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Brown Lands

Traffic Impact Study

Prepared For: Strathburn Almonte Regional Inc.

BROWN LANDS
ALMONTE, ONTARIO
TRAFFIC IMPACT STUDY

Prepared By:

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February 2023
Resubmitted: February 2024

Novatech File: 118178
Ref: R-2023-002

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Reference: **Brown Lands**
Traffic Impact Study
Novatech File No. 118178

This revised Traffic Impact Study has been prepared in support of the Brown Lands subdivision. The subdivision is located on the northeast corner of the County Road 29/Christian Street/Strathburn Street/Gleeson Road intersection.

This revised study has been prepared to review modifications to the proposed Draft Plan as well as to address Municipality and community concerns.

If you have any questions or comments regarding this report, please feel free to contact Brad Byvelds, or the undersigned.

Yours truly,

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EXECUTIVE SUMMARY

This revised Traffic Impact Study (TIS) has been prepared in support of the Brown Lands subdivision, located on the northeast corner of the County Road 29/Christian Street/Strathburn Street/Gleeson Road intersection. The TIS has been revised to review modifications to the proposed Draft Plan as well as to address Municipality and community concerns. Revisions to the report incorporate an operational analysis of an expanded study area including the County Road 29/Strathburn Street/Gleeson Street, Christian Street/Almonte Street, Strathburn Street/Malcolm Street, and Malcolm Street/Almonte Street intersections. A sensitivity analysis has been included in Section 6.4 to review the impacts of the development should a higher proportion of vehicles use Malcolm Street. Section 8.0 has been updated to include a discussion of alternatives considered to limit impacts of the proposed development on Malcolm Street and to review future pedestrian and cycling improvements to Strathburn Street and Malcolm Street.

Currently the subject site is currently occupied by farmlands. The property has a 'Residential' Land Use from the Municipality of Mississippi Mills Official Plan (OP) and is zoned as 'Development' area in the Zoning By-law (ZBL). From the Lanark County OP the property has a 'Settlement Area' Land Use.

The Brown Lands subdivision includes a total of 143 single detached units, 18 semi-detached units, and 74 townhouse units. The development proposes two new accesses, one to Strathburn Street mid-block between County Road 29 and Malcolm Street and one to County Road 29 northwest of the County Road 29/Christian Street/Strathburn Street/Gleeson Road intersection. The development is anticipated to be constructed in phases with full buildout occurring in 2029.

The conclusions and recommendations of this TIS can be summarized as follows:

- The proposed development is anticipated to generate 153 trips (38 in, 115 out) in the AM peak and 198 trips (125 in, 73 out) in the PM peak;

- Site generated traffic is not anticipated to have a significant impact on the operating conditions at the County Road 29/Strathburn Street/Gleeson Road, Christian Street (CR29)/Almonte Street, Strathburn Street/Malcolm Street, and Almonte Street/Malcolm Street intersections;

- The County Road 29/Street 1 intersection is anticipated to operate with a LOS B during the AM and PM peak hours under the 2034 total traffic conditions. A southbound left turn lane is not warranted at this intersection. However, a northbound right turn taper is recommended based on the projected traffic volumes,

- The Strathburn Street/Street 2 intersection is anticipated to operate with a LOS A during the AM and PM peak hours under the 2034 total traffic conditions. Auxiliary turn lanes are not warranted at this intersection;

- Based on the sensitivity analysis of an unrealistic traffic distribution and assignment, 50% of site traffic arriving and departing to the east via the Almonte Street/Malcolm Street intersection is anticipated to increase southbound delays from 13 seconds to 15 seconds during the AM peak hour and from 17 seconds to 21 seconds during the PM peak hour at the Almonte Street/Malcolm Street intersection. The southbound delays correspond to a LOS B or C and are considered acceptable. However, it is our professional opinion that due

to the layout of the subdivision, turn restrictions at the Strathburn Street/Street 2 intersection, and operations at the Christian Street/Almonte Street intersection, the proposed subdivision traffic using this route will be far less;

- Sufficient intersection sight distance is available at each access for all turning movements;

- Sidewalks are proposed on one side of all roadways within the subdivision to provide pedestrian connectivity to the surrounding roadways and the proposed park. Cyclists will be accommodated within shared use lanes along the roadways within the subdivision;

- A new stone dust pathway is proposed through the pump station/park, connecting Street 2 and Street Five. It will continue north of Street 5 along the north tributary. A stone dust pathway is also proposed in the northeast corner of the subdivision, connecting Street 5 to the existing mountain bike trail along the Mississippi River. Opportunities for a potential river lookout at this location will be investigated during the detailed design of the subdivision;

- Signage is proposed to prohibit the southbound left turn movement from Street 2 onto Strathburn Street. The proposed signage is intended to minimize the impacts of development traffic on the existing community along Malcolm Street;

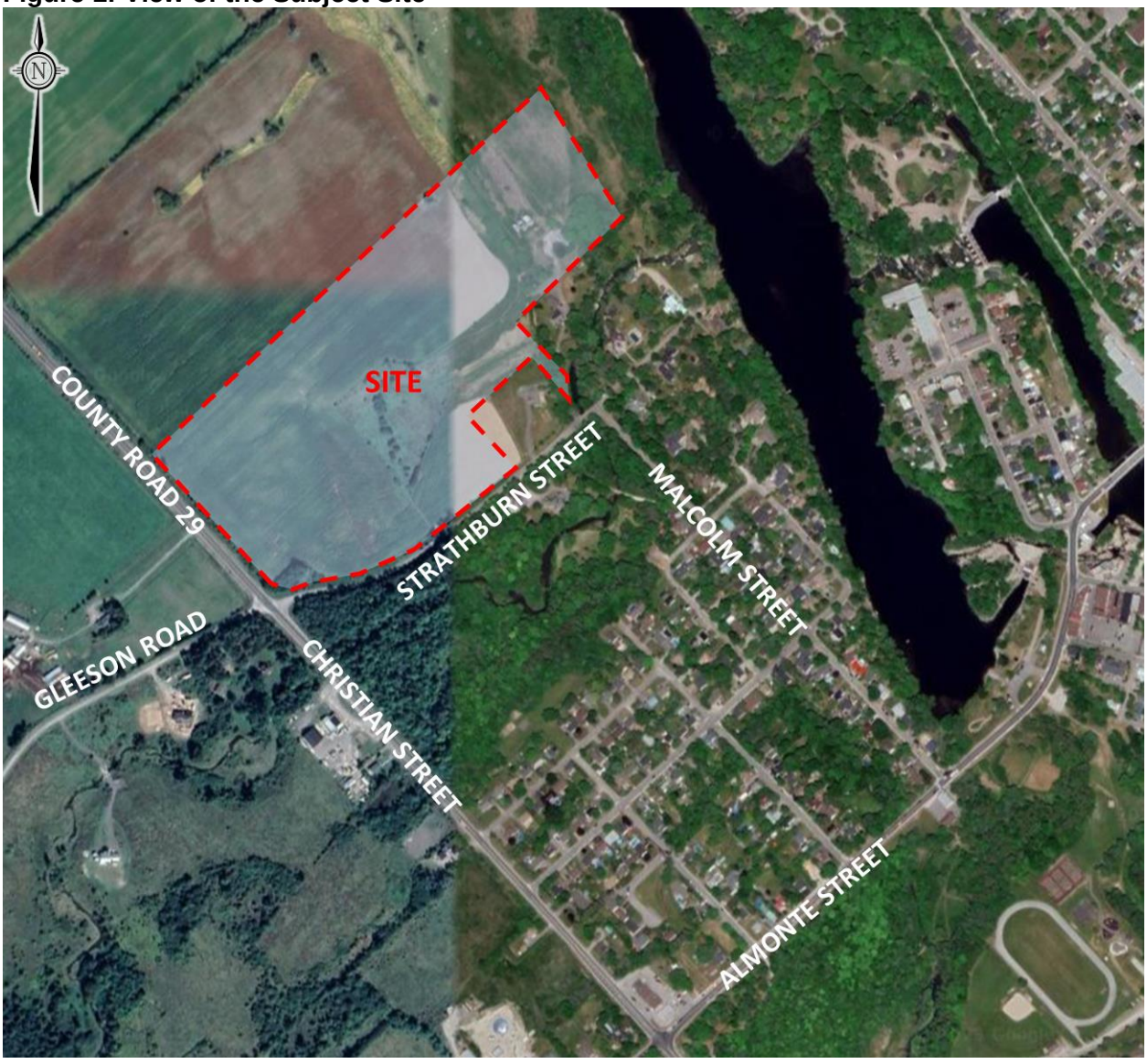
- The future cycling and pedestrian improvements identified in the 2016 MMTMP will provide system connectivity between the proposed on-site facilities and the existing community to the southeast. As the Municipality is currently updating the TMP, it is recommended that the aforementioned facilities be prioritized to meet the needs of the existing and future communities.

1.0 INTRODUCTION

This revised Traffic Impact Study (TIS) has been prepared in support of the Brown Lands subdivision, located on the northeast corner of the County Road 29/Christian Street/Strathburn Street/Gleeson Road intersection. The TIS has been revised to review modifications to the proposed Draft Plan as well as to address Municipality and community concerns. Revisions to the report incorporate an operational analysis of an expanded study area including the County Road 29/Strathburn Street/Gleeson Street, Christian Street/Almonte Street, Strathburn Street/Malcolm Street, and Malcolm Street/Almonte Street intersections. A sensitivity analysis has been included in Section 6.4 to review the impacts of the development should a higher proportion of vehicles use Malcolm Street. Section 8.0 has been updated to include a discussion of alternatives considered to limit impacts of the proposed development on Malcolm Street and to review future pedestrian and cycling improvements to Strathburn Street and Malcolm Street.

An aerial view of the subject site is provided in **Figure 1**.

Figure 1: View of the Subject Site



Currently the subject site is currently occupied by farmlands. The property has a 'Residential' Land Use from the Municipality of Mississippi Mills Official Plan (OP) and is zoned as 'Development' area in the Zoning By-law (ZBL). From the Lanark County OP the property has a 'Settlement Area' Land Use.

1.1 Proposed Development

The Brown Lands subdivision is proposed to include a total of 143 single detached units, 18 semi-detached units, and 74 townhouse units. The development proposes two new accesses, one to Strathburn Street mid-block between County Road 29 and Malcolm Street and one to County Road 29 northwest of the County Road 29/Christian Street/Strathburn Street/Gleeson Road intersection. The development is anticipated to be constructed in phases with full buildout occurring in 2029.

A copy of the Draft Plan of Subdivision is included in **Appendix A.**

1.2 Analysis Parameters

The study will include an analysis of the future accesses to County Road 29 and Strathburn Street, the County Road 29/Christian Street/Strathburn Street/Gleeson Road intersection, the Almonte Street/Malcolm Street intersection, the Malcolm Street/Strathburn Street intersection, and the Almonte Street/Christian Street intersection for the following years:

- 2029 Full subdivision build-out
- 2034 Five-year horizon

1.3 Analysis Methods

Intersection capacity analysis was completed using Synchro 11 software. This software uses methodology from the Highway Capacity Manual (HCM), published by the Transportation Research Board, to evaluate signalized and unsignalized intersections.

Intersection operating conditions are commonly described in terms of a Level of Service (LOS) and volume to capacity (v/c) ratio. LOS is a quality measure of speed, freedom to manoeuvre, interruptions, comfort, and convenience. Letters are assigned to six levels, with LOS 'A' representing optimal operating conditions and LOS 'F' representing failing operating conditions. Vehicle capacity is defined as the maximum number of vehicles that can pass a given point during a specified period under prevailing traffic conditions.

The LOS of a signalized intersection is typically related to the stopped delay per vehicle, measured in seconds. In the 2010 HCM, delay is defined as a measure of driver discomfort and frustration, fuel consumption, and lost travel time. For signalized intersections, Exhibit 18-4 of the 2010 HCM defines the relationship between control delay and LOS as follows:

LOS	Delay (sec)
A	<10
B	10 to 20
C	20 to 35
D	35 to 55

LOS	Delay (sec)
E	55 to 80
F	>80

At signalized intersections, the MTO *General Guidelines for the Preparation of Traffic Impact Studies* identify a v/c ratio of 0.85 as the threshold that defines a 'critical' movement.

