignalized Intersection Capacity Analysis

4: Alice Street West & Peel Street




















2031 FB PM
12-21-2021

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	2	0	4	0	0	4
Future Volume (Veh/h)	2	0	4	0	0	4
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.56	0.56	0.56	0.56	0.56	0.56
Hourly flow rate (vph)	4	0	7	0	0	7
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	14	7			7	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	14	7			7	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	1010	1081			1627	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	4	7	7			
Volume Left	4	0	0			
Volume Right	0	0	0			
cSH	1010	1700	1627			
Volume to Capacity	0.00	0.00	0.00			
Queue Length 95th (m)	0.1	0.0	0.0			
Control Delay (s)	8.6	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	8.6	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay		1.9				
Intersection Capacity Utilization		13.3%		ICU Level of Service		A
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis

1: Arthur Street West & Lansdowne Street North

















2031 FB AM
12-21-2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	443	5	9	352	7	7	7	6	5	2	7
Future Volume (Veh/h)	5	443	5	9	352	7	7	7	6	5	2	7
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	6	515	6	10	409	8	8	8	7	6	2	8
Pedestrians	2											
Lane Width (m)	3.6											
Walking Speed (m/s)	1.2											
Percent Blockage	0											
Right turn flare (veh)												
Median type	None			None								
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	417			521			968	967	520	973	966	413
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	417			521			968	967	520	973	966	413
tC, single (s)	4.1			4.3			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.4			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			96	97	99	97	99	99
cM capacity (veh/h)	1153			973			228	252	559	222	253	643
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	6	521	10	417	23	16						
Volume Left	6	0	10	0	8	6						
Volume Right	0	6	0	8	7	8						
cSH	1153	1700	973	1700	290	338						
Volume to Capacity	0.01	0.31	0.01	0.25	0.08	0.05						
Queue Length 95th (m)	0.1	0.0	0.2	0.0	2.1	1.2						
Control Delay (s)	8.1	0.0	8.7	0.0	18.5	16.2						
Lane LOS	A		A		C	C						
Approach Delay (s)	0.1		0.2		18.5	16.2						
Approach LOS					C	C						
Intersection Summary												
Average Delay				0.8								
Intersection Capacity Utilization				34.3%	ICU Level of Service				A			
Analysis Period (min)				15								

HCM Unsignalized Intersection Capacity Analysis

2: Lansdowne Street South & Louisa Street West

















2031 FB AM
12-21-2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	4	0	0	0	18	1	0	13	0
Future Volume (Veh/h)	0	0	0	4	0	0	0	18	1	0	13	0
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69
Hourly flow rate (vph)	0	0	0	6	0	0	0	26	1	0	19	0
Pedestrians	1			3								
Lane Width (m)	3.6			3.6								
Walking Speed (m/s)	1.2			1.2								
Percent Blockage	0			0								
Right turn flare (veh)												
Median type							None			None		
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	46	50	20	48	50	30	20				30	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	46	50	20	48	50	30	20				30	
tC, single (s)	7.1	6.5	6.2	8.1	6.5	6.2	4.1				4.1	
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	4.4	4.0	3.3	2.2				2.2	
p0 queue free %	100	100	100	99	100	100	100				100	
cM capacity (veh/h)	952	839	1057	752	839	1048	1608				1592	
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	0	6	27	19								
Volume Left	0	6	0	0								
Volume Right	0	0	1	0								
cSH	1700	752	1608	1592								
Volume to Capacity	0.00	0.01	0.00	0.00								
Queue Length 95th (m)	0.0	0.2	0.0	0.0								
Control Delay (s)	0.0	9.8	0.0	0.0								
Lane LOS	A	A										
Approach Delay (s)	0.0	9.8	0.0	0.0								
Approach LOS	A	A										
Intersection Summary												
Average Delay				1.1								
Intersection Capacity Utilization				14.3%	ICU Level of Service				A			
Analysis Period (min)				15								

HCM Unsignalized Intersection Capacity Analysis

3: Alice Street West & Lansdowne Street South










2031 FB AM
12-21-2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	1	2	2	2	2	4	0	16	9	10	18	1
Future Volume (vph)	1	2	2	2	2	4	0	16	9	10	18	1
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	1	2	2	2	2	5	0	18	10	11	20	1
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	5	9	28	32								
Volume Left (vph)	1	2	0	11								
Volume Right (vph)	2	5	10	1								
Hadj (s)	-0.17	-0.25	-0.18	0.08								
Departure Headway (s)	3.9	3.8	3.8	4.0								
Degree Utilization, x	0.01	0.01	0.03	0.04								
Capacity (veh/h)	910	933	944	883								
Control Delay (s)	6.9	6.8	6.9	7.2								
Approach Delay (s)	6.9	6.8	6.9	7.2								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay				7.0								
Level of Service				A								
Intersection Capacity Utilization				20.3%	ICU Level of Service	A						
Analysis Period (min)				15								

HCM Unsignalized Intersection Capacity Analysis

4: Alice Street West & Peel Street




















2031 FB AM
12-21-2021

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	1	0	2	1	0	2
Future Volume (Veh/h)	1	0	2	1	0	2
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.50	0.50	0.50	0.50	0.50	0.50
Hourly flow rate (vph)	2	0	4	2	0	4
Pedestrians	3					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	12	8			9	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	12	8			9	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	1010	1077			1620	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	2	6	4			
Volume Left	2	0	0			
Volume Right	0	2	0			
cSH	1010	1700	1620			
Volume to Capacity	0.00	0.00	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	8.6	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	8.6	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay		1.4				
Intersection Capacity Utilization		14.3%		ICU Level of Service		A
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis

1: Arthur Street West & Lansdowne Street North

















2041 FB AM
12-21-2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	539	5	11	429	9	7	9	7	6	3	9
Future Volume (Veh/h)	6	539	5	11	429	9	7	9	7	6	3	9
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	7	627	6	13	499	10	8	10	8	7	3	10
Pedestrians	2											
Lane Width (m)	3.6											
Walking Speed (m/s)	1.2											
Percent Blockage	0											
Right turn flare (veh)												
Median type	None			None								
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	509			633			1180	1179	632	1186	1177	504
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	509			633			1180	1179	632	1186	1177	504
tC, single (s)	4.1			4.3			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.4			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			95	95	98	95	98	98
cM capacity (veh/h)	1066			882			161	188	483	155	189	572
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	7	633	13	509	26	20						
Volume Left	7	0	13	0	8	7						
Volume Right	0	6	0	10	8	10						
cSH	1066	1700	882	1700	218	254						
Volume to Capacity	0.01	0.37	0.01	0.30	0.12	0.08						
Queue Length 95th (m)	0.2	0.0	0.4	0.0	3.2	2.0						
Control Delay (s)	8.4	0.0	9.1	0.0	23.8	20.4						
Lane LOS	A		A		C	C						
Approach Delay (s)	0.1		0.2		23.8	20.4						
Approach LOS					C	C						
Intersection Summary												
Average Delay				1.0								
Intersection Capacity Utilization				39.3%	ICU Level of Service				A			
Analysis Period (min)				15								

HCM Unsignalized Intersection Capacity Analysis

2: Lansdowne Street South & Louisa Street West

















2041 FB AM
12-21-2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	4	0	0	0	20	1	0	15	0
Future Volume (Veh/h)	0	0	0	4	0	0	0	20	1	0	15	0
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69
Hourly flow rate (vph)	0	0	0	6	0	0	0	29	1	0	22	0
Pedestrians	1			3								
Lane Width (m)	3.6			3.6								
Walking Speed (m/s)	1.2			1.2								
Percent Blockage	0			0								
Right turn flare (veh)												
Median type							None			None		
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	52	56	23	54	56	32	23				33	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	52	56	23	54	56	32	23				33	
tC, single (s)	7.1	6.5	6.2	8.1	6.5	6.2	4.1				4.1	
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	4.4	4.0	3.3	2.2				2.2	
p0 queue free %	100	100	100	99	100	100	100				100	
cM capacity (veh/h)	943	832	1053	744	833	1044	1604				1588	
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	0	6	30	22								
Volume Left	0	6	0	0								
Volume Right	0	0	1	0								
cSH	1700	744	1604	1588								
Volume to Capacity	0.00	0.01	0.00	0.00								
Queue Length 95th (m)	0.0	0.2	0.0	0.0								
Control Delay (s)	0.0	9.9	0.0	0.0								
Lane LOS	A	A										
Approach Delay (s)	0.0	9.9	0.0	0.0								
Approach LOS	A	A										
Intersection Summary												
Average Delay				1.0								
Intersection Capacity Utilization				14.3%	ICU Level of Service				A			
Analysis Period (min)				15								

HCM Unsignalized Intersection Capacity Analysis

3: Alice Street West & Lansdowne Street South










2041 FB AM
12-21-2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	1	3	3	3	3	4	0	19	10	12	22	1
Future Volume (vph)	1	3	3	3	3	4	0	19	10	12	22	1
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	1	3	3	3	3	5	0	22	11	14	25	1
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	7	11	33	40								
Volume Left (vph)	1	3	0	14								
Volume Right (vph)	3	5	11	1								
Hadj (s)	-0.19	-0.18	-0.17	0.09								
Departure Headway (s)	3.9	3.9	3.8	4.1								
Degree Utilization, x	0.01	0.01	0.03	0.05								
Capacity (veh/h)	907	907	936	878								
Control Delay (s)	6.9	6.9	6.9	7.2								
Approach Delay (s)	6.9	6.9	6.9	7.2								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay			7.1									
Level of Service			A									
Intersection Capacity Utilization			20.6%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

4: Alice Street West & Peel Street

2041 FB AM
12-21-2021




















						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	1	0	3	1	0	3
Future Volume (Veh/h)	1	0	3	1	0	3
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.50	0.50	0.50	0.50	0.50	0.50
Hourly flow rate (vph)	2	0	6	2	0	6
Pedestrians	3					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	16	10			11	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	16	10			11	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	1005	1075			1617	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	2	8	6			
Volume Left	2	0	0			
Volume Right	0	2	0			
cSH	1005	1700	1617			
Volume to Capacity	0.00	0.00	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	8.6	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	8.6	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay		1.1				
Intersection Capacity Utilization		14.3%		ICU Level of Service		A
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis

1: Arthur Street West & Lansdowne Street North

2041 FB PM

















12-21-2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	588	12	19	722	9	23	4	22	13	9	16
Future Volume (Veh/h)	4	588	12	19	722	9	23	4	22	13	9	16
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	4	619	13	20	760	9	24	4	23	14	9	17
Pedestrians	2											
Lane Width (m)	3.6											
Walking Speed (m/s)	1.2											
Percent Blockage	0											
Right turn flare (veh)												
Median type	None			None								
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	769			632			1457	1442	626	1456	1444	766
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	769			632			1457	1442	626	1456	1444	766
tC, single (s)	4.1			4.1			7.1	6.5	6.4	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.4	3.5	4.0	3.3
p0 queue free %	100			98			75	97	95	86	93	96
cM capacity (veh/h)	854			960			97	130	462	99	130	405
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	4	632	20	769	51	40						
Volume Left	4	0	20	0	24	14						
Volume Right	0	13	0	9	23	17						
cSH	854	1700	960	1700	155	158						
Volume to Capacity	0.00	0.37	0.02	0.45	0.33	0.25						
Queue Length 95th (m)	0.1	0.0	0.5	0.0	10.7	7.6						
Control Delay (s)	9.2	0.0	8.8	0.0	39.2	35.3						
Lane LOS	A		A		E	E						
Approach Delay (s)	0.1		0.2		39.2	35.3						
Approach LOS					E	E						
Intersection Summary												
Average Delay				2.4								
Intersection Capacity Utilization				49.5%	ICU Level of Service				A			
Analysis Period (min)				15								

HCM Unsignalized Intersection Capacity Analysis

2: Lansdowne Street South & Louisa Street West

















2041 FB PM
12-21-2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	0	0	1	0	38	0	0	38	0
Future Volume (Veh/h)	0	0	0	0	0	1	0	38	0	0	38	0
Sign Control	Stop				Stop				Free		Free	
Grade	0%				0%				0%		0%	
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73
Hourly flow rate (vph)	0	0	0	0	0	1	0	52	0	0	52	0
Pedestrians	2				5							
Lane Width (m)	3.6				3.6							
Walking Speed (m/s)	1.2				1.2							
Percent Blockage	0				0							
Right turn flare (veh)												
Median type							None			None		
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	107	111	54	109	111	57	54				57	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	107	111	54	109	111	57	54				57	
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1				4.1	
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2				2.2	
p0 queue free %	100	100	100	100	100	100	100				100	
cM capacity (veh/h)	866	775	1011	867	775	1011	1549				1541	
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	0	1	52	52								
Volume Left	0	0	0	0								
Volume Right	0	1	0	0								
cSH	1700	1011	1549	1541								
Volume to Capacity	0.00	0.00	0.00	0.00								
Queue Length 95th (m)	0.0	0.0	0.0	0.0								
Control Delay (s)	0.0	8.6	0.0	0.0								
Lane LOS	A	A										
Approach Delay (s)	0.0	8.6	0.0	0.0								
Approach LOS	A	A										
Intersection Summary												
Average Delay			0.1									
Intersection Capacity Utilization			14.9%	ICU Level of Service				A				
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

3: Alice Street West & Lansdowne Street South










2041 FB PM
12-21-2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	0	1	0	10	6	12	0	43	4	13	56	1
Future Volume (vph)	0	1	0	10	6	12	0	43	4	13	56	1
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	0	1	0	11	7	13	0	48	4	15	63	1
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	1	31	52	79								
Volume Left (vph)	0	11	0	15								
Volume Right (vph)	0	13	4	1								
Hadj (s)	0.03	-0.15	-0.01	0.06								
Departure Headway (s)	4.2	4.0	4.0	4.1								
Degree Utilization, x	0.00	0.03	0.06	0.09								
Capacity (veh/h)	816	861	871	869								
Control Delay (s)	7.3	7.2	7.3	7.5								
Approach Delay (s)	7.3	7.2	7.3	7.5								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay				7.4								
Level of Service				A								
Intersection Capacity Utilization				26.9%	ICU Level of Service	A						
Analysis Period (min)				15								

HCM Unsignalized Intersection Capacity Analysis

4: Alice Street West & Peel Street




















2041 FB PM
12-21-2021

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	3	0	4	0	0	4
Future Volume (Veh/h)	3	0	4	0	0	4
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.56	0.56	0.56	0.56	0.56	0.56
Hourly flow rate (vph)	5	0	7	0	0	7
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	14	7			7	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	14	7			7	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	1010	1081			1627	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	5	7	7			
Volume Left	5	0	0			
Volume Right	0	0	0			
cSH	1010	1700	1627			
Volume to Capacity	0.00	0.00	0.00			
Queue Length 95th (m)	0.1	0.0	0.0			
Control Delay (s)	8.6	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	8.6	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay		2.3				
Intersection Capacity Utilization		13.3%		ICU Level of Service		A
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis

1: Arthur Street West & Lansdowne Street North

















2026 FT AM
12-21-2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	423	8	16	331	7	14	7	16	4	2	7
Future Volume (Veh/h)	4	423	8	16	331	7	14	7	16	4	2	7
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	5	492	9	19	385	8	16	8	19	5	2	8
Pedestrians	2											
Lane Width (m)	3.6											
Walking Speed (m/s)	1.2											
Percent Blockage	0											
Right turn flare (veh)												
Median type	None			None								
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	393			501			938	938	498	954	938	389
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	393			501			938	938	498	954	938	389
tC, single (s)	4.1			4.3			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.4			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			98			93	97	97	98	99	99
cM capacity (veh/h)	1177			990			238	260	575	223	260	664
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	5	501	19	393	43	15						
Volume Left	5	0	19	0	16	5						
Volume Right	0	9	0	8	19	8						
cSH	1177	1700	990	1700	328	355						
Volume to Capacity	0.00	0.29	0.02	0.23	0.13	0.04						
Queue Length 95th (m)	0.1	0.0	0.5	0.0	3.6	1.1						
Control Delay (s)	8.1	0.0	8.7	0.0	17.6	15.6						
Lane LOS	A		A		C	C						
Approach Delay (s)	0.1		0.4		17.6	15.6						
Approach LOS					C	C						
Intersection Summary												
Average Delay	1.2											
Intersection Capacity Utilization	33.4%			ICU Level of Service			A					
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis

2: Lansdowne Street South & Louisa Street West

















2026 FT AM
12-21-2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	0	6	3	0	0	4	17	1	0	12	11
Future Volume (Veh/h)	18	0	6	3	0	0	4	17	1	0	12	11
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69
Hourly flow rate (vph)	26	0	9	4	0	0	6	25	1	0	17	16
Pedestrians	1			3								
Lane Width (m)	3.6			3.6								
Walking Speed (m/s)	1.2			1.2								
Percent Blockage	0			0								
Right turn flare (veh)												
Median type							None			None		
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	64	67	26	74	74	28	34				29	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	64	67	26	74	74	28	34				29	
tC, single (s)	7.1	6.5	6.2	8.1	6.5	6.2	4.1				4.1	
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	4.4	4.0	3.3	2.2				2.2	
p0 queue free %	97	100	99	99	100	100	100				100	
cM capacity (veh/h)	925	818	1049	712	810	1050	1589				1593	
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	35	4	32	33								
Volume Left	26	4	6	0								
Volume Right	9	0	1	16								
cSH	954	712	1589	1593								
Volume to Capacity	0.04	0.01	0.00	0.00								
Queue Length 95th (m)	0.9	0.1	0.1	0.0								
Control Delay (s)	8.9	10.1	1.4	0.0								
Lane LOS	A	B	A									
Approach Delay (s)	8.9	10.1	1.4	0.0								
Approach LOS	A	B										
Intersection Summary												
Average Delay				3.8								
Intersection Capacity Utilization				15.3%	ICU Level of Service				A			
Analysis Period (min)				15								

HCM Unsignalized Intersection Capacity Analysis

3: Alice Street West & Lansdowne Street South










2026 FT AM
12-21-2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	2	5	2	2	3	4	0	16	8	10	21	2
Future Volume (vph)	2	5	2	2	3	4	0	16	8	10	21	2
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	2	6	2	2	3	5	0	18	9	11	24	2
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	10	10	27	37								
Volume Left (vph)	2	2	0	11								
Volume Right (vph)	2	5	9	2								
Hadj (s)	-0.05	-0.23	-0.17	0.06								
Departure Headway (s)	4.0	3.8	3.8	4.0								
Degree Utilization, x	0.01	0.01	0.03	0.04								
Capacity (veh/h)	880	922	935	884								
Control Delay (s)	7.0	6.9	6.9	7.2								
Approach Delay (s)	7.0	6.9	6.9	7.2								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay			7.1									
Level of Service			A									
Intersection Capacity Utilization			20.5%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

4: Alice Street West & Peel Street

2026 FT AM
12-21-2021

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	5	0	2	3	0	2
Future Volume (Veh/h)	5	0	2	3	0	2
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.50	0.50	0.50	0.50	0.50	0.50
Hourly flow rate (vph)	10	0	4	6	0	4
Pedestrians	3					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	14	10			13	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	14	10			13	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	100			100	
cM capacity (veh/h)	1008	1075			1615	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	10	10	4			
Volume Left	10	0	0			
Volume Right	0	6	0			
cSH	1008	1700	1615			
Volume to Capacity	0.01	0.01	0.00			
Queue Length 95th (m)	0.2	0.0	0.0			
Control Delay (s)	8.6	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	8.6	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay		3.6				
Intersection Capacity Utilization		14.3%		ICU Level of Service		A
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis

5: Site - A & Arthur Street West

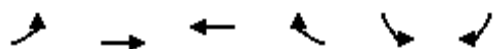
2026 FT AM
12-21-2021




	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↶		↷	↶	↷	
Traffic Volume (veh/h)	407	20	21	331	26	28
Future Volume (Veh/h)	407	20	21	331	26	28
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	473	23	24	385	30	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			496		918	484
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			496		918	484
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		90	94
cM capacity (veh/h)			1068		295	582
Direction, Lane #	EB 1	WB 1	WB 2	NB 1		
Volume Total	496	24	385	63		
Volume Left	0	24	0	30		
Volume Right	23	0	0	33		
cSH	1700	1068	1700	398		
Volume to Capacity	0.29	0.02	0.23	0.16		
Queue Length 95th (m)	0.0	0.6	0.0	4.5		
Control Delay (s)	0.0	8.4	0.0	15.7		
Lane LOS		A		C		
Approach Delay (s)	0.0	0.5		15.7		
Approach LOS				C		
Intersection Summary						
Average Delay			1.2			
Intersection Capacity Utilization			32.6%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

6: Alice Street West & Site - C

2026 FT AM
12-21-2021





















Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	1	7	4	1	3	3
Future Volume (Veh/h)	1	7	4	1	3	3
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	1	8	5	1	3	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	6				16	6
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	6				16	6
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1615				1002	1077
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	9	6	6			
Volume Left	1	0	3			
Volume Right	0	1	3			
cSH	1615	1700	1039			
Volume to Capacity	0.00	0.00	0.01			
Queue Length 95th (m)	0.0	0.0	0.1			
Control Delay (s)	0.8	0.0	8.5			
Lane LOS	A		A			
Approach Delay (s)	0.8	0.0	8.5			
Approach LOS			A			
Intersection Summary						
Average Delay			2.8			
Intersection Capacity Utilization			13.3%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

1: Arthur Street West & Lansdowne Street North

















2026 FT PM
12-21-2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	458	18	28	562	7	24	3	26	10	7	12
Future Volume (Veh/h)	3	458	18	28	562	7	24	3	26	10	7	12
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	3	482	19	29	592	7	25	3	27	11	7	13
Pedestrians	2											
Lane Width (m)	3.6											
Walking Speed (m/s)	1.2											
Percent Blockage	0											
Right turn flare (veh)												
Median type	None			None								
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	599			501			1166	1154	492	1170	1160	598
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	599			501			1166	1154	492	1170	1160	598
tC, single (s)	4.1			4.1			7.1	6.5	6.4	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.4	3.5	4.0	3.3
p0 queue free %	100			97			84	98	95	93	96	97
cM capacity (veh/h)	988			1074			159	193	552	157	191	505
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	3	501	29	599	55	31						
Volume Left	3	0	29	0	25	11						
Volume Right	0	19	0	7	27	13						
cSH	988	1700	1074	1700	248	234						
Volume to Capacity	0.00	0.29	0.03	0.35	0.22	0.13						
Queue Length 95th (m)	0.1	0.0	0.7	0.0	6.6	3.6						
Control Delay (s)	8.7	0.0	8.4	0.0	23.6	22.7						
Lane LOS	A		A		C	C						
Approach Delay (s)	0.1		0.4		23.6	22.7						
Approach LOS					C	C						
Intersection Summary												
Average Delay				1.9								
Intersection Capacity Utilization				41.2%	ICU Level of Service				A			
Analysis Period (min)				15								

HCM Unsignalized Intersection Capacity Analysis

2: Lansdowne Street South & Louisa Street West

















2026 FT PM
12-21-2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	16	0	7	0	0	1	8	29	0	0	30	21
Future Volume (Veh/h)	16	0	7	0	0	1	8	29	0	0	30	21
Sign Control	Stop				Stop				Free			
Grade	0%				0%				0%			
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73
Hourly flow rate (vph)	22	0	10	0	0	1	11	40	0	0	41	29
Pedestrians	2				5							
Lane Width (m)	3.6				3.6							
Walking Speed (m/s)	1.2				1.2							
Percent Blockage	0				0							
Right turn flare (veh)												
Median type							None			None		
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	120	124	58	132	139	45	72				45	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	120	124	58	132	139	45	72				45	
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1				4.1	
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2				2.2	
p0 queue free %	97	100	99	100	100	100	99				100	
cM capacity (veh/h)	844	756	1007	824	742	1026	1526				1557	
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	32	1	51	70								
Volume Left	22	0	11	0								
Volume Right	10	1	0	29								
cSH	889	1026	1526	1557								
Volume to Capacity	0.04	0.00	0.01	0.00								
Queue Length 95th (m)	0.9	0.0	0.2	0.0								
Control Delay (s)	9.2	8.5	1.6	0.0								
Lane LOS	A	A	A									
Approach Delay (s)	9.2	8.5	1.6	0.0								
Approach LOS	A	A										
Intersection Summary												
Average Delay			2.5									
Intersection Capacity Utilization			23.9%		ICU Level of Service			A				
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

3: Alice Street West & Lansdowne Street South










2026 FT PM
12-21-2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control	Stop			Stop			Stop			Stop		
Traffic Volume (vph)	2	2	0	8	6	11	0	36	3	12	45	3
Future Volume (vph)	2	2	0	8	6	11	0	36	3	12	45	3
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	2	2	0	9	7	12	0	40	3	13	51	3
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	4	28	43	67								
Volume Left (vph)	2	9	0	13								
Volume Right (vph)	0	12	3	3								
Hadj (s)	0.13	-0.16	-0.01	0.05								
Departure Headway (s)	4.3	4.0	4.0	4.1								
Degree Utilization, x	0.00	0.03	0.05	0.08								
Capacity (veh/h)	811	876	873	875								
Control Delay (s)	7.3	7.1	7.2	7.4								
Approach Delay (s)	7.3	7.1	7.2	7.4								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay				7.3								
Level of Service				A								
Intersection Capacity Utilization				22.5%	ICU Level of Service	A						
Analysis Period (min)				15								

HCM Unsignalized Intersection Capacity Analysis

4: Alice Street West & Peel Street

2026 FT PM
12-21-2021

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	5	0	3	4	0	3
Future Volume (Veh/h)	5	0	3	4	0	3
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.56	0.56	0.56	0.56	0.56	0.56
Hourly flow rate (vph)	9	0	5	7	0	5
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	14	8			12	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	14	8			12	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	100			100	
cM capacity (veh/h)	1011	1079			1620	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	9	12	5			
Volume Left	9	0	0			
Volume Right	0	7	0			
cSH	1011	1700	1620			
Volume to Capacity	0.01	0.01	0.00			
Queue Length 95th (m)	0.2	0.0	0.0			
Control Delay (s)	8.6	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	8.6	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay		3.0				
Intersection Capacity Utilization		13.3%		ICU Level of Service		A
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis

5: Site - A & Arthur Street West

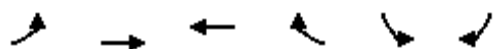
2026 FT PM
12-21-2021

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↶		↶	↶	↶	
Traffic Volume (veh/h)	445	40	41	558	31	33
Future Volume (Veh/h)	445	40	41	558	31	33
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)	468	42	43	587	33	35
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			510		1162	489
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			510		1162	489
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			96		84	94
cM capacity (veh/h)			1055		207	579
Direction, Lane #	EB 1	WB 1	WB 2	NB 1		
Volume Total	510	43	587	68		
Volume Left	0	43	0	33		
Volume Right	42	0	0	35		
cSH	1700	1055	1700	309		
Volume to Capacity	0.30	0.04	0.35	0.22		
Queue Length 95th (m)	0.0	1.0	0.0	6.6		
Control Delay (s)	0.0	8.6	0.0	19.9		
Lane LOS		A		C		
Approach Delay (s)	0.0	0.6		19.9		
Approach LOS				C		
Intersection Summary						
Average Delay			1.4			
Intersection Capacity Utilization			42.9%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

6: Alice Street West & Site - C

2026 FT PM
12-21-2021






















Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↱	↱		↱↲	
Traffic Volume (veh/h)	2	3	8	2	1	1
Future Volume (Veh/h)	2	3	8	2	1	1
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)	2	3	8	2	1	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	10				16	9
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	10				16	9
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1610				1001	1073
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	5	10	2			
Volume Left	2	0	1			
Volume Right	0	2	1			
cSH	1610	1700	1036			
Volume to Capacity	0.00	0.01	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	2.9	0.0	8.5			
Lane LOS	A		A			
Approach Delay (s)	2.9	0.0	8.5			
Approach LOS			A			
Intersection Summary						
Average Delay			1.9			
Intersection Capacity Utilization			13.3%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

1: Arthur Street West & Lansdowne Street North

2031 FT AM

















12-21-2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	465	9	16	364	7	15	7	16	5	2	7
Future Volume (Veh/h)	5	465	9	16	364	7	15	7	16	5	2	7
Sign Control	Free				Free				Stop		Stop	
Grade	0%				0%				0%		0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	6	541	10	19	423	8	17	8	19	6	2	8
Pedestrians						2						
Lane Width (m)						3.6						
Walking Speed (m/s)						1.2						
Percent Blockage						0						
Right turn flare (veh)												
Median type	None						None					
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	431			551			1028	1027	548	1043	1028	427
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	431			551			1028	1027	548	1043	1028	427
tC, single (s)	4.1			4.3			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.4			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			98			92	97	96	97	99	99
cM capacity (veh/h)	1139			948			206	230	539	192	230	632
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	6	551	19	431	44	16						
Volume Left	6	0	19	0	17	6						
Volume Right	0	10	0	8	19	8						
cSH	1139	1700	948	1700	289	305						
Volume to Capacity	0.01	0.32	0.02	0.25	0.15	0.05						
Queue Length 95th (m)	0.1	0.0	0.5	0.0	4.2	1.3						
Control Delay (s)	8.2	0.0	8.9	0.0	19.7	17.5						
Lane LOS	A			A			C	C				
Approach Delay (s)	0.1			0.4			19.7	17.5				
Approach LOS						C	C					
Intersection Summary												
Average Delay			1.3									
Intersection Capacity Utilization			35.7%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

2: Lansdowne Street South & Louisa Street West

















2031 FT AM
12-21-2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	0	6	4	0	0	4	18	1	0	13	11
Future Volume (Veh/h)	18	0	6	4	0	0	4	18	1	0	13	11
Sign Control	Stop				Stop				Free			
Grade	0%				0%				0%			
Peak Hour Factor	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69
Hourly flow rate (vph)	26	0	9	6	0	0	6	26	1	0	19	16
Pedestrians	1				3							
Lane Width (m)	3.6				3.6							
Walking Speed (m/s)	1.2				1.2							
Percent Blockage	0				0							
Right turn flare (veh)												
Median type							None			None		
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	66	70	28	78	78	30	36				30	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	66	70	28	78	78	30	36				30	
tC, single (s)	7.1	6.5	6.2	8.1	6.5	6.2	4.1				4.1	
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	4.4	4.0	3.3	2.2				2.2	
p0 queue free %	97	100	99	99	100	100	100				100	
cM capacity (veh/h)	921	815	1046	708	807	1048	1587				1592	
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	35	6	33	35								
Volume Left	26	6	6	0								
Volume Right	9	0	1	16								
cSH	950	708	1587	1592								
Volume to Capacity	0.04	0.01	0.00	0.00								
Queue Length 95th (m)	0.9	0.2	0.1	0.0								
Control Delay (s)	8.9	10.1	1.3	0.0								
Lane LOS	A	B	A									
Approach Delay (s)	8.9	10.1	1.3	0.0								
Approach LOS	A	B										
Intersection Summary												
Average Delay			3.8									
Intersection Capacity Utilization			15.3%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

3: Alice Street West & Lansdowne Street South










2031 FT AM
12-21-2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	2	5	2	2	3	5	0	18	9	11	22	2
Future Volume (vph)	2	5	2	2	3	5	0	18	9	11	22	2
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	2	6	2	2	3	6	0	20	10	12	25	2
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	10	11	30	39								
Volume Left (vph)	2	2	0	12								
Volume Right (vph)	2	6	10	2								
Hadj (s)	-0.05	-0.26	-0.17	0.06								
Departure Headway (s)	4.0	3.8	3.8	4.0								
Degree Utilization, x	0.01	0.01	0.03	0.04								
Capacity (veh/h)	877	926	924	882								
Control Delay (s)	7.1	6.8	6.9	7.2								
Approach Delay (s)	7.1	6.8	6.9	7.2								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay				7.1								
Level of Service				A								
Intersection Capacity Utilization				20.6%	ICU Level of Service			A				
Analysis Period (min)				15								

HCM Unsignalized Intersection Capacity Analysis

4: Alice Street West & Peel Street

2031 FT AM
12-21-2021

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	5	0	2	3	0	2
Future Volume (Veh/h)	5	0	2	3	0	2
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.50	0.50	0.50	0.50	0.50	0.50
Hourly flow rate (vph)	10	0	4	6	0	4
Pedestrians	3					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	14	10			13	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	14	10			13	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	100			100	
cM capacity (veh/h)	1008	1075			1615	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	10	10	4			
Volume Left	10	0	0			
Volume Right	0	6	0			
cSH	1008	1700	1615			
Volume to Capacity	0.01	0.01	0.00			
Queue Length 95th (m)	0.2	0.0	0.0			
Control Delay (s)	8.6	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	8.6	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay		3.6				
Intersection Capacity Utilization		14.3%		ICU Level of Service		A
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis

5: Site - A & Arthur Street West

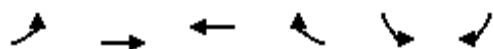
2031 FT AM
12-21-2021

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↗		↘	↗	↘	
Traffic Volume (veh/h)	449	20	21	365	26	28
Future Volume (Veh/h)	449	20	21	365	26	28
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	522	23	24	424	30	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			545		1006	534
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			545		1006	534
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		89	94
cM capacity (veh/h)			1024		261	546
Direction, Lane #	EB 1	WB 1	WB 2	NB 1		
Volume Total	545	24	424	63		
Volume Left	0	24	0	30		
Volume Right	23	0	0	33		
cSH	1700	1024	1700	359		
Volume to Capacity	0.32	0.02	0.25	0.18		
Queue Length 95th (m)	0.0	0.6	0.0	5.0		
Control Delay (s)	0.0	8.6	0.0	17.1		
Lane LOS		A		C		
Approach Delay (s)	0.0	0.5		17.1		
Approach LOS				C		
Intersection Summary						
Average Delay			1.2			
Intersection Capacity Utilization			34.8%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