The LOS of an unsignalized intersection is based on average control delay and is defined for individual movements. Control delay includes initial deceleration, queue move-up time, stopped time and final acceleration. For unsignalized intersections, Exhibit 19-1 of the 2010 HCM defines the relationship between control delay and LOS as follows:

LOS	Delay (sec/veh)
A	<10
B	10 to 15
C	15 to 25
D	25 to 35
E	35 to 50
F	>50

In this study, movements at signalized and unsignalized intersections have been evaluated in terms of the LOS as defined in the foregoing tables. Mitigation measures will be considered for movements with a LOS of E or F for unsignalized intersections, or a v/c ratio exceeding 0.85 for signalized intersections.

2.0 EXISTING CONDITIONS

2.1 Roadways

County Road 29 is a north-south roadway that extends from Ottawa Road 29 in the north to Ramsay Concession 8 in Carleton Place. Per the Municipality of Mississippi Mills 2016 Transportation Master Plan (MMTMP) it is an arterial road south of Almonte Street and a collector road north of Almonte Street. From Wylie Street to Old Perth Road, County Road 29 is known as Christian Street. Within the vicinity of the subject site, it has a two-lane undivided rural cross section with gravel shoulders. It has a posted speed limit of 60km/hr within the Town of Almonte, transitioning to a posted speed limit of 80km/hr approximately 350m north of Strathburn Street (north of the subject site). For the purposes of this report, this roadway is referred to as County Road 29 within the study area.

Strathburn Street is an east-west collector roadway that extends from County Road 29 to the Mississippi River. It has a two-lane undivided rural cross section with a road platform width of approximately 6.1m. It has a regulatory speed limit of 50km/h.

Gleeson Road is an east-west local roadway that extends from Ramsay Concession 8 to County Road 29. It has a two-lane undivided rural cross section with a gravel surface and a regulatory speed limit of 50km/h.

Malcolm Street is a north-south collector roadway that extends from Strathburn Street to Almonte Street. It has a two-lane undivided rural cross section from Strathburn Street to Dunn Street, where it transitions to an urban cross section with a sidewalk on the west side of the road. It has a posted speed limit of 40km/hr.

Almonte Street is an east-west collector roadway that extends from Mary Street to the Town of Almonte western limit. It has a two-lane undivided urban cross section and a regulatory speed limit of 50km/h.

2.2 Intersections

The County Road 29/Strathburn Street/Gleeson Road intersection operates under side street stop control, with free flow on County Road 29. A northbound right turn taper is provided along County Road 29. No other auxiliary lanes are currently provided at this intersection.

The Almonte Street/Christian Street intersection operates under the control of a traffic signal. A southbound auxiliary left turn lane is provided. No other auxiliary lanes are currently provided at this intersection. Pedestrian signal heads are provided on all approaches.

The Strathburn Street/Malcolm Street intersection operates under side street stop control on Malcolm Street. No auxiliary turn lanes are currently provided at this intersection.

The Almonte Street/Malcolm Street intersection operates under side street stop control on Malcolm Street. No auxiliary turn lanes are currently provided at this intersection. A pedestrian crossover type B is provided on the eastbound leg of the intersection.

2.3 Pedestrian and Cycling Facilities

Currently there are no sidewalks or cycling facilities provided on County Road 29, Strathburn Street or Gleeson Road within the vicinity of the proposed development. Almonte Street has a sidewalk on the north side between Christian Street and Euphemia Street which continues to the east on the south side of Almonte Street. Malcolm Street has a sidewalk on the west side from Main Street to Dunn Street.

The Almonte Riverside Trail begins along the north side of Strathburn Street mid-block between County Road 29 and Malcolm Street.

2.4 Transit

Currently there are no transit routes offered within the vicinity of the subject area.

2.5 Existing Traffic Volumes

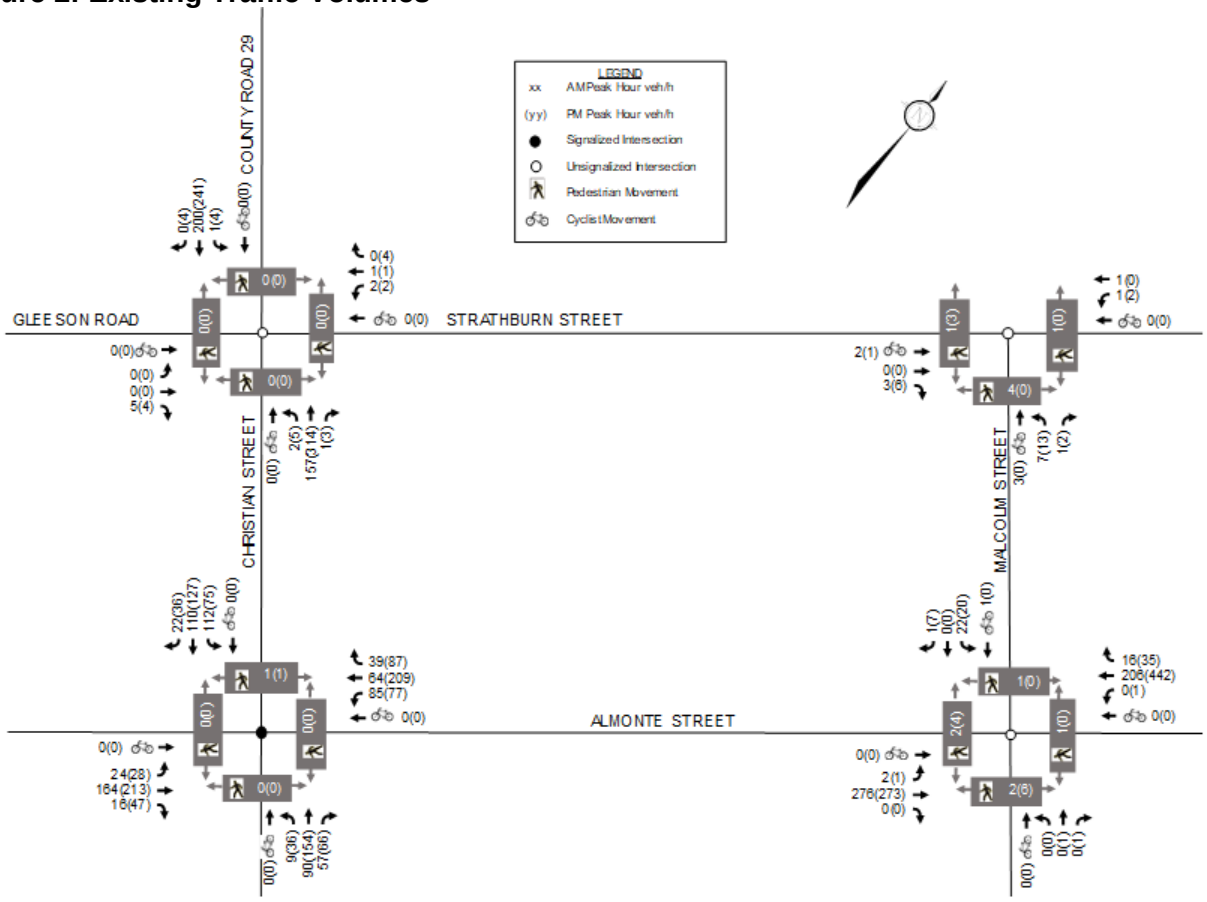
Weekday traffic counts were completed during the AM, mid-day, and PM peak periods (7:00-10:00AM, 11:30AM-1:30PM, and 3:00-6:00PM) and were used to determine the existing pedestrian, cyclist, and vehicular traffic volumes at the study area intersections. The traffic count dates and observed AM and PM peak hours are summarized in the following table.

Table 1: Traffic Count Summary

Intersection	Date	AM Peak Hour	PM Peak Hour
Almonte Street/Christian Street (CR29)	June 6, 2023	7:30-8:30AM	3:45-4:45PM
CR29/Strathburn Street/Gleeson Street	August 17, 2023	9:00-10:00AM	3:45-4:45PM
Malcolm Street/Strathburn Street	August 16, 2023	7:45-8:45AM	5:00-6:00PM
Almonte Street/Malcolm Street	August 17, 2023	8:45-9:45AM	4:00-5:00PM

Observed weekday AM and PM peak hour traffic volumes at the study area intersections are shown in **Figure 2**. Peak hour summary sheets of the above traffic counts are included in **Appendix B**.

Figure 2: Existing Traffic Volumes



3.0 PLANNED CONDITIONS

The construction of the full development will occur in phases with full buildout occurring in 2029. At this time there are no other significant developments owned by others within the vicinity of the study area that are anticipated to impact the proposed development.

The following table summarizes the active transportation projects in proximity of the subject site, as described in Table 34 of the MMTMP.

Table 2: Mississippi Mills Infrastructure Project Prioritization Plan Summary

Facility Type	Roadway	From	To	Priority
New Concrete Sidewalks	Almonte Street	Euphemia Street	Malcolm Street	Medium
	Almonte Street	Malcolm Street	Mill Street	Medium
	Malcolm Street	Strathburn Street	Dunn Street	Low
	Strathburn Street	Christian Street	Malcolm Street	Low
Urban Primary Routes	Almonte Street	Christian Street	Malcolm Street	High
Urban Secondary Routes	Malcolm Street	Strathburn Street	Almonte Street	Medium
	Strathburn Street	Christian Street	Malcolm Street	Medium

4.0 SITE TRAFFIC

4.1 Trip Generation

Trip generation assumptions are based on the Institute of Transportation Engineers' (ITE) *Trip Generation Manual* (11th Edition). The proposed residential development was estimated using the ITE code 210 (Single-Family Detached Housing) for Single Lots and ITE code 220 (Multifamily - Low-Rise) for the townhouses. **Table 3** outlines the trip generation results using the relevant rates for the proposed development.

Table 3: Trip Generation

Dwelling Type	Land Use Code	ITE Code	Units	AM Peak			PM Peak		
				IN	OUT	TOT	IN	OUT	TOT
Single Family	Single-Family Detached Housing	210	143	26	77	103	88	51	139
Semi-Detached	Single-Family Attached Housing	215	18	1	3	4	4	3	7
Townhouse	Multi-Family Low-Rise	220	74	11	35	46	33	19	52
			Total	**38**	**115**	**153**	**125**	**73**	**198**

From the previous table, the proposed development is anticipated to generate 153 trips (38 in, 115 out) in the AM peak and 198 trips (125 in, 73 out) in the PM peak.

4.2 Trip Distribution

The distribution of trips has been derived based on the existing traffic patterns and is described as follows:

- 20% to/from the north via County Road 29
- 20% to/from the south via County Road 29
- 50% to/from the east via Almonte Street
- 10% to/from the west via Almonte Street

4.3 Trip Assignment

Based on the layout of the subdivision and logical routing assumptions all trips generated by the proposed development have been assigned to the accesses at County Road 29 and Strathburn

Street. A summary of the percentage of trips assigned to each access can be seen in the following table.

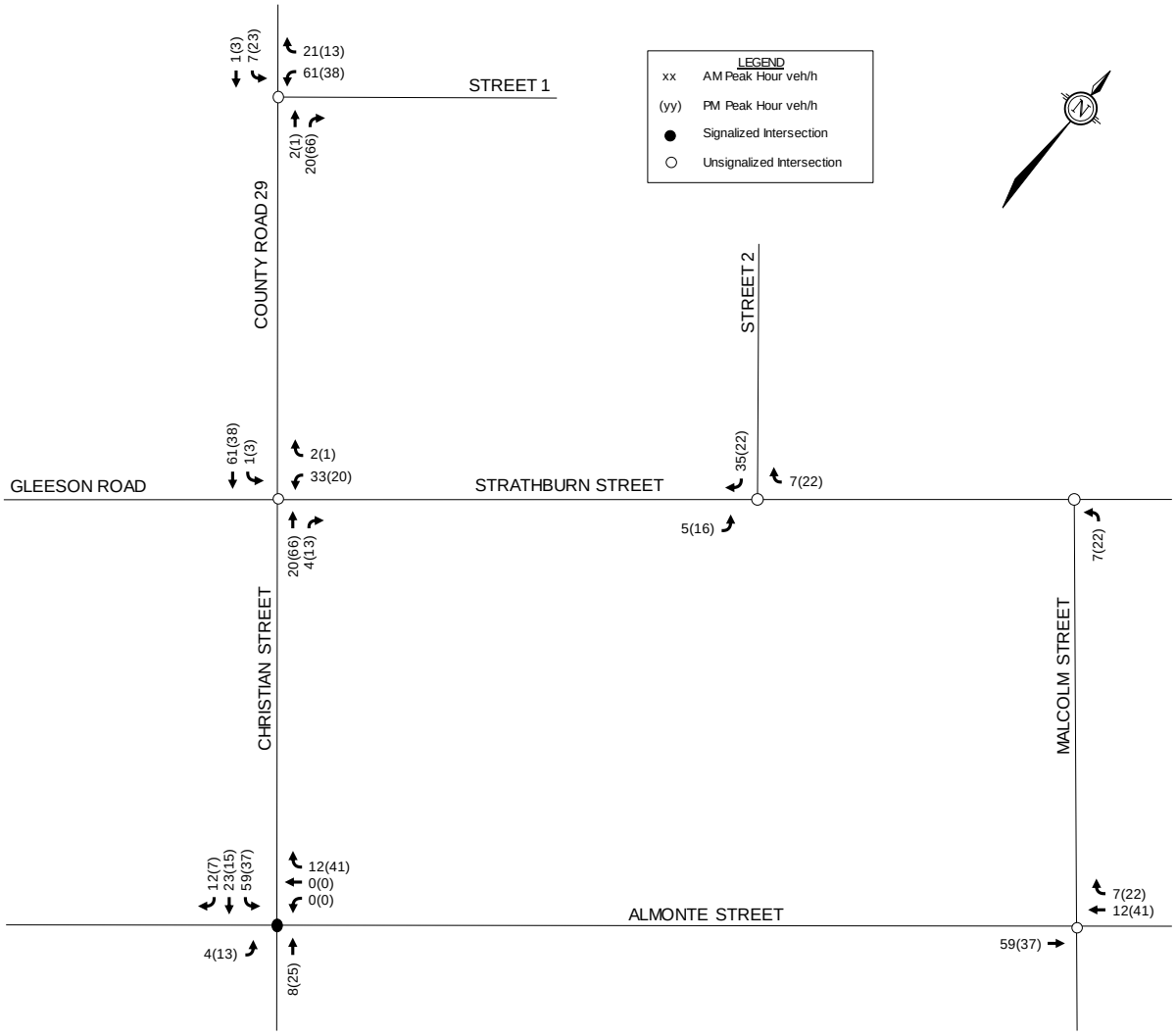
Table 4: Trip Assignment Summary

Distribution	Access Assigned To	
	County Road 29	Strathburn Street
North via County Road 29	90%	10%
South via County Road 29	65%	35%
East via Almonte Street		
West via Almonte Street		

In order to minimize impacts of development traffic on the existing community along Malcolm Street, a southbound left turn prohibition is proposed at the Strathburn Street access. As such all traffic departing to the south/east have been assigned to County Road 29. For the purposes of this analysis, the traffic assigned to the Strathburn Street access that is arriving from the east via Almonte Street is assumed to use Malcolm Street.

Traffic generated by the proposed residential subdivision for the 2029 build-out year is shown in **Figure 3**.

Figure 3: 2029 Site Generated Trips



5.0 BACKGROUND TRAFFIC CONDITIONS

5.1 Historic Growth

In September/October of 2019 and 2021 Lanark County completed AADT counts along County Road 29. A comparison of the 2019 and 2021 traffic counts was completed to develop a background growth rate and can be seen in the following table.

Table 5: Traffic Count Data Comparison

Day	Year		Growth Rate
	2019	2021	
Tuesday	7660	7699	0.25%
Wednesday	7942	7901	-0.25%
Thursday	8034	8194	1%
TOTAL	**23,636**	**23,794**	**0.33%**

Based on the above traffic volumes, traffic growth along County Road is expected to be between 0% and 1%. To provide a conservative analysis, a growth factor of 1% was applied to traffic along County Road 29 during the AM and PM peak hours.

5.2 Other Area Developments

For the purposes of this report no other developments have been identified that would significantly impact traffic volumes within the study area.

Background traffic volumes for the 2029 buildout year and the 2034 horizon year can be found in **Figures 4** and **5**, respectively.

Figure 4: 2029 Background Traffic Volumes

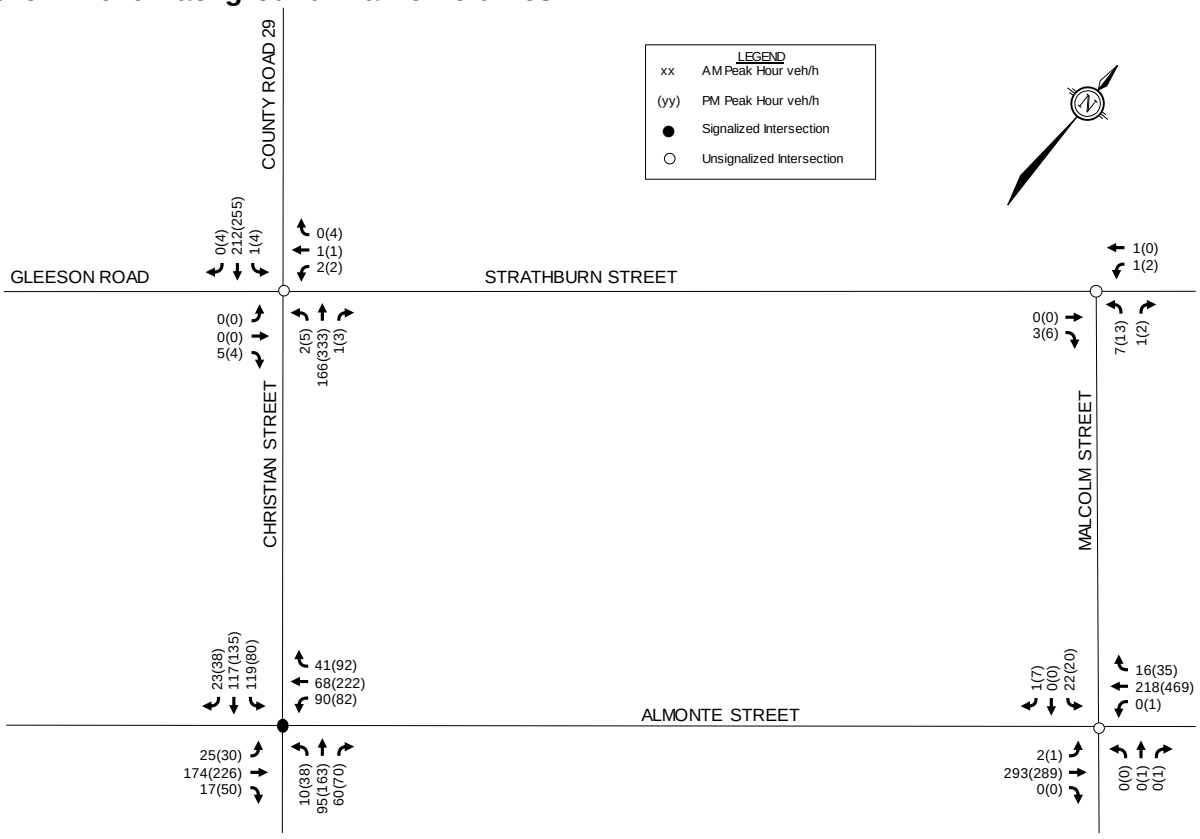
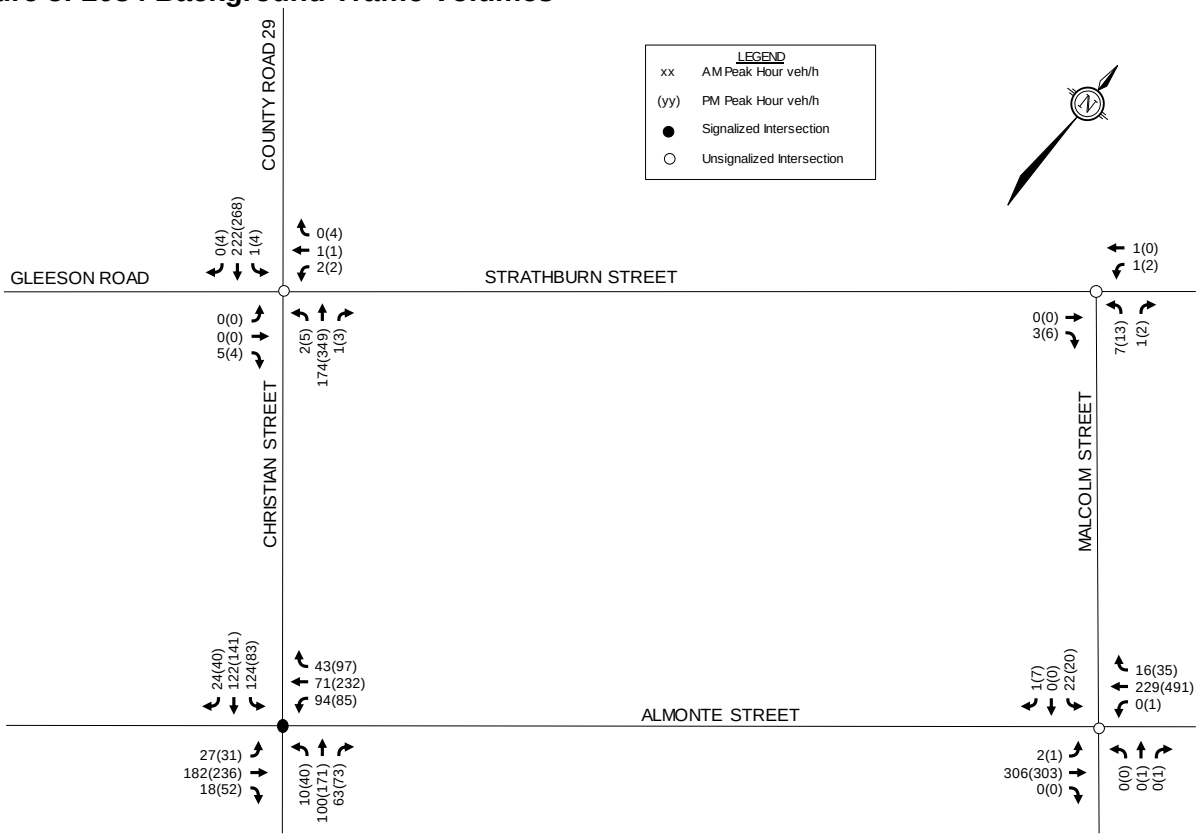


Figure 5: 2034 Background Traffic Volumes



Total traffic volumes for the 2029 build out year and 2034 horizon year have been calculated by adding the site generated traffic volumes with the projected background traffic volumes. Total traffic volumes for 2029 and 2034 are shown in **Figures 6** and **7**, respectively.