6: Alice Street West & Site - C

2031 FT AM
12-21-2021






















Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↶		↶	
Traffic Volume (veh/h)	1	7	5	1	3	3
Future Volume (Veh/h)	1	7	5	1	3	3
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	1	8	6	1	3	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	7				16	6
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	7				16	6
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1614				1001	1076
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	9	7	6			
Volume Left	1	0	3			
Volume Right	0	1	3			
cSH	1614	1700	1037			
Volume to Capacity	0.00	0.00	0.01			
Queue Length 95th (m)	0.0	0.0	0.1			
Control Delay (s)	0.8	0.0	8.5			
Lane LOS	A		A			
Approach Delay (s)	0.8	0.0	8.5			
Approach LOS			A			
Intersection Summary						
Average Delay			2.6			
Intersection Capacity Utilization			13.3%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

1: Arthur Street West & Lansdowne Street North

















2031 FT PM
12-21-2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	503	18	29	618	7	26	4	28	11	7	13
Future Volume (Veh/h)	4	503	18	29	618	7	26	4	28	11	7	13
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	4	529	19	31	651	7	27	4	29	12	7	14
Pedestrians	2											
Lane Width (m)	3.6											
Walking Speed (m/s)	1.2											
Percent Blockage	0											
Right turn flare (veh)												
Median type	None			None								
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	658			548			1279	1266	538	1284	1272	656
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	658			548			1279	1266	538	1284	1272	656
tC, single (s)	4.1			4.1			7.1	6.5	6.4	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.4	3.5	4.0	3.3
p0 queue free %	100			97			79	98	94	91	96	97
cM capacity (veh/h)	939			1032			132	165	518	129	163	468
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	4	548	31	658	60	33						
Volume Left	4	0	31	0	27	12						
Volume Right	0	19	0	7	29	14						
cSH	939	1700	1032	1700	210	199						
Volume to Capacity	0.00	0.32	0.03	0.39	0.29	0.17						
Queue Length 95th (m)	0.1	0.0	0.7	0.0	9.0	4.6						
Control Delay (s)	8.8	0.0	8.6	0.0	28.8	26.6						
Lane LOS	A		A		D	D						
Approach Delay (s)	0.1		0.4		28.8	26.6						
Approach LOS					D	D						
Intersection Summary												
Average Delay				2.2								
Intersection Capacity Utilization				44.5%	ICU Level of Service				A			
Analysis Period (min)				15								

HCM Unsignalized Intersection Capacity Analysis

2: Lansdowne Street South & Louisa Street West

















2031 FT PM
12-21-2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	16	0	7	0	0	1	8	32	0	0	33	21
Future Volume (Veh/h)	16	0	7	0	0	1	8	32	0	0	33	21
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73
Hourly flow rate (vph)	22	0	10	0	0	1	11	44	0	0	45	29
Pedestrians	2			5								
Lane Width (m)	3.6			3.6								
Walking Speed (m/s)	1.2			1.2								
Percent Blockage	0			0								
Right turn flare (veh)												
Median type							None			None		
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	128	132	62	140	147	49	76				49	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	128	132	62	140	147	49	76				49	
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1				4.1	
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2				2.2	
p0 queue free %	97	100	99	100	100	100	99				100	
cM capacity (veh/h)	834	748	1002	814	735	1021	1520				1551	
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	32	1	55	74								
Volume Left	22	0	11	0								
Volume Right	10	1	0	29								
cSH	880	1021	1520	1551								
Volume to Capacity	0.04	0.00	0.01	0.00								
Queue Length 95th (m)	0.9	0.0	0.2	0.0								
Control Delay (s)	9.2	8.5	1.5	0.0								
Lane LOS	A	A	A									
Approach Delay (s)	9.2	8.5	1.5	0.0								
Approach LOS	A	A										
Intersection Summary												
Average Delay				2.4								
Intersection Capacity Utilization				24.0%	ICU Level of Service			A				
Analysis Period (min)				15								

HCM Unsignalized Intersection Capacity Analysis

3: Alice Street West & Lansdowne Street South










2031 FT PM
12-21-2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control	Stop			Stop			Stop			Stop		
Traffic Volume (vph)	2	2	0	9	7	12	0	39	4	13	49	3
Future Volume (vph)	2	2	0	9	7	12	0	39	4	13	49	3
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	2	2	0	10	8	13	0	44	4	15	55	3
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	4	31	48	73								
Volume Left (vph)	2	10	0	15								
Volume Right (vph)	0	13	4	3								
Hadj (s)	0.13	-0.15	-0.02	0.05								
Departure Headway (s)	4.3	4.0	4.0	4.1								
Degree Utilization, x	0.00	0.03	0.05	0.08								
Capacity (veh/h)	804	868	871	871								
Control Delay (s)	7.3	7.2	7.3	7.4								
Approach Delay (s)	7.3	7.2	7.3	7.4								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay				7.3								
Level of Service				A								
Intersection Capacity Utilization				22.7%	ICU Level of Service	A						
Analysis Period (min)				15								

HCM Unsignalized Intersection Capacity Analysis

4: Alice Street West & Peel Street











2031 FT PM
12-21-2021

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	5	0	4	4	0	4
Future Volume (Veh/h)	5	0	4	4	0	4
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.56	0.56	0.56	0.56	0.56	0.56
Hourly flow rate (vph)	9	0	7	7	0	7
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	18	10			14	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	18	10			14	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	100			100	
cM capacity (veh/h)	1006	1077			1617	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	9	14	7			
Volume Left	9	0	0			
Volume Right	0	7	0			
cSH	1006	1700	1617			
Volume to Capacity	0.01	0.01	0.00			
Queue Length 95th (m)	0.2	0.0	0.0			
Control Delay (s)	8.6	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	8.6	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay		2.6				
Intersection Capacity Utilization		13.3%		ICU Level of Service		A
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis

5: Site - A & Arthur Street West

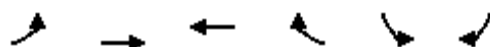
2031 FT PM
12-21-2021

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	491	40	41	616	31	33
Future Volume (Veh/h)	491	40	41	616	31	33
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)	517	42	43	648	33	35
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			559		1272	538
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			559		1272	538
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			96		81	94
cM capacity (veh/h)			1012		177	543
Direction, Lane #	EB 1	WB 1	WB 2	NB 1		
Volume Total	559	43	648	68		
Volume Left	0	43	0	33		
Volume Right	42	0	0	35		
cSH	1700	1012	1700	271		
Volume to Capacity	0.33	0.04	0.38	0.25		
Queue Length 95th (m)	0.0	1.1	0.0	7.7		
Control Delay (s)	0.0	8.7	0.0	22.7		
Lane LOS		A		C		
Approach Delay (s)	0.0	0.5		22.7		
Approach LOS				C		
Intersection Summary						
Average Delay			1.5			
Intersection Capacity Utilization			44.5%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

6: Alice Street West & Site - C

2031 FT PM
12-21-2021






















Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↱	↱		↱	
Traffic Volume (veh/h)	2	3	8	2	1	1
Future Volume (Veh/h)	2	3	8	2	1	1
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)	2	3	8	2	1	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	10				16	9
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	10				16	9
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1610				1001	1073
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	5	10	2			
Volume Left	2	0	1			
Volume Right	0	2	1			
cSH	1610	1700	1036			
Volume to Capacity	0.00	0.01	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	2.9	0.0	8.5			
Lane LOS	A		A			
Approach Delay (s)	2.9	0.0	8.5			
Approach LOS			A			
Intersection Summary						
Average Delay			1.9			
Intersection Capacity Utilization			13.3%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

1: Arthur Street West & Lansdowne Street North

















2041 FT AM
12-21-2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	561	9	18	441	9	15	9	17	6	3	9
Future Volume (Veh/h)	6	561	9	18	441	9	15	9	17	6	3	9
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	7	652	10	21	513	10	17	10	20	7	3	10
Pedestrians	2											
Lane Width (m)	3.6											
Walking Speed (m/s)	1.2											
Percent Blockage	0											
Right turn flare (veh)												
Median type	None			None								
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	523			662			1238	1236	659	1253	1236	518
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	523			662			1238	1236	659	1253	1236	518
tC, single (s)	4.1			4.3			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.4			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			98			88	94	96	95	98	98
cM capacity (veh/h)	1054			859			146	172	466	134	172	562
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	7	662	21	523	47	20						
Volume Left	7	0	21	0	17	7						
Volume Right	0	10	0	10	20	10						
cSH	1054	1700	859	1700	216	229						
Volume to Capacity	0.01	0.39	0.02	0.31	0.22	0.09						
Queue Length 95th (m)	0.2	0.0	0.6	0.0	6.4	2.3						
Control Delay (s)	8.4	0.0	9.3	0.0	26.2	22.2						
Lane LOS	A		A		D	C						
Approach Delay (s)	0.1		0.4		26.2	22.2						
Approach LOS					D	C						
Intersection Summary												
Average Delay				1.5								
Intersection Capacity Utilization				40.7%	ICU Level of Service				A			
Analysis Period (min)				15								

HCM Unsignalized Intersection Capacity Analysis

2: Lansdowne Street South & Louisa Street West

















2041 FT AM
12-21-2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	0	6	4	0	0	4	20	1	0	15	11
Future Volume (Veh/h)	18	0	6	4	0	0	4	20	1	0	15	11
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69
Hourly flow rate (vph)	26	0	9	6	0	0	6	29	1	0	22	16
Pedestrians	1			3								
Lane Width (m)	3.6			3.6								
Walking Speed (m/s)	1.2			1.2								
Percent Blockage	0			0								
Right turn flare (veh)												
Median type							None			None		
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	72	76	31	84	84	32	39				33	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	72	76	31	84	84	32	39				33	
tC, single (s)	7.1	6.5	6.2	8.1	6.5	6.2	4.1				4.1	
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	4.4	4.0	3.3	2.2				2.2	
p0 queue free %	97	100	99	99	100	100	100				100	
cM capacity (veh/h)	913	809	1042	701	801	1044	1583				1588	
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	35	6	36	38								
Volume Left	26	6	6	0								
Volume Right	9	0	1	16								
cSH	943	701	1583	1588								
Volume to Capacity	0.04	0.01	0.00	0.00								
Queue Length 95th (m)	0.9	0.2	0.1	0.0								
Control Delay (s)	9.0	10.2	1.2	0.0								
Lane LOS	A	B	A									
Approach Delay (s)	9.0	10.2	1.2	0.0								
Approach LOS	A	B										
Intersection Summary												
Average Delay				3.6								
Intersection Capacity Utilization				15.4%	ICU Level of Service			A				
Analysis Period (min)				15								

HCM Unsignalized Intersection Capacity Analysis

3: Alice Street West & Lansdowne Street South










2041 FT AM
12-21-2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control	Stop			Stop			Stop			Stop		
Traffic Volume (vph)	2	6	3	3	4	5	0	21	10	13	26	2
Future Volume (vph)	2	6	3	3	4	5	0	21	10	13	26	2
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	2	7	3	3	5	6	0	24	11	15	30	2
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	12	14	35	47								
Volume Left (vph)	2	3	0	15								
Volume Right (vph)	3	6	11	2								
Hadj (s)	-0.08	-0.18	-0.15	0.07								
Departure Headway (s)	4.0	3.9	3.8	4.1								
Degree Utilization, x	0.01	0.02	0.04	0.05								
Capacity (veh/h)	875	898	915	875								
Control Delay (s)	7.1	7.0	7.0	7.3								
Approach Delay (s)	7.1	7.0	7.0	7.3								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay				7.1								
Level of Service				A								
Intersection Capacity Utilization				21.0%	ICU Level of Service			A				
Analysis Period (min)				15								

HCM Unsignalized Intersection Capacity Analysis

4: Alice Street West & Peel Street











2041 FT AM
12-21-2021

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	5	0	3	3	0	3
Future Volume (Veh/h)	5	0	3	3	0	3
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.50	0.50	0.50	0.50	0.50	0.50
Hourly flow rate (vph)	10	0	6	6	0	6
Pedestrians	3					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	18	12			15	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	18	12			15	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	100			100	
cM capacity (veh/h)	1002	1072			1612	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	10	12	6			
Volume Left	10	0	0			
Volume Right	0	6	0			
cSH	1002	1700	1612			
Volume to Capacity	0.01	0.01	0.00			
Queue Length 95th (m)	0.2	0.0	0.0			
Control Delay (s)	8.6	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	8.6	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay		3.1				
Intersection Capacity Utilization		14.3%		ICU Level of Service		A
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis

5: Site - A & Arthur Street West

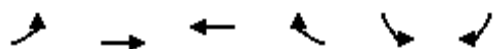
2041 FT AM
12-21-2021

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	547	20	21	444	26	28
Future Volume (Veh/h)	547	20	21	444	26	28
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	636	23	24	516	30	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			659		1212	648
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			659		1212	648
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		85	93
cM capacity (veh/h)			929		196	471
Direction, Lane #	EB 1	WB 1	WB 2	NB 1		
Volume Total	659	24	516	63		
Volume Left	0	24	0	30		
Volume Right	23	0	0	33		
cSH	1700	929	1700	282		
Volume to Capacity	0.39	0.03	0.30	0.22		
Queue Length 95th (m)	0.0	0.6	0.0	6.7		
Control Delay (s)	0.0	9.0	0.0	21.4		
Lane LOS		A		C		
Approach Delay (s)	0.0	0.4		21.4		
Approach LOS				C		
Intersection Summary						
Average Delay			1.2			
Intersection Capacity Utilization			40.0%		ICU Level of Service	
Analysis Period (min)			15		A	

HCM Unsignalized Intersection Capacity Analysis

6: Alice Street West & Site - C

2041 FT AM
12-21-2021






















Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↰	↰		↰	
Traffic Volume (veh/h)	1	8	5	1	3	3
Future Volume (Veh/h)	1	8	5	1	3	3
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	1	9	6	1	3	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	7				18	6
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	7				18	6
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1614				1000	1076
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	10	7	6			
Volume Left	1	0	3			
Volume Right	0	1	3			
cSH	1614	1700	1037			
Volume to Capacity	0.00	0.00	0.01			
Queue Length 95th (m)	0.0	0.0	0.1			
Control Delay (s)	0.7	0.0	8.5			
Lane LOS	A		A			
Approach Delay (s)	0.7	0.0	8.5			
Approach LOS			A			
Intersection Summary						
Average Delay			2.5			
Intersection Capacity Utilization			13.3%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

1: Arthur Street West & Lansdowne Street North

















2041 FT PM
12-21-2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	608	20	32	747	9	30	4	31	13	9	16
Future Volume (Veh/h)	4	608	20	32	747	9	30	4	31	13	9	16
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	4	640	21	34	786	9	32	4	33	14	9	17
Pedestrians	2											
Lane Width (m)	3.6											
Walking Speed (m/s)	1.2											
Percent Blockage	0											
Right turn flare (veh)												
Median type	None			None								
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	795			661			1536	1522	650	1542	1528	792
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	795			661			1536	1522	650	1542	1528	792
tC, single (s)	4.1			4.1			7.1	6.5	6.4	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.4	3.5	4.0	3.3
p0 queue free %	100			96			62	97	93	83	92	96
cM capacity (veh/h)	835			937			83	115	447	83	114	391
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	4	661	34	795	69	40						
Volume Left	4	0	34	0	32	14						
Volume Right	0	21	0	9	33	17						
cSH	835	1700	937	1700	140	137						
Volume to Capacity	0.00	0.39	0.04	0.47	0.49	0.29						
Queue Length 95th (m)	0.1	0.0	0.9	0.0	18.5	9.0						
Control Delay (s)	9.3	0.0	9.0	0.0	53.5	41.7						
Lane LOS	A		A		F	E						
Approach Delay (s)	0.1		0.4		53.5	41.7						
Approach LOS					F	E						
Intersection Summary												
Average Delay				3.6								
Intersection Capacity Utilization				52.1%	ICU Level of Service				A			
Analysis Period (min)				15								

HCM Unsignalized Intersection Capacity Analysis

2: Lansdowne Street South & Louisa Street West

















2041 FT PM
12-21-2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	16	0	7	0	0	1	8	38	0	0	38	21
Future Volume (Veh/h)	16	0	7	0	0	1	8	38	0	0	38	21
Sign Control	Stop				Stop				Free			
Grade	0%				0%				0%			
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73
Hourly flow rate (vph)	22	0	10	0	0	1	11	52	0	0	52	29
Pedestrians	2				5							
Lane Width (m)	3.6				3.6							
Walking Speed (m/s)	1.2				1.2							
Percent Blockage	0				0							
Right turn flare (veh)												
Median type							None			None		
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	144	148	68	156	162	57	83				57	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	144	148	68	156	162	57	83				57	
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1				4.1	
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2				2.2	
p0 queue free %	97	100	99	100	100	100	99				100	
cM capacity (veh/h)	815	734	993	796	721	1011	1512				1541	
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	32	1	63	81								
Volume Left	22	0	11	0								
Volume Right	10	1	0	29								
cSH	864	1011	1512	1541								
Volume to Capacity	0.04	0.00	0.01	0.00								
Queue Length 95th (m)	0.9	0.0	0.2	0.0								
Control Delay (s)	9.3	8.6	1.3	0.0								
Lane LOS	A	A	A									
Approach Delay (s)	9.3	8.6	1.3	0.0								
Approach LOS	A	A										
Intersection Summary												
Average Delay			2.2									
Intersection Capacity Utilization			24.2%		ICU Level of Service			A				
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

3: Alice Street West & Lansdowne Street South










2041 FT PM
12-21-2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	2	2	0	10	8	14	0	47	4	15	59	3
Future Volume (vph)	2	2	0	10	8	14	0	47	4	15	59	3
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	2	2	0	11	9	16	0	53	4	17	66	3
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	4	36	57	86								
Volume Left (vph)	2	11	0	17								
Volume Right (vph)	0	16	4	3								
Hadj (s)	0.13	-0.17	-0.01	0.05								
Departure Headway (s)	4.4	4.0	4.1	4.1								
Degree Utilization, x	0.00	0.04	0.06	0.10								
Capacity (veh/h)	790	858	863	865								
Control Delay (s)	7.4	7.2	7.3	7.5								
Approach Delay (s)	7.4	7.2	7.3	7.5								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay				7.4								
Level of Service				A								
Intersection Capacity Utilization				23.4%	ICU Level of Service	A						
Analysis Period (min)				15								

HCM Unsignalized Intersection Capacity Analysis

4: Alice Street West & Peel Street











2041 FT PM
12-21-2021

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	6	0	4	4	0	4
Future Volume (Veh/h)	6	0	4	4	0	4
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.56	0.56	0.56	0.56	0.56	0.56
Hourly flow rate (vph)	11	0	7	7	0	7
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	18	10			14	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	18	10			14	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	100			100	
cM capacity (veh/h)	1006	1077			1617	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	11	14	7			
Volume Left	11	0	0			
Volume Right	0	7	0			
cSH	1006	1700	1617			
Volume to Capacity	0.01	0.01	0.00			
Queue Length 95th (m)	0.3	0.0	0.0			
Control Delay (s)	8.6	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	8.6	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay		3.0				
Intersection Capacity Utilization		13.3%		ICU Level of Service		A
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis

5: Site - A & Arthur Street West

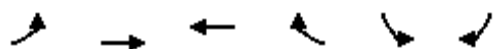
2041 FT PM
12-21-2021




						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	599	40	41	752	31	33
Future Volume (Veh/h)	599	40	41	752	31	33
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)	631	42	43	792	33	35
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			673		1530	652
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			673		1530	652
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			95		73	93
cM capacity (veh/h)			918		123	468
Direction, Lane #	EB 1	WB 1	WB 2	NB 1		
Volume Total	673	43	792	68		
Volume Left	0	43	0	33		
Volume Right	42	0	0	35		
cSH	1700	918	1700	198		
Volume to Capacity	0.40	0.05	0.47	0.34		
Queue Length 95th (m)	0.0	1.2	0.0	11.5		
Control Delay (s)	0.0	9.1	0.0	32.4		
Lane LOS	A		D			
Approach Delay (s)	0.0	0.5	32.4			
Approach LOS	D					
Intersection Summary						
Average Delay			1.6			
Intersection Capacity Utilization			50.0%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

6: Alice Street West & Site - C

2041 FT PM
12-21-2021






















Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	2	3	9	2	1	1
Future Volume (Veh/h)	2	3	9	2	1	1
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)	2	3	9	2	1	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	11				17	10
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	11				17	10
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1608				1000	1071
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	5	11	2			
Volume Left	2	0	1			
Volume Right	0	2	1			
cSH	1608	1700	1034			
Volume to Capacity	0.00	0.01	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	2.9	0.0	8.5			
Lane LOS	A		A			
Approach Delay (s)	2.9	0.0	8.5			
Approach LOS			A			
Intersection Summary						
Average Delay			1.7			
Intersection Capacity Utilization			13.3%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

1: Arthur Street West & Lansdowne Street North

2041 FT AM Sc2

12-21-2021

















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	576	8	11	449	9	10	9	7	6	3	9
Future Volume (Veh/h)	6	576	8	11	449	9	10	9	7	6	3	9
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	7	670	9	13	522	10	12	10	8	7	3	10
Pedestrians	2											
Lane Width (m)	3.6											
Walking Speed (m/s)	1.2											
Percent Blockage	0											
Right turn flare (veh)												
Median type	None			None								
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	532			679			1248	1246	676	1252	1246	527
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	532			679			1248	1246	676	1252	1246	527
tC, single (s)	4.1			4.3			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.4			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			98			92	94	98	95	98	98
cM capacity (veh/h)	1046			847			144	171	456	139	171	555
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	7	679	13	532	30	20						
Volume Left	7	0	13	0	12	7						
Volume Right	0	9	0	10	8	10						
cSH	1046	1700	847	1700	189	233						
Volume to Capacity	0.01	0.40	0.02	0.31	0.16	0.09						
Queue Length 95th (m)	0.2	0.0	0.4	0.0	4.4	2.2						
Control Delay (s)	8.5	0.0	9.3	0.0	27.7	21.9						
Lane LOS	A		A		D	C						
Approach Delay (s)	0.1		0.2		27.7	21.9						
Approach LOS					D	C						
Intersection Summary												
Average Delay				1.1								
Intersection Capacity Utilization				41.4%	ICU Level of Service				A			
Analysis Period (min)				15								

HCM Unsignalized Intersection Capacity Analysis

2: Lansdowne Street South & Louisa Street West

2041 FT AM Sc2

















12-21-2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	4	0	0	0	23	1	0	18	0
Future Volume (Veh/h)	0	0	0	4	0	0	0	23	1	0	18	0
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69
Hourly flow rate (vph)	0	0	0	6	0	0	0	33	1	0	26	0
Pedestrians	1			3								
Lane Width (m)	3.6			3.6								
Walking Speed (m/s)	1.2			1.2								
Percent Blockage	0			0								
Right turn flare (veh)												
Median type							None			None		
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	60	64	27	62	64	36	27				37	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	60	64	27	62	64	36	27				37	
tC, single (s)	7.1	6.5	6.2	8.1	6.5	6.2	4.1				4.1	
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	4.4	4.0	3.3	2.2				2.2	
p0 queue free %	100	100	100	99	100	100	100				100	
cM capacity (veh/h)	932	824	1048	735	825	1039	1599				1583	
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	0	6	34	26								
Volume Left	0	6	0	0								
Volume Right	0	0	1	0								
cSH	1700	735	1599	1583								
Volume to Capacity	0.04	0.01	0.00	0.00								
Queue Length 95th (m)	0.0	0.2	0.0	0.0								
Control Delay (s)	0.0	9.9	0.0	0.0								
Lane LOS	A	A										
Approach Delay (s)	0.0	9.9	0.0	0.0								
Approach LOS	A	A										
Intersection Summary												
Average Delay				0.9								
Intersection Capacity Utilization				14.3%	ICU Level of Service				A			
Analysis Period (min)				15								

HCM Unsignalized Intersection Capacity Analysis

3: Alice Street West & Lansdowne Street South










2041 FT AM Sc2
12-21-2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	2	3	3	3	3	5	0	20	10	13	23	2
Future Volume (vph)	2	3	3	3	3	5	0	20	10	13	23	2
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	2	3	3	3	3	6	0	23	11	15	26	2
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	8	12	34	43								
Volume Left (vph)	2	3	0	15								
Volume Right (vph)	3	6	11	2								
Hadj (s)	-0.14	-0.22	-0.16	0.08								
Departure Headway (s)	3.9	3.9	3.8	4.0								
Degree Utilization, x	0.01	0.01	0.04	0.05								
Capacity (veh/h)	892	911	922	879								
Control Delay (s)	7.0	6.9	7.0	7.3								
Approach Delay (s)	7.0	6.9	7.0	7.3								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay				7.1								
Level of Service				A								
Intersection Capacity Utilization				20.8%	ICU Level of Service	A						
Analysis Period (min)				15								

HCM Unsignalized Intersection Capacity Analysis

4: Alice Street West & Peel Street

2041 FT AM Sc2
12-21-2021

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	2	0	3	2	0	3
Future Volume (Veh/h)	2	0	3	2	0	3
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.50	0.50	0.50	0.50	0.50	0.50
Hourly flow rate (vph)	4	0	6	4	0	6
Pedestrians	3					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	17	11			13	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	17	11			13	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	1004	1073			1615	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	4	10	6			
Volume Left	4	0	0			
Volume Right	0	4	0			
cSH	1004	1700	1615			
Volume to Capacity	0.00	0.01	0.00			
Queue Length 95th (m)	0.1	0.0	0.0			
Control Delay (s)	8.6	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	8.6	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			1.7			
Intersection Capacity Utilization			14.3%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

5: Site - A & Arthur Street West

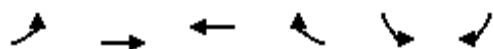
2041 FT AM Sc2
12-21-2021

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↱		↱	↱	↱	
Traffic Volume (veh/h)	543	26	32	436	38	46
Future Volume (Veh/h)	543	26	32	436	38	46
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	631	30	37	507	44	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			661		1227	646
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			661		1227	646
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			96		77	89
cM capacity (veh/h)			927		189	472
Direction, Lane #	EB 1	WB 1	WB 2	NB 1		
Volume Total	661	37	507	97		
Volume Left	0	37	0	44		
Volume Right	30	0	0	53		
cSH	1700	927	1700	281		
Volume to Capacity	0.39	0.04	0.30	0.35		
Queue Length 95th (m)	0.0	1.0	0.0	11.9		
Control Delay (s)	0.0	9.0	0.0	24.4		
Lane LOS		A		C		
Approach Delay (s)	0.0	0.6		24.4		
Approach LOS				C		
Intersection Summary						
Average Delay			2.1			
Intersection Capacity Utilization			41.7%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

6: Alice Street West & Site - C

2041 FT AM Sc2
12-21-2021






















Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↶		↶	
Traffic Volume (veh/h)	0	8	5	0	0	0
Future Volume (Veh/h)	0	8	5	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	0	9	6	0	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	6				15	6
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	6				15	6
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1615				1004	1077
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	9	6	0			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1615	1700	1700			
Volume to Capacity	0.00	0.00	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS			A			
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			6.7%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

1: Arthur Street West & Lansdown Street North

2041 FT PM Sc2

12-07-2021

















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	616	18	19	762	9	29	4	22	13	9	16
Future Volume (Veh/h)	4	616	18	19	762	9	29	4	22	13	9	16
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	4	648	19	20	802	9	31	4	23	14	9	17
Pedestrians	2											
Lane Width (m)	3.6											
Walking Speed (m/s)	1.2											
Percent Blockage	0											
Right turn flare (veh)												
Median type	None			None								
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	811			667			1531	1516	658	1528	1522	808
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	811			667			1531	1516	658	1528	1522	808
tC, single (s)	4.1			4.1			7.1	6.5	6.4	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.4	3.5	4.0	3.3
p0 queue free %	100			98			64	97	95	84	92	96
cM capacity (veh/h)	824			932			85	117	442	88	116	383
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	4	667	20	811	58	40						
Volume Left	4	0	20	0	31	14						
Volume Right	0	19	0	9	23	17						
cSH	824	1700	932	1700	129	142						
Volume to Capacity	0.00	0.39	0.02	0.48	0.45	0.28						
Queue Length 95th (m)	0.1	0.0	0.5	0.0	16.1	8.6						
Control Delay (s)	9.4	0.0	8.9	0.0	54.2	39.9						
Lane LOS	A		A		F	E						
Approach Delay (s)	0.1		0.2		54.2	39.9						
Approach LOS					F	E						
Intersection Summary												
Average Delay				3.1								
Intersection Capacity Utilization				52.4%	ICU Level of Service				A			
Analysis Period (min)				15								

HCM Unsignalized Intersection Capacity Analysis

2: Lansdown Street South & Louisa Street West

2041 FT PM Sc2

12-07-2021

















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	0	0	1	0	44	0	0	44	0
Future Volume (Veh/h)	0	0	0	0	0	1	0	44	0	0	44	0
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73
Hourly flow rate (vph)	0	0	0	0	0	1	0	60	0	0	60	0
Pedestrians	2			5								
Lane Width (m)	3.6			3.6								
Walking Speed (m/s)	1.2			1.2								
Percent Blockage	0			0								
Right turn flare (veh)												
Median type							None			None		
Median storage (veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	123	127	62	125	127	65	62				65	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	123	127	62	125	127	65	62				65	
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1				4.1	
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2				2.2	
p0 queue free %	100	100	100	100	100	100	100				100	
cM capacity (veh/h)	845	759	1001	846	759	1001	1538				1531	
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	0	1	60	60								
Volume Left	0	0	0	0								
Volume Right	0	1	0	0								
cSH	1700	1001	1538	1531								
Volume to Capacity	0.04	0.00	0.00	0.00								
Queue Length 95th (m)	0.0	0.0	0.0	0.0								
Control Delay (s)	0.0	8.6	0.0	0.0								
Lane LOS	A	A										
Approach Delay (s)	0.0	8.6	0.0	0.0								
Approach LOS	A	A										
Intersection Summary												
Average Delay				0.1								
Intersection Capacity Utilization				14.9%	ICU Level of Service				A			
Analysis Period (min)				15								

HCM Unsignalized Intersection Capacity Analysis

3: Alice Street West & Lansdown Street South

2041 FT PM Sc2










12-07-2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	2	1	0	10	6	14	0	45	4	15	58	3
Future Volume (vph)	2	1	0	10	6	14	0	45	4	15	58	3
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	2	1	0	11	7	16	0	51	4	17	65	3
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	3	34	55	85								
Volume Left (vph)	2	11	0	17								
Volume Right (vph)	0	16	4	3								
Hadj (s)	0.17	-0.18	-0.01	0.05								
Departure Headway (s)	4.4	4.0	4.1	4.1								
Degree Utilization, x	0.00	0.04	0.06	0.10								
Capacity (veh/h)	787	862	866	868								
Control Delay (s)	7.4	7.2	7.3	7.5								
Approach Delay (s)	7.4	7.2	7.3	7.5								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay				7.4								
Level of Service				A								
Intersection Capacity Utilization				23.3%	ICU Level of Service	A						
Analysis Period (min)				15								

HCM Unsignalized Intersection Capacity Analysis

4: Alice Street West & Peel Street











2041 FT PM Sc2
12-07-2021

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	5	0	4	2	0	4
Future Volume (Veh/h)	5	0	4	2	0	4
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.56	0.56	0.56	0.56	0.56	0.56
Hourly flow rate (vph)	9	0	7	4	0	7
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	16	9			11	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	16	9			11	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	100			100	
cM capacity (veh/h)	1008	1079			1621	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	9	11	7			
Volume Left	9	0	0			
Volume Right	0	4	0			
cSH	1008	1700	1621			
Volume to Capacity	0.01	0.01	0.00			
Queue Length 95th (m)	0.2	0.0	0.0			
Control Delay (s)	8.6	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	8.6	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay		2.9				
Intersection Capacity Utilization		13.3%		ICU Level of Service		A
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis

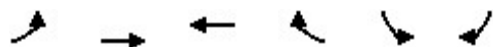
5: Site - A & Arthur Street West




2041 FT PM Sc2
12-07-2021

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	592	50	62	745	40	47
Future Volume (Veh/h)	592	50	62	745	40	47
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)	623	53	65	784	42	49
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			676		1564	650
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			676		1564	650
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		63	90
cM capacity (veh/h)			915		114	469
Direction, Lane #	EB 1	WB 1	WB 2	NB 1		
Volume Total	676	65	784	91		
Volume Left	0	65	0	42		
Volume Right	53	0	0	49		
cSH	1700	915	1700	193		
Volume to Capacity	0.40	0.07	0.46	0.47		
Queue Length 95th (m)	0.0	1.8	0.0	18.2		
Control Delay (s)	0.0	9.2	0.0	39.4		
Lane LOS		A		E		
Approach Delay (s)	0.0	0.7		39.4		
Approach LOS				E		
Intersection Summary						
Average Delay			2.6			
Intersection Capacity Utilization			52.7%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis 6: Alice Street West & Site - D

2041 FT PM Sc2
12-07-2021



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	3	9	0	0	0
Future Volume (Veh/h)	0	3	9	0	0	0
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	3	9	0	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	9				12	9
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	9				12	9
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1611				1008	1073
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	3	9	0			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1611	1700	1700			
Volume to Capacity	0.00	0.01	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS			A			
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			6.7%		ICU Level of Service	
Analysis Period (min)			15			
			A			

APPENDIX H

Roadway Improvement Information



Staff Report

Operations

Report To: Committee of the Whole
Meeting Date: June 15, 2021
Report Number: CSOPS.21.044
Title: Beaver Street Stop Up and Close and Addition of Beaver and Louisa to Thornbury West Phase 1
Prepared by: Michael Campbell, Construction Coordinator

A. Recommendations

THAT Council receive Staff Report CSOPS.21.044, entitled "Beaver Street Stop Up and Close and Addition of Beaver and Louisa to Thornbury West Phase 1";

AND THAT Council receive the Victoria and Louisa Streets Area Reconstruction Traffic Study, Attachment 1;

AND THAT Council direct Staff to initiate a public process for the stop-up and closure of Beaver Street between Victoria Street and Louisa Street as shown on Attachment #2;

AND THAT Council direct Staff to add the reconstruction of Beaver Street between Victoria Street and Alice Street and Louisa Street between Victoria Street and Beaver Street to the Thornbury West Phase 1 Reconstruction Project;

AND THAT Council increase the Thornbury West Road Reconstruction project budget by \$1,130,000 to fund the additional works.