Figure 6: 2029 Total Traffic

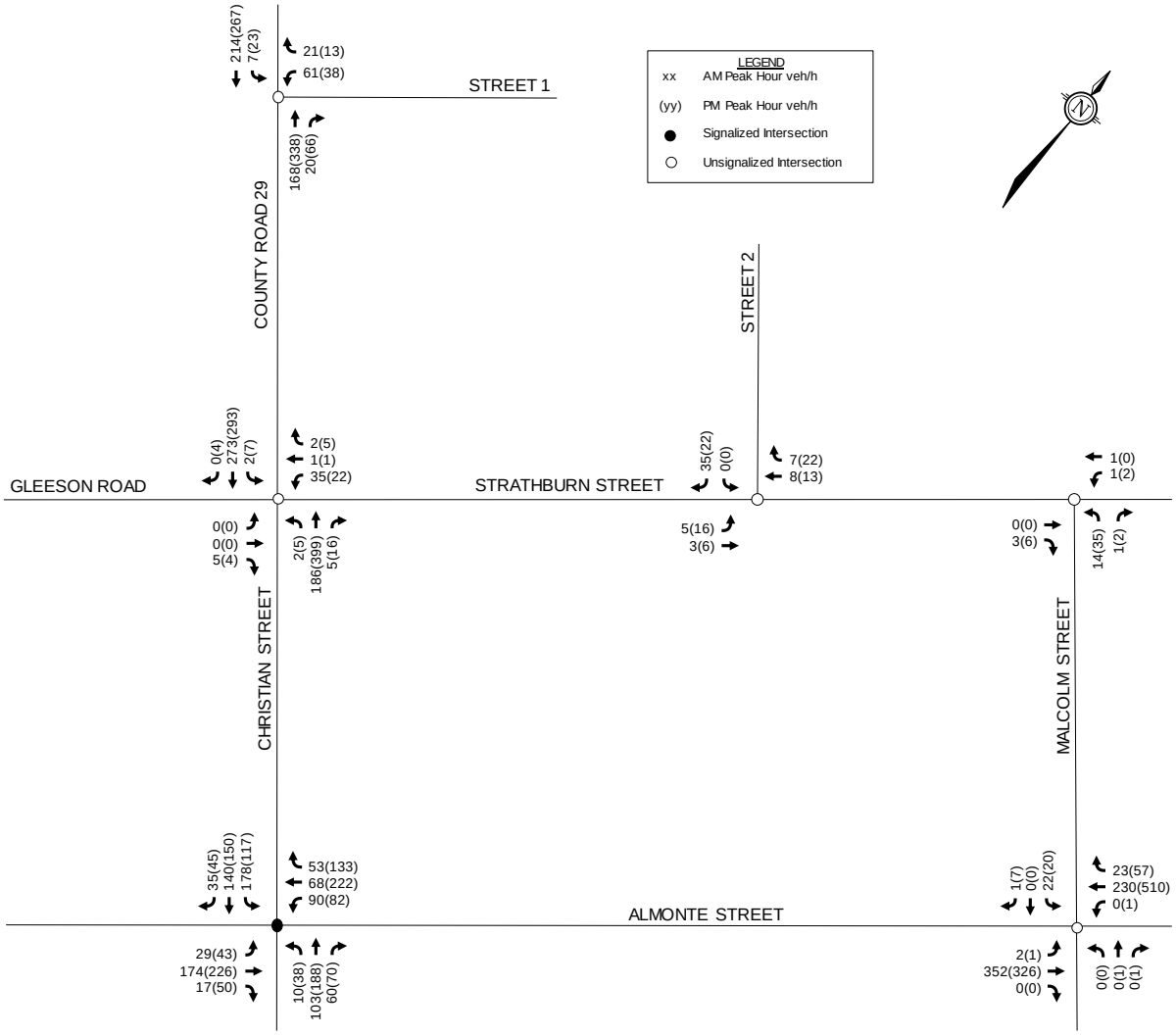
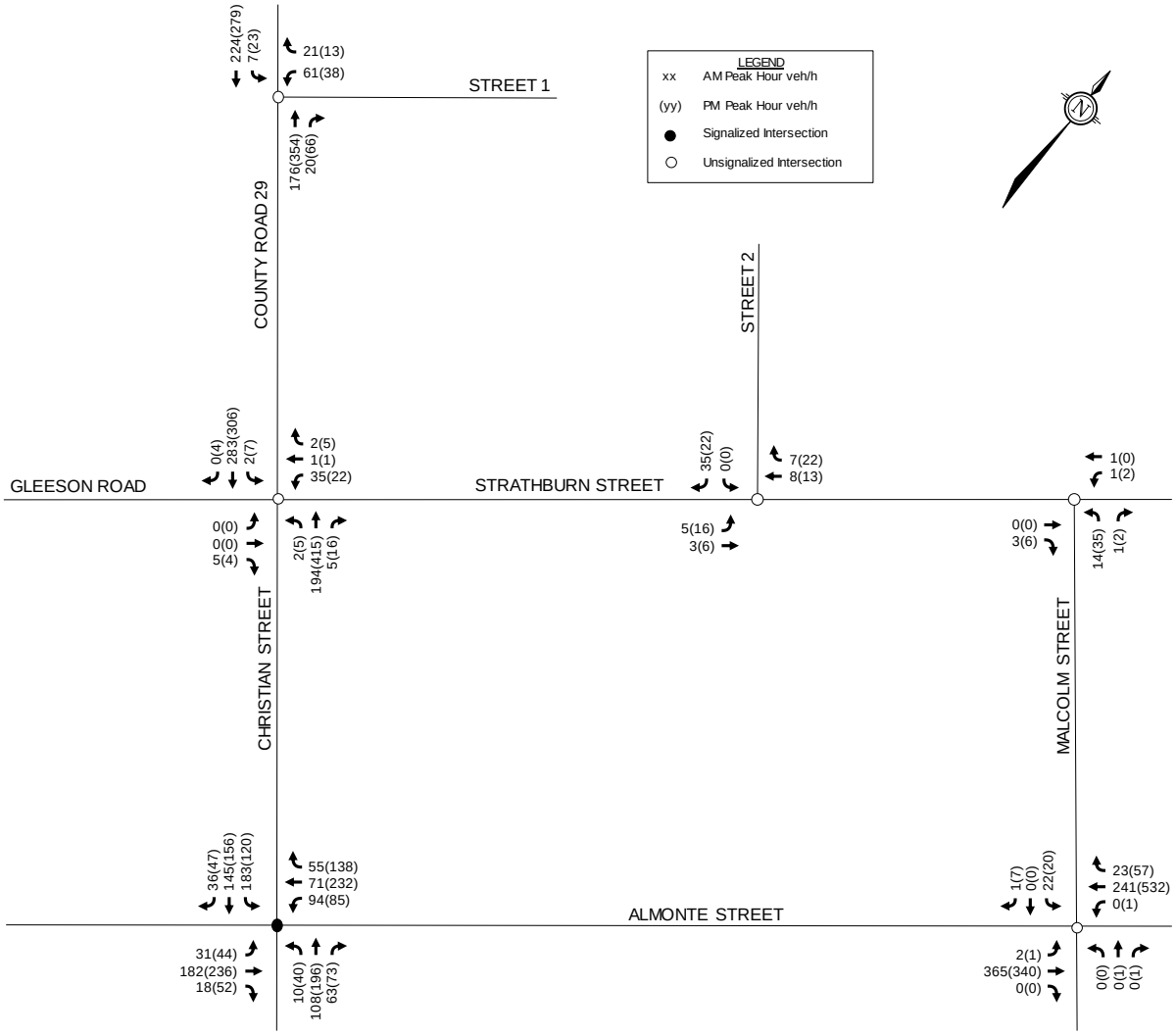


Figure 7: 2034 Total Traffic



6.0 INTERSECTION OPERATING CONDITIONS

6.1 Existing Traffic Operations

Intersection capacity analysis has been completed for the existing traffic conditions. The results of the analysis are summarized in the following table for the weekday AM and PM peak hours. The traffic signal timing plan for the Almonte Street/Christian Street intersection was obtained from the County and is included in **Appendix C**. Detailed synchro reports are included in **Appendix D**.

Table 6: Analysis Results - Existing Traffic Conditions

Intersection	AM Peak			PM Peak		
	V/C or Delay	LOS	Mvmt	V/C or Delay	LOS	Mvmt
CR29/Strathburn St/Gleeson St	12 sec	B	WB	12 sec	B	WB
Christian St (CR29)/Almonte St	0.68	B	WB	0.87	D	WB
Strathburn St/Malcolm St	9 sec	A	NB	9 sec	A	NB
Almonte St/Malcolm St	14 sec	B	SB	17 sec	C	SB

All movements at study area intersections are currently operating with an acceptable LOS.

6.2 Background Traffic Operations

Operating conditions at the study area intersections are summarized in **Table 7** for the 2029 and 2034 weekday AM and PM peak periods. Detailed reports are included in **Appendix D.**

Table 7: Analysis Results - Background Traffic Conditions

Intersection	AM Peak			PM Peak		
	Delay or V/C	LOS	Mvmt	Delay or V/C	LOS	Mvmt
2029 Background Traffic						
CR29/Strathburn St/Gleeson St	12 sec.	B	WB	12 sec.	B	WB
Christian St (CR29)/Almonte St	0.65	B	WB	0.86	D	WB
Strathburn St/Malcolm St	9 sec	A	NB	9 sec	A	NB
Almonte St/Malcolm St	13 sec	B	SB	16 sec	C	SB
2034 Background Traffic						
CR29/Strathburn St/Gleeson St	12 sec.	B	WB	12 sec.	B	WB
Christian St (CR29)/Almonte St	0.68	B	WB	0.87	D	WB
Strathburn St/Malcolm St	9 sec	A	NB	9 sec	A	NB
Almonte St/Malcolm St	13 sec	B	SB	17 sec	C	SB

All movements at study area intersections continue to operate with an acceptable LOS under 2029 and 2034 background traffic conditions.

6.3 Total Traffic Operations

Operations at the study area intersections and the proposed accesses have been evaluated for the 2029 and 2034 total traffic scenarios, as summarized in the following table. Detailed reports are included in **Appendix D**.

Table 8: Analysis Results - Total Traffic Conditions

Intersection	AM Peak			PM Peak		
	Delay or V/C	LOS	Mvmt	Delay or V/C	LOS	Mvmt
2029 Total Traffic						
CR29/Strathburn St/Gleeson St	13 sec.	B	WB	16 sec.	C	WB
Christian St (CR29)/Almonte St	0.67	B	WB	0.88	D	WB
Strathburn St/Malcolm St	9 sec	A	NB	9 sec	A	NB
Almonte St/Malcolm St	14 sec	B	SB	18 sec	C	SB
County Road 29/Street 1	11 sec.	B	WB	14 sec.	B	WB
Strathburn Street/Street 2	9 sec.	A	SB	9 sec.	A	SB
2034 Total Traffic						
CR29/Strathburn St/Gleeson St	13 sec.	B	WB	16 sec.	C	WB
Christian St (CR29)/Almonte St	0.70	B	WB	0.89	D	WB
Strathburn St/Malcolm St	9 sec	A	NB	9 sec	A	NB
Almonte St/Malcolm St	14 sec	B	SB	19 sec	C	SB
County Road 29/Street 1	12 sec.	B	WB	14 sec.	B	WB
Strathburn Street/Street 2	9 sec.	A	SB	9 sec.	A	SB

6.3.1 County Road 29/Strathburn Street/Gleeson Road

Operating conditions at the County Road 29/Strathburn Street/Gleeson Road intersection have been evaluated for the 2029 and 2034 total traffic scenarios, as shown in **Table 8**. Site generated traffic is not anticipated to have a significant impact on the operating conditions at this intersection. Under 2034 total traffic conditions, the intersection is anticipated to operate at a LOS B during the AM peak hour and a LOS C during the PM peak hour.

A left turn lane warrant analysis was conducted to confirm if a southbound left turn lane would be required under 2034 total traffic conditions. Based on a design speed of 70km/hr, the left turn lane warrants indicated that a southbound left turn lane at the County Road 29/Strathburn Street/Gleeson Road intersection would not be required. Left turn lane warrants are included in **Appendix E**.

6.3.2 Christian Street (CR29)/Almonte Street

Operating conditions at the Almonte Street/Christian Street intersection have been evaluated for the 2029 and 2034 total traffic scenarios, as shown in **Table 8**. Site generated traffic is not anticipated to have a significant impact on the operating conditions at this intersection. Under 2034 total traffic conditions, the intersection is anticipated to operate at a LOS B during the AM peak hour and a LOS D during the PM peak hour.

6.3.3 Strathburn Street/Malcolm Street

Operating conditions at the Strathburn Street/Malcolm Street intersection have been evaluated for the 2029 and 2034 total traffic scenarios, as shown in **Table 8**. Site generated traffic is not anticipated to have a significant impact on the operating conditions at this intersection. Under 2034 total traffic conditions, the intersection is anticipated to operate at a LOS A during the AM and PM peak hours.