B. Overview

The Town has a unique opportunity to enhance or eliminate 3 existing that have been recently identified by staff through the work being completed Thornbury West works as outlined in this report.

C. Background

The preliminary engineering for the Victoria and Louisa Streets Area Reconstruction included a traffic study that can be found as Attachment #1 as noted above. The study was undertaken because 2 of the intersections would be reconstructed by the Victoria & Louisa project and the requirements of the intersections needed to be understood. Therefore, the study was mostly for work outside the intended construction limits of the major project now known as Thornbury West Phase 1. The Study recommends:



TOWN OF THE BLUE MOUNTAINS
ELMA & ALICE ST. AREA RECONSTRUCTION
BEAVER STREET CLOSURE

SCALE: 1:1,000

DATE: MAY/21

DWG. No. FIG. 2



TOWN OF THE BLUE MOUNTAINS
ELMA & ALICE ST. AREA RECONSTRUCTION
BEAVER STREET TURN AROUND

SCALE: 1:1,000

DATE: MAY/21

DWG. No. FIG. 1

APPENDIX I

Background Development Excerpts



Staff Report - REVISED

Planning and Development Services

Report To: Committee of the Whole
Date: June 2, 2020
Report Number: PDS.20.52
Subject: Towns of Thornbury Site Plan Approval
Prepared by: Denise Whaley, Planner II

A. Recommendations

THAT Council receive Staff Report PDS.20.52 entitled "Towns of Thornbury Site Plan Approval" for the lands known as RP 16R-1213, Part of Park Lot 10, Town Plot of Thornbury;

AND THAT Council grant Site Plan approval for these lands, subject to the following conditions:

1. That the final Plans and Drawings be received and accepted for Approved for Construction stamping by the Town;
2. That the Owner of the lands enter into a site plan agreement with the Town to satisfy all financial, legal, planning, engineering, and landscaping requirements; and
3. That this conditional approval is valid for a period of 90 days, after which, should the conditions not be met, the approval shall expire (*September 14, 2020*).

B. Overview

The purpose of this report is to make a recommendation on a Site Plan Application for a 23-unit condominium Townhouse project known as "Towns of Thornbury". The subject property is located on the corner of Lansdowne, Louisa and Beaver Streets. This Site Plan Application is required to return to Council for approval, rather than delegated to Town staff. Staff completed the review of the Site Plan Application and are now prepared to recommend approval of the Site Plan subject to conditions outlined in the recommendations section in this report.

C. Executive Summary

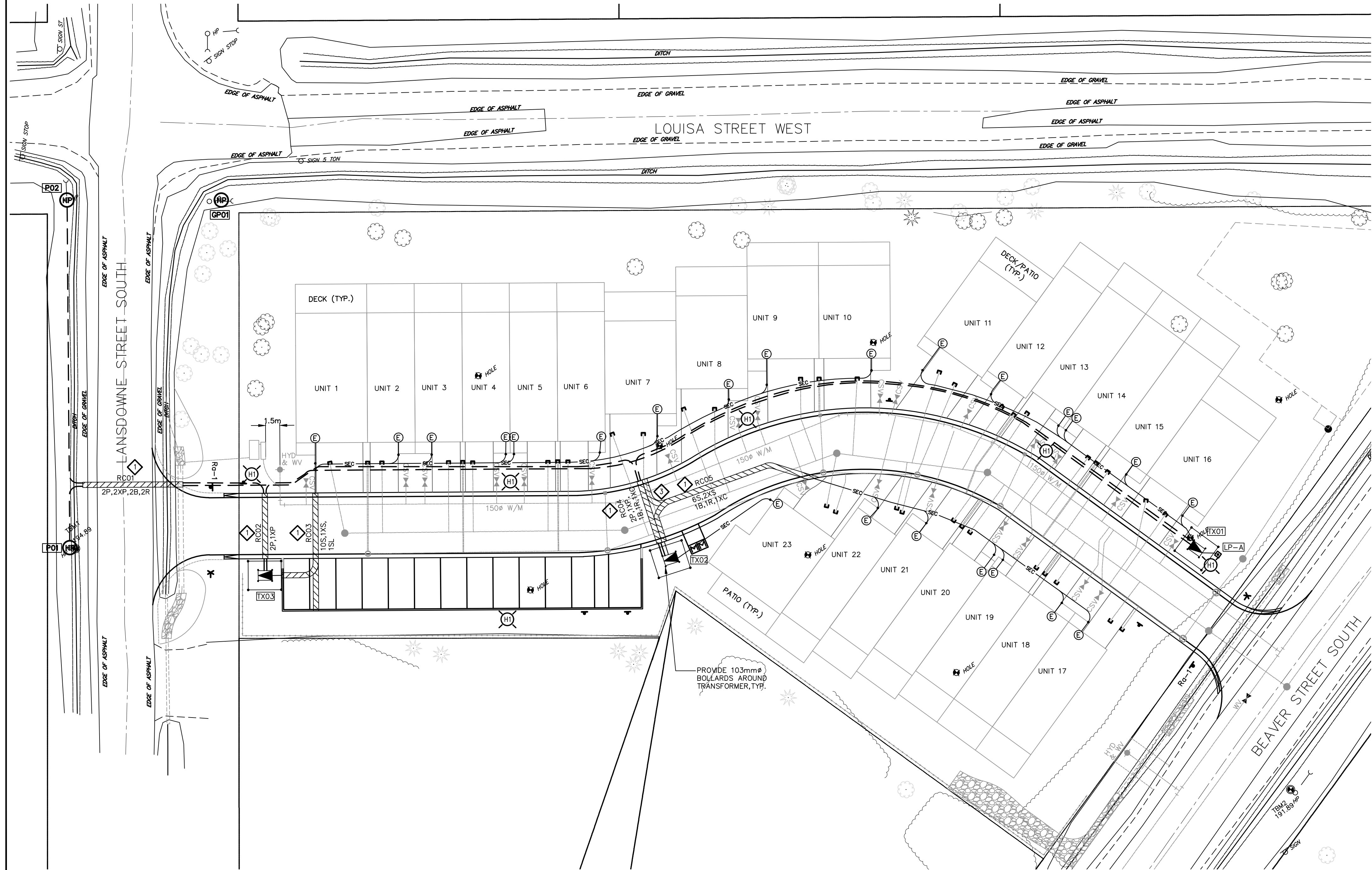
Application File #: P2784 (Site Plan Application)

Application Received: August 1, 2019

Application Deemed Complete: August 13, 2019

Official Plan Designation: Community Living Area (CLA)

Zoning Bylaw Category: R2-111-h33-h4a

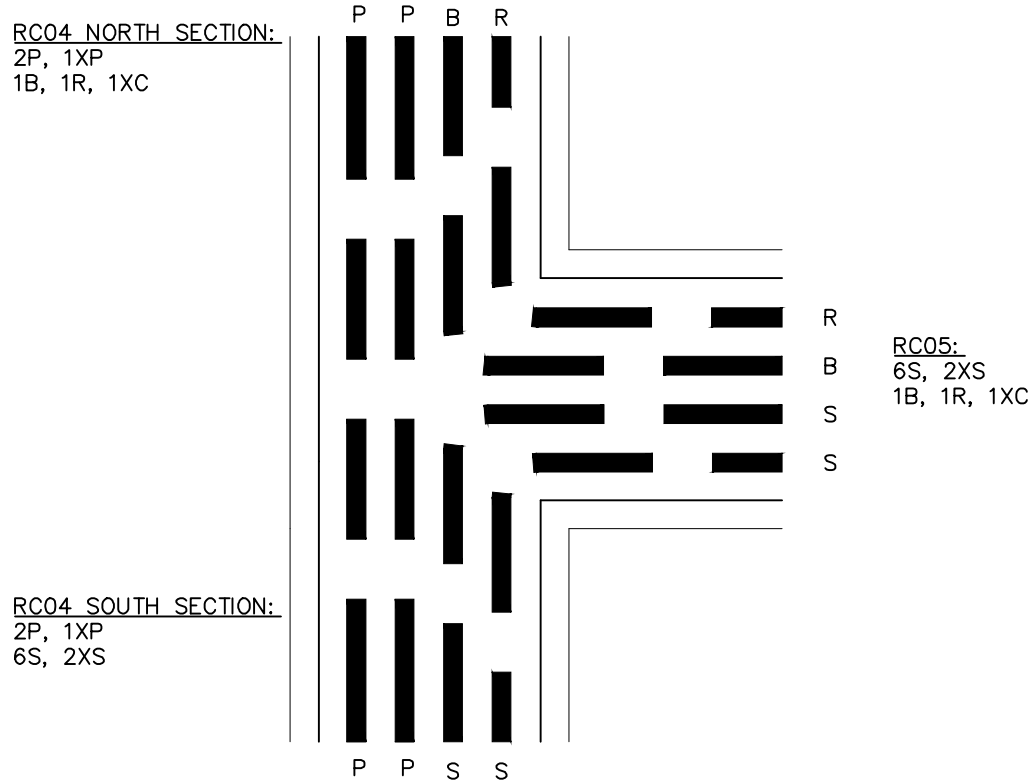


ELECTRICAL LEGEND:

---	PROPOSED 1Ø PRIMARY CABLE AND CONDUIT
SEC	PROPOSED SECONDARY ELECTRICAL SERVICE CABLE(S) (120/240V).
STAKE (LIMIT OF THIS CONTRACT)	PROPOSED SECONDARY ELECTRICAL SERVICE. TERMINATE SERVICE AT LOT LINE WITH 5m TAIL ATTACHED SECURELY TO A 2" x 4" x 8' MARKER STAKE.
■	PROPOSED LIGHTING PEDESTAL
■	PROPOSED 1PH POWER TRANSFORMER AND GROUNDING GRID
⊗	PROPOSED MUNICIPAL STREET LIGHT
1S,1XS,1SL,1XSL,1P,1XP	PROPOSED UNDERGROUND ROAD CROSSINGS WITH NUMBERED TAG, DUCT BANK (TYPE DB2) FOR ELECTRICAL CABLES AS FOLLOWS: 1P = ONE PRIMARY DUCT 1XP = ONE PRIMARY SPARE DUCT 1S = ONE SECONDARY DUCT 1XS = ONE SECONDARY SPARE DUCT 1SL = ONE STREET LIGHT DUCT 1XSL = ONE STREET LIGHT SPARE DUCT 1B = ONE BELL DUCT 1R = ONE ROGERS CABLE DUCT
TYP.	TYPICAL

ELECTRICAL LAYOUT NOTES:

- ROAD CROSSING DUCT BANKS:
 - DUCT BANKS TO COMPLY WITH EPCOR USE STANDARDS 12-401 & 12-404
 - PROVIDE FISH ROPE IN EACH EMPTY DUCT
 - INSTALL SPACERS EVERY 1524mm TO ASSEMBLY DUCTBANK. OFFSET OR STAGGER SPACERS.
- PROVIDE LARGE UTILITY "SWEEP" FITTINGS FOR ALL DUCT BENDS AS FOLLOWS:
 - 1220mm RADIUS FOR PRIMARY LOOP AND EXPRESS FEEDERS.
 - 915mm RADIUS FOR SECONDARY SERVICES AND STREETLIGHTING
- BELL AND ROGERS DUCTS ARE BETWEEN NORTH CURB AND TURN TOWARDS UNIT 22. PRIMARY HYDRO DUCTS ARE BETWEEN NORTH AND SOUTH CURB. SECONDARY HYDRO DUCTS ARE BETWEEN SOUTH CURB AND TURN TOWARDS UNIT 22. SEE DETAIL 2/E1.



1 UTILITY DESIGN
E1
SCALE - 1:250

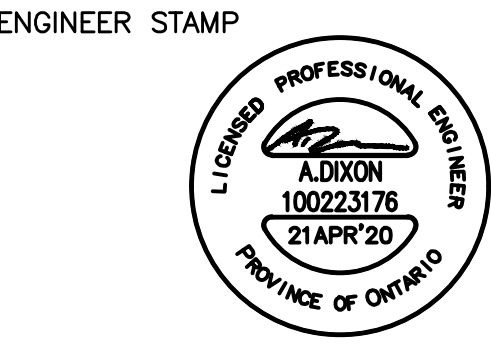
2 RC04 & RC05 PLAN VIEW DETAIL
E1
-NTS

DISCLAIMER AND COPYRIGHT
1. This drawing is the exclusive property of Runge & Associates Inc. and the reproduction of any part without prior written consent of this office is strictly prohibited.
2. The contractor shall verify all dimensions, levels, and datums on site and report any discrepancies or omissions to this office prior to construction.
3. This drawing is to be read and understood in conjunction with all other plans and documents applicable to this project.
4. Drawing revision must be note "Issued For Construction" before any work commences

BENCHMARKS
TBM 1 ELEV. 194.89
BOLT IN HYDRO POLE LOCATED ON THE WEST SIDE OF LANSDOWNE STREET, APPROXIMATELY 47m. SOUTHWEST OF THE INTERSECTION OF LANSDOWNE STREET AND LOUISA STREET
TBM 2 ELEV. 191.89
BOLT IN HYDRO POLE LOCATED ON THE SOUTH SIDE OF BEAVER STREET, APPROXIMATELY 85m SOUTHWEST OF THE INTERSECTION OF LOUISA STREET AND BEAVER STREET

NOTES
ACCEPTED FOR CONSTRUCTION EPCOR
per
Date:

No.	REVISION DESCRIPTION	DATE
2	REVISED PRELIMINARY ISSUE FOR COORDINATION	01/11/19
3	ISSUED FOR EPCOR APPROVAL	01/11/19
4	REISSUED FOR APPROVAL	11/02/20
5	UPDATED WITH EPCOR COMMENTS	09/03/20
6	UPDATED WITH ROGERS COMMENTS	21/04/20



THE TOWNS OF THORNbury
TOWN OF THE BLUE MOUNTAINS

UTILITY DESIGN LAYOUT



Runge & Associates Inc.
864 Hurontario Street
P.O. Box 387
Collingwood, ON L9Y 3Z7
t: (705) 446-3590
f: (705) 446-3588
www.rungeengineers.ca

DESIGN: AD	FILE: 19108T	DWG:
DRAWN: AD	DATE: OCTOBER 2019	E1
CHECK: GGR	SCALE: AS NOTED	

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

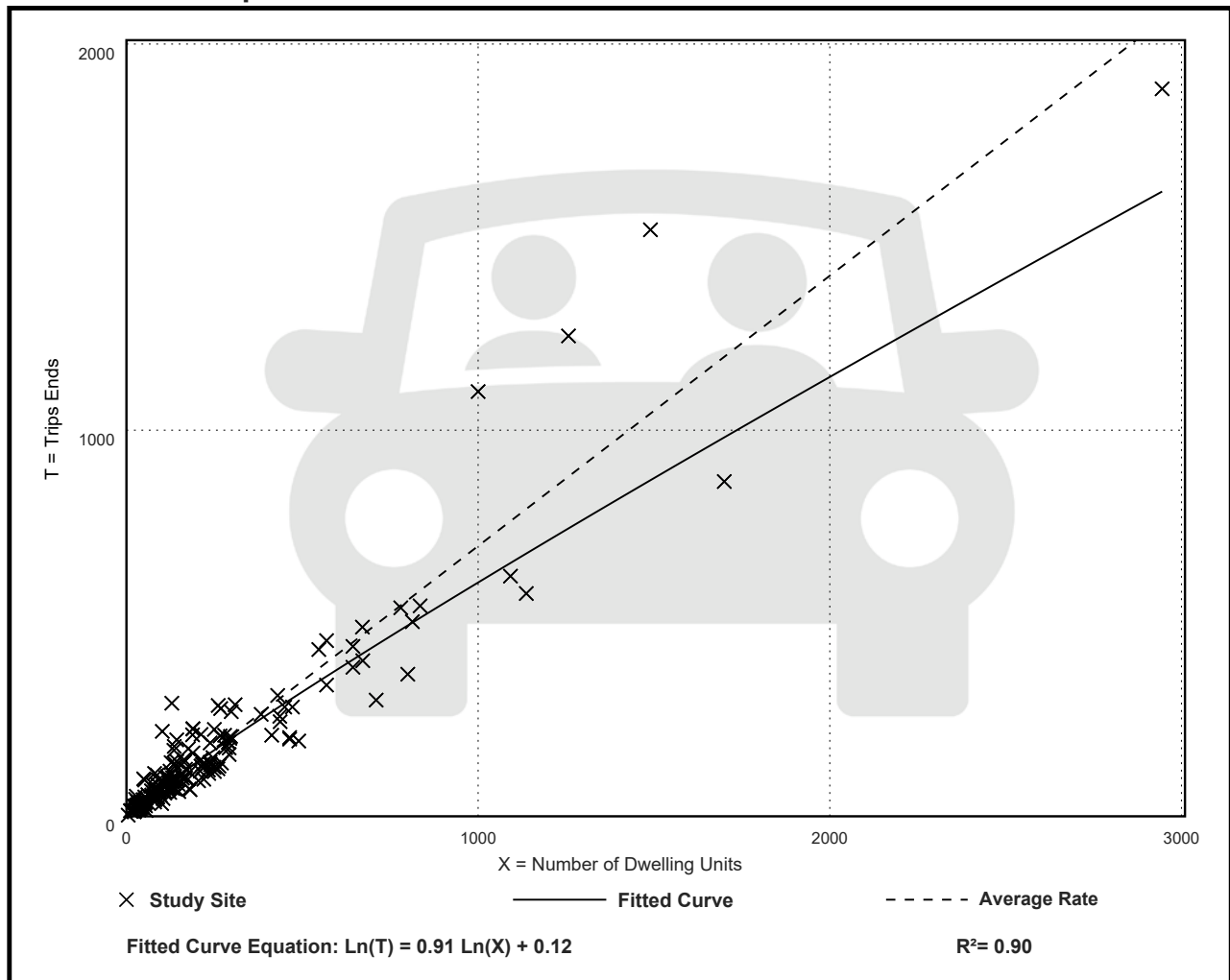
Avg. Num. of Dwelling Units: 226

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

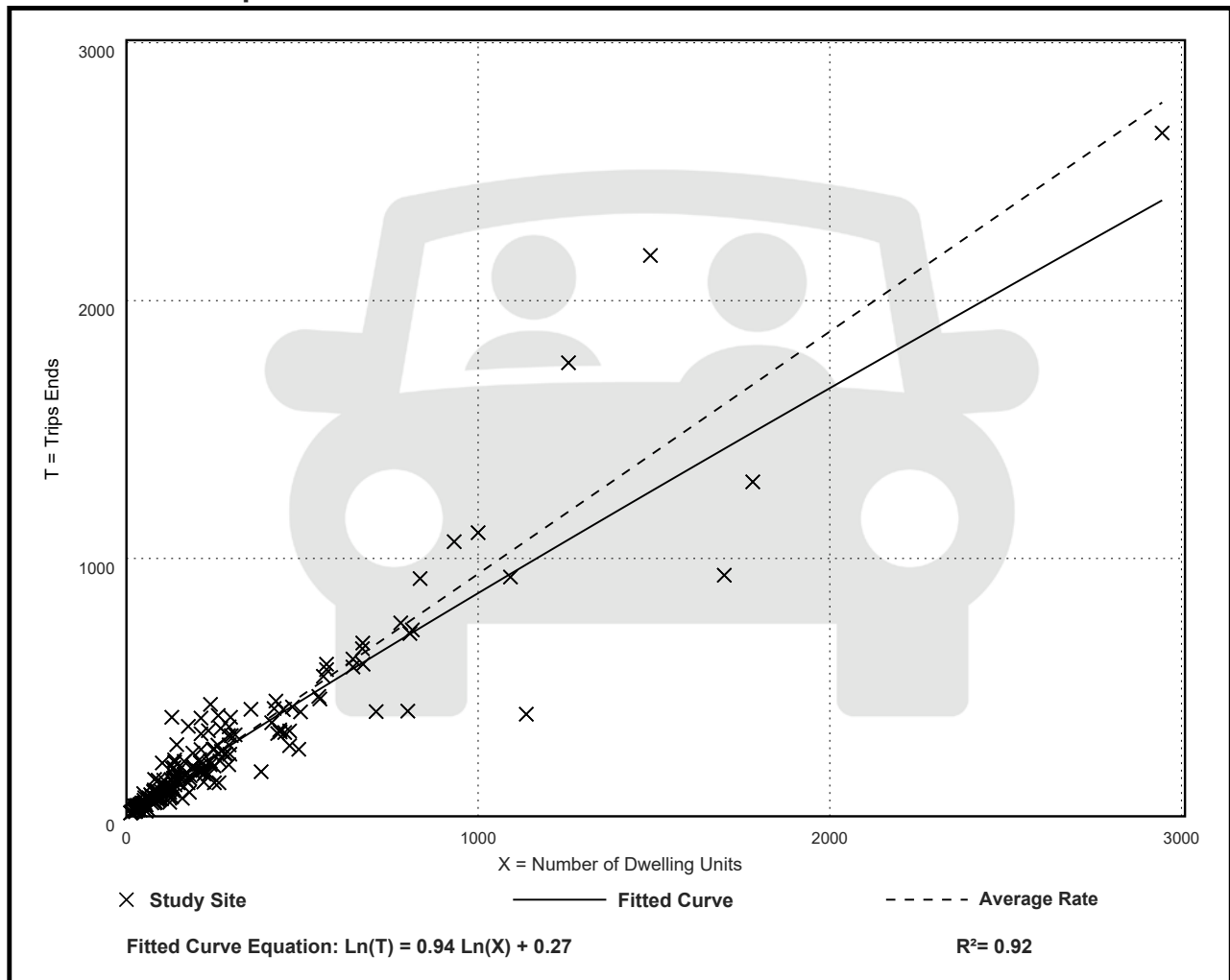
Avg. Num. of Dwelling Units: 248

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

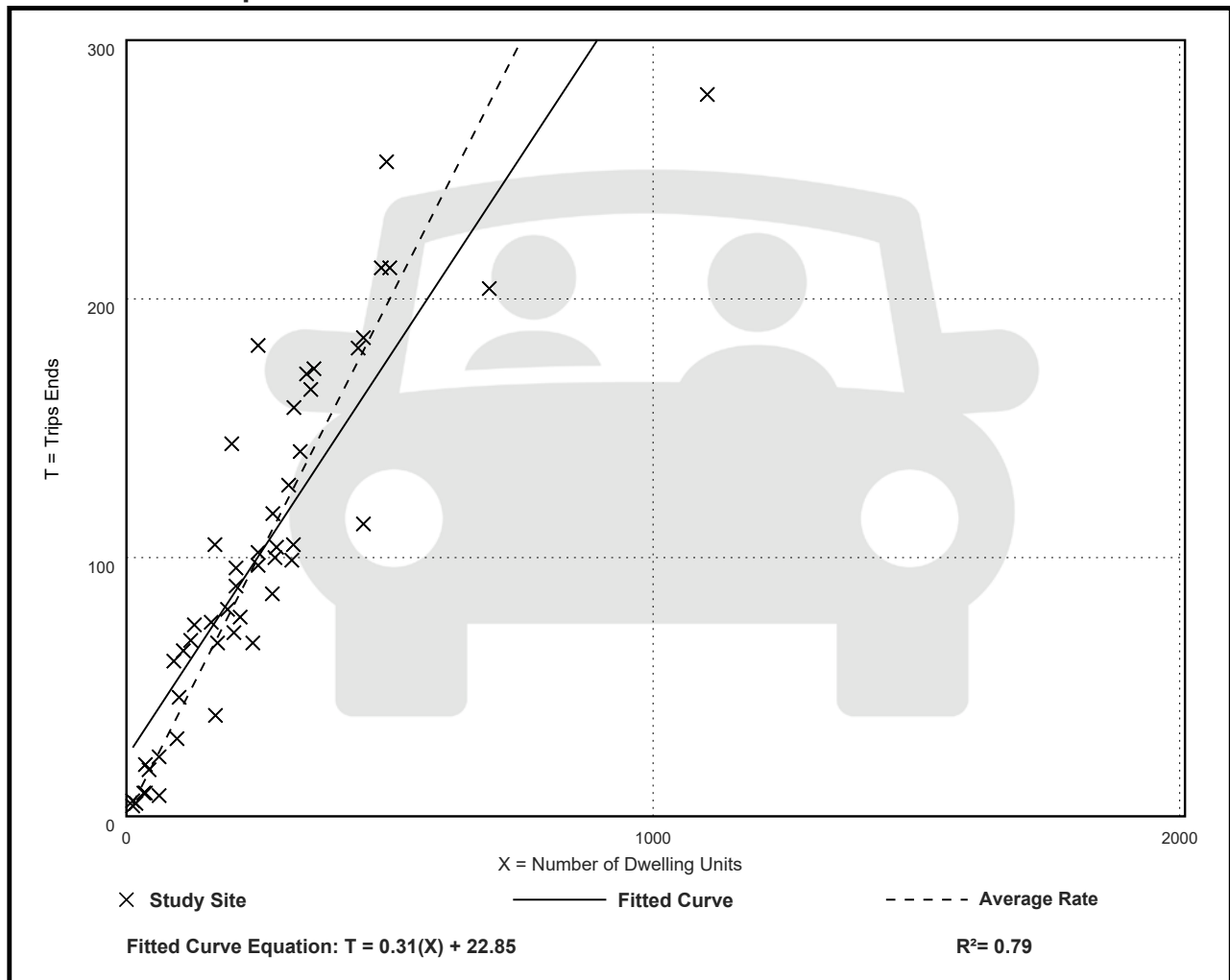
Avg. Num. of Dwelling Units: 249

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

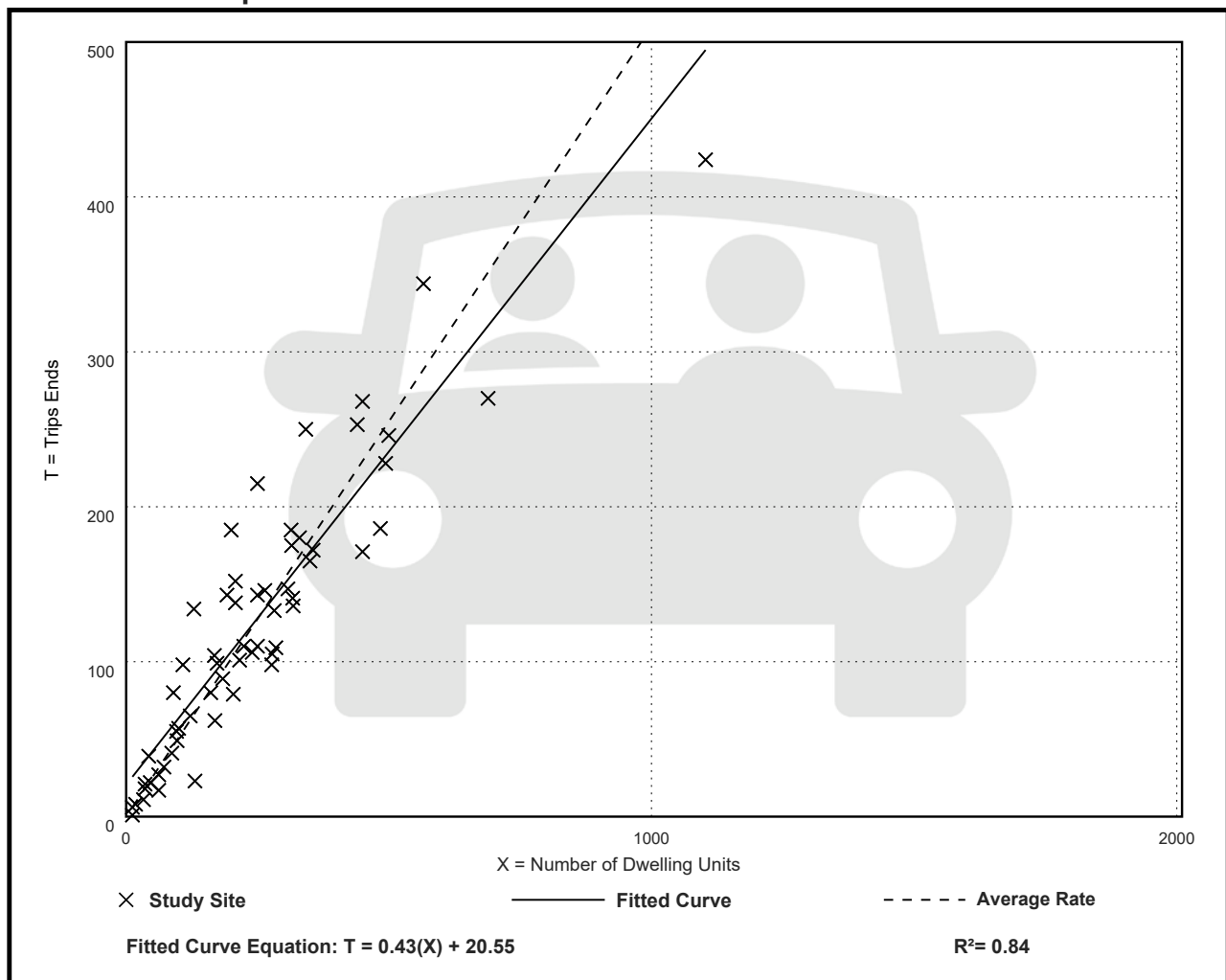
Avg. Num. of Dwelling Units: 241

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



Land Use: 822

Strip Retail Plaza (<40k)

Description

A strip retail plaza is an integrated group of commercial establishments that is planned, developed, owned, and managed as a unit. Each study site in this land use has less than 40,000 square feet of gross leasable area (GLA). Because a strip retail plaza is open-air, the GLA is the same as the gross floor area of the building.

The 40,000 square feet GFA threshold between strip retail plaza and shopping plaza (Land Use 821) was selected based on an examination of the overall shopping center/plaza database. No shopping plaza with a supermarket as its anchor is smaller than 40,000 square feet GLA.

Shopping center (>150k) (Land use 820), shopping plaza (40-150k) (Land Use 821), and factory outlet center (Land Use 823) are related uses.

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/>).

The sites were surveyed in the 1980s, the 1990s, the 2000s, and the 2010s in Alberta (CAN), California, Delaware, Florida, New Jersey, Ontario (CAN), South Dakota, Vermont, Washington, and Wisconsin.

Source Numbers

304, 358, 423, 428, 437, 507, 715, 728, 936, 960, 961, 974, 1009

Strip Retail Plaza (<40k) (822)

Vehicle Trip Ends vs: 1000 Sq. Ft. GLA

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: 5

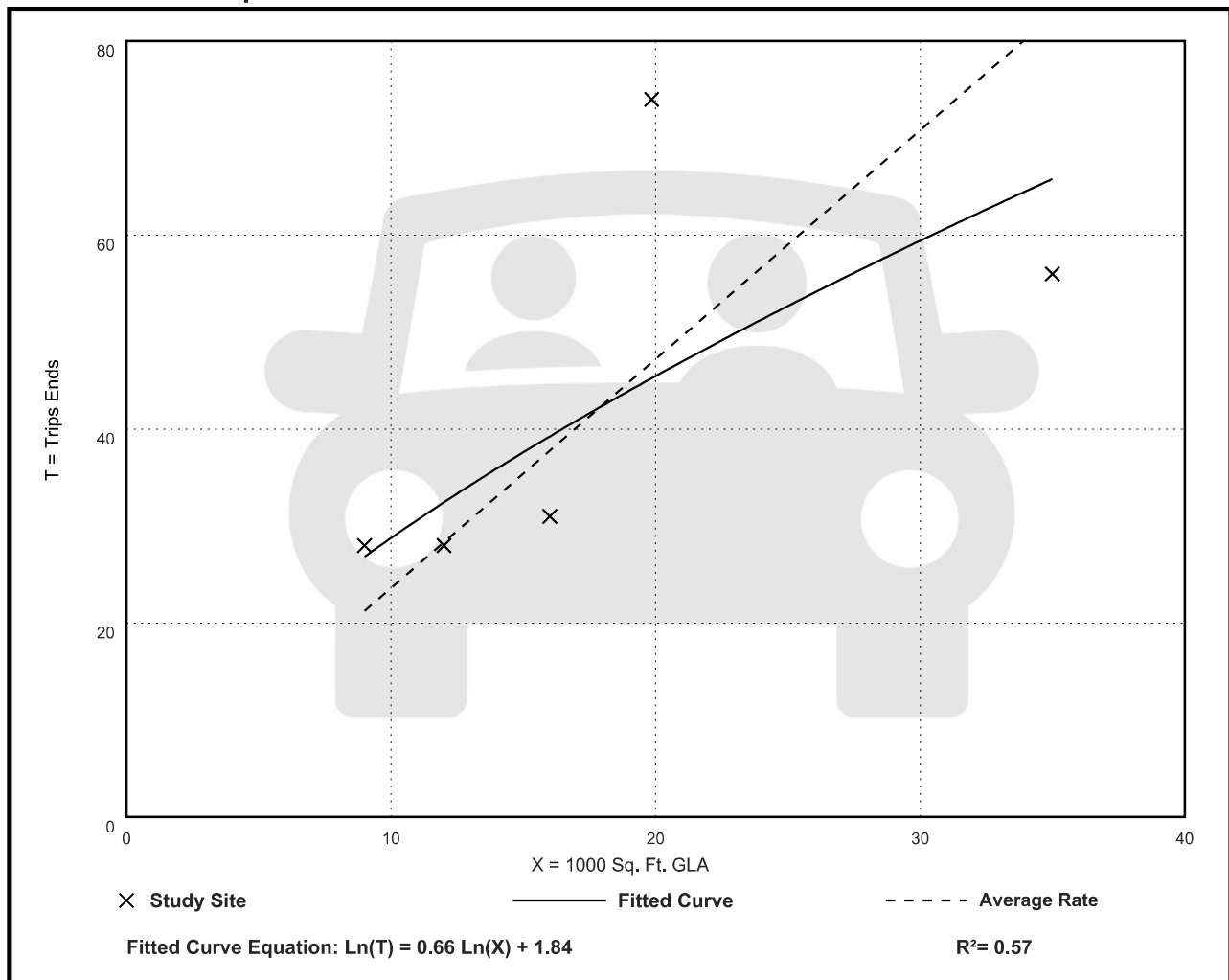
Avg. 1000 Sq. Ft. GLA: 18

Directional Distribution: 60% entering, 40% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
2.36	1.60 - 3.73	0.94

Data Plot and Equation



Strip Retail Plaza (<40k) (822)

Vehicle Trip Ends vs: 1000 Sq. Ft. GLA

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: 25

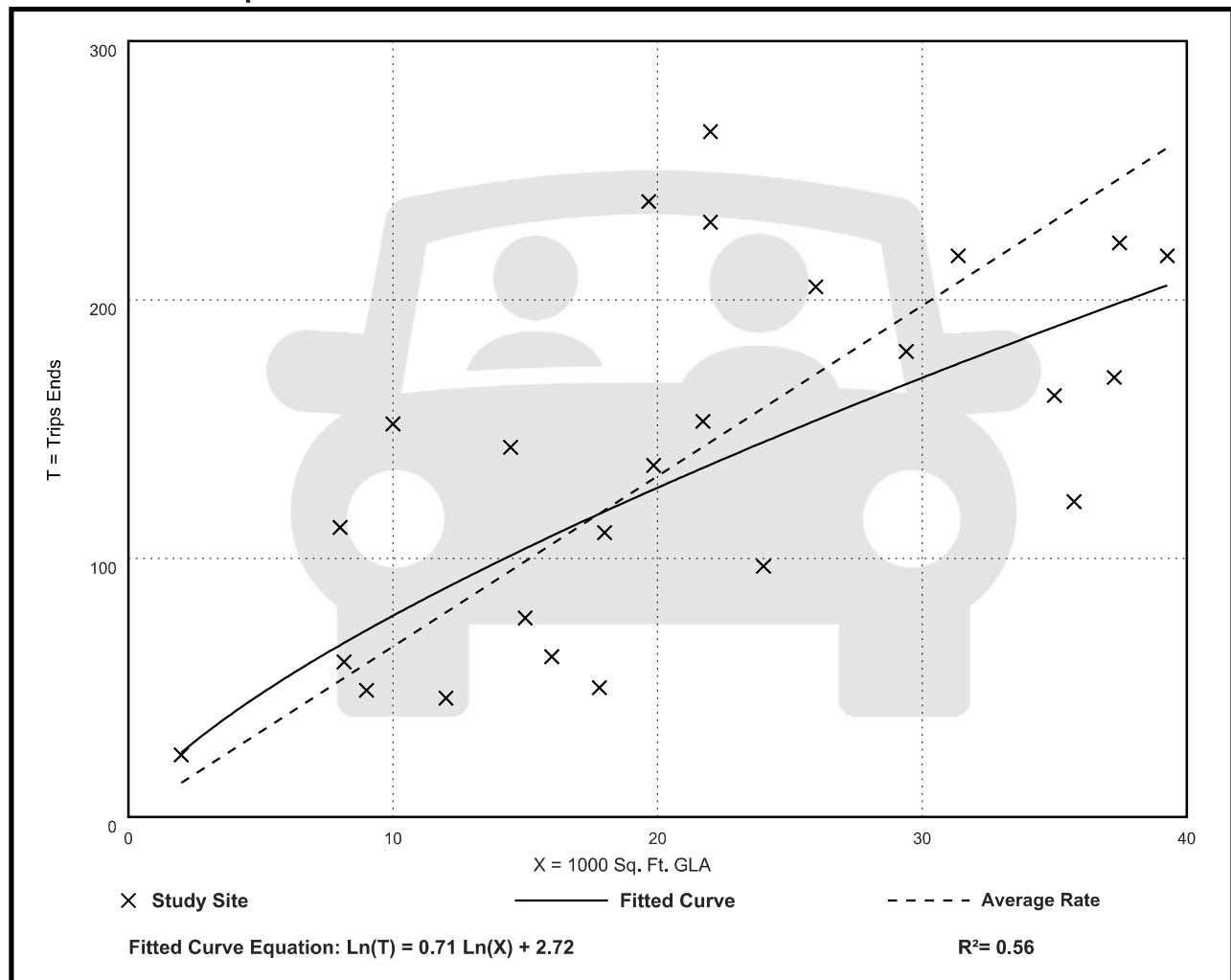
Avg. 1000 Sq. Ft. GLA: 21

Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
6.59	2.81 - 15.20	2.94

Data Plot and Equation

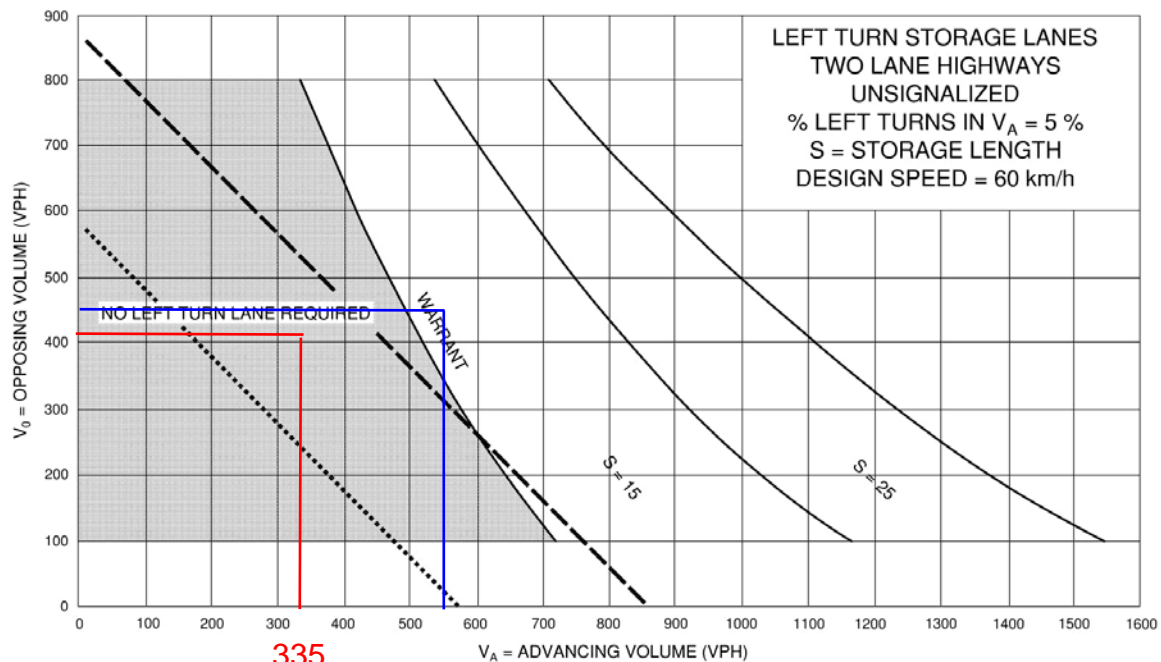


APPENDIX K

Auxiliary Left-Turn Lane Warrants

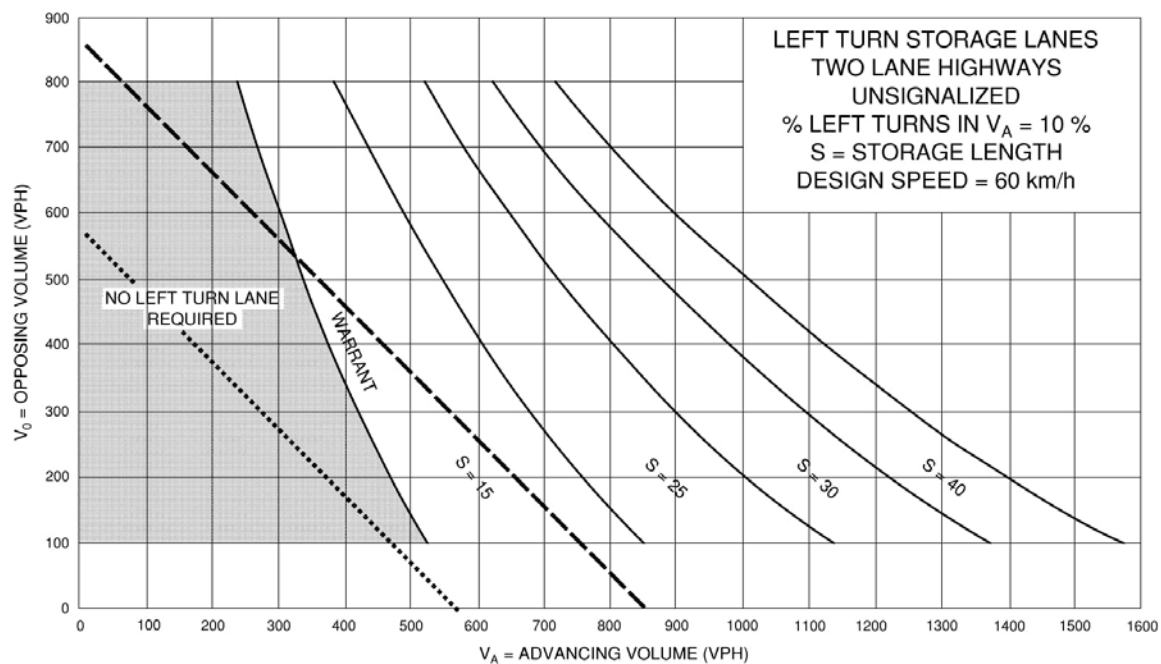
— AM
— PM

Exhibit 9A-7



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

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



90 km/h

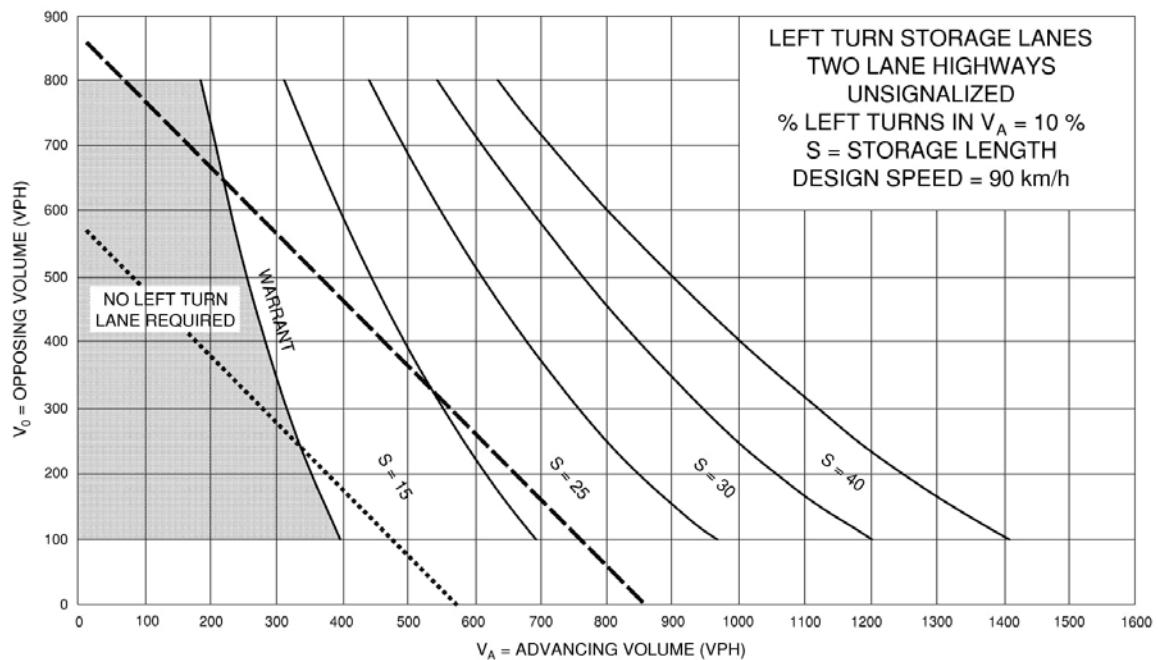
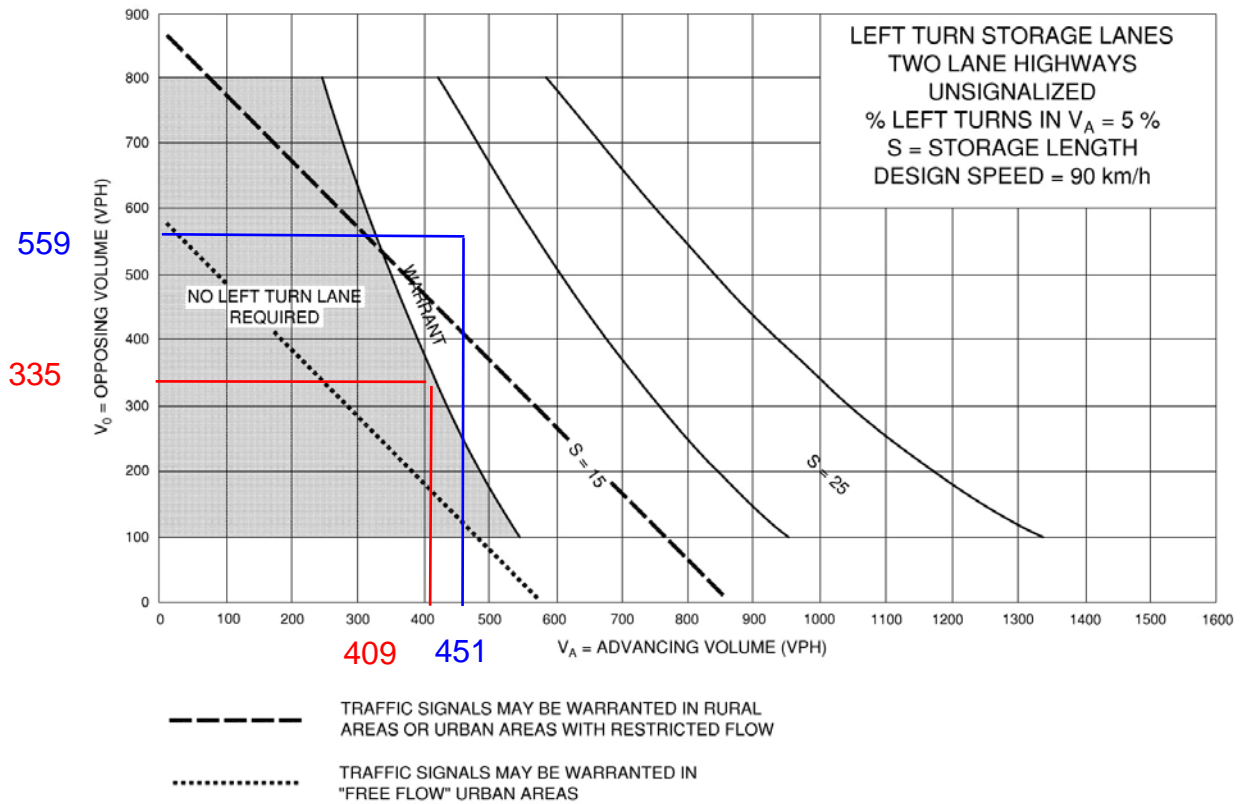
2026 FB - EB - Arthur Street and Lansdowne Street

TAC GDG for Canadian Roads – June 2017

MTO Design Supplement, April 2020

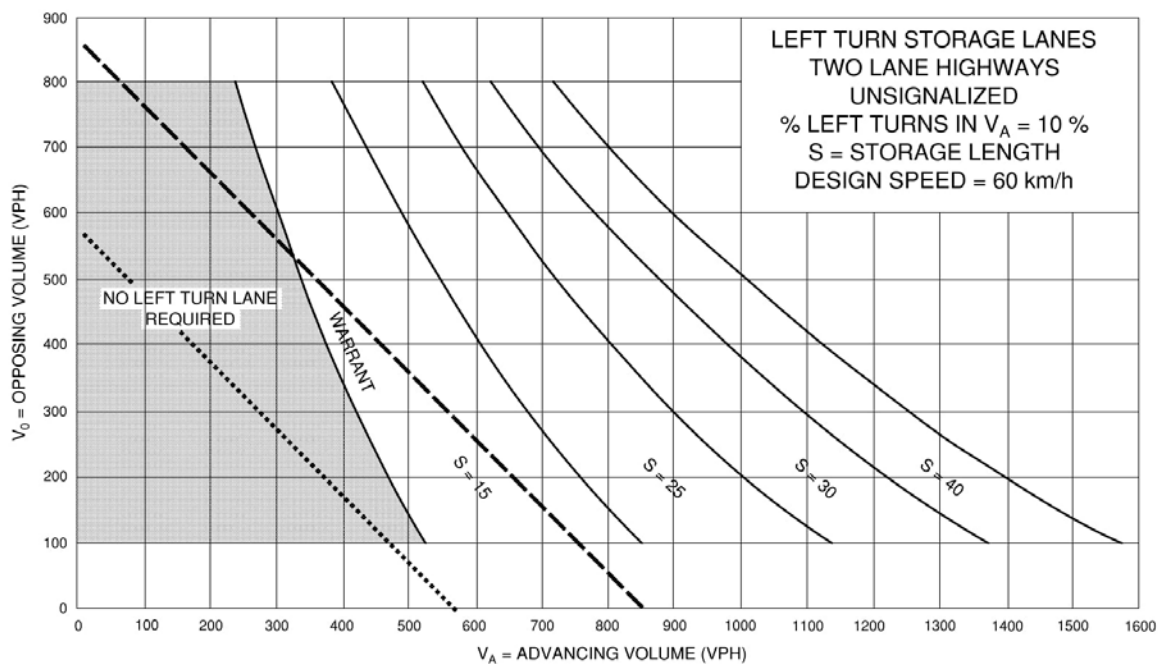
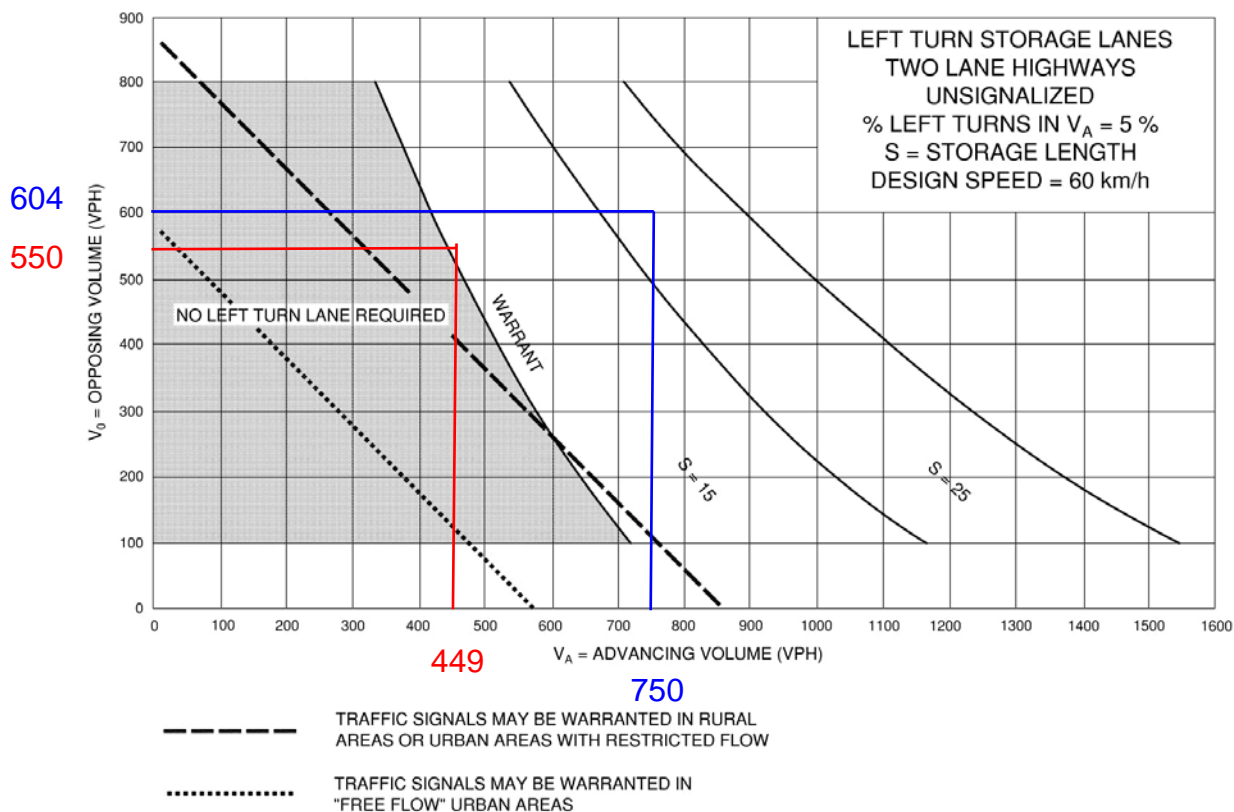
— AM
— PM

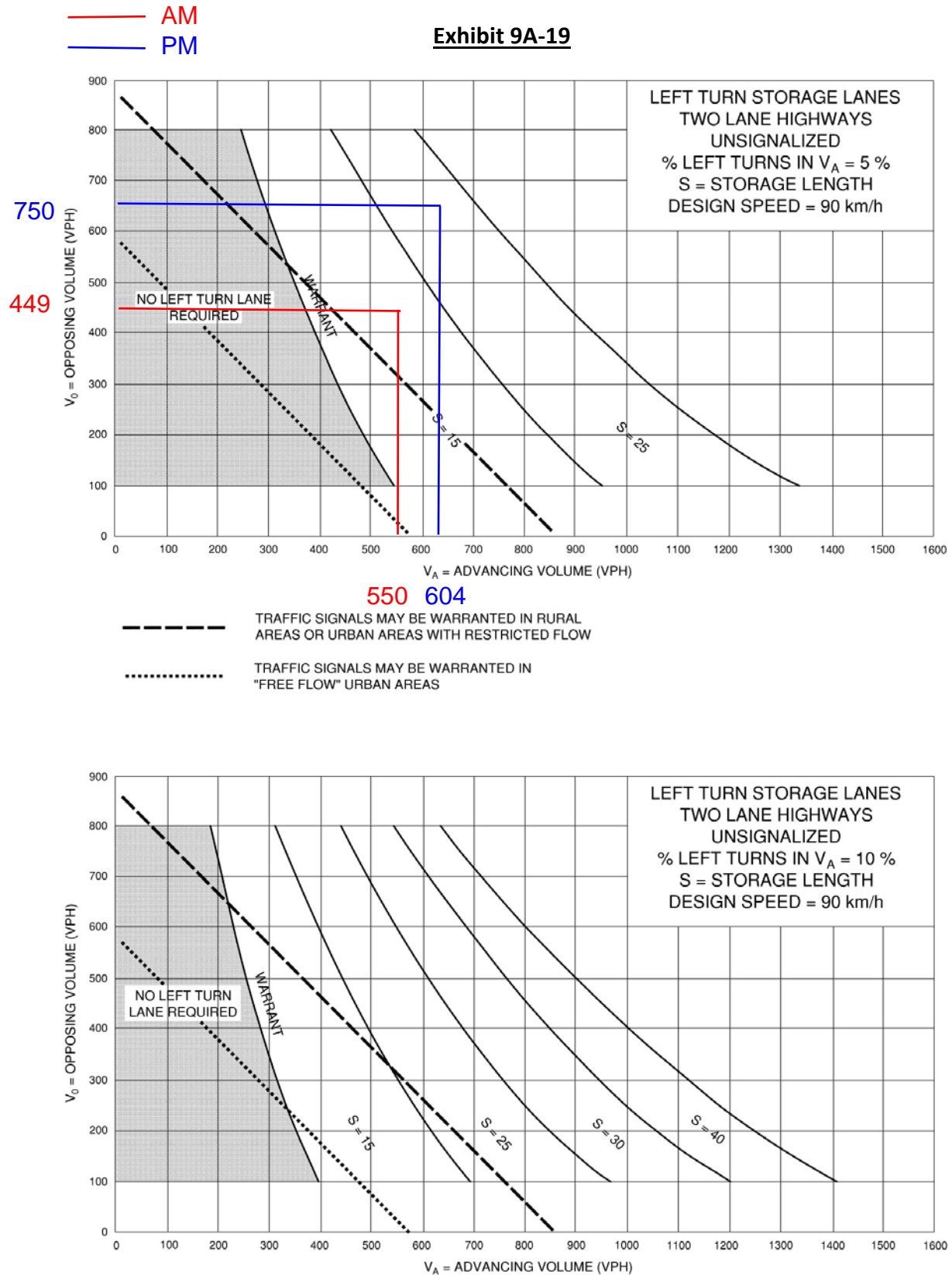
Exhibit 9A-19



— AM
— PM

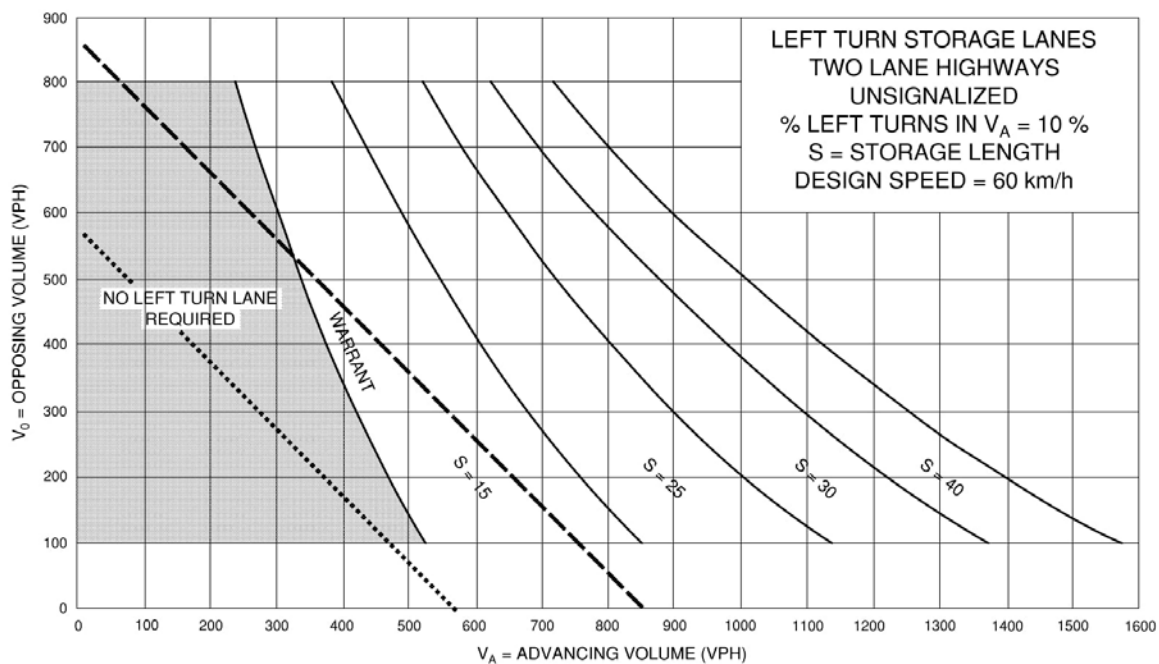
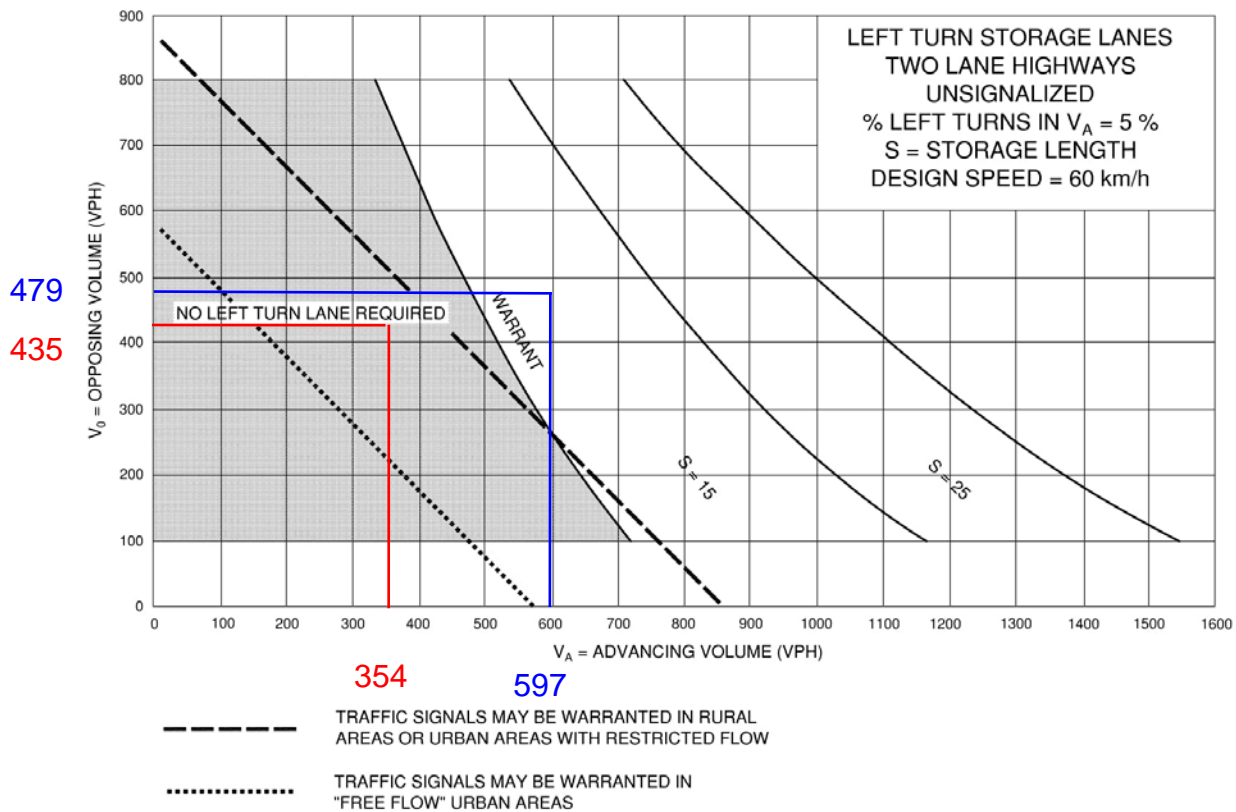
Exhibit 9A-7