6.3.4 Almonte Street/Malcolm Street

Operating conditions at the Almonte Street/Malcolm Street intersection have been evaluated for the 2029 and 2034 total traffic scenarios, as shown in **Table 8**. Site generated traffic is not anticipated to have a significant impact on the operating conditions at this intersection. Under 2034 total traffic conditions, the intersection is anticipated to operate at a LOS B during the AM peak hour and a LOS C during the PM peak hour.

6.3.5 County Road 29/Street 1

Operating conditions at the County Road 29/Street 1 intersection have been evaluated for the 2029 and 2034 total traffic scenarios, as shown in **Table 8**. Under 2034 total traffic conditions, the intersection is anticipated to operate at a LOS B during the AM and PM peak hours.

A left turn lane warrant analysis was conducted to confirm if a southbound left turn lane would be required under 2034 total traffic conditions. Based on a design speed of 70km/hr, the left turn lane warrants indicated that a southbound left turn lane at the County Road 29 access would not be required. Left turn lane warrants are included in **Appendix E**.

From the TAC Geometric Design Guide a right-turn taper with auxiliary lanes is required when the volume of decelerating or accelerating vehicles compared with the through traffic volume causes undue hazard. Generally, Novatech recommends a right turn lane should the volumes of right turning vehicles exceed 60vph. The 2034 Total Traffic scenario projects 20 right turning vehicles in the AM peak hour and 66 in the PM peak hour. As the 60vph guideline is marginally met in the PM peak hour a northbound right turn taper is proposed. The proposed right turn taper is similar to the existing taper at the County Road 29/Strathburn Street/Gleeson Road intersection. A functional design of the proposed northbound right turn taper is included in **Appendix F**.

6.3.6 Strathburn Street/Street 2

Operating conditions at the Strathburn Street/Street 2 intersection have been evaluated for the 2029 and 2034 total traffic scenarios, as shown in **Table 8**. Under 2034 total traffic conditions, the intersection is anticipated to operate at a LOS A during the AM and PM peak hour.

6.4 Sensitivity Analysis

Figure 9.1A of the MMTMP identifies the recommended road hierarchy within Almonte and classifies both Strathburn Street and Malcolm Street as collector roadways. Table 15 and 16 of the MMTMP identifies typical characteristics for local and collector roadways. Urban local roadways are expected to carry less than 1,000 Annual Average Daily Traffic (AADT) or 100 vehicles per hour (vph). Rural collector roadways are expected to carry less than 5,000 AADT or 500 vph while urban collectors carry less than 10,000 AADT or 1,000 vph. These thresholds are generally consistent with Table 2.6.4 and 2.6.5 of the Transportation Association of Canada (TAC) Geometric Design Guidelines, which recommends less than 1,000 AADT for urban local roads, 5,000 AADT for rural collector roads, and 8,000 AADT for urban collector roads.

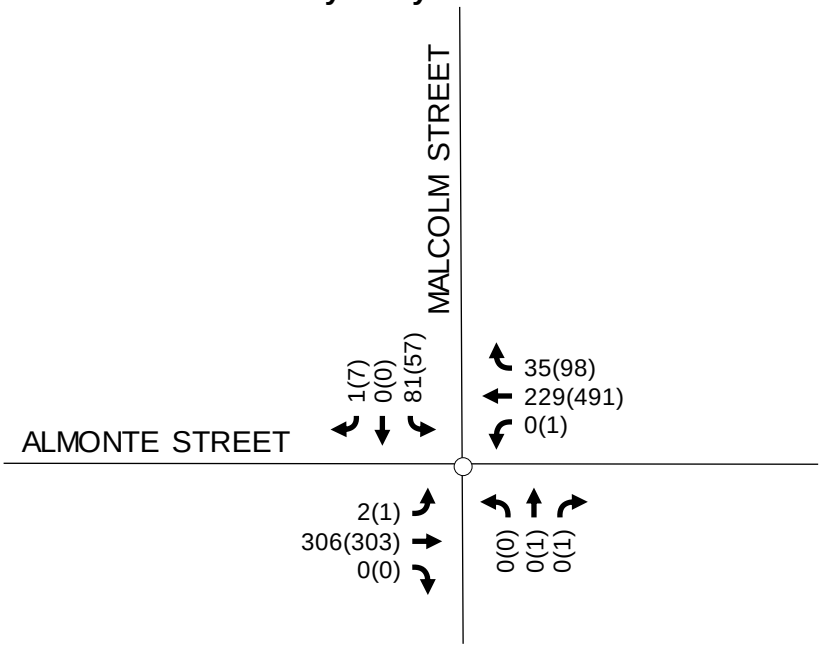
The traffic count conducted at Malcolm Street/Almonte Street identifies 41 vph along Malcolm Street during the AM peak hour and 64 vph during the PM peak hour. The traffic count conducted at Strathburn Street/Malcolm Street identifies 11 vph along Strathburn Street during the AM peak hour and 19 vph during the PM peak hour. Although both Malcolm Street and Strathburn Street are classified as collector roadways, existing vehicular volumes are within the MMTMP and TAC threshold for a local roadway.

Though Malcolm Street is designated as a collector roadway, the existing traffic and design is more consistent with that of a local road. Based on the trip generation presented in **Table 3** above, the proposed subdivision is anticipated to generate 155 vph during the AM peak hour and 199 vph during the PM peak hour. For Malcolm Street to exceed the threshold of a local roadway, approximately 40% of the overall traffic from the subdivision would need to access the subdivision via Malcolm Street and Strathburn Street during the AM peak hour, or 20% during the PM peak hour.

In response to Municipality and community concerns regarding potential impacts to Malcolm Street, a sensitivity analysis has been conducted to review a higher distribution of traffic to/from Almonte Street via Malcolm Street and Strathburn Street. The sensitivity analysis assumes that 50% of all site traffic arrives/departs via Malcolm Street and Strathburn Street. However, it is our professional opinion that due to the layout of the subdivision, turn restrictions at the Strathburn Street/Street 2 intersection, and operations at the Christian Street/Almonte Street intersection, the proposed subdivision traffic using this route will be far less. The traffic scenario with the 50%

site traffic being assigned to Malcolm Street and disobeying the proposed southbound left turn prohibition at the Strathburn Street/Street 2 intersection is shown in the following figure.

Figure 8: 2034 Total Traffic – Sensitivity Analysis



Conservatively assuming 50% of all site traffic arrives/departs via Malcolm Street and Strathburn Street results in 119vph during the AM peak hour and 164vph during the PM peak hour along Malcolm Street. This is well within acceptable thresholds for a collector roadway in the MMTMP and TAC Guidelines (800-1,000vph). Operations at the Almonte Street/Malcolm Street intersection under 2034 total traffic conditions with 50% of site traffic arriving/departing to the east are summarized in the following table.

Table 9: Intersection Operations – Sensitivity Analysis

Intersection	AM Peak			PM Peak		
	V/C or Delay	LOS	Mvmt	V/C or Delay	LOS	Mvmt
Almonte St/ Malcolm St	15 sec	B	SB	21 sec	C	SB

Based on the above, 50% of site traffic arriving and departing to the east via the Almonte Street/Malcolm Street intersection is anticipated to increase southbound delays from 13 seconds to 15 seconds during the AM peak hour and from 17 seconds to 21 seconds during the PM peak hour, compared to the 2034 background traffic condition. The increased delays result in an acceptable LOS B or C.

Detailed synchro reports are included in **Appendix D**.

7.0 ON-SITE DESIGN

7.1 Site Access

Intersection sight distance (ISD) at the proposed accesses have been determined using the Transportation Association of Canada (TAC) *Geometric Design Guidelines for Canadian Roads.* The ISD requirements for the Strathburn Street access, based on a design speed of 60km/h, is as follows:

- Left Turn from Minor Road 130 metres
- Right Turn from Minor Road 110 metres

As shown on the proposed draft plan shown in **Appendix A** there is roughly 150m to the high point of the road to the west of the proposed Strathburn Street access and therefore sufficient ISD for left turning vehicles. As there is roughly 150m of clear sight distance between the proposed Strathburn Street access and Malcolm Street there is sufficient ISD for right turning vehicles. The ISD requirements for the County Road 29 access, based on a design speed of 70km/h, is as follows:

- Left Turn from Minor Road 150 metres
- Right Turn from Minor Road 130 metres

As the County Road 29 access meets County Road 29 and perpendicular angle and no sightline obstruction have been identified based on a desktop review, available sightlines are within recommended guidelines to allow safe all directional access to the development.

7.2 Subdivision Design

All streets within the subdivision have a proposed right of way (ROW) width of 18.0m. Sidewalks are proposed on all roadways within the subdivision to provide pedestrian connectivity to the surrounding roadways and the proposed park. Cyclists will be accommodated within shared use lanes along the roadways within the subdivision.

As part of the proposed development, portions of the existing mountain bike trail on the north side of the Mississippi River that meander through the subject property to connect to Strathburn Street will be removed. A new stone dust pathway is proposed through the pump station/park, connecting Street 2 and Street Five. It will continue north of Street 5 along the north tributary. A stone dust pathway is also proposed in the northeast corner of the subdivision, connecting Street 5 to the existing mountain bike trail along the Mississippi River. Opportunities for a potential river lookout east of Street 5 will be investigated during the detailed design of the subdivision. A network and pathways plan is provided in **Figure 9**.

Minimum spacing between intersections was reviewed as per section 9.4.2 of the Geometric Design Guide from TAC. The typical minimum spacing for local roads is 60m for four-legged intersections and 40m for three-legged intersections according to the Geometric Design Guide. The intersection spacing within the proposed development meets TAC requirements.

Side street stop control on the minor street is proposed at each of the proposed intersections. The location of each of the proposed stop signs is shown in **Figure 9**.

COUNTY ROAD 29

Street One

Street Two

Street Three

Street Four

Street Five

Street Six

Street Seven

PARK
AREA=2.00ha

PUMP STATION

FUTURE DEVELOPMENT LANDS

NORTH TRIBUTARY

WOLF GROVE CREEK

STRATHBURN STREET

MISSISSIPPI RIVER

STOP

LEGEND

- PROPOSED CONCRETE SIDEWALK
- PROPOSED FUTURE CONCRETE SIDEWALK
- EXISTING MOUNTAIN BIKE TRAIL (TO REMAIN)
- EXISTING MOUNTAIN BIKE TRAIL (TO BE ABANDONED/REMOVED)
- PROPOSED STONE DUST PATHWAY / MAINTENANCE ACCESS ROAD
- POTENTIAL RIVER LOOKOUT
- VEHICLE CONNECTIONS TO FUTURE DEVELOPMENT LANDS
- PROPOSED STOP SIGNS

NOVATECH
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Facsimile (613) 254-5867
Website www.novatech-eng.com

MUNICIPALITY of MISSISSIPPI MILLS
BROWN LANDS

NETWORK AND PATHWAYS PLAN

SCALE 1 : 2000 (0, 20, 40, 60, 80)

DATE FEB 2024 | JOB 118178 | FIGURE FIGURE 9

SHT11X17.DWG - 279mmX432mm

M:\2018\118178\CAD\Design\Figures\Traffic\118178-NPP.dwg, FIG16-NPP, Feb 20, 2024 - 11:35am, sbennett

8.0 OFF-SITE DESIGN

While the sensitivity analysis presented in **Section 6.4** did not identify a need for mitigation measures to address development traffic infiltration along Malcolm Street, several alternatives were discussed with the Municipality to address community concerns.

The opportunity to provide a "pork chop" splitter island on Street 2 at Strathburn Street was discussed with Municipality staff. The pork chop island would physically restrict Street 2 to right-in right-out operation and prohibit drivers from performing the southbound left turn movement from Street 2 onto Strathburn Street. This alternative would limit the number of vehicles exiting the subdivision via Strathburn Street and Malcolm Street. Due to operational concerns associated with the pork chop island, this alternative was not suitable for Municipality staff.

The opportunity to convert Strathburn Street to one-way eastbound operation between Street 2 and Malcolm Street was discussed with Municipality staff. In addition to the one-way operation, signage would be to prohibit the southbound left turn movement from Street 2 onto Strathburn Street. This alternative would limit traffic from the subdivision from arriving or departing via Strathburn Street and Malcolm Street. Due to operational concerns and impacts to existing residents on Strathburn Street, this alternative was not suitable for Municipality staff.