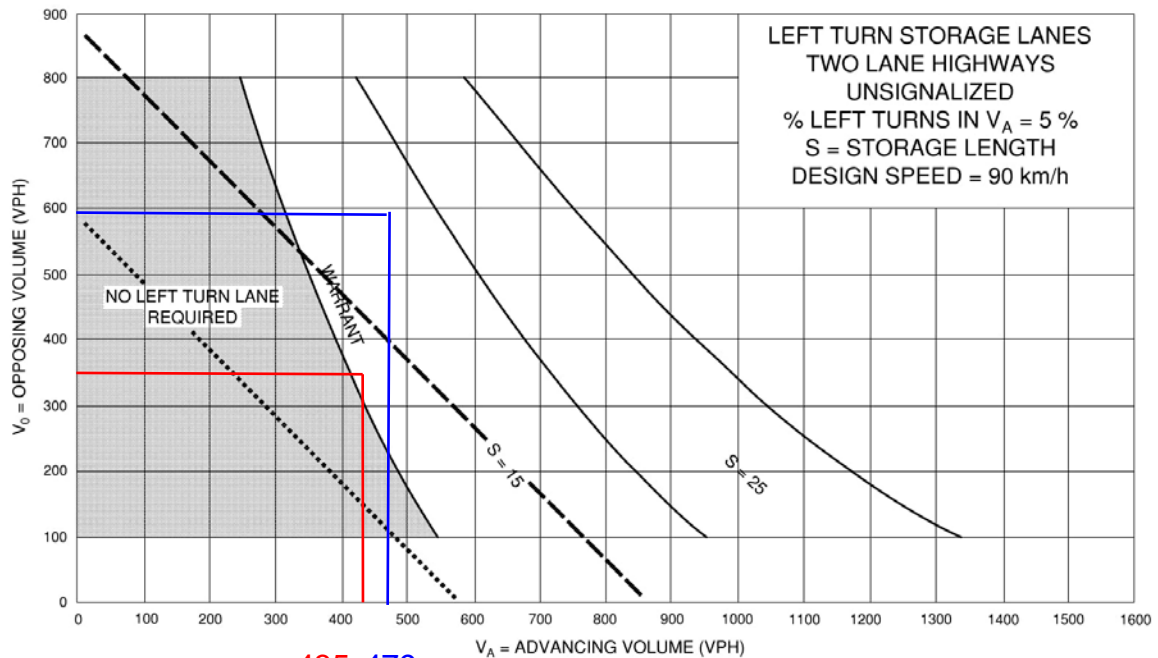
— AM
— PM

Exhibit 9A-7

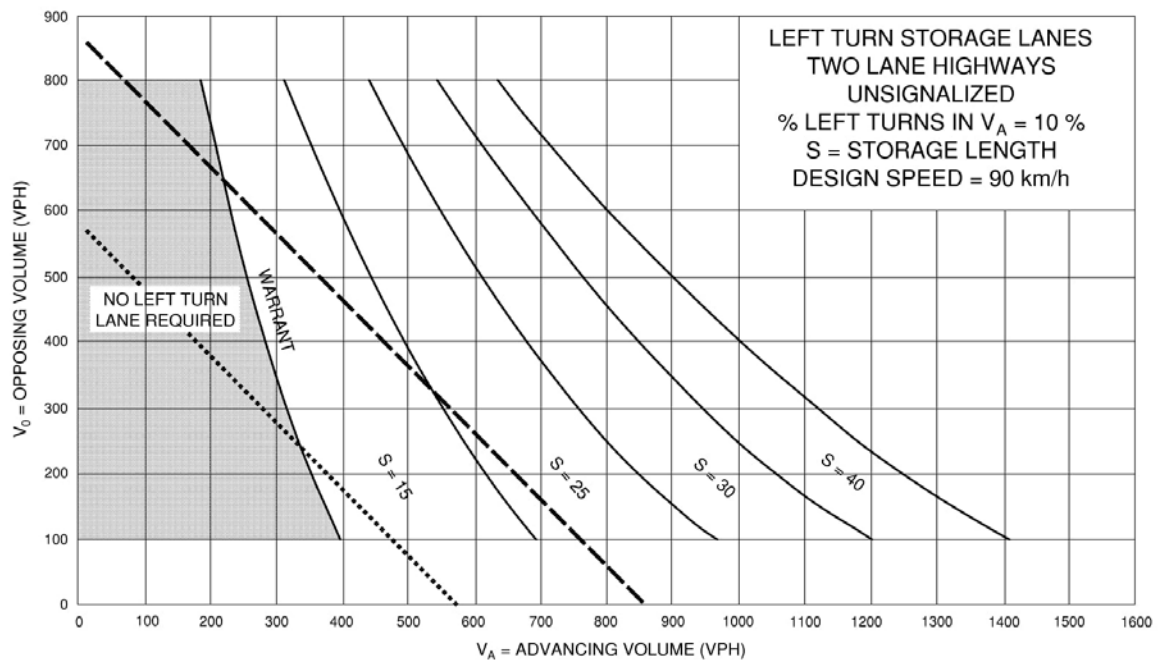


— AM
— PM

Exhibit 9A-19

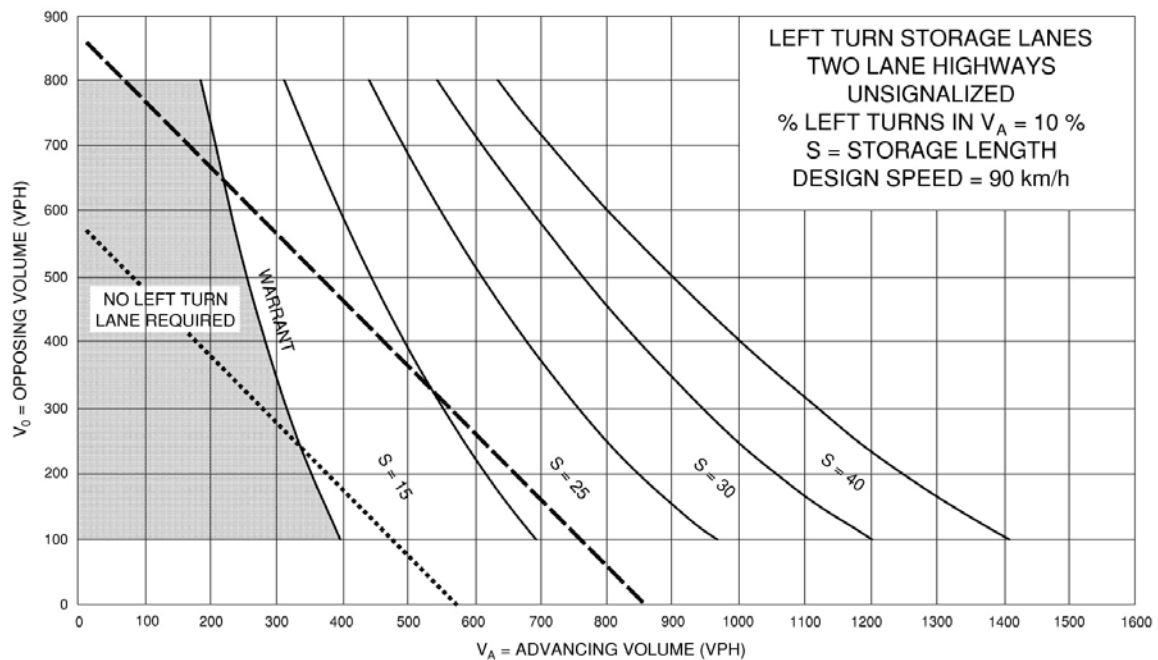
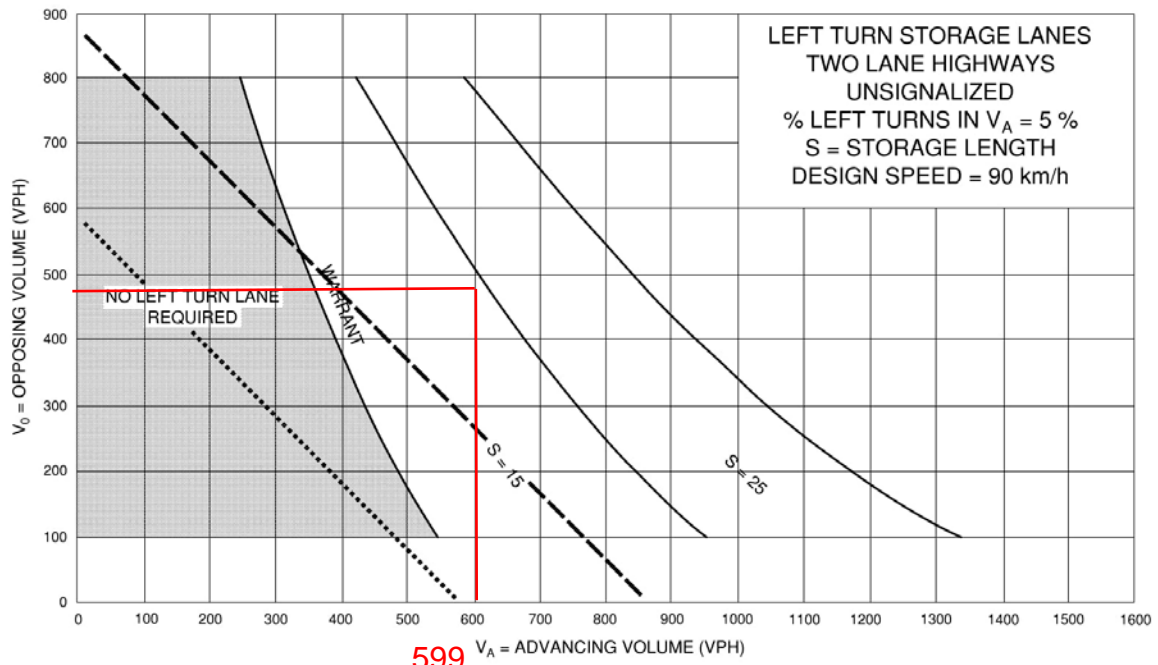


--- TRAFFIC SIGNALS MAY BE WARRANTED IN RURAL AREAS OR URBAN AREAS WITH RESTRICTED FLOW
..... TRAFFIC SIGNALS MAY BE WARRANTED IN "FREE FLOW" URBAN AREAS



PM (critical time)

Exhibit 9A-19

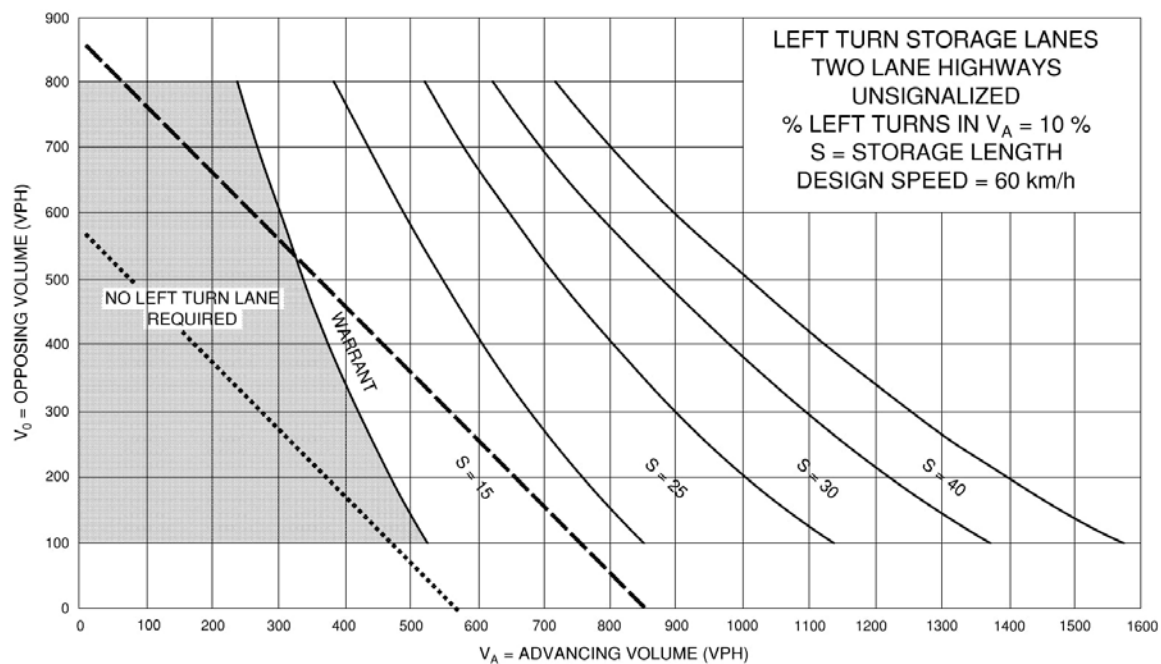
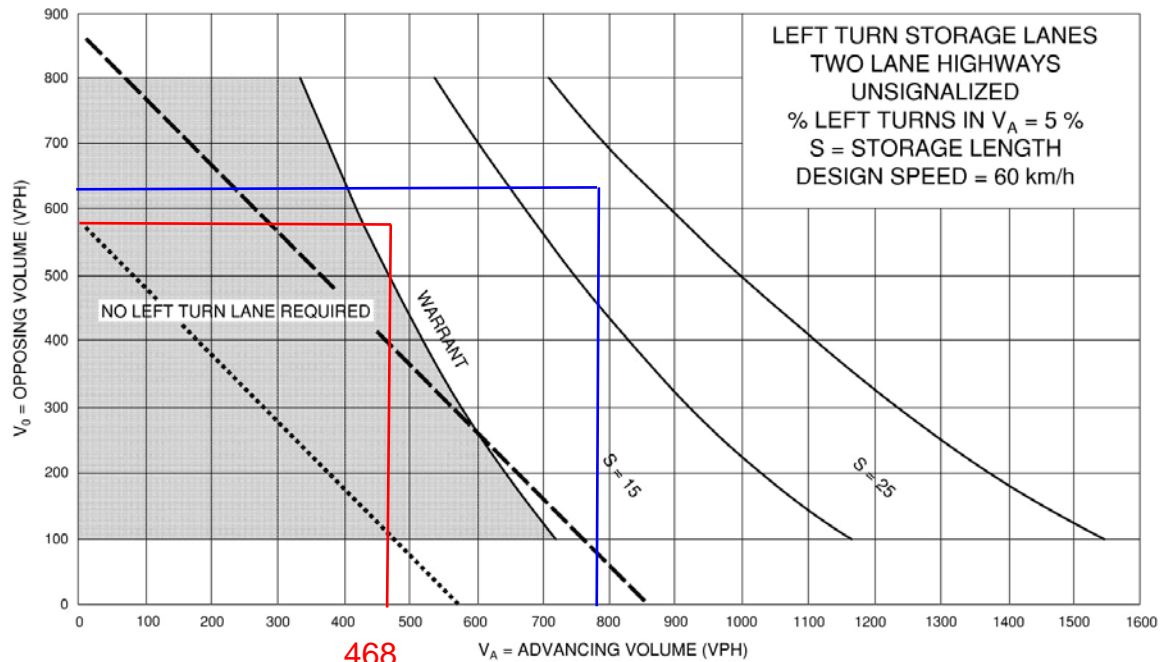


— WB AM
— WB PM

Exhibit 9A-7

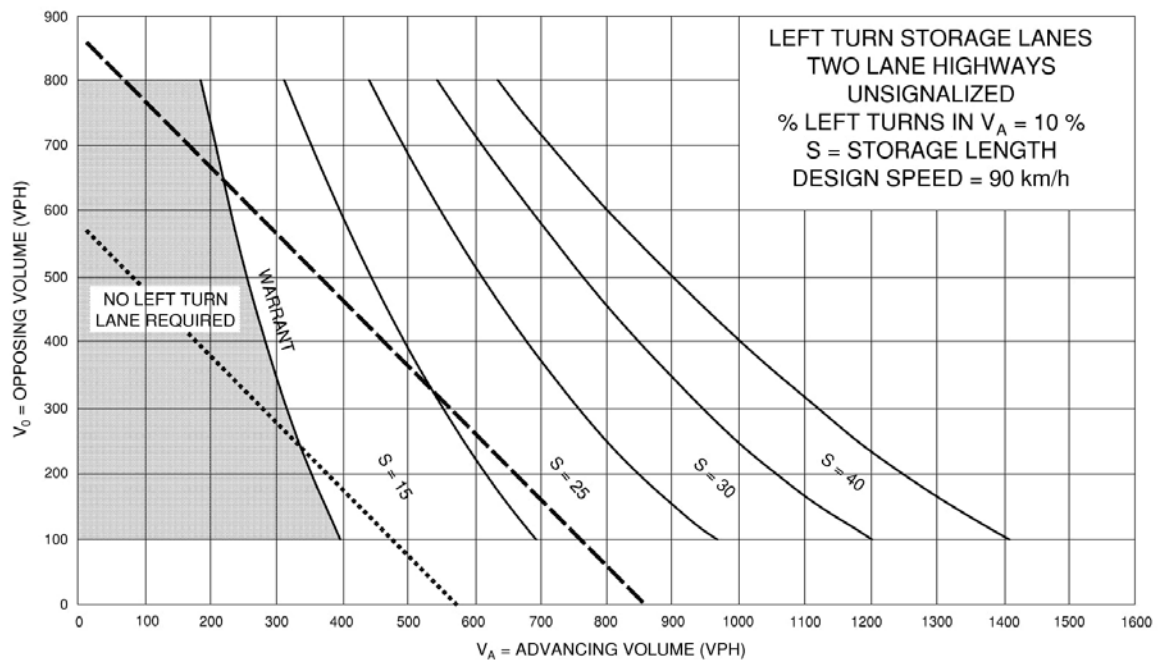
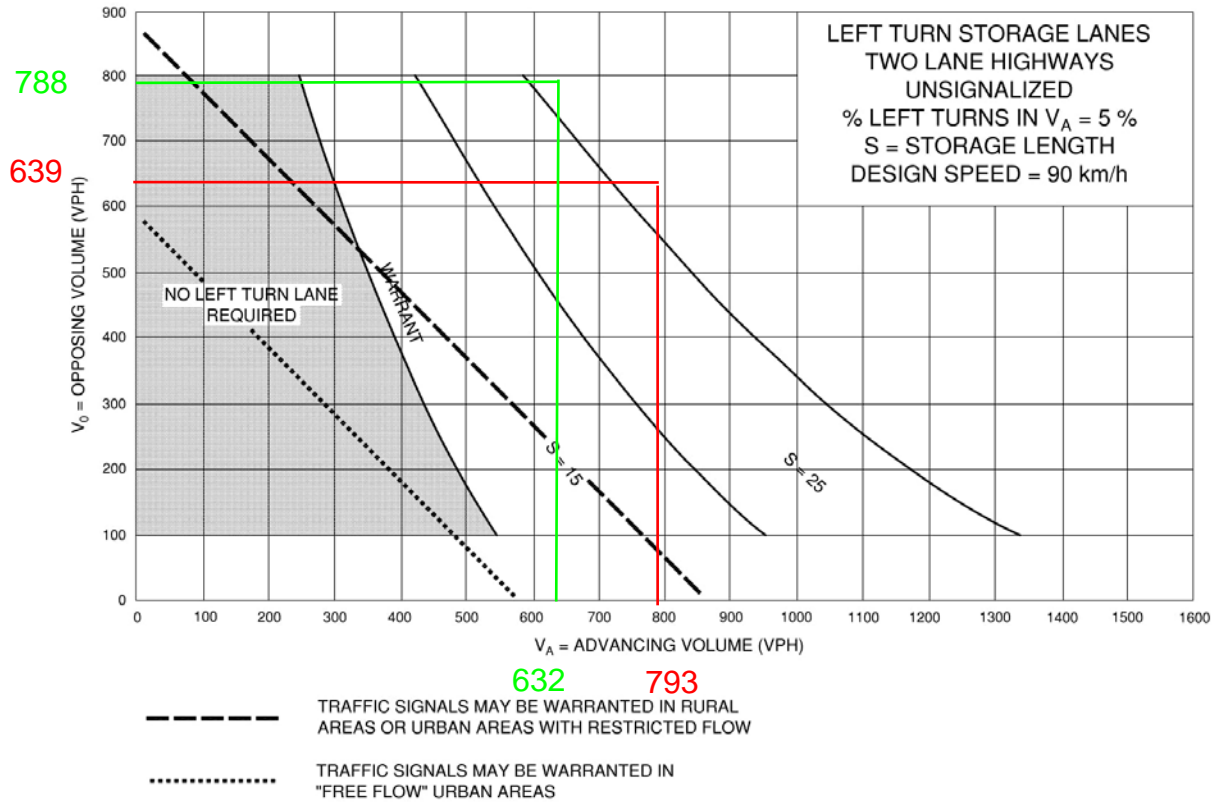
632

576



2041 FT - WB PM Arthur Street and Site Access
Exhibit 9A-19

2041 FT - EB PM Lansdowne Street and Arthur Street



APPENDIX L

Signalization Warrants

Analysis Sheet

[Input Sheet](#)
[Results Sheet](#)
[Proposed Collision](#)

GO TO Justification:

Intersection: Arthur and Lansdowne

Count Date: 2041

Justification 1: Minimum Vehicle Volumes

Restricted Flow Urban Conditions

Justification	Guidance Approach Lanes				Percentage Warrant								Total Across	Section Percent		
	1 Lanes		2 or More Lanes		Hour Ending											
Flow Condition	FREE FLOW	RESTR. FLOW	FREE FLOW	RESTR. FLOW	7:00	8:00	9:00	12:00	13:00	16:00	17:00	18:00				
1A	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>												
	480	720	600	900	376	900	1,051	1,074	1,415	1,514	1,232	717				
	COMPLIANCE %				52	100	100	100	100	100	100	100	752	94		
1B	120	170	120	170	33	42	55	47	63	109	40	37				
	COMPLIANCE %				19	25	32	28	37	64	24	22	251	31		
Restricted Flow Signal Justification 1:					Both 1A and 1B 100% Fulfilled each of 8 hours Lesser of 1A or 1B at least 80% fulfilled each of 8 hours								Yes Yes <input type="checkbox"/>		No No <input checked="" type="checkbox"/>	

Justification 2: Delay to Cross Traffic

Restricted Flow Urban Conditions

Justification	Guidance Approach Lanes				Percentage Warrant								Total Across	Section Percent		
	1 lanes		2 or More lanes		Hour Ending											
Flow Condition	FREE FLOW	RESTR. FLOW	FREE FLOW	RESTR. FLOW	7:00	8:00	9:00	12:00	13:00	16:00	17:00	18:00				
2A	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	7:00	8:00	9:00	12:00	13:00	16:00	17:00	18:00				
	480	720	600	900	343	858	996	1,027	1,352	1,405	1,192	680				
	COMPLIANCE %				48	100	100	100	100	100	100	94	742	93		
2B	50	75	50	75	14	16	27	30	39	62	25	26				
	COMPLIANCE %				19	21	36	40	52	83	33	35	319	40		
Restricted Flow					Both 2A and 2B 100% Fulfilled each of 8 hours								Yes	<div><div></div></div>	No	<div><div></div></div>
Signal Justification 2:					Lesser of 2A or 2B at least 80% fulfilled each of 8 hours								Yes	<div><div></div></div>	No	<div><div></div></div>

Justification 3: Combination

Combination Justification 1 and 2

Justification Satisfied 80% or More				Two Justifications Satisfied 80% or More	
Justification	Minimum Vehicular Volume	YES	NO	YES	NO
Justification 1				<input checked="" type="checkbox"/>	<input type="checkbox"/>
Justification 2	Delay Cross Traffic	YES	NO	<input checked="" type="checkbox"/>	NOT JUSTIFIED

Justification 4: Four Hour Volume

Justification	Time Period	Total Volume of Both Approaches (Main)	Heaviest Minor Approach	Required Value	Average % Compliance	Overall % Compliance
		X	Y (actual)	Y (warrant threshold)		
Justification 4	12:00	1,027	34	97	35 %	52 %
	13:00	1,352	34	80	43 %	
	16:00	1,405	77	80	96 %	
	17:00	1,192	27	80	34 %	

Results Sheet

[Input Sheet](#)
[Analysis Sheet](#)
[Proposed Collision](#)

Intersection: Arthur and Lansdowne

Count Date: 2041

Summary Results

Justification		Compliance		Signal Justified?	
				YES	NO
1. Minimum Vehicular Volume	A Total Volume	94	%	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	B Crossing Volume	31	%	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2. Delay to Cross Traffic	A Main Road	93	%	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	B Crossing Road	40	%	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3. Combination	A Justificaton 1	31	%	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	B Justification 2	40	%	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4. 4-Hr Volume		52	%	<input type="checkbox"/>	<input checked="" type="checkbox"/>

5. Collision Experience	0	%	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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6. Pedestrians	A Volume	Justification met	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	B Delay	Justification not met	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Justification 1: Minimum Vehicle Volumes

Restricted Flow Urban Conditions

Justification	Guidance Approach Lanes				Percentage Warrant								Total Across	Section Percent
	1 Lanes		2 or More Lanes		Hour Ending									
Flow Condition	FREE FLOW	RESTR. FLOW	FREE FLOW	RESTR. FLOW	7:00	8:00	9:00	10:00	13:00	16:00	17:00	18:00		
1A	480	<input checked="" type="checkbox"/> 720	600	<input type="checkbox"/> 900	366	894	1,057	1,076	1,410	1,516	1,239	726		
	COMPLIANCE %				51	100	100	100	100	100	100	100	751	94
1B	120	170	120	170	20	24	42	35	59	101	38	35		
	COMPLIANCE %				12	14	25	21	35	59	22	21	208	26
Restricted Flow Signal Justification 1:					Both 1A and 1B 100% Fulfilled each of 8 hours Lesser of 1A or 1B at least 80% fulfilled each of 8 hours								Yes Yes <input type="checkbox"/>	No No <input checked="" type="checkbox"/>

Justification 2: Delay to Cross Traffic

Restricted Flow Urban Conditions

Justification	Guidance Approach Lanes				Percentage Warrant								Total Across	Section Percent
	1 lanes		2 or More lanes		Hour Ending									
Flow Condition	FREE FLOW	RESTR. FLOW	FREE FLOW	RESTR. FLOW	7:00	8:00	9:00	10:00	13:00	16:00	17:00	18:00		
2A	480	<input checked="" type="checkbox"/> 720	600	<input type="checkbox"/> 900	346	870	1,015	1,041	1,351	1,415	1,201	691		
	COMPLIANCE %				48	100	100	100	100	100	100	96	744	93
2B	50	75	50	75	11	14	24	24	39	63	26	27		
	COMPLIANCE %				15	19	32	32	52	84	35	36	304	38
Restricted Flow Signal Justification 2:					Both 2A and 2B 100% Fulfilled each of 8 hours Lesser of 2A or 2B at least 80% fulfilled each of 8 hours								Yes Yes <input type="checkbox"/>	No No <input checked="" type="checkbox"/>

Justification 3: Combination

Combination Justification 1 and 2

Justification Satisfied 80% or More				Two Justifications Satisfied 80% or More	
Justification 1	Minimun Vehicular Volume	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
Justification 2	Delay Cross Traffic	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>	NOT JUSTIFIED	

Justification 4: Four Hour Volume

Justification	Time Period	Total Volume of Both Approaches (Main) X	Heaviest Minor Approach Y (actual)	Required Value Y (warrant threshold)	Average % Compliance	Overall % Compliance
Justification 4	10:00	1,041	22	94	23 %	45 %
	13:00	1,351	30	80	38 %	
	16:00	1,415	69	80	86 %	
	17:00	1,201	25	80	31 %	

Results Sheet

Input Sheet

Analysis Sheet

Proposed Collision

Intersection: Arthur St. and Lansdowne St.

Count Date: 2041

Summary Results

Justification		Compliance		Signal Justified?	
				YES	NO
1. Minimum Vehicular Volume	A Total Volume	94	%	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	B Crossing Volume	26	%		
2. Delay to Cross Traffic	A Main Road	93	%	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	B Crossing Road	38	%		
3. Combination	A Justificaton 1	26	%	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	B Justification 2	38	%		
4. 4-Hr Volume		45	%	<input type="checkbox"/>	<input checked="" type="checkbox"/>

5. Collision Experience	0	%	<input type="checkbox"/>	<input checked="" type="checkbox"/>
-------------------------	---	---	--------------------------	-------------------------------------

6. Pedestrians	A Volume	Justification met	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	B Delay	Justification not met		

APPENDIX M

TAC GDGCR Excerpts

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/s²)

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 Automobiles⁵⁴

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/s² used to determine calculated sight distance.

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.

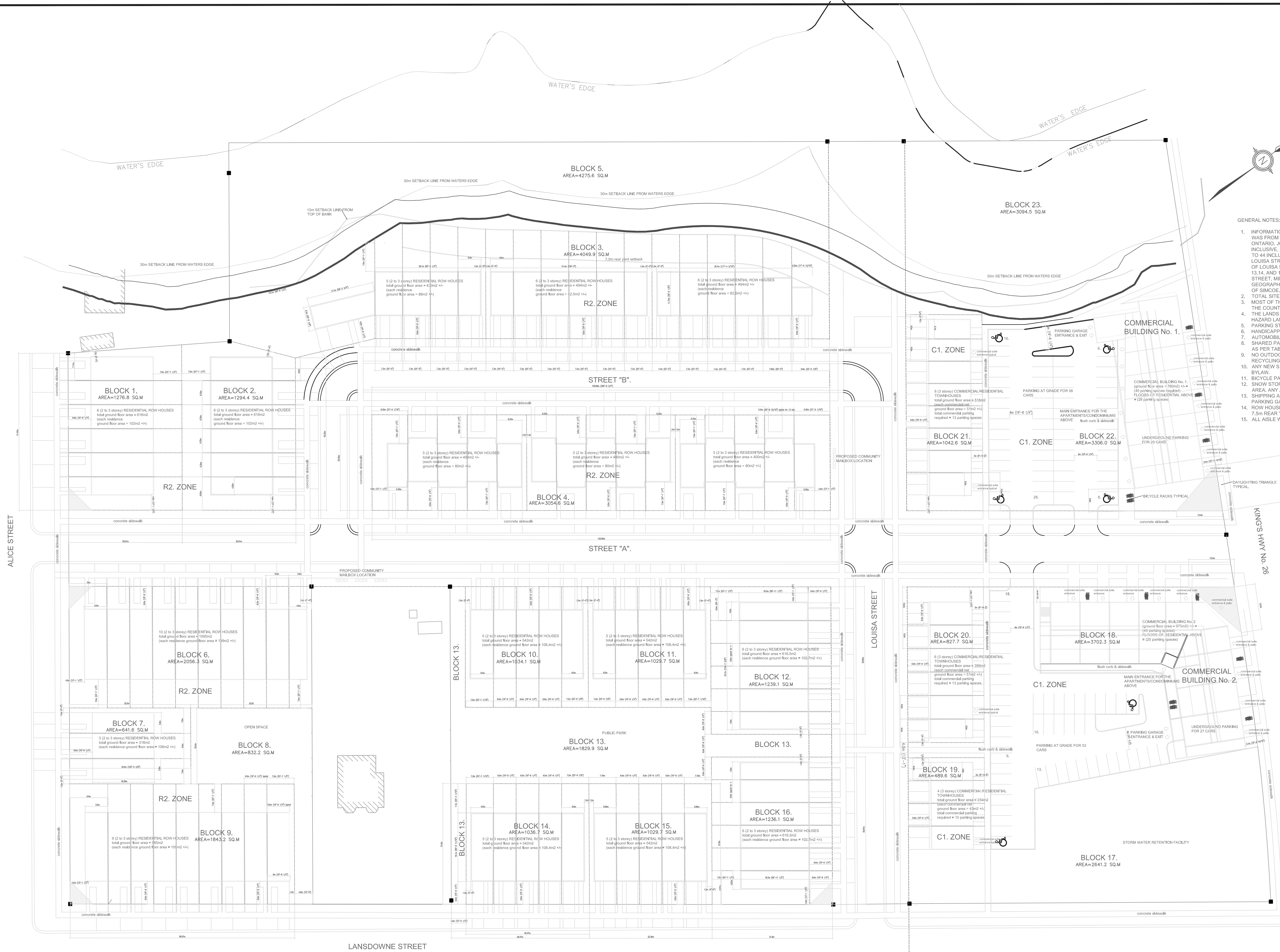
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Figure 25:	Sensitivity Analysis Future Total 2041 Traffic Volume



GENERAL NOTES:

1. INFORMATION USED OR ACQUIRED IN THE DEVELOPMENT OF THIS SITE PLAN WAS FROM RUDY MAK SURVEYING LTD. (ONTARIO LAND SURVEYOR) BARRIE ONTARIO, JOB NO. 13384, SHOWING TOPOGRAPHY ON PART OF LOTS 40-44, INCLUSIVE, 46 & 47 SOUTHWEST SIDE OF ARTHUR STREET AND ALL OF LOTS 40 TO 44 INCLUSIVE, PARTS OF LOTS 45 TO 49 INCLUSIVE, NORTHEAST SIDE OF LOUISA STREET AND ALL OF PARK LOTS 11 TO 14 INCLUSIVE, SOUTHWEST SIDE OF LOUISA STREET AND PART OF PARK LOTS 11 AND 12, AND ALL OF PARK LOTS 13, 14, AND 15, NORTHEAST SIDE OF ALICE STREET, TOWN OF THORNHURST, GEORGIC TOWN OF THORNHURST, TOWN OF THE BLUE MOUNTAINS COUNTY OF SIMCOE.
2. TOTAL SITE AREA IS 5.6 HECTARES (13.8 ACRES).
3. MOST OF THE LANDS SHOWN ARE DESIGNATED PRIMARY SETTLEMENT AREA IN THE COUNTY OFFICIAL PLAN, WITH A PORTION DESIGNATED AS HAZARDOUS LAND. THE LANDS ARE DESIGNATED DOWNTOWN AREA, COMMUNITY LIVING AREA AND HAZARDOUS LAND WITHIN THE TOWN OF BLUE MOUNTAINS OFFICIAL PLAN.
4. PARKING STALL SIZES SHOWN ARE 2.75m WIDE X 5.5m LONG.
5. HANDICAPPED PARKING STALL SIZE SHOWN ARE 3.4m WIDE X 5.5m LONG.
6. AUTOMOBILE DRIVE AISLE WIDTH TO BE 6.0m WIDE.
7. SHARED PARKING FOR THE COMMERCIAL BUILDINGS AND APARTMENTS ABOVE AS PER TABLE 6.4 OF THE TOWN OF BLUE MOUNTAINS ZONING BY-LAW.
8. NO OUTDOOR GARBAGE OR RECYCLING PROPOSED, ALL GARBAGE AND RECYCLING TO BE WITHIN THE BUILDING.
9. ANY NEW SIGNAGE IS SUBJECT TO THE TOWN OF THE BLUE MOUNTAINS SIGN BY-LAW.
10. BICYCLE PARKING IS SHOWN NEAR THE COMMERCIAL BUILDINGS.
11. SNOW STORAGE TO BE STORED ON SITE IN THE DESIGNATED SNOW STORAGE AREA, ANY ADDITIONAL SNOW IS TO BE REMOVED FROM THE SITE.
12. SHIPPING AND RECEIVING FOR THE COMMERCIAL BLOCKS 1 AND 2 TO BE IN THE PARKING GARAGE.
13. ROW HOUSES HAVE A 6.0m WIDE LOT FRONTAGE, 6.0m FRONT YARD SET BACK, 7.5m REAR YARD SETBACK.
14. ALL AISLE WIDTHS WITHIN THE PARKING LOTS ARE 6.0m.