As the aforementioned alternatives were not carried forward, signage is proposed to prohibit the southbound left turn movement from Street 2 onto Strathburn Street. The proposed signage is intended to minimize the impacts of development traffic on the existing community along Malcolm Street.

As described in Section 2.0 and 3.0 above, the 2016 MMTMP identifies Strathburn Street and Malcolm Street as collector roadways and designates them as Urban Secondary Cycling Routes. It also identifies the future implementation of a sidewalk along Strathburn Street between Christian Street and Malcolm Street as well as along Malcolm Street between Strathburn Street and Dunn Street. The future cycling and pedestrian improvements identified in the 2016 MMTMP will provide system connectivity between the proposed on-site facilities and the existing community to the southeast.

The 2016 MMTMP identifies the cycling and pedestrian improvements along Strathburn Street and Malcolm Street as low or medium priority. As the Municipality is currently updating the TMP, it is recommended that the aforementioned facilities be prioritized to meet the needs of the existing and future communities.

9.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the results of the foregoing analysis, the main conclusions and recommendations of this report are as follows:

- The proposed development is anticipated to generate 153 trips (38 in, 115 out) in the AM peak and 198 trips (125 in, 73 out) in the PM peak;

- Site generated traffic is not anticipated to have a significant impact on the operating conditions at the County Road 29/Strathburn Street/Gleeson Road, Christian Street (CR29)/Almonte Street, Strathburn Street/Malcolm Street, and Almonte Street/Malcolm Street intersections;

- The County Road 29/Street 1 intersection is anticipated to operate with a LOS B during the AM and PM peak hours under the 2034 total traffic conditions. A southbound left turn lane is not warranted at this intersection. However, a northbound right turn taper is recommended based on the projected traffic volumes,

- The Strathburn Street/Street 2 intersection is anticipated to operate with a LOS A during the AM and PM peak hours under the 2034 total traffic conditions. Auxiliary turn lanes are not warranted at this intersection;

- Based on the sensitivity analysis of an unrealistic traffic distribution and assignment, 50% of site traffic arriving and departing to the east via the Almonte Street/Malcolm Street intersection is anticipated to increase southbound delays from 13 seconds to 15 seconds during the AM peak hour and from 17 seconds to 21 seconds during the PM peak hour at the Almonte Street/Malcolm Street intersection. The southbound delays correspond to a LOS B or C and are considered acceptable. However, it is our professional opinion that due to the layout of the subdivision, turn restrictions at the Strathburn Street/Street 2 intersection, and operations at the Christian Street/Almonte Street intersection, the proposed subdivision traffic using this route will be far less;

- Sufficient intersection sight distance is available at each access for all turning movements;

- Sidewalks are proposed on one side of all roadways within the subdivision to provide pedestrian connectivity to the surrounding roadways and the proposed park. Cyclists will be accommodated within shared use lanes along the roadways within the subdivision;

- A new stone dust pathway is proposed through the pump station/park, connecting Street 2 and Street Five. It will continue north of Street 5 along the north tributary. A stone dust pathway is also proposed in the northeast corner of the subdivision, connecting Street 5 to the existing mountain bike trail along the Mississippi River. Opportunities for a potential river lookout at this location will be investigated during the detailed design of the subdivision;

- Signage is proposed to prohibit the southbound left turn movement from Street 2 onto Strathburn Street. The proposed signage is intended to minimize the impacts of development traffic on the existing community along Malcolm Street;

- The future cycling and pedestrian improvements identified in the 2016 MMTMP will provide system connectivity between the proposed on-site facilities and the existing community to the southeast. As the Municipality is currently updating the TMP, it is recommended that the aforementioned facilities be prioritized to meet the needs of the existing and future communities.

Based on the foregoing, the proposed development can be recommended from a transportation perspective.

NOVATECH

Prepared by:

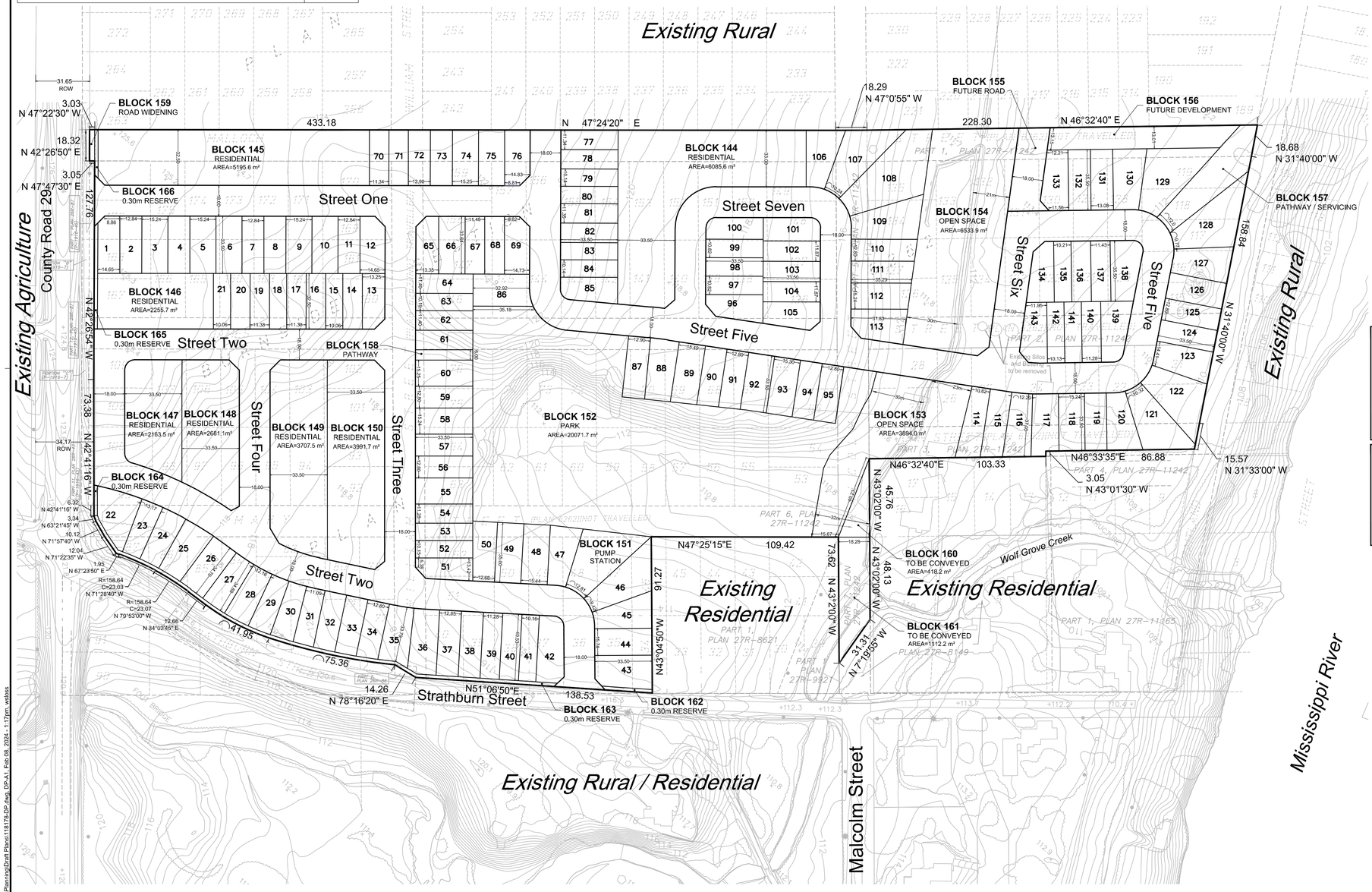
Trevor Van Wiechen, M.Eng.
E.I.T. | Transportation

Reviewed by:

Brad Byvelds, P.Eng.
Project Manager | Transportation

APPENDIX A

Proposed Draft Plan of Subdivision



SCHEDULE OF LANDUSE

BLOCK #'s	LAND USE	UNITS	AREA (hectares)
1 - 143	RESIDENTIAL (Single Family Homes)	143	6.96
144 - 150	RESIDENTIAL (Semis/Townhomes)	92	2.61
151	PUMP STATION		0.10
152	PARK		2.01
153, 154	OPEN SPACE		1.04
157, 158	PATHWAY / SERVICING		0.15
155	FUTURE ROAD		0.09
156	FUTURE DEVELOPMENT		0.14
159	ROAD WIDENING		0.01
160, 161	TO BE CONVEYED		0.15
162 - 166	1' RESERVE		0.01
	ROADS		3.71
TOTAL			16.97

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KEY MAP

NOT TO SCALE

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

DRAFT PLAN OF SUBDIVISION OF

PART OF LOTS 34-40, 46, 77, 79, 81-82, 84-87, 99-100, 108-109, 167-168, AND 176-177 AND ALL OF LOTS 20-28, 47-76, 78, 80, 83, 92-98, 101-107, 115-166 AND 169-175 AND PART OF MALLOCH STREET, JAMES STREET, MARY STREET, WILLIAM STREET, MALCOLM STREET, AND JOHN STREET (CLOSED BY BY-LAW LC204530) BURNSIDE SECTION PLAN 6262

FORMERLY TOWN OF ALMONTE
MUNICIPALITY of MISSISSIPPI MILLS
COUNTY OF LANARK

SCALE
1 : 1250 0 10 20 30 40 50

DATE: FEBRUARY, 2024

SURVEYOR'S CERTIFICATE

I HEREBY CERTIFY THAT THE BOUNDARIES OF THE LANDS TO BE SUBDIVIDED AND THEIR RELATIONSHIP TO ADJOINING LANDS ARE CORRECTLY SHOWN.

DATED ______________________________

____
Bennett J. Faulhammer
ONTARIO LAND SURVEYOR

Callon Dietz Incorporated
ONTARIO LAND SURVEYORS

JOB No. 22-1819

OWNER'S CERTIFICATE

WE, STRATHBURN ALMONTE REGIONAL INC., BEING THE REGISTERED OWNER(S), HEREBY AUTHORIZE NOVATECH TO PREPARE AND SUBMIT THIS DRAFT PLAN OF SUBDIVISION TO THE COUNTY OF LANARK FOR REVIEW AND APPROVAL.

DATED ______________________________

____
Strathburn Almonte Regional Inc.

ADDITIONAL INFORMATION REQUIRED UNDER SECTION 51 (17) OF THE PLANNING ACT.

A) The boundaries of the land proposed to be subdivided, certified by an Ontario land Surveyor;
As shown on Draft Plan

B) The locations, widths & names of the proposed highways within the proposed subdivision & of existing highways on which the proposed subdivision abuts;
As shown on Draft Plan

C) On a small keyplan, on a scale of not less than 1cm to 100m, all of the land adjacent to the proposed subdivision that is owned by the applicant or in which the applicant has an interest, every subdivision adjacent to the proposed subdivision & the relationship of the boundaries of the land to be subdivided to the boundaries of the township lot of other original grant of which the land forms the whole part;
As Shown on Draft Plan

D) The purpose for which the proposed lots are to be used;
Residential, Open Space, and Pump Station shown on Draft Plan

E) The existing uses of all adjoining lands;
Rural, Residential and Agriculture shown on Draft Plan

F) The approximate dimensions & layout of the proposed lots;
As shown on Draft Plan

G) Natural & artificial features such as buildings or other structures or installations, railways, highways, watercources, drainage ditches, wetlands & wooded areas within or adjacent to the land proposed to be subdivided;
As shown on Draft Plan

H) The availability and nature of domestic water supplies;
Development will be supplied with full municipal piped water service

I) The nature & porosity of the soil;
Silty Clay and Bedrock near or at surface

J) Existing contours or elevations as may be required to determine the grade of the highways and the drainage of the land proposed to be subdivided;
Contours shown at 0.5 metre intervals on Draft Plan

K) The municipal services available or to be available to the land proposed to be subdivided;
Development will be supplied with full sanitary and storm water sewer services.