SITE STATISTICS (TOTAL SITE AREA = 5.6 HECTARES)			
LAND USE	NUMBER OF UNITS	GROUND FLOOR AREA	PARKING PROVIDED
RESIDENTIAL TOWNHOUSES & ROW HOUSES	89 UNITS	9659 m ²	7 spaces per unit
COMMERCIAL RESIDENTIAL TOWNHOUSES	18 UNITS	1171 m ²	2 spaces per unit residential 1 space for 20% of commercial
COMMERCIAL BUILDINGS	2 BUILDINGS CONTAINING A TOTAL OF 17 COMMERCIAL UNITS	1735 m ²	89 parking spaces required
APARTMENT UNITS (ABOVE THE 2 COMMERCIAL BUILDINGS)	2 BUILDINGS CONTAINING A TOTAL OF 75 APARTMENTS	no ground floor area	as per the zoning bylaw

SCHEDULE OF LAND USE			
PROPOSED LAND USE	BLOCKS	YIELD UNITS, BLOCKS	AREA
RESIDENTIAL ROW HOUSES & SEMI-DETACHED DWELLING	1, 2, 3, 4, 6, 7, 9, 10, 11, 12, 14, 15, 16	96 UNITS PER 13 BLOCKS	2,082.2 HECTARES 20,822,200
COMMERCIAL RESIDENTIAL TOWNHOUSES	18, 20, 21	18 UNITS PER 3 BLOCKS	2,036 HECTARES 20,360
COMMERCIAL BUILDINGS 1 & 2	18, AND 22	17 UNITS PER 2 BLOCKS	7,083 HECTARES 70,830
RESIDENTIAL UNITS (ABOVE THE 2 COMMERCIAL BUILDINGS)	18, AND 22	75 UNITS PER 2 BLOCKS	SHARED SPACE WITH COMMERCIAL BUILDINGS 1 & 2 2,842 HECTARES 28,420
STORM WATER FACILITY	17		1,409 HECTARES 14,090
PUBLIC PARK	13		2,023 HECTARES 20,230
OPEN SPACE	5, 6, AND 23		4,602 HECTARES 46,020
TOTAL			5.6 HECTARES 56,000

ADDED & REVISED INFORMATION	10	22/02/16	MPK
ADDED & REVISED INFORMATION	9	22/02/04	MPK
ADDED DIMENSIONS	8	22/02/02	MPK
REVISED SITE LINES & DIMENSIONS	7	22/01/26	MPK
REVISED LOT LINES	6	22/01/21	MPK
REVISED DRAWING COMMENTS	5	22/01/07	MPK
REVISED LOT LINES	4	22/01/05	MPK
REVISED CHART	3	21/12/31	MPK
REVISED DRAWING	2	21/12/06	MPK
ISSUED FOR COMMENT	1	21/12/02	MPK
Particulars	No.	Date	By

Revisions to drawing



Project title

BLUE MEADOWS DEVELOPMENT

LANDSDOWNE & ALICE STREET

THORNHURST

TOWN OF THE BLUE MOUNTAINS

ONTARIO

Project number

2021-1000

Drawn by

MPK

Sheet title

SITE LAYOUT (NOTES)

Scale as noted

Checked by

MPK

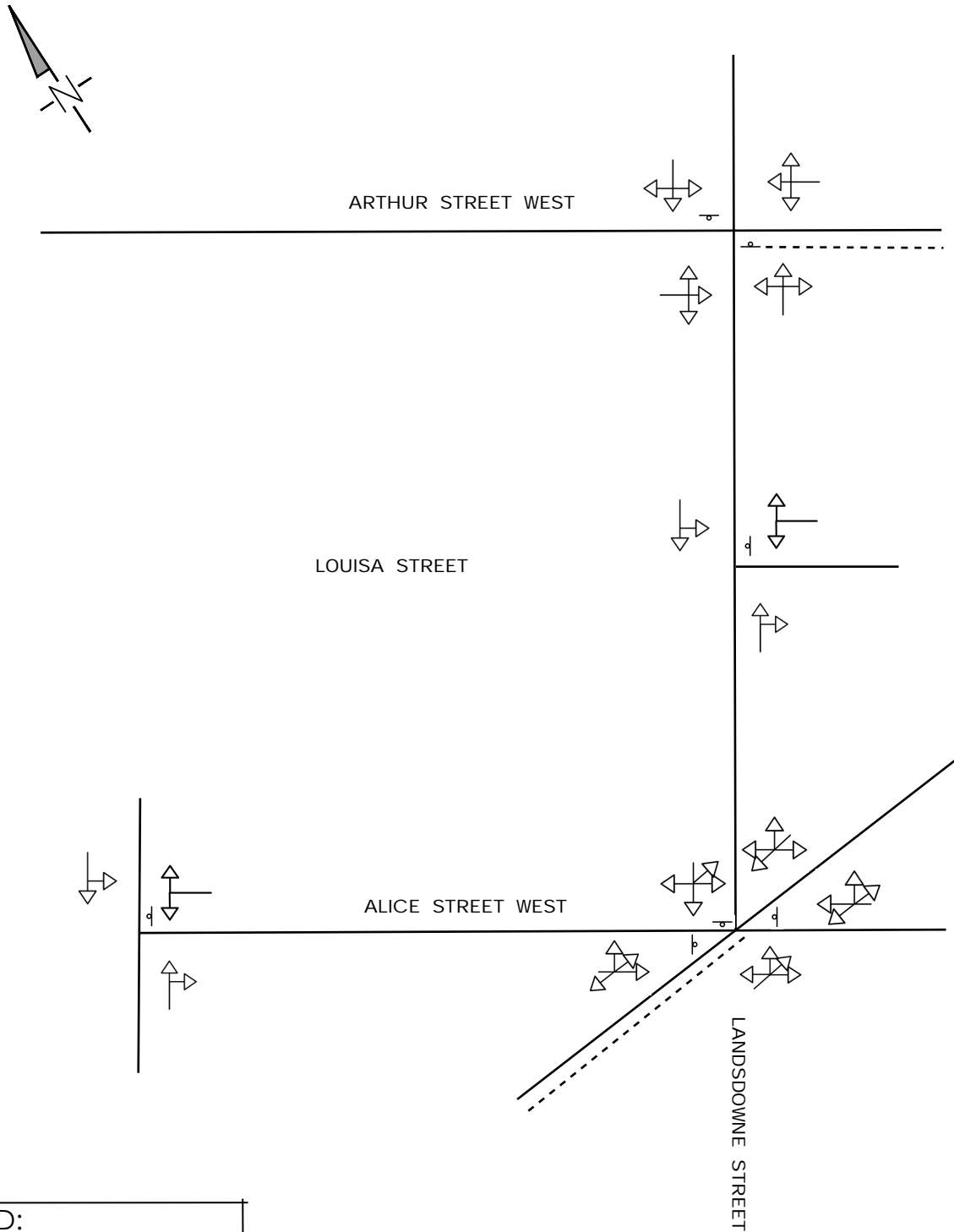
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A1.0



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	<div>Drawing</div> <div>SITE LOCATION</div>		<div><div>Drawn ByS.O.</div><div>Design ByS.O.</div><div>Project</div></div> <div>2142-6059</div>
	<div><div>ScaleN.T.S.</div><div>Date09/07/2021</div><div>Check ByG.C.</div><div>Drawing</div></div> <div>FIG.2</div>		

NOTE: THIS FIGURE IS FOR SCHEMATIC PURPOSES ONLY & IS NOT TO BE SCALED.



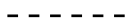
LEGEND:



STOP CONTROL

AM(PM)

WEEKDAY AM(PM)
PEAK HOUR VOLUMES



SIDEWALK



Project

The Blue Meadows Inc.
125 Arthur Street

Drawing

BOUNDARY ROAD NETWORK

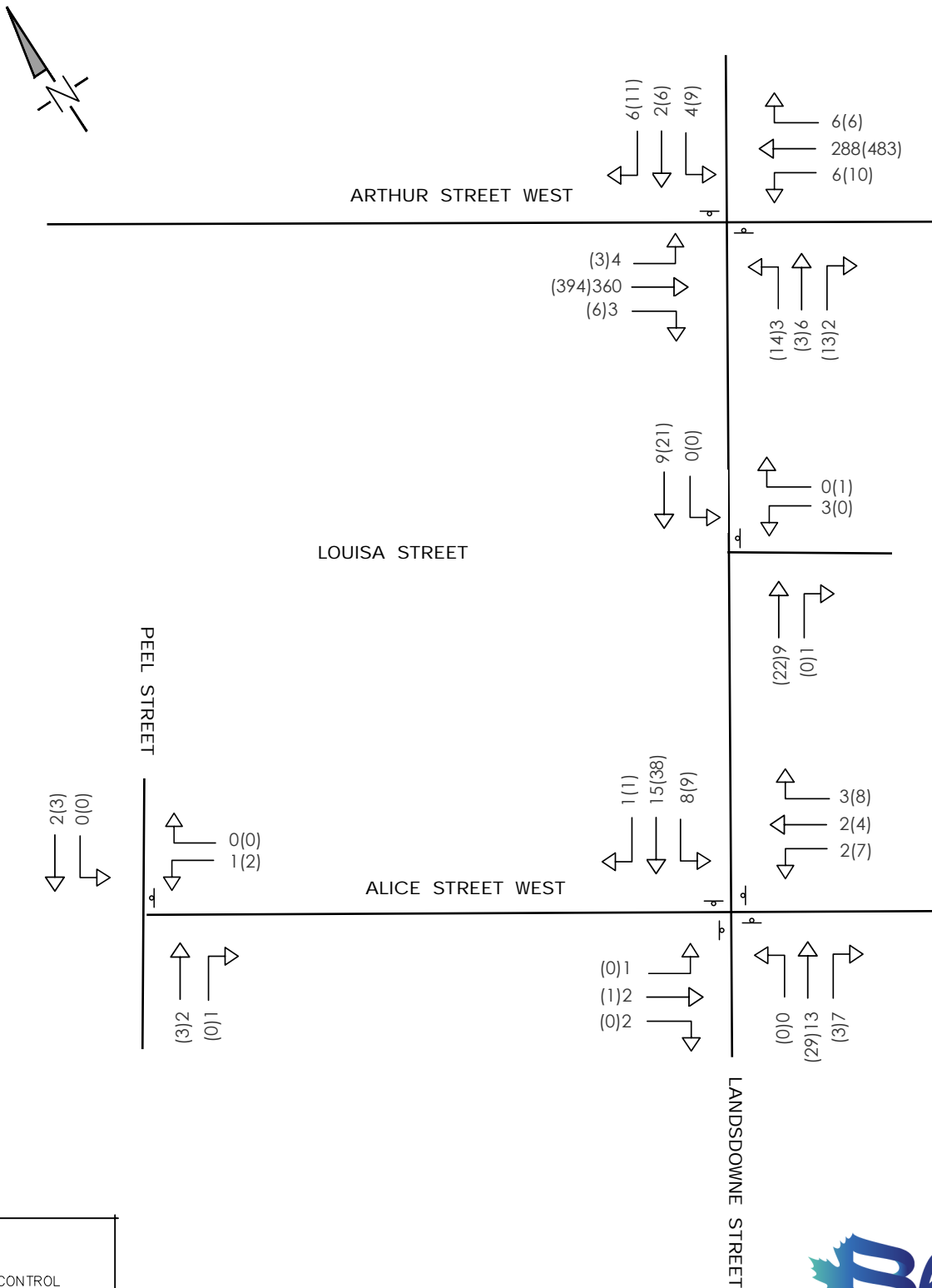


CROZIER
CONSULTING ENGINEERS


ADMIRAL BUILDING
1 FIRST STREET, SUITE 200
COLLINGWOOD, ON L9Y 1A1
705 446-3510 T
705 446-3520 F
WWW.CFCROZIER.CA

Drawn	D.B.	Design	D.B.	Project No.	2142-6059
Date	23/12/2021	Check	E.H.	Scale	N.T.S.
				Dwg.	FIG. 3

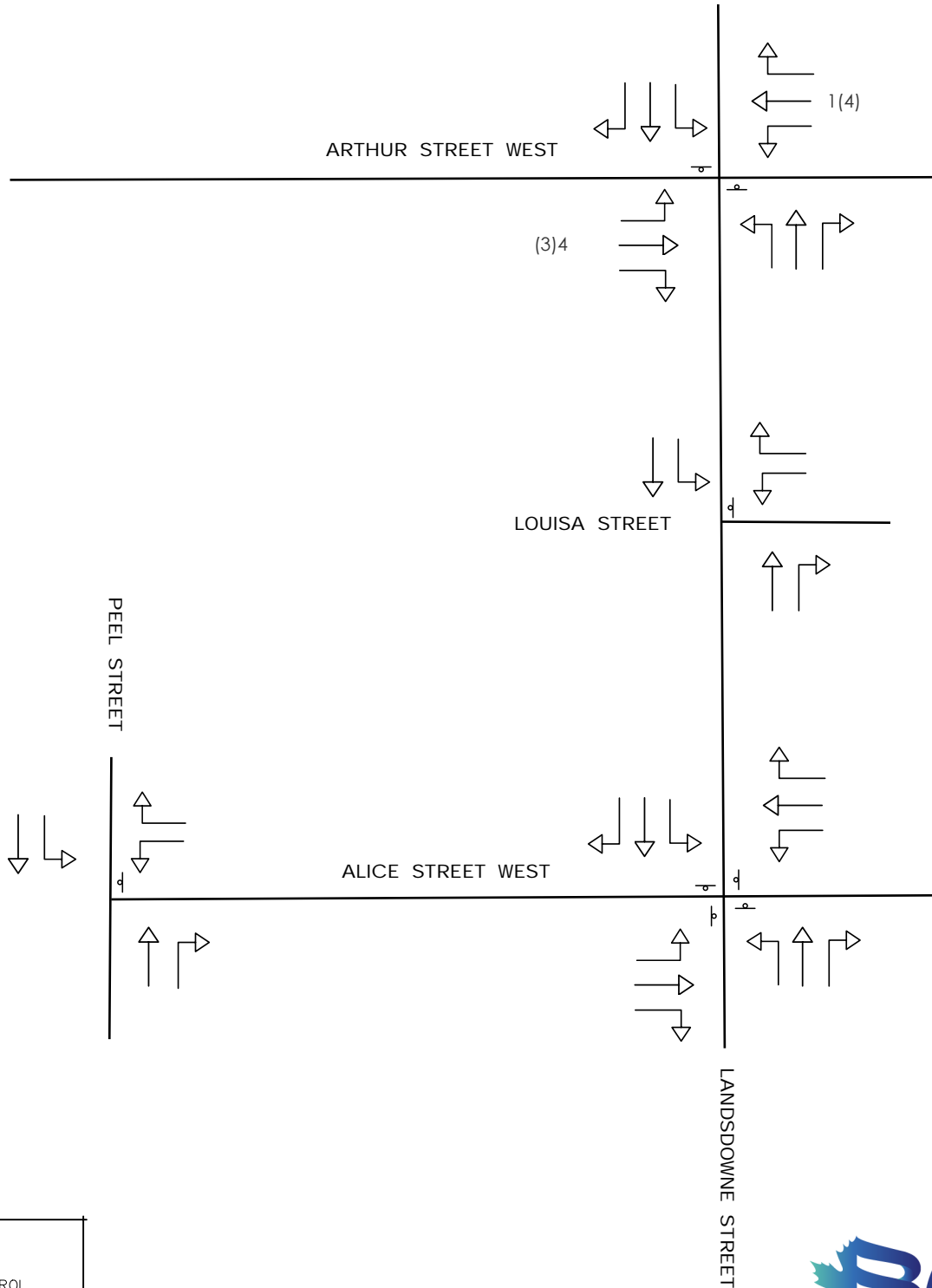
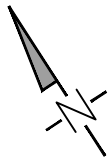
NOTE: THIS FIGURE IS FOR SCHEMATIC PURPOSES ONLY & IS NOT TO BE SCALED.



LEGEND:	
STOP CONTROL	
AM(PM)	WEEKDAY AM(PM) PEAK HOUR VOLUMES

Project		The Blue Meadows Inc. 125 Arthur Street		<div><div>CROZIER CONSULTING ENGINEERS</div></div> <div>ADMIRAL BUILDING 1 FIRST STREET, SUITE 200 COLLINGWOOD, ON L9Y 1A1 705 446-3510 T 705 446-3520 F WWW.CFCROZIER.CA</div>	
Drawing		2021 EXISTING TRAFFIC VOLUMES			
Drawn	D.B.	Design	D.B.	Project No.	2142-6059
Date	23/12/2021	Check	E.H.	Scale	N.T.S.
				Dwg.	FIG. 4

NOTE: THIS FIGURE IS FOR SCHEMATIC PURPOSES ONLY & IS NOT TO BE SCALED.



LEGEND:

d STOP CONTROL

AM(PM) WEEKDAY AM(PM)
PEAK HOUR VOLUMES



Project

The Blue Meadows Inc.
125 Arthur Street

Drawing

LORA BAY HIEGHTS TRIP ASSIGNMENT

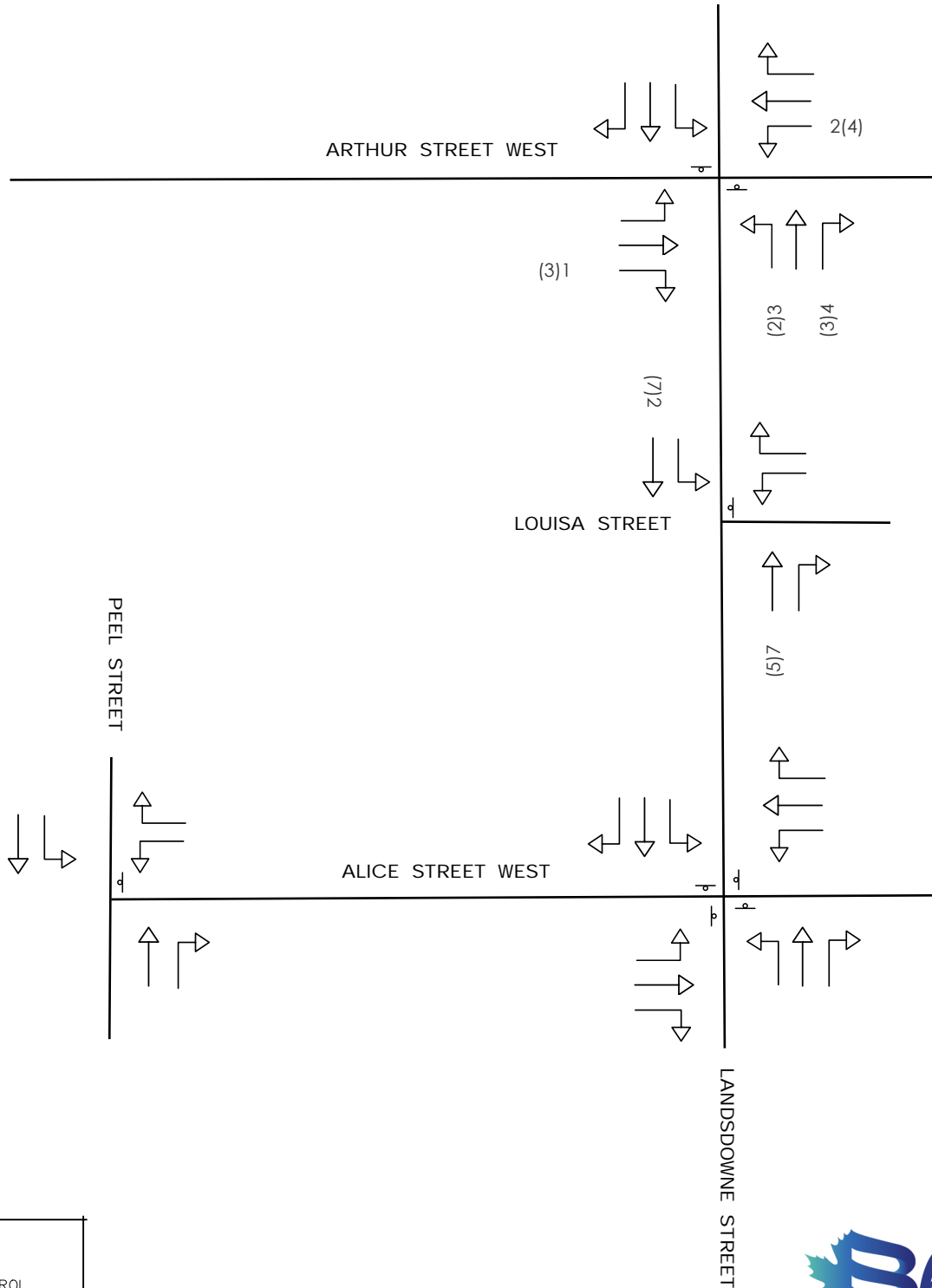


CROZIER
CONSULTING ENGINEERS

ADMIRAL BUILDING
1 FIRST STREET, SUITE 200
COLLINGWOOD, ON L9Y 1A1
705 446-3510 T
705 446-3520 F
WWW.CFCROZIER.CA

Drawn	D.B.	Design	D.B.	Project No.	2142-6059
Date	23/12/2021	Check	E.H.	Scale	N.T.S.
				Dwg.	FIG. 5

NOTE: THIS FIGURE IS FOR SCHEMATIC PURPOSES ONLY & IS NOT TO BE SCALED.



LEGEND:

d STOP CONTROL
AM(PM) WEEKDAY AM(PM)
PEAK HOUR VOLUMES



Project

The Blue Meadows Inc.
125 Arthur Street

Drawing

TOWNS OF THORNBURY TRIP ASSIGNMENT

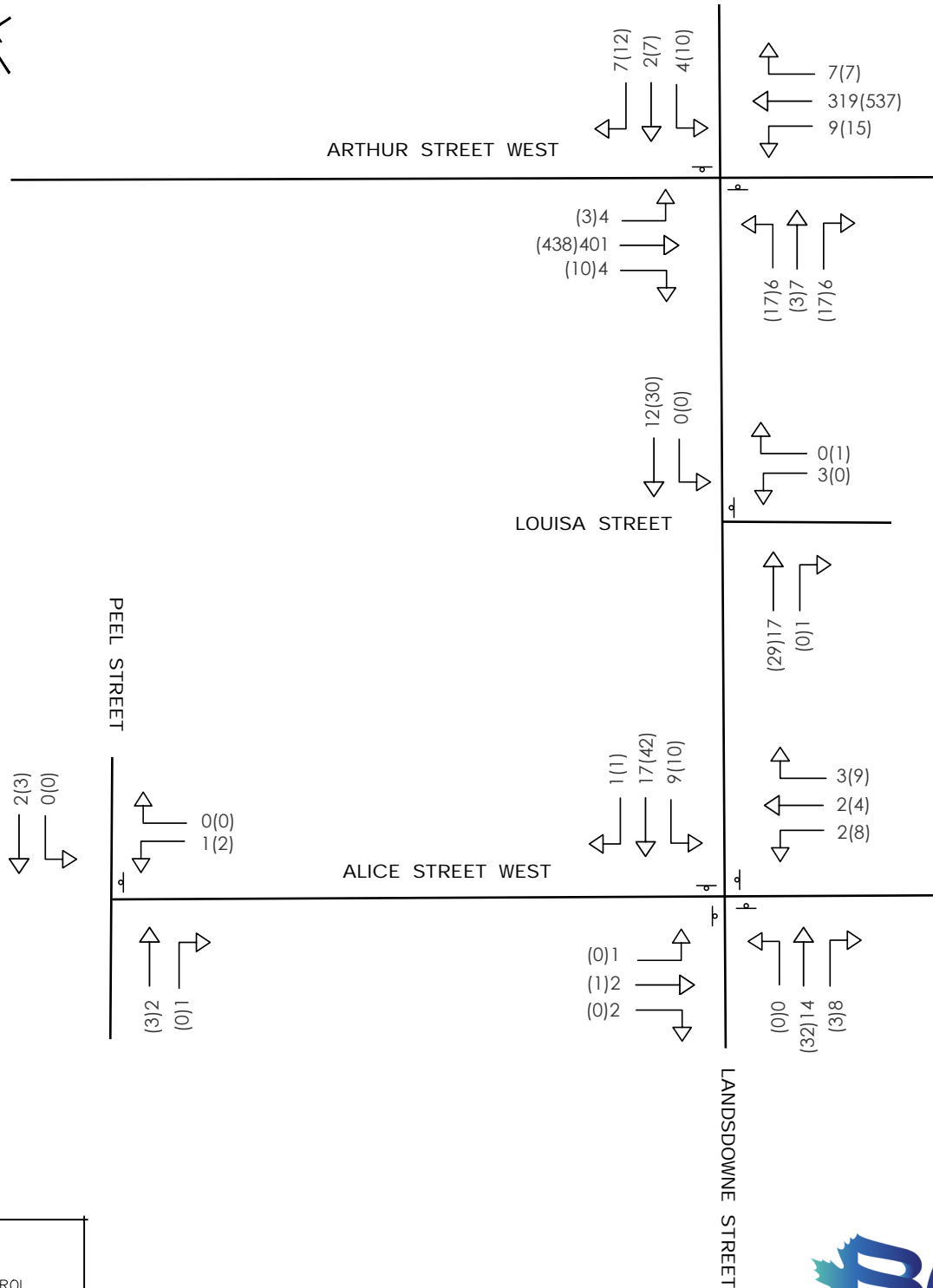


CROZIER
CONSULTING ENGINEERS

ADMIRAL BUILDING
1 FIRST STREET, SUITE 200
COLLINGWOOD, ON L9Y 1A1
705 446-3510 T
705 446-3520 F
WWW.CFCROZIER.CA

Drawn	D.B.	Design	D.B.	Project No.	2142-6059
Date	23/12/2021	Check	E.H.	Scale	N.T.S.
				Dwg.	FIG. 6

NOTE: THIS FIGURE IS FOR SCHEMATIC PURPOSES ONLY & IS NOT TO BE SCALED.



LEGEND:

\downarrow STOP CONTROL
AM(PM) WEEKDAY AM(PM)
PEAK HOUR VOLUMES

Project

The Blue Meadows Inc.
125 Arthur Street

Drawing

2026 FUTURE BACKGROUND VOLUMES

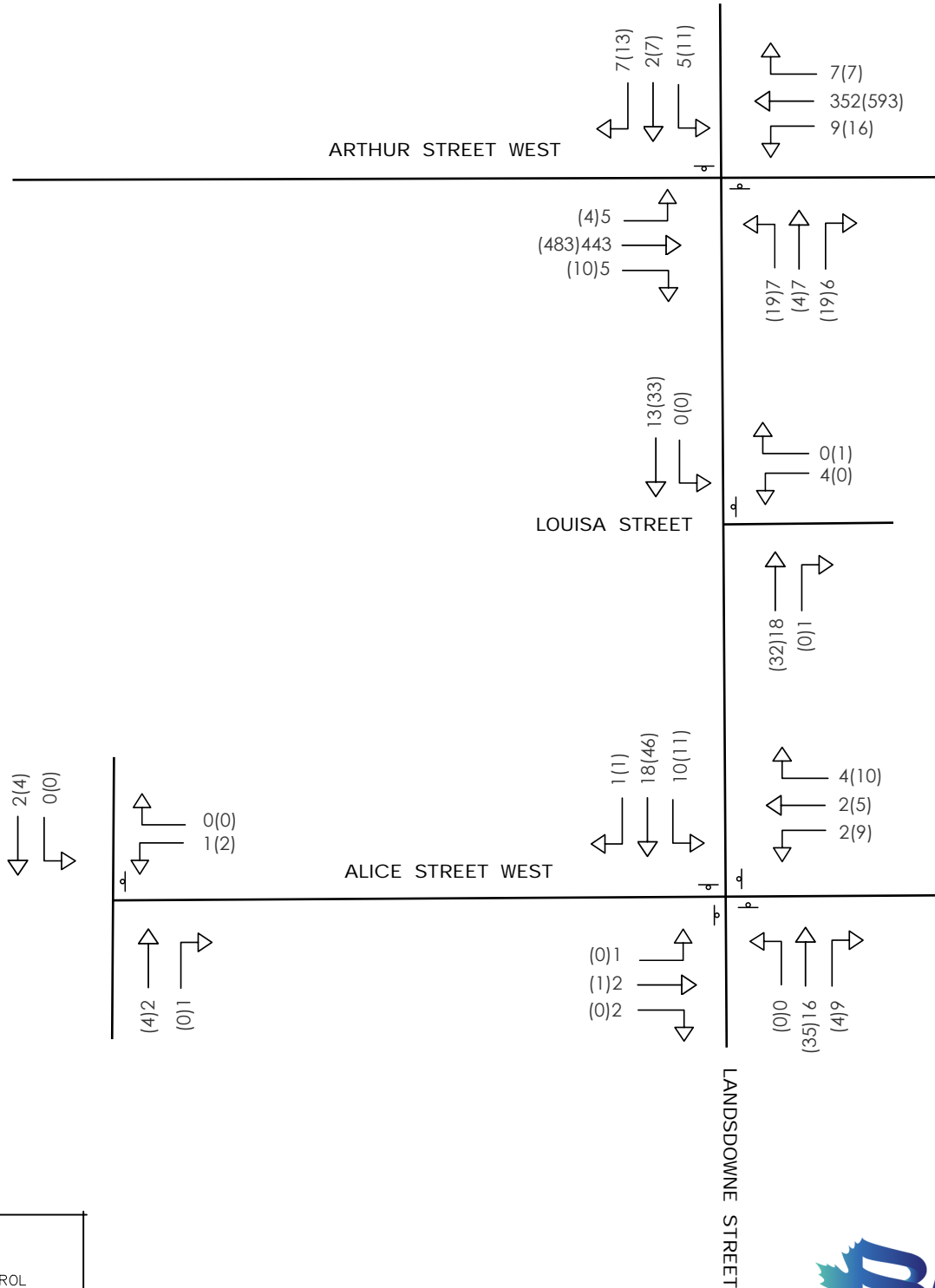


CROZIER
CONSULTING ENGINEERS


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705 446-3520 F
WWW.CFCROZIER.CA

Drawn	D.B.	Design	D.B.	Project No.	2142-6059
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				Dwg.	FIG. 7

NOTE: THIS FIGURE IS FOR SCHEMATIC PURPOSES ONLY & IS NOT TO BE SCALED.



LEGEND:

 STOP CONTROL
 AM(PM) WEEKDAY AM(PM)
 PEAK HOUR VOLUMES



Project

The Blue Meadows Inc.
125 Arthur Street

Drawing

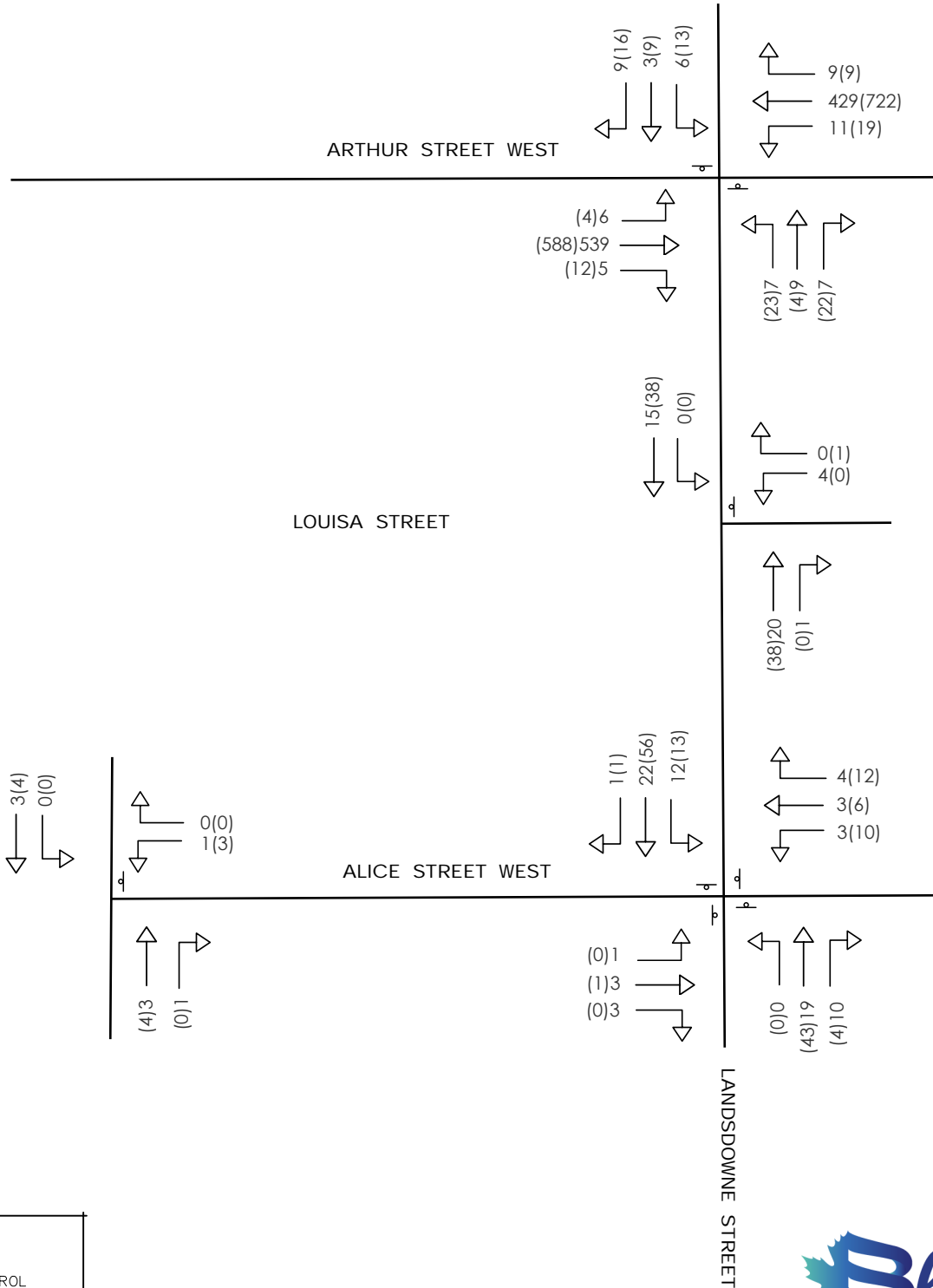
2031 FUTURE BACKGROUND VOLUMES



CROZIER
CONSULTING ENGINEERS

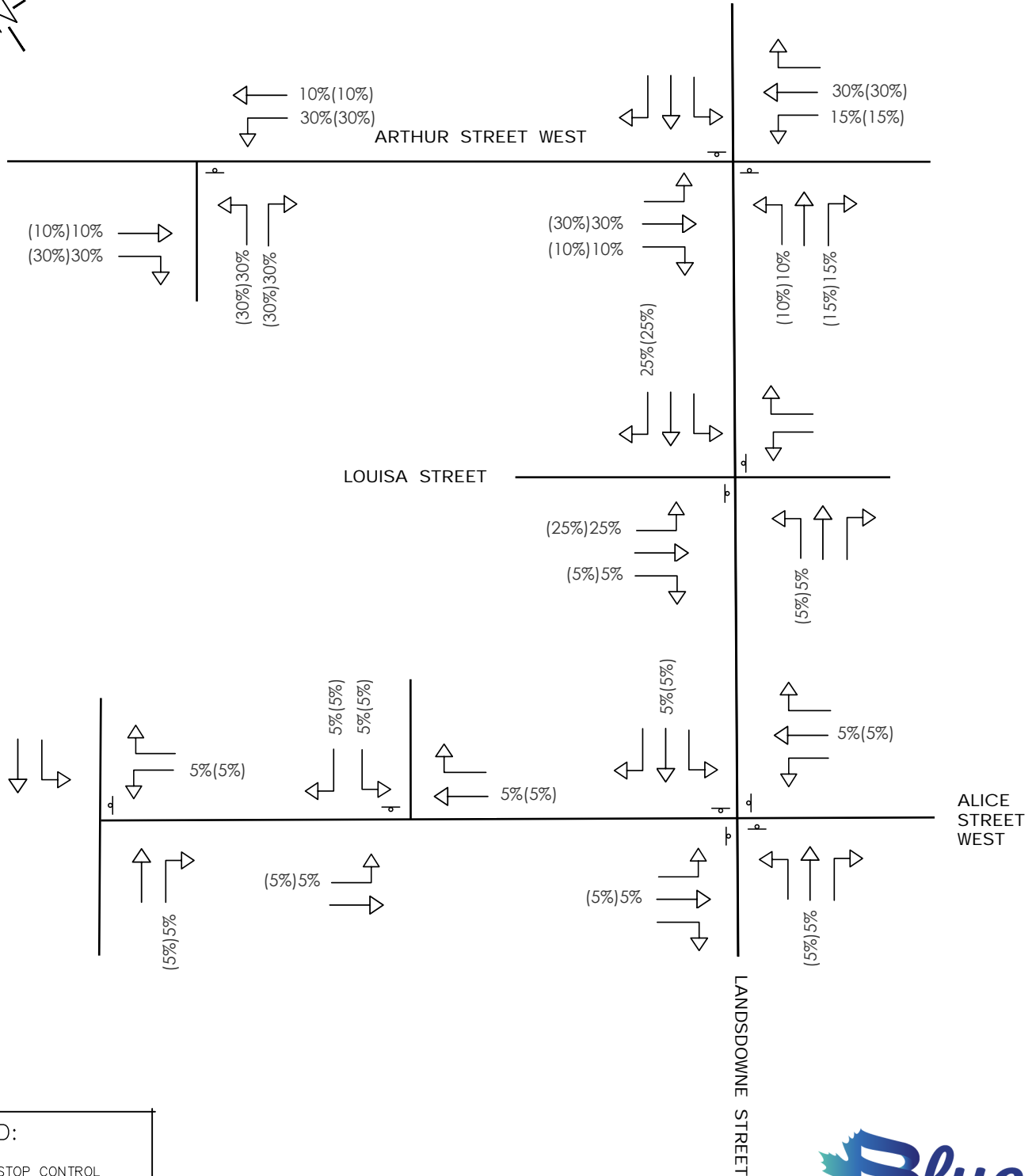
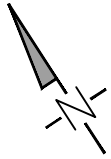
ADMIRAL BUILDING
1 FIRST STREET, SUITE 200
COLLINGWOOD, ON L9Y 1A1
705 446-3510 T
705 446-3520 F
WWW.CFCROZIER.CA