L) The nature & extent of any restrictions affecting the land proposed to be subdivided, including restrictive covenants or easements. 1994, c. 23, s. 30; 1996, c. 4, s. 28 (3).;
As shown on Draft Plan.

BROWN LANDS

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Facsimile	(613) 254-5867
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PROJECT No. 118178

APPENDIX B

Traffic Count Data

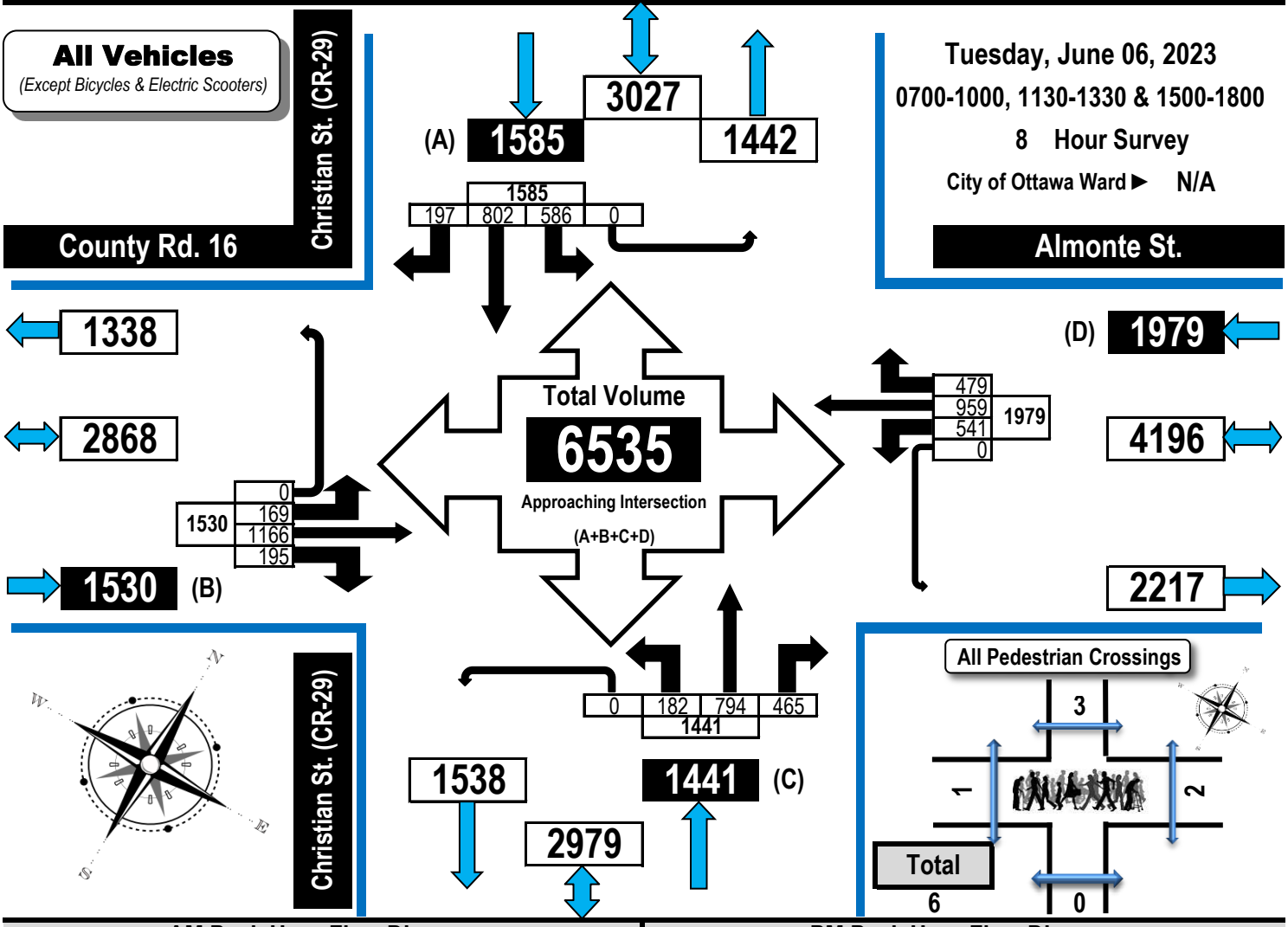
ACCURATE TRUSTED TRAFFIC DATA

Turning Movement Count
Summary, AM and PM Peak Hour Flow Diagrams
All Vehicles Except Bicycles

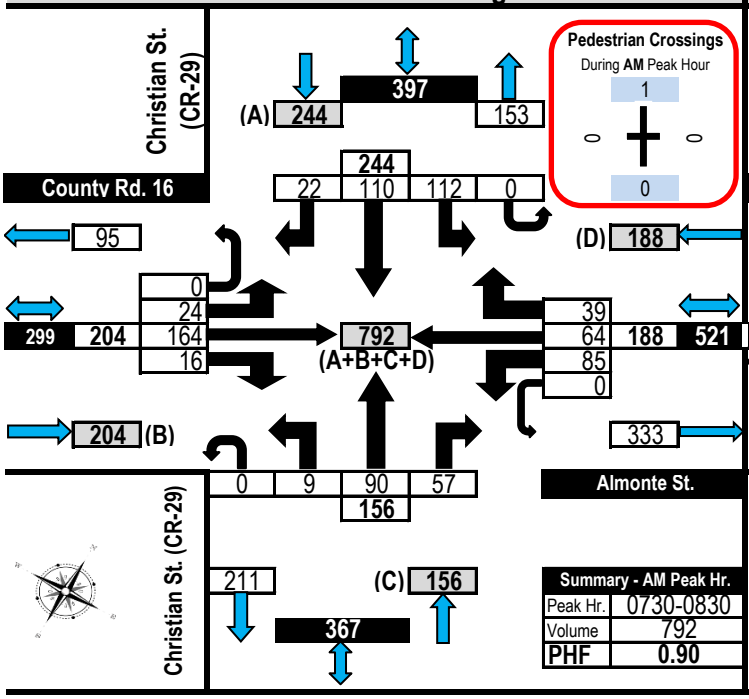
Almonte Street & Christian Street (CR-29) — Almonte, ON

All Vehicles
(Except Bicycles & Electric Scooters)

Tuesday, June 06, 2023
0700-1000, 1130-1330 & 1500-1800
8 Hour Survey
City of Ottawa Ward ► N/A

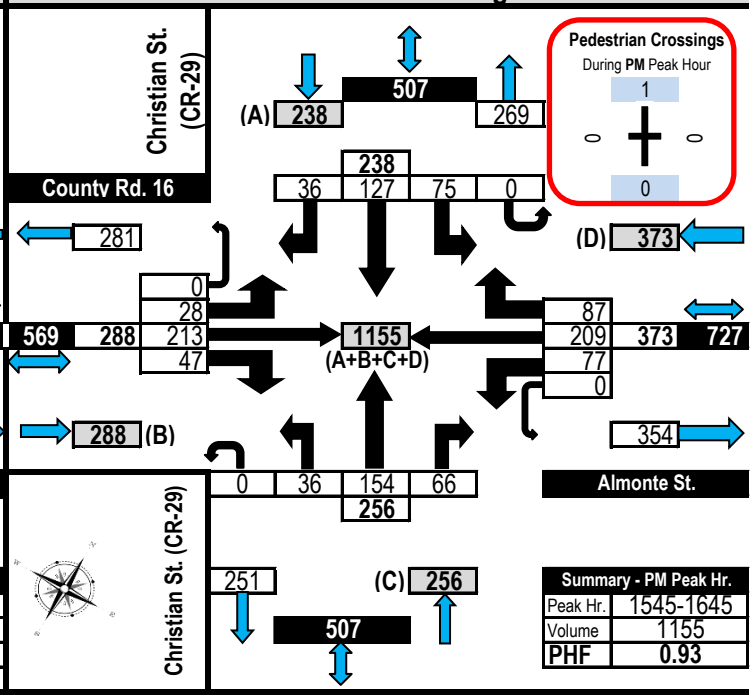


AM Peak Hour Flow Diagram



Summary - AM Peak Hr.	
Peak Hr.	0730-0830
Volume	792
PHF	0.90

PM Peak Hour Flow Diagram

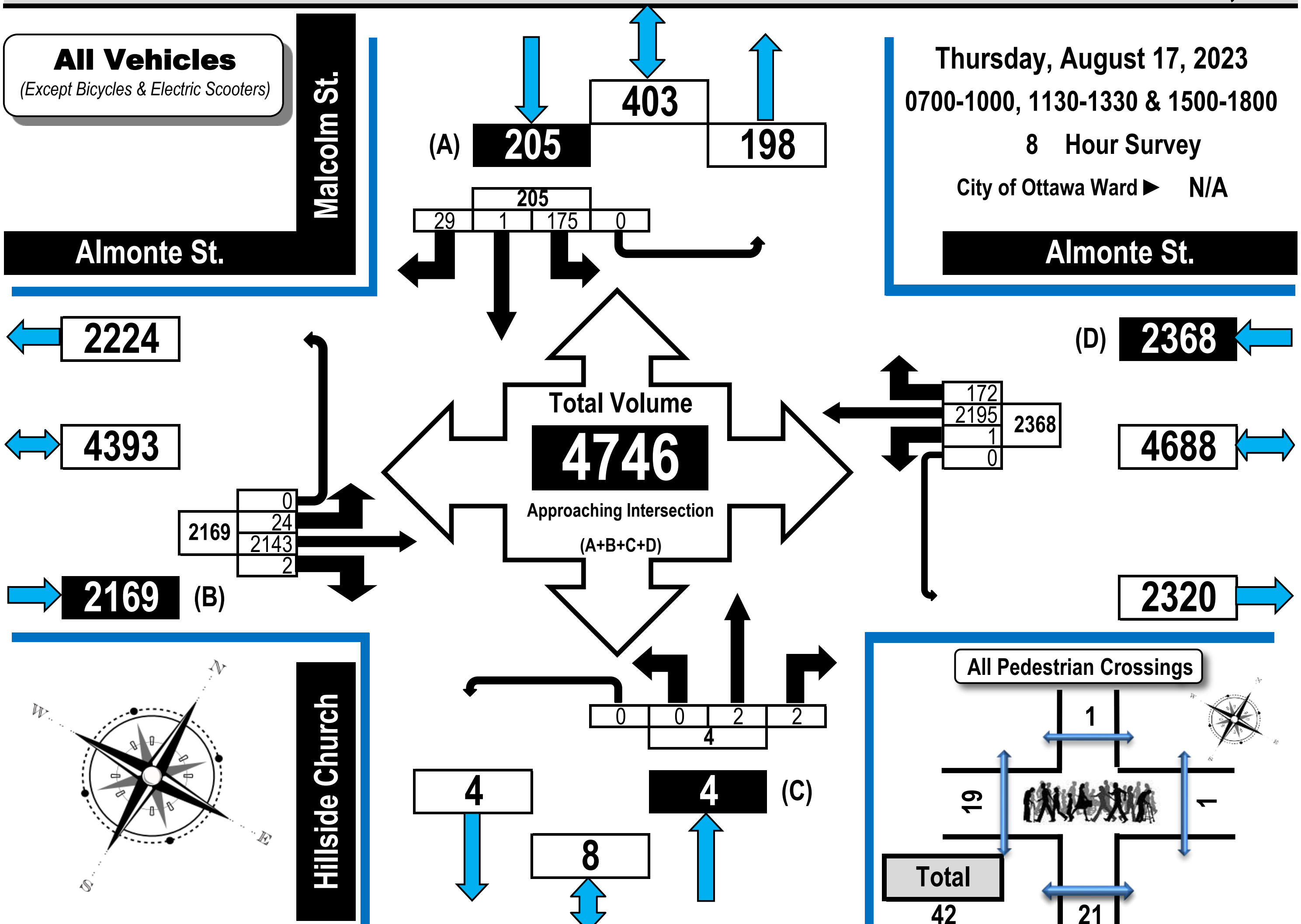


Summary - PM Peak Hr.	
Peak Hr.	1545-1645
Volume	1155
PHF	0.93

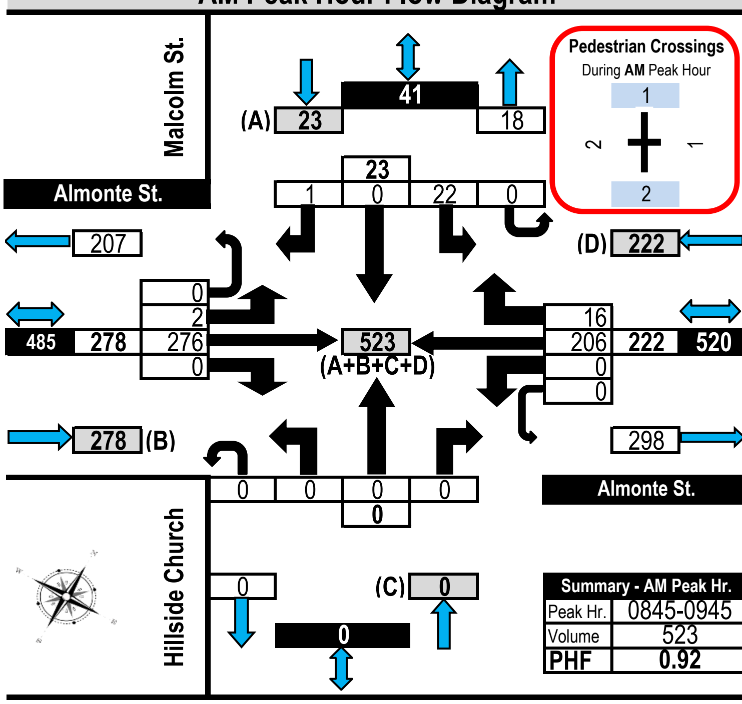
Turning Movement Count
Summary, AM and PM Peak Hour Flow Diagrams
All Vehicles Except Bicycles