Drawn	D.B.	Design	D.B.	Project No.	2142-6059
Date	23/12/2021	Check	E.H.	Scale	N.T.S.
				Dwg.	FIG. 8



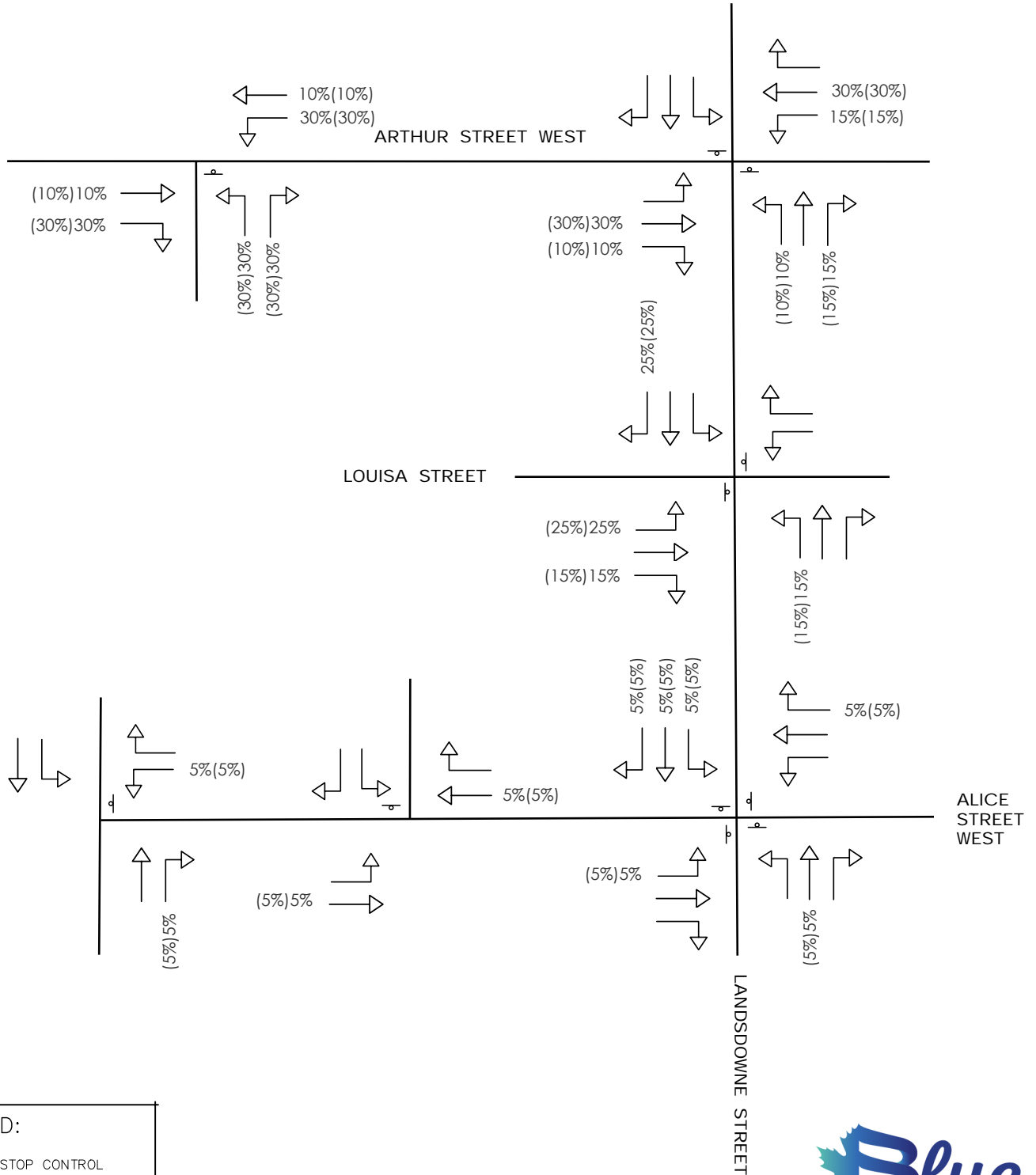
Project The Blue Meadows Inc. 125 Arthur Street	<div data-bbox="927 1791 1049 1913"> </div> <div data-bbox="1057 1812 1287 1898"> CROZIER CONSULTING ENGINEERS </div> <div data-bbox="1287 1801 1533 1917"> ADMIRAL BUILDING 1 FIRST STREET, SUITE 200 COLLINGWOOD, ON L9Y 1A1 705 446-3510 T 705 446-3520 F WWW.CFCROZIER.CA </div>			
Drawing 2041 FUTURE BACKGROUND VOLUMES	Drawn D.B.	Design D.B.	Project No. 2142-6059	Dwg. FIG. 9
Date 23/12/2021	Check E.H.	Scale N.T.S.		

NOTE: THIS FIGURE IS FOR SCHEMATIC PURPOSES ONLY & IS NOT TO BE SCALED.



Project		The Blue Meadows Inc. 125 Arthur Street		<div><div>CROZIER CONSULTING ENGINEERS</div><div>ADMIRAL BUILDING 1 FIRST STREET, SUITE 200 COLLINGWOOD, ON L9Y 1A1 705 446-3510 T 705 446-3520 F WWW.CFCROZIER.CA</div></div>	
Drawing		TRIP DISTRIBUTION RESIDENTIAL			
Drawn	D.B.	Design	D.B.	Project No.	2142-6059
Date	23/12/2021	Check	E.H.	Scale	N.T.S.
				Dwg.	FIG. 10


NOTE: THIS FIGURE IS FOR SCHEMATIC PURPOSES ONLY & IS NOT TO BE SCALED.



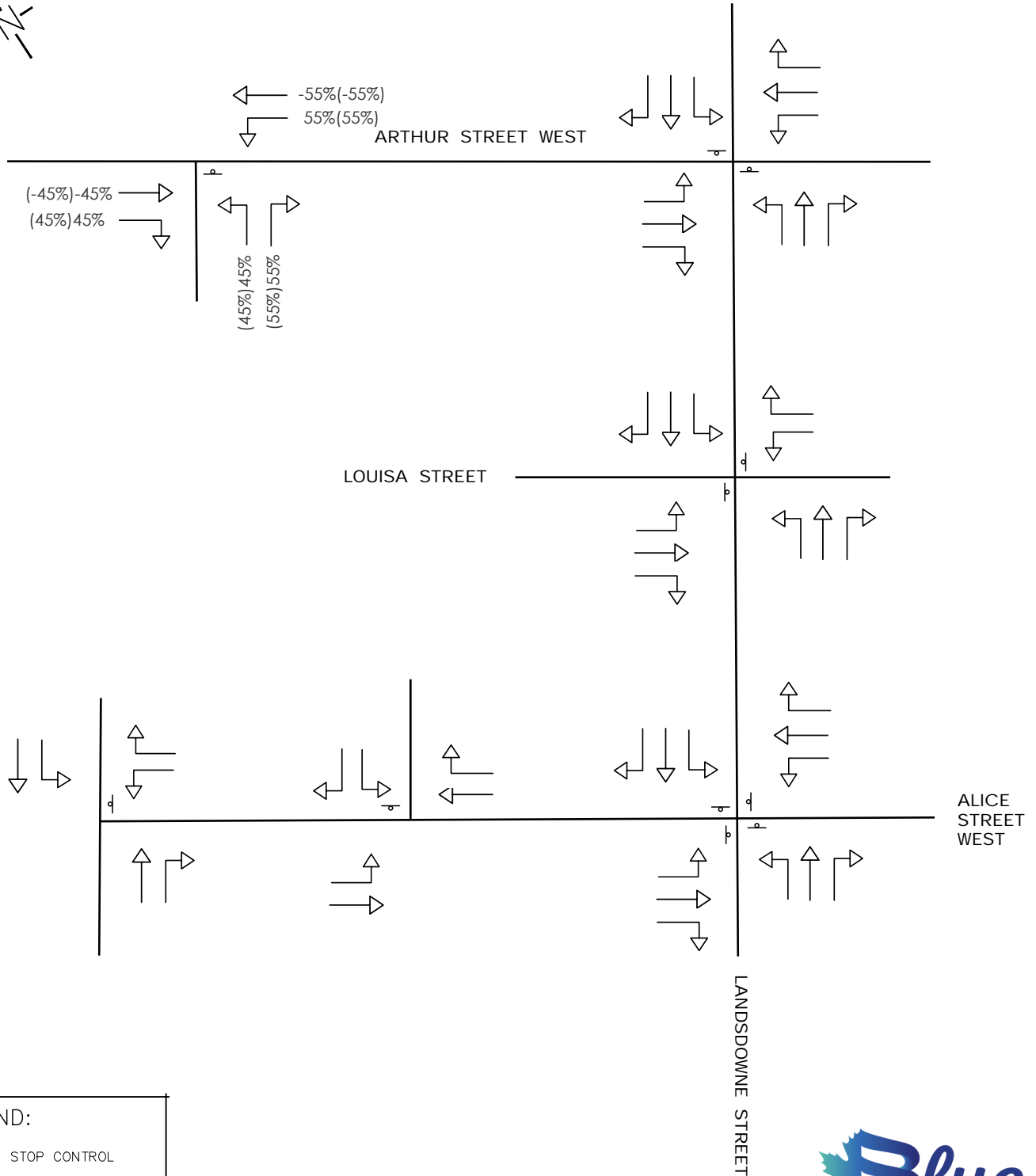
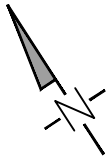
LEGEND:

STOP CONTROL
 AM(PM) WEEKDAY AM(PM)
 PEAK HOUR VOLUMES



Project		The Blue Meadows Inc. 125 Arthur Street		 <div>CROZIER CONSULTING ENGINEERS</div> <div>ADMIRAL BUILDING 1 FIRST STREET, SUITE 200 COLLINGWOOD, ON L9Y 1A1 705 446-3510 T 705 446-3520 F WWW.CFCROZIER.CA</div>	
Drawing		TRIP DISTRIBUTION PRIMARY COMMERCIAL			
Drawn	D.B.	Design	D.B.	Project No.	2142-6059
Date	23/12/2021	Check	E.H.	Scale	N.T.S.
				Dwg.	FIG. 11

NOTE: THIS FIGURE IS FOR SCHEMATIC PURPOSES ONLY & IS NOT TO BE SCALED.



Project

The Blue Meadows Inc.
125 Arthur Street

Drawing

TRIP DISTRIBUTION COMMERCIAL PASS-BY

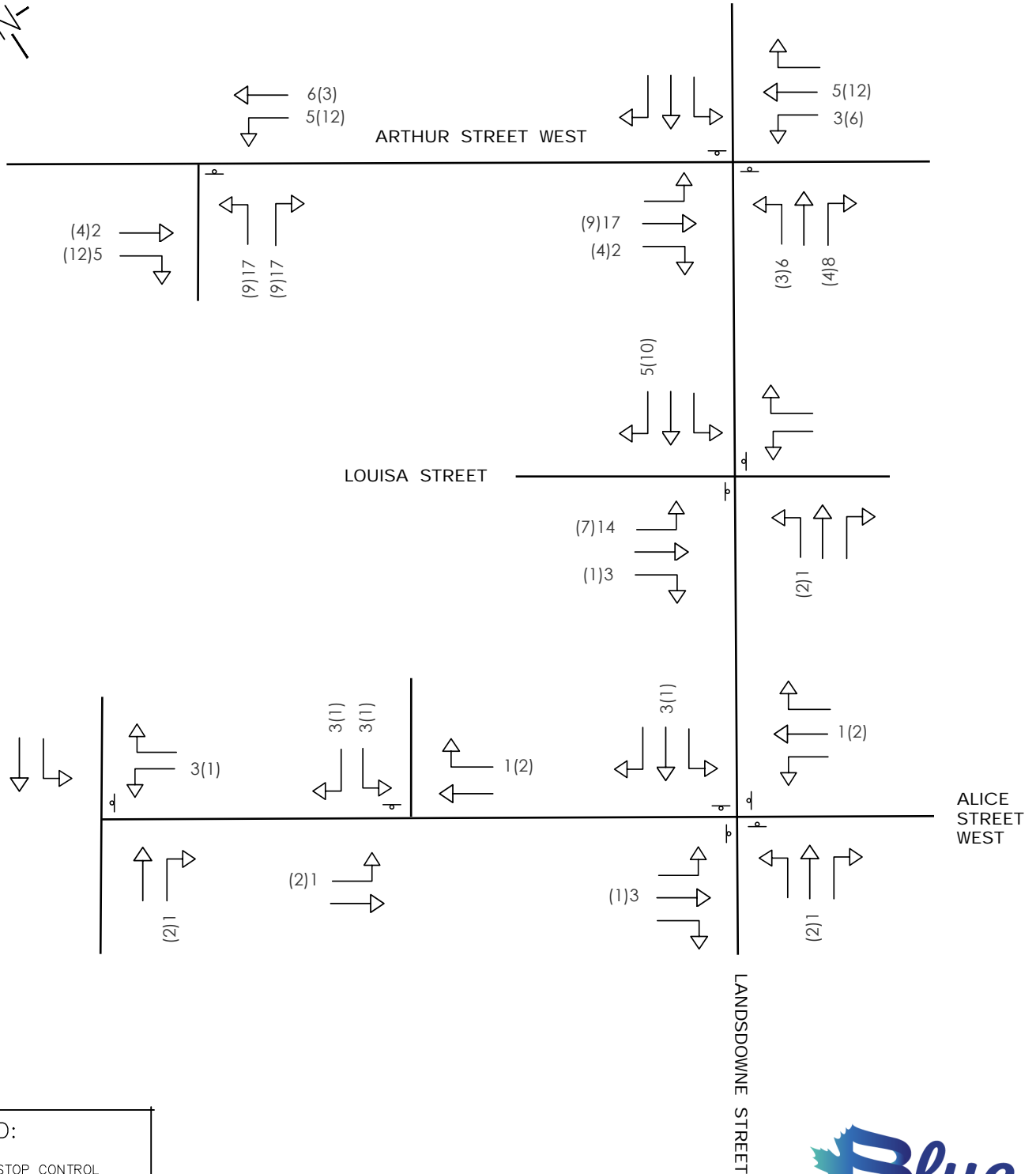


CROZIER
CONSULTING ENGINEERS

ADMIRAL BUILDING
1 FIRST STREET, SUITE 200
COLLINGWOOD, ON L9Y 1A1
705 446-3510 T
705 446-3520 F
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Drawn	D.B.	Design	D.B.	Project No.	2142-6059
Date	23/12/2021	Check	E.H.	Scale	N.T.S.
				Dwg.	FIG. 12

NOTE: THIS FIGURE IS FOR SCHEMATIC PURPOSES ONLY & IS NOT TO BE SCALED.



LEGEND:



STOP CONTROL

AM(PM) WEEKDAY AM(PM)
PEAK HOUR VOLUMES



Project

The Blue Meadows Inc.
125 Arthur Street

Drawing

TRIP ASSIGNMENT RESIDENTIAL

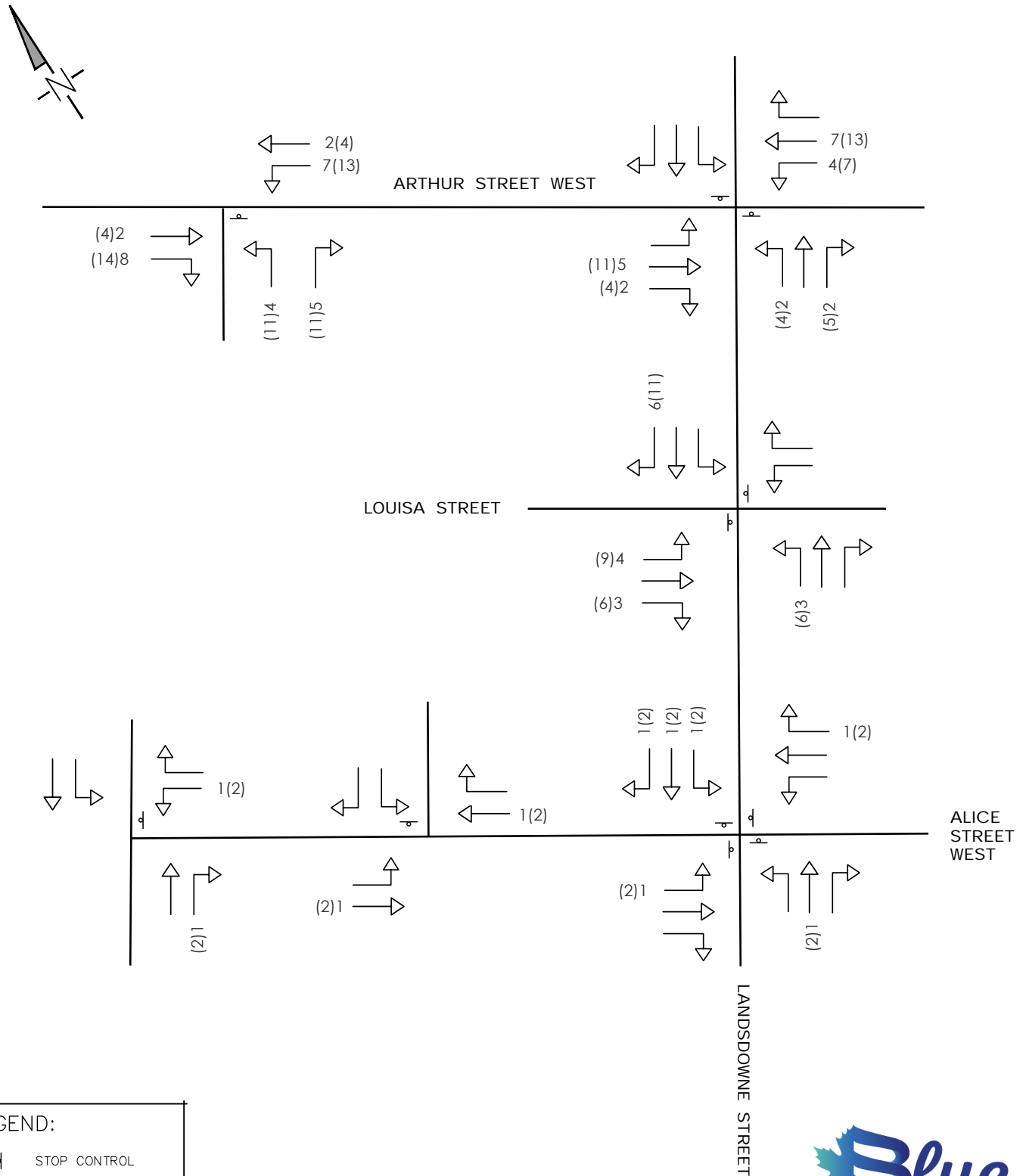


CROZIER
CONSULTING ENGINEERS

ADMIRAL BUILDING
1 FIRST STREET, SUITE 200
COLLINGWOOD, ON L9Y 1A1
705 446-3510 T
705 446-3520 F
WWW.CFCROZIER.CA

Drawn	D.B.	Design	D.B.	Project No.	2142-6059
Date	23/12/2021	Check	E.H.	Scale	N.T.S.
				Dwg.	FIG. 13

NOTE: THIS FIGURE IS FOR SCHEMATIC PURPOSES ONLY & IS NOT TO BE SCALED.



Project

The Blue Meadows Inc.
125 Arthur Street

Drawing

TRIP ASSIGNMENT COMMERCIAL

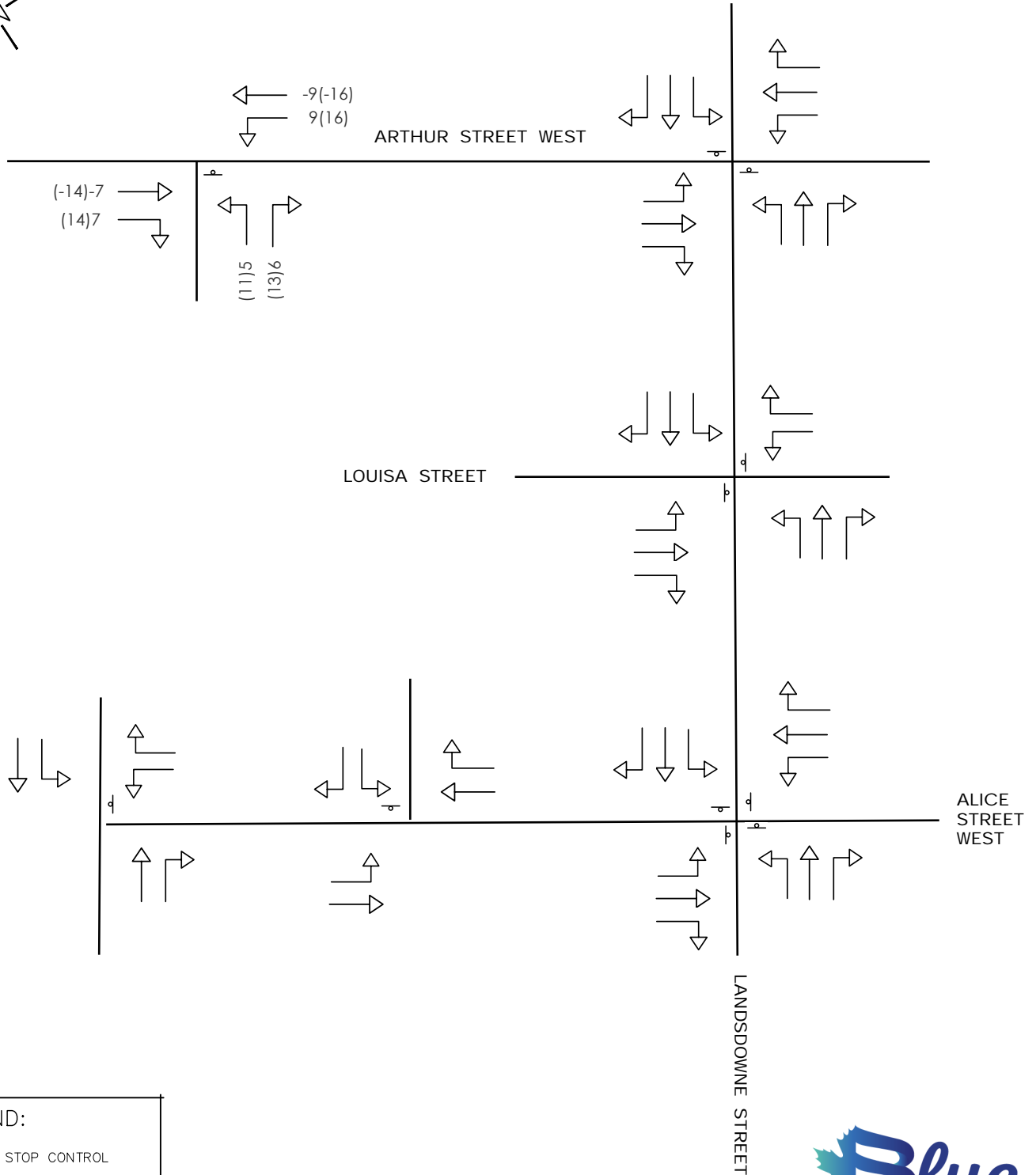
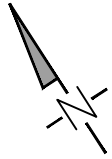


CROZIER
CONSULTING ENGINEERS

ADMIRAL BUILDING
1 FIRST STREET, SUITE 200
COLLINGWOOD, ON L9Y 1A1
705 446-3510 T
705 446-3520 F
WWW.CFCROZIER.CA

Drawn	D.B.	Design	D.B.	Project No.	2142-6059
Date	23/12/2021	Check	E.H.	Scale	N.T.S.
				Dwg.	FIG. 14

NOTE: THIS FIGURE IS FOR SCHEMATIC PURPOSES ONLY & IS NOT TO BE SCALED.



Project

The Blue Meadows Inc.
125 Arthur Street

Drawing

TRIP ASSIGNMENT COMMERCIAL PASS-BY

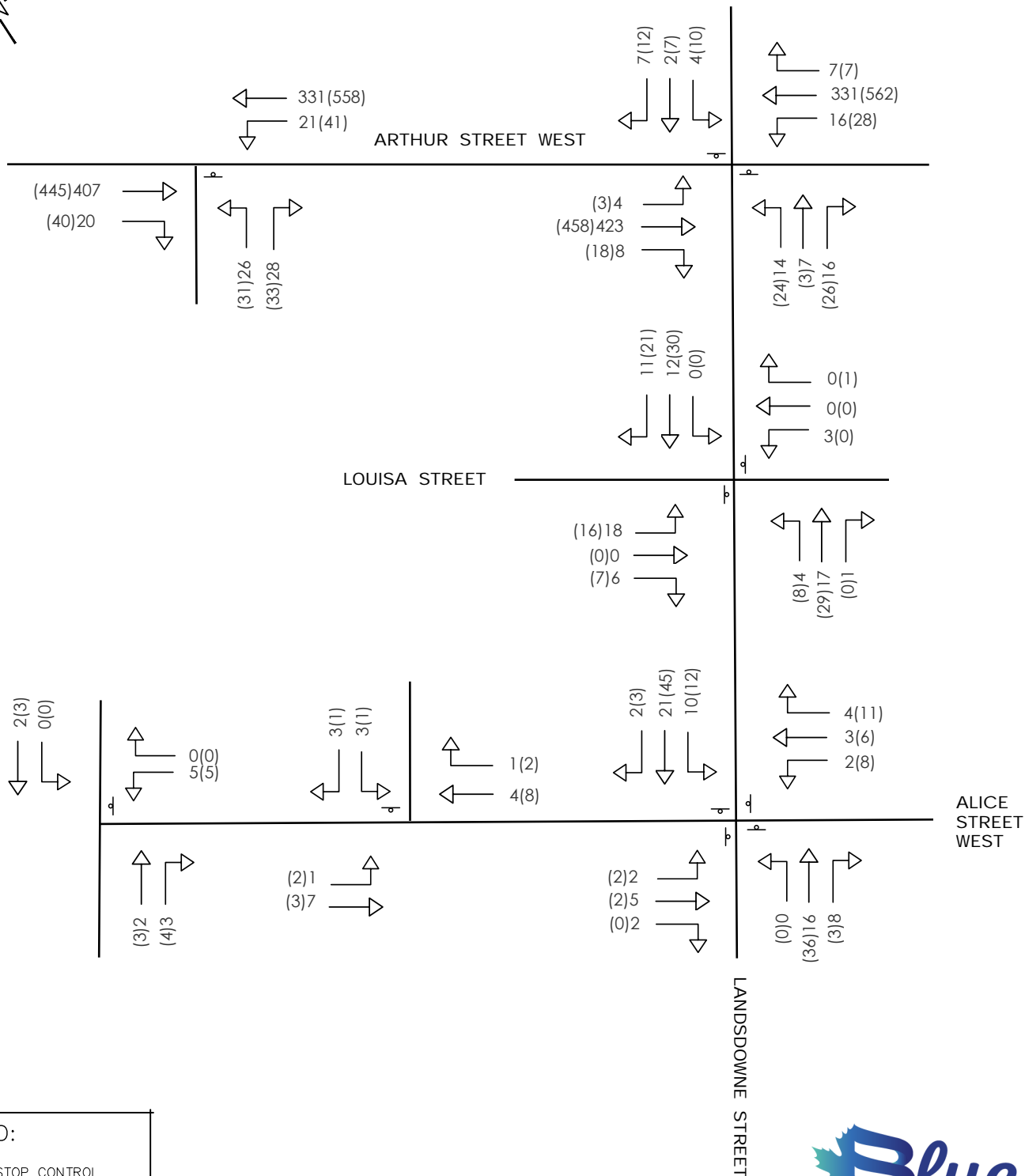


CROZIER
CONSULTING ENGINEERS


ADMIRAL BUILDING
1 FIRST STREET, SUITE 200
COLLINGWOOD, ON L9Y 1A1
705 446-3510 T
705 446-3520 F
WWW.CFCROZIER.CA

Drawn	D.B.	Design	D.B.	Project No.	2142-6059
Date	23/12/2021	Check	E.H.	Scale	N.T.S.
				Dwg.	FIG. 15

NOTE: THIS FIGURE IS FOR SCHEMATIC PURPOSES ONLY & IS NOT TO BE SCALED.



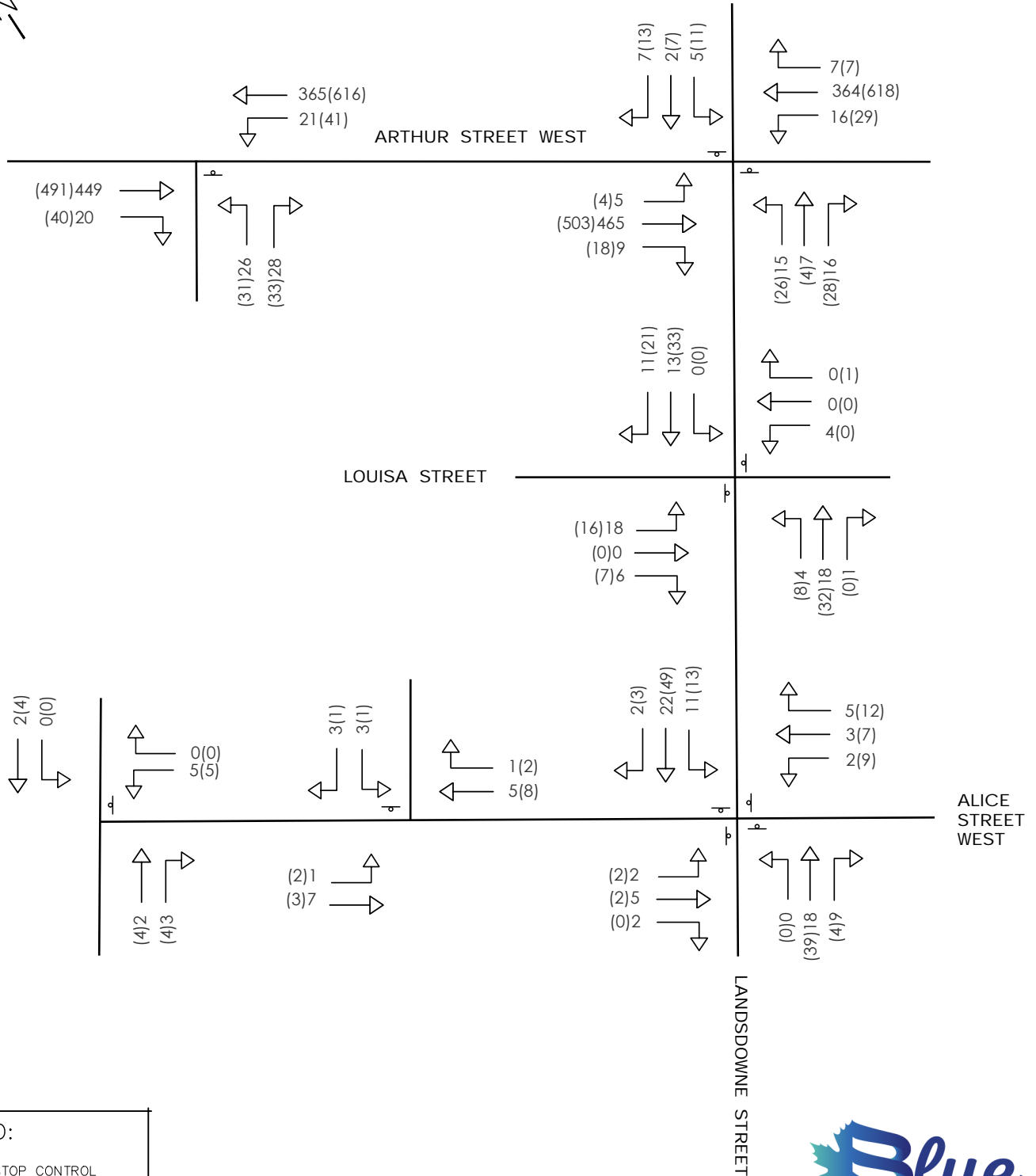
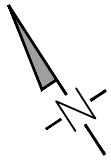
LEGEND:

 STOP CONTROL
 AM(PM) WEEKDAY AM(PM)
 PEAK HOUR VOLUMES



Project The Blue Meadows Inc. 125 Arthur Street	<div data-bbox="932 1793 1045 1919"> </div> <div data-bbox="1062 1814 1289 1898"> CROZIER CONSULTING ENGINEERS </div> <div data-bbox="1289 1793 1516 1919"> ADMIRAL BUILDING 1 FIRST STREET, SUITE 200 COLLINGWOOD, ON L9Y 1A1 705 446-3510 T 705 446-3520 F WWW.CFCROZIER.CA </div>			
Drawing 2026 FUTURE TOTAL VOLUMES	Drawn D.B.	Design D.B.	Project No. 2142-6059	Dwg. FIG. 16
Date 23/12/2021	Check E.H.	Scale N.T.S.		

NOTE: THIS FIGURE IS FOR SCHEMATIC PURPOSES ONLY & IS NOT TO BE SCALED.



LEGEND:



STOP CONTROL

AM(PM) WEEKDAY AM(PM)
PEAK HOUR VOLUMES

Project

The Blue Meadows Inc.
125 Arthur Street

Drawing

2031 FUTURE TOTAL VOLUMES



CROZIER
CONSULTING ENGINEERS

ADMIRAL BUILDING
1 FIRST STREET, SUITE 200
COLLINGWOOD, ON L9Y 1A1
705 446-3510 T
705 446-3520 F
WWW.CFCROZIER.CA

Drawn

D.B.

Design

D.B.

Project No.

2142-6059

Date

23/12/2021

Check

E.H.

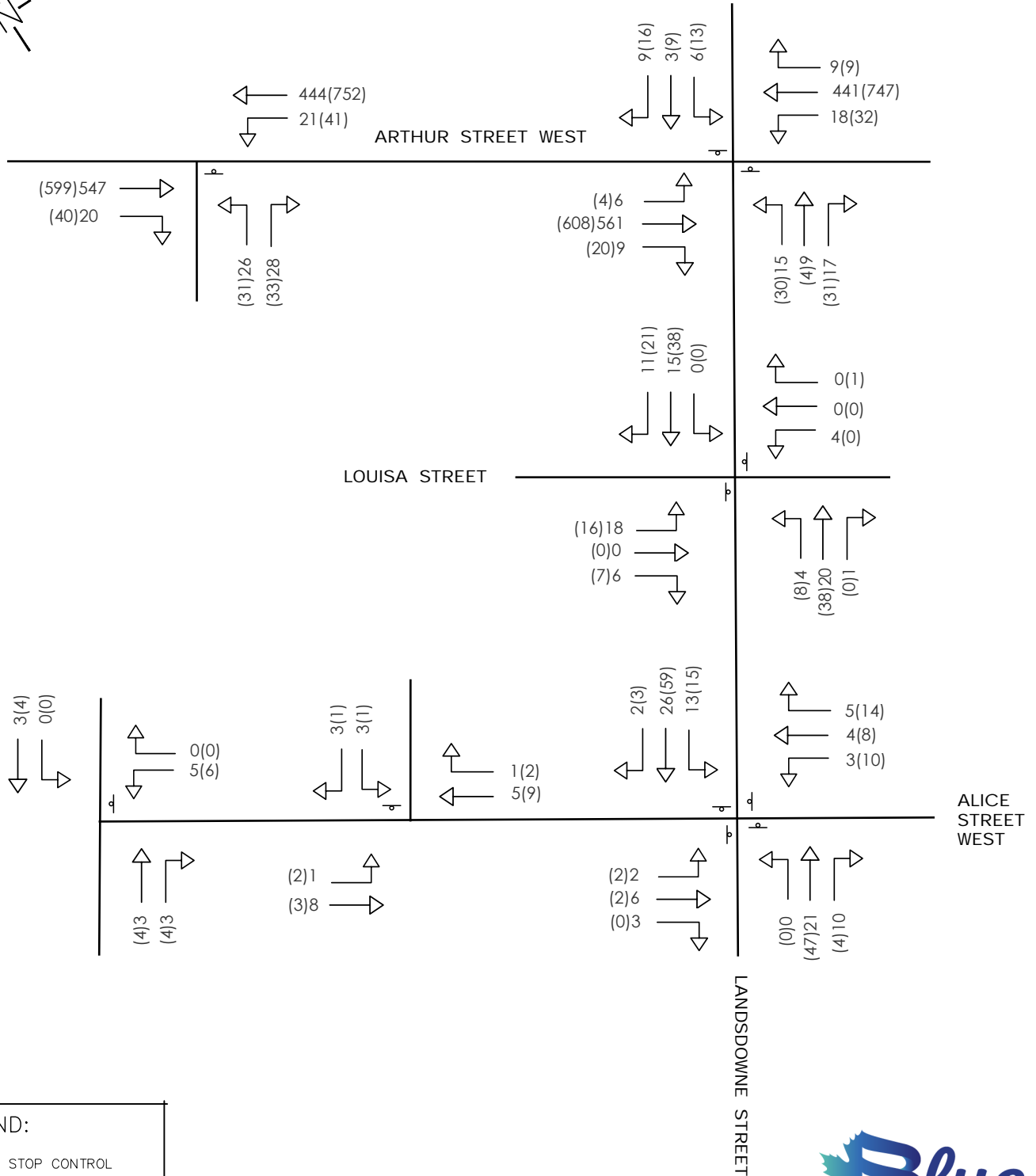
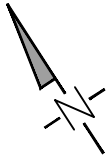
Scale

N.T.S.

Dwg.

FIG. 17

NOTE: THIS FIGURE IS FOR SCHEMATIC PURPOSES ONLY & IS NOT TO BE SCALED.



Project

The Blue Meadows Inc.
125 Arthur Street

Drawing

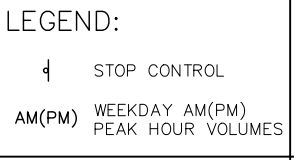
2041 FUTURE TOTAL VOLUMES



CROZIER
CONSULTING ENGINEERS

ADMIRAL BUILDING
1 FIRST STREET, SUITE 200
COLLINGWOOD, ON L9Y 1A1
705 446-3510 T
705 446-3520 F
WWW.CFCROZIER.CA

Drawn	D.B.	Design	D.B.	Project No.	2142-6059
Date	23/12/2021	Check	E.H.	Scale	N.T.S.
				Dwg.	FIG. 18



THE BLUE MEADOWS INC.
125 ARTHUR STREET

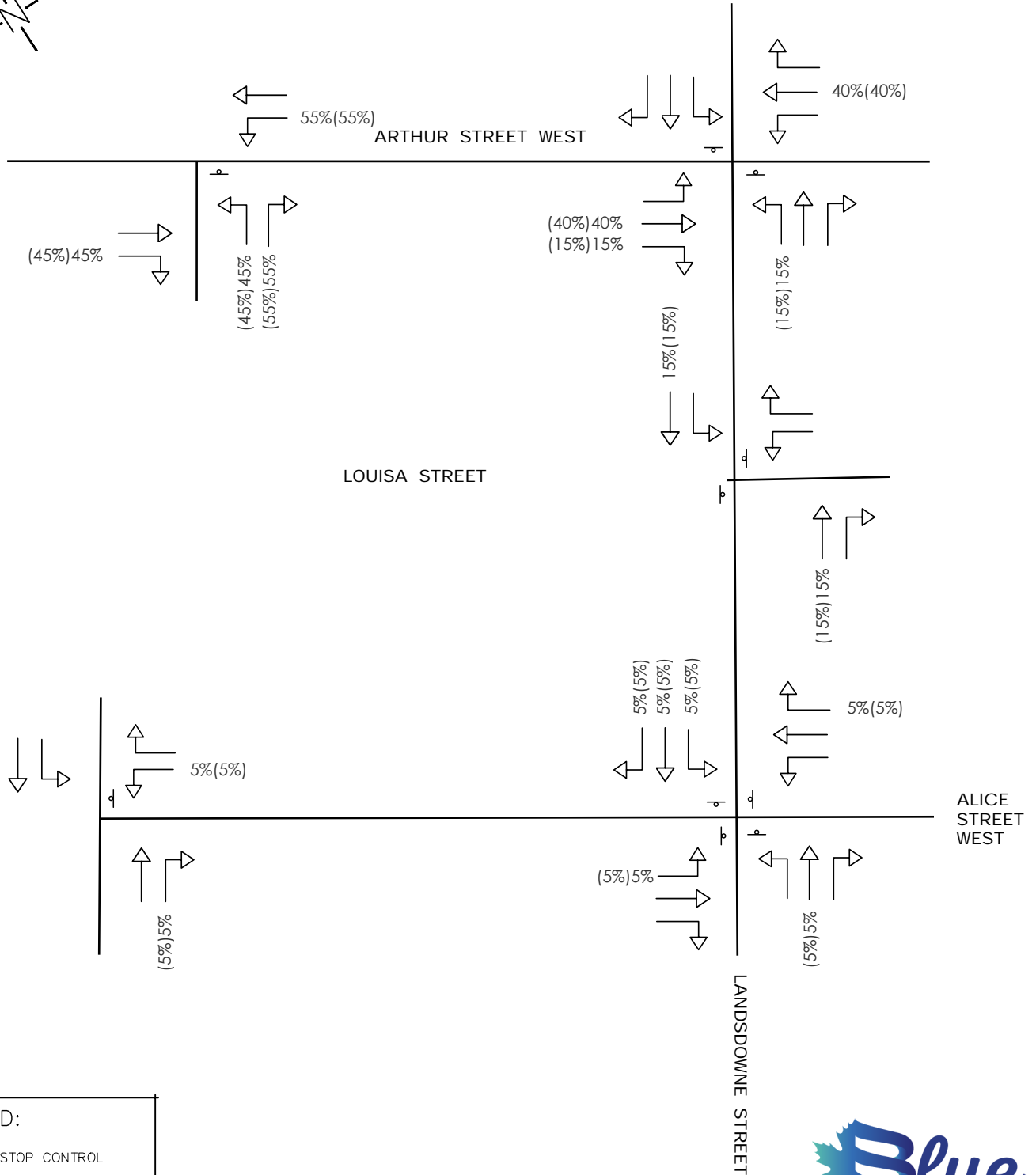


ADMIRAL BUILDING
1 FIRST STREET, SUITE 200
COLLINGWOOD, ON L9Y 1A1
705 446-3510 T
705 446-3520 F
WWW.CFCROZIER.CA

SENSITIVITY ANALYSIS RESIDENTIAL TRIP DISTRIBUTION

Drawn D.B.	Design D.B.	Project No. 2142-6059	
Date 23/12/2021	Check E.H.	Scale N.T.S.	Dwg. FIG. 19

NOTE: THIS FIGURE IS FOR SCHEMATIC PURPOSES ONLY & IS NOT TO BE SCALED.



LEGEND:

d STOP CONTROL

AM(PM) WEEKDAY AM(PM)
PEAK HOUR VOLUMES



Project

THE BLUE MEADOWS INC.
125 ARTHUR STREET



CROZIER
CONSULTING ENGINEERS

ADMIRAL BUILDING
1 FIRST STREET, SUITE 200
COLLINGWOOD, ON L9Y 1A1
705 446-3510 T
705 446-3520 F
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Project No.

2142-6059

Date

23/12/2021

Check

E.H.

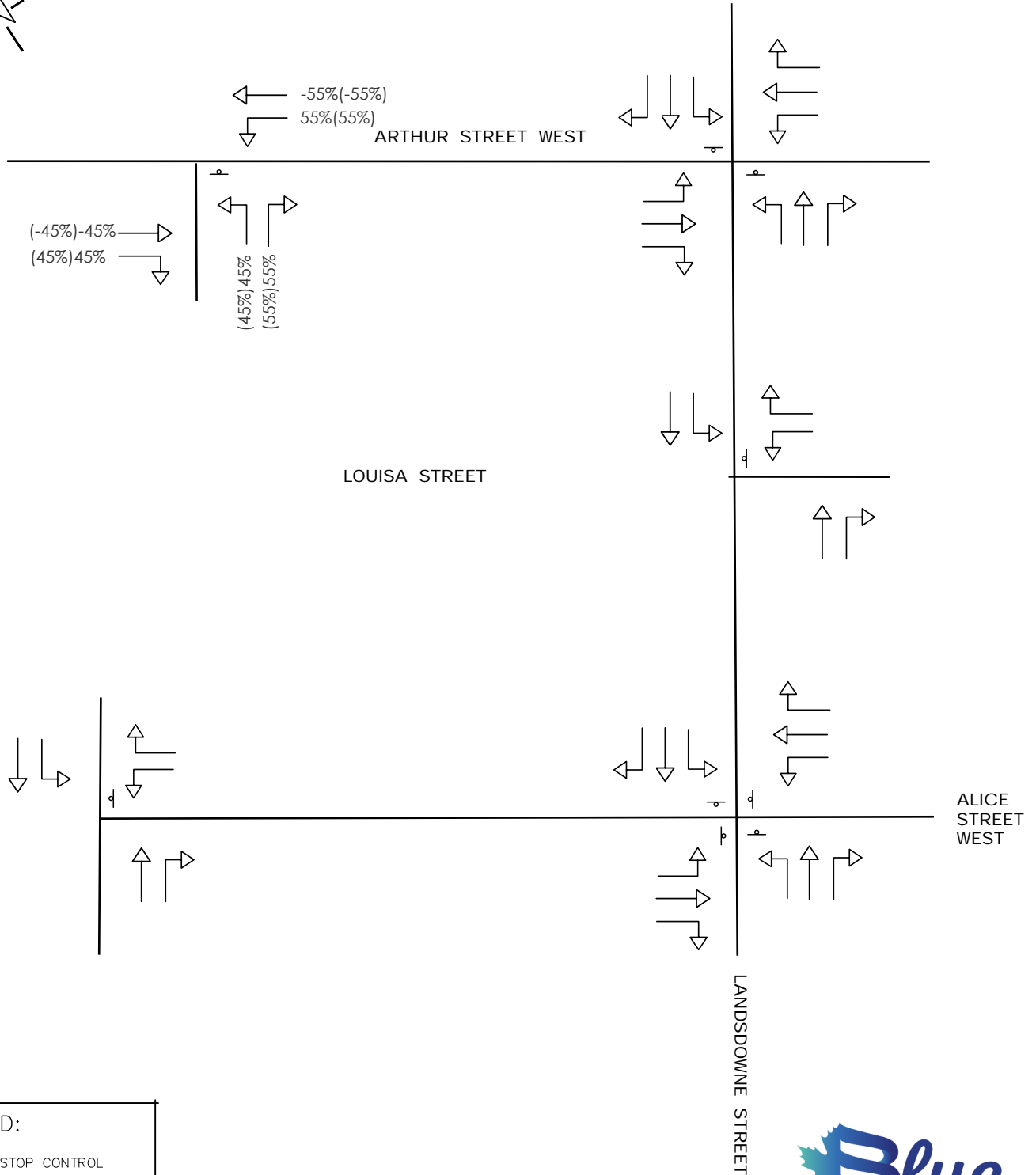
Scale

N.T.S.

Dwg.

FIG. 20

NOTE: THIS FIGURE IS FOR SCHEMATIC PURPOSES ONLY & IS NOT TO BE SCALED.



LEGEND:

d STOP CONTROL
 AM(PM) WEEKDAY AM(PM)
 PEAK HOUR VOLUMES



Project

THE BLUE MEADOWS INC.
 125 ARTHUR STREET

Drawing

SENSITIVITY ANALYSIS COMMERCIAL PASS-BY TRIP
 DISTRIBUTION

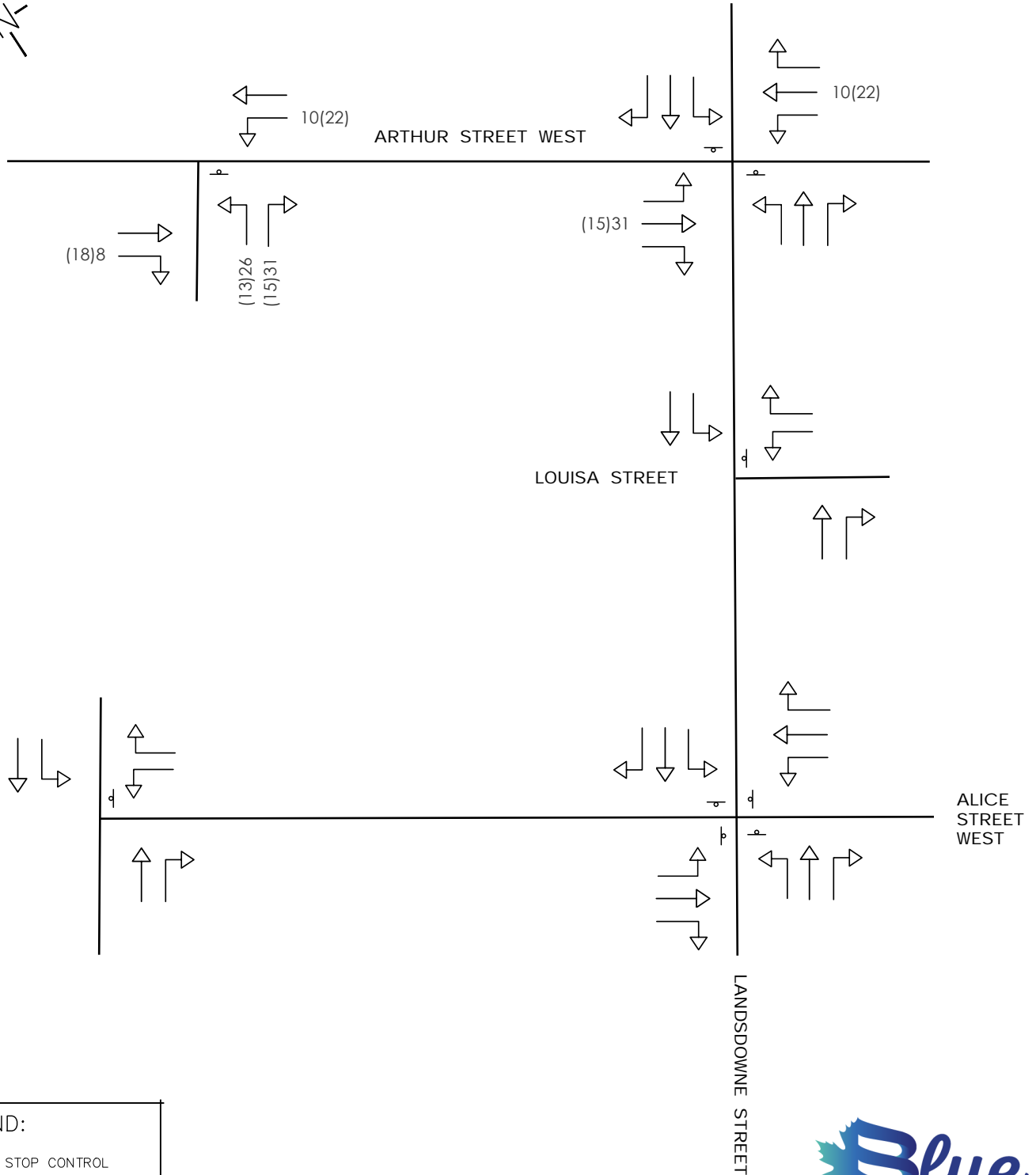
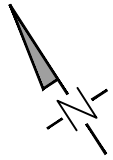


CROZIER
 CONSULTING ENGINEERS

ADMIRAL BUILDING
 1 FIRST STREET, SUITE 200
 COLLINGWOOD, ON L9Y 1A1
 705 446-3510 T
 705 446-3520 F
 WWW.CFCROZIER.CA

Drawn D.B.	Design D.B.	Project No. 2142-6059	
Date 23/12/2021	Check E.H.	Scale N.T.S.	Dwg. FIG. 21

NOTE: THIS FIGURE IS FOR SCHEMATIC PURPOSES ONLY & IS NOT TO BE SCALED.



LEGEND:

d STOP CONTROL
AM(PM) WEEKDAY AM(PM)
PEAK HOUR VOLUMES



Project

THE BLUE MEADOWS INC.
125 ARTHUR STREET

Drawing

SENSITIVITY ANALYSIS RESIDENTIAL TRIP
ASSIGNMENT

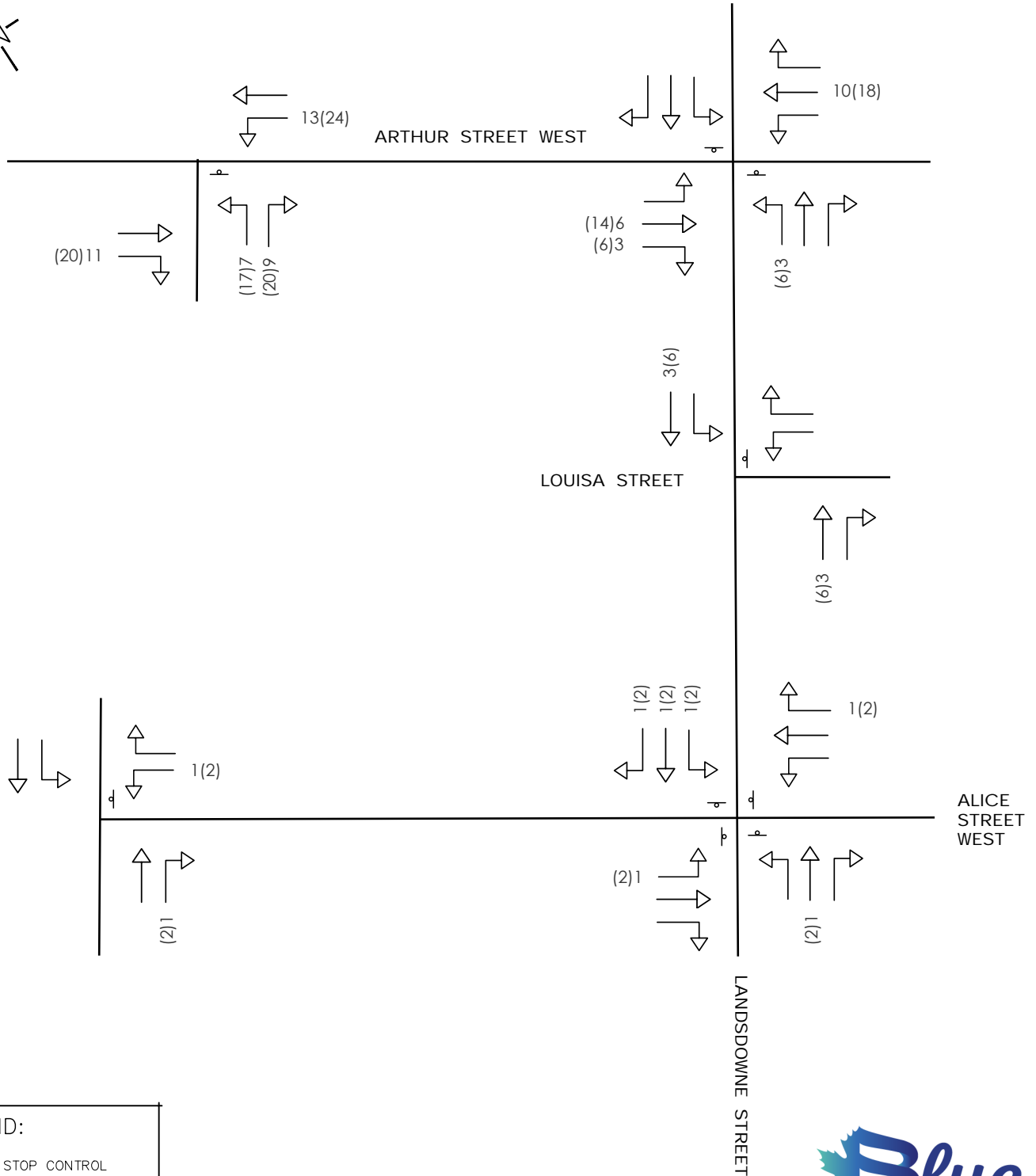
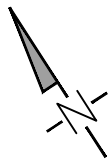


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CONSULTING ENGINEERS

ADMIRAL BUILDING
1 FIRST STREET, SUITE 200
COLLINGWOOD, ON L9Y 1A1
705 446-3510 T
705 446-3520 F
WWW.CFCROZIER.CA

Drawn	D.B.	Design	D.B.	Project No.	2142-6059
Date	23/12/2021	Check	E.H.	Scale	N.T.S.
				Dwg.	FIG. 22

NOTE: THIS FIGURE IS FOR SCHEMATIC PURPOSES ONLY & IS NOT TO BE SCALED.



LEGEND:

d STOP CONTROL
AM(PM) WEEKDAY AM(PM)
PEAK HOUR VOLUMES



Project

THE BLUE MEADOWS INC.
125 ARTHUR STREET

Drawing

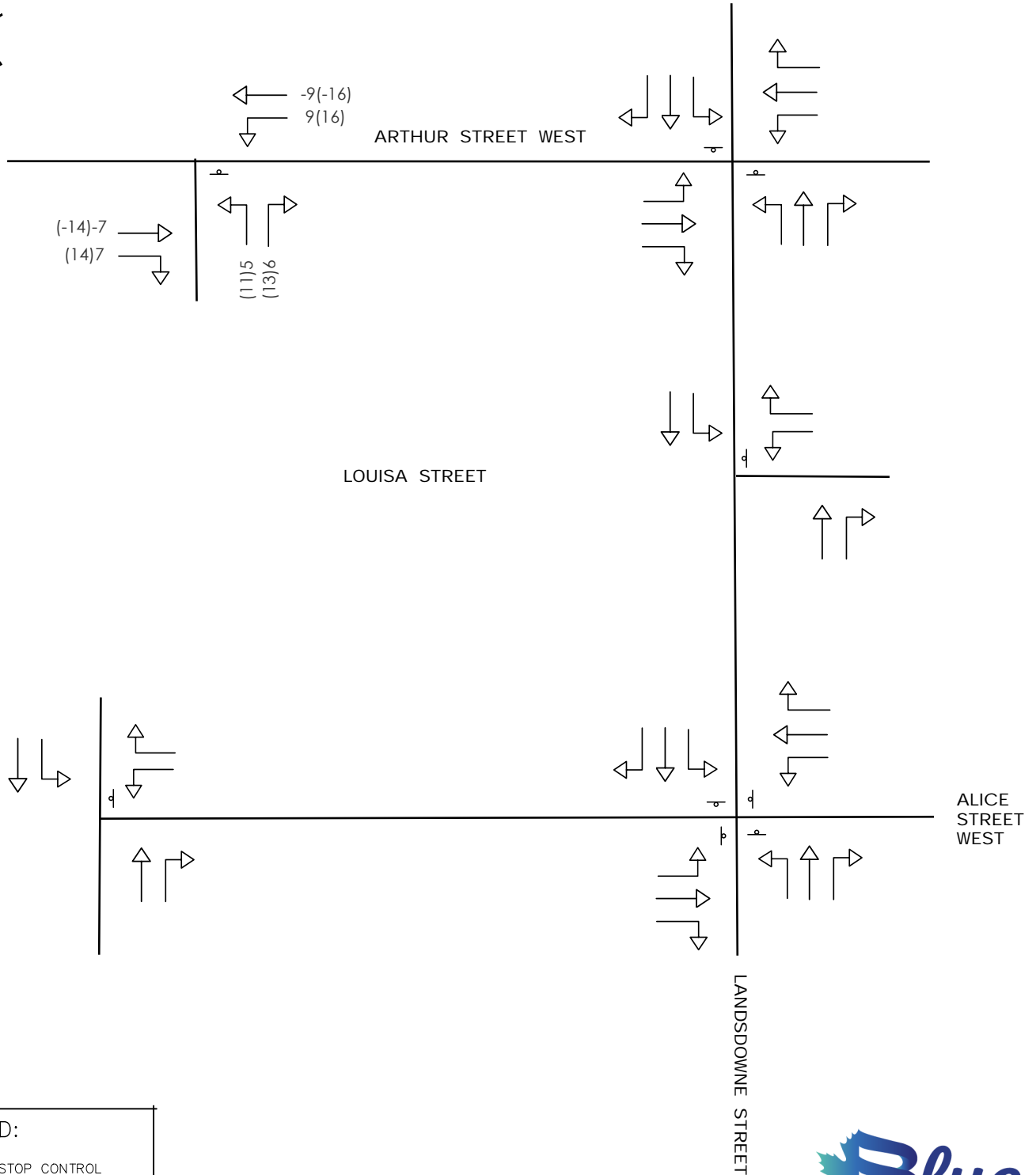
SENSITIVITY ANALYSIS COMMERCIAL PRIMARY TRIP
ASSIGNMENT




CROZIER
CONSULTING ENGINEERS

ADMIRAL BUILDING
1 FIRST STREET, SUITE 200
COLLINGWOOD, ON L9Y 1A1
705 446-3510 T
705 446-3520 F
WWW.CFCROZIER.CA

Drawn	D.B.	Design	D.B.	Project No.	2142-6059
Date	23/12/2021	Check	E.H.	Scale	N.T.S.
				Dwg.	FIG. 23



LEGEND:

 STOP CONTROL
 AM(PM) WEEKDAY AM(PM)
 PEAK HOUR VOLUMES



Project

THE BLUE MEADOWS INC.
125 ARTHUR STREET

Drawing

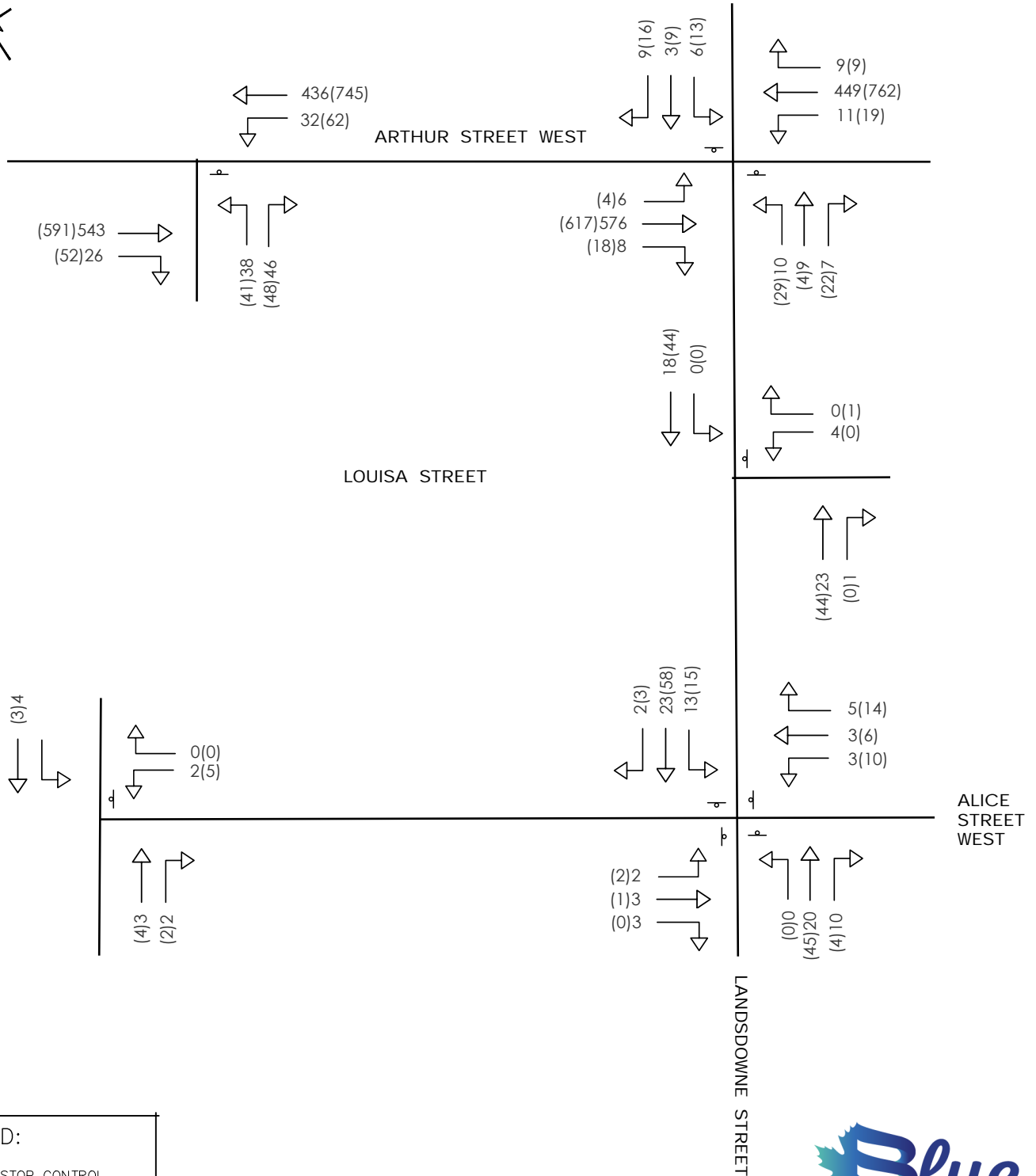
SENSITIVITY ANALYSIS COMMERCIAL PASS-BY TRIP
ASSIGNMENT



CROZIER
CONSULTING ENGINEERS

ADMIRAL BUILDING
1 FIRST STREET, SUITE 200
COLLINGWOOD, ON L9Y 1A1
705 446-3510 T
705 446-3520 F
WWW.CFCROZIER.CA

Drawn	D.B.	Design	D.B.	Project No.	2142-6059
Date	23/12/2021	Check	E.H.	Scale	N.T.S.
				Dwg.	FIG. 24



LEGEND:

d STOP CONTROL

AM(PM) WEEKDAY AM(PM)
PEAK HOUR VOLUMES



Project

The Blue Meadows Inc.
125 Arthur Street

Drawing

SENSITIVITY ANALYSIS FUTURE TOTAL 2041 TRAFFIC
VOLUMES



CROZIER
CONSULTING ENGINEERS

ADMIRAL BUILDING
1 FIRST STREET, SUITE 200
COLLINGWOOD, ON L9Y 1A1
705 446-3510 T
705 446-3520 F
WWW.CFCROZIER.CA

Drawn	D.B.	Design	D.B.	Project No.	2142-6059
Date	23/12/2021	Check	E.H.	Scale	N.T.S.
				Dwg.	FIG. 25