Almonte Street & Malcolm Street — **Almonte, ON**

Thursday, August 17, 2023
0700-1000, 1130-1330 & 1500-1800
8 Hour Survey
City of Ottawa Ward ► N/A

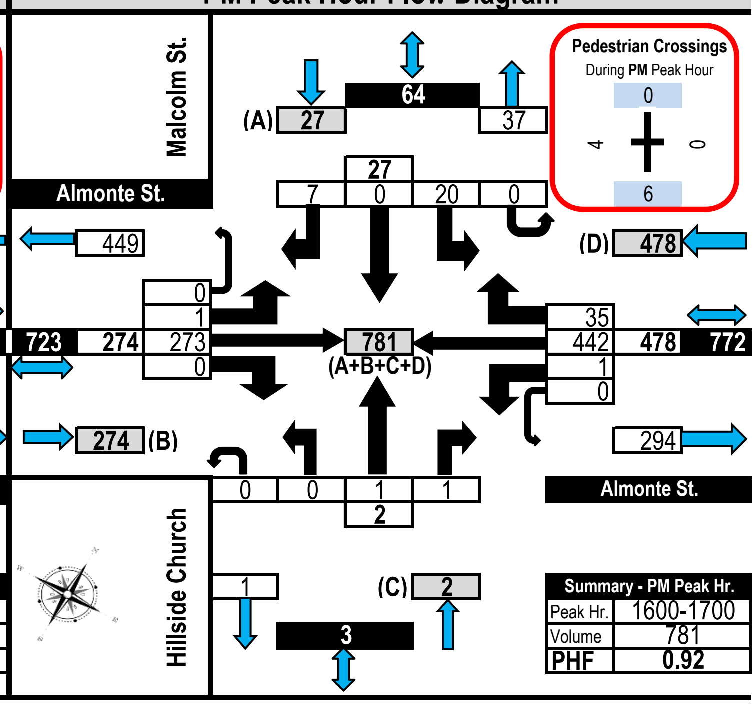


AM Peak Hour Flow Diagram



Summary - AM Peak Hr.	
Peak Hr.	0845-0945
Volume	523
PHF	0.92

PM Peak Hour Flow Diagram



Summary - PM Peak Hr.	
Peak Hr.	1600-1700
Volume	781
PHF	0.92

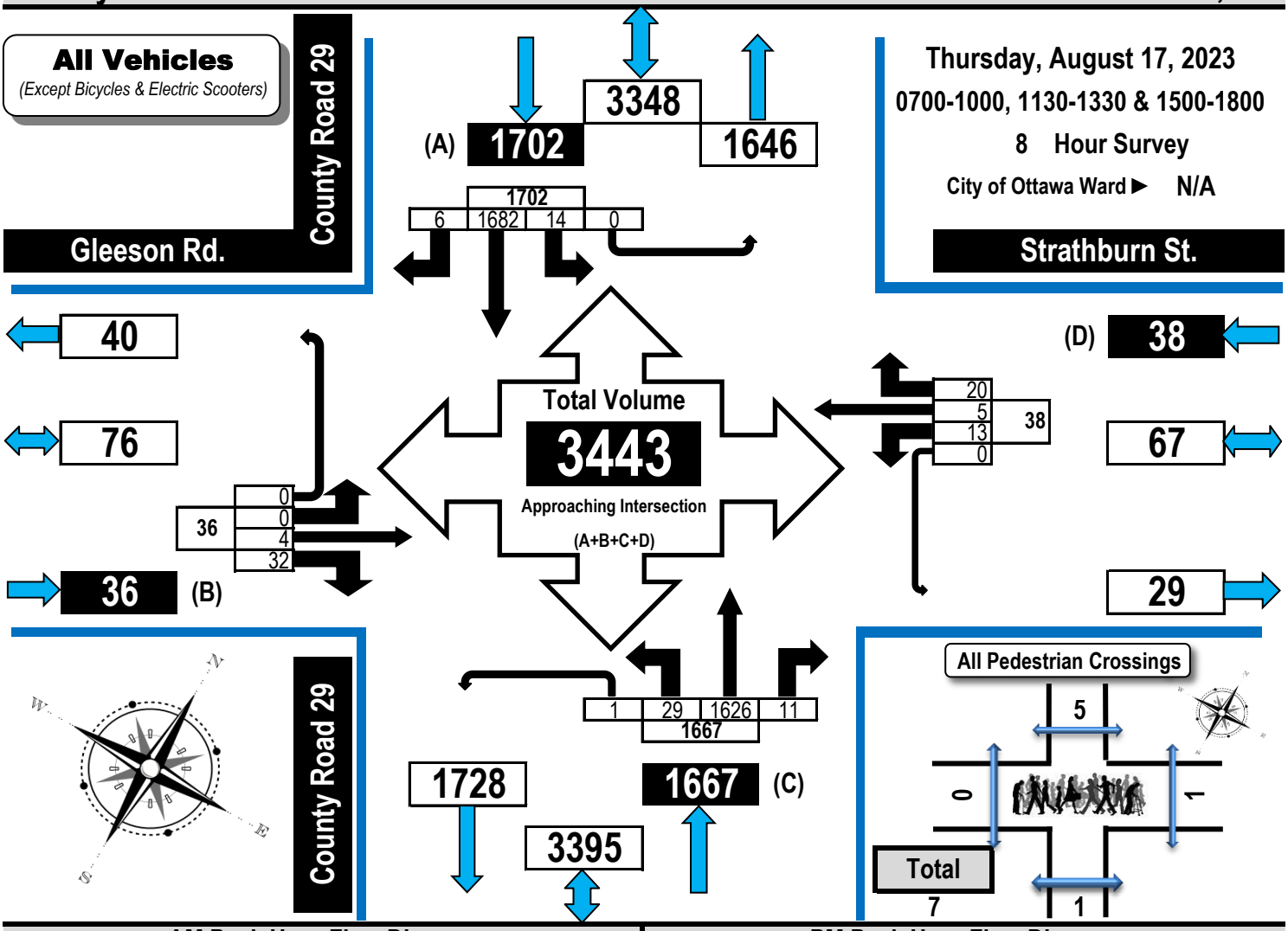
ACCURATE TRUSTED TRAFFIC DATA

Turning Movement Count
Summary, AM and PM Peak Hour Flow Diagrams
All Vehicles Except Bicycles

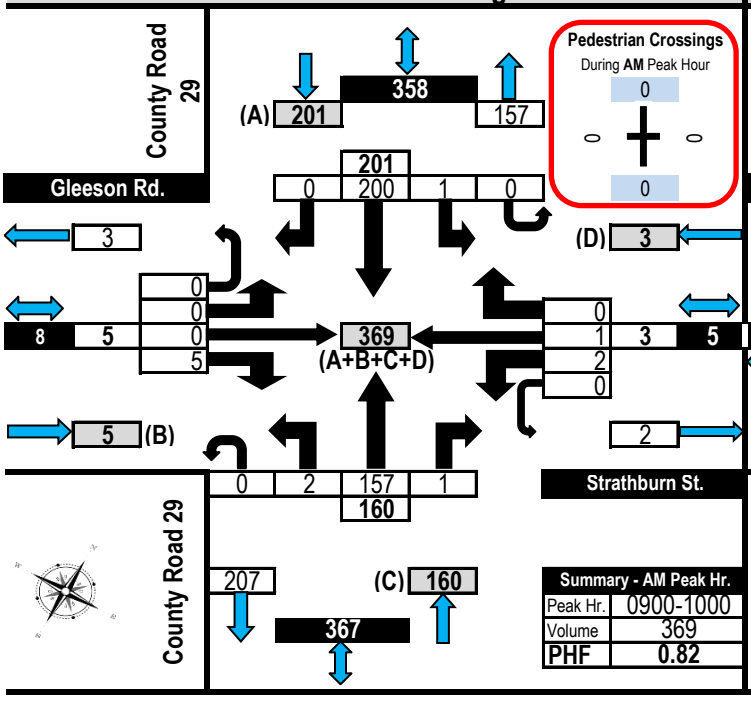
County Road 29 & Gleeson Road/Strathburn Street — Almonte, ON

All Vehicles
(Except Bicycles & Electric Scooters)

Thursday, August 17, 2023
0700-1000, 1130-1330 & 1500-1800
8 Hour Survey
City of Ottawa Ward ► N/A

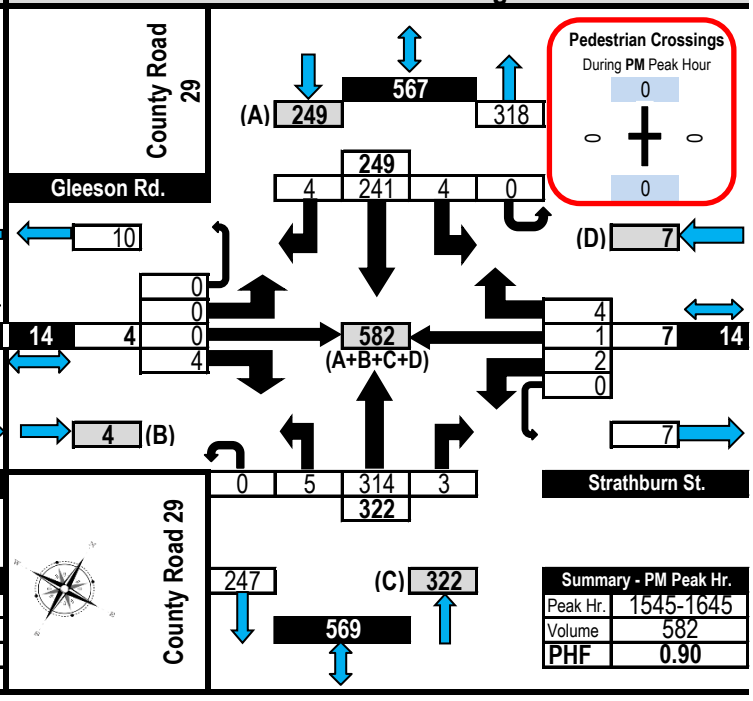


AM Peak Hour Flow Diagram



Summary - AM Peak Hr.	
Peak Hr.	0900-1000
Volume	369
PHF	0.82

PM Peak Hour Flow Diagram



Summary - PM Peak Hr.	
Peak Hr.	1545-1645
Volume	582
PHF	0.90

ACCURATE TRUSTED TRAFFIC DATA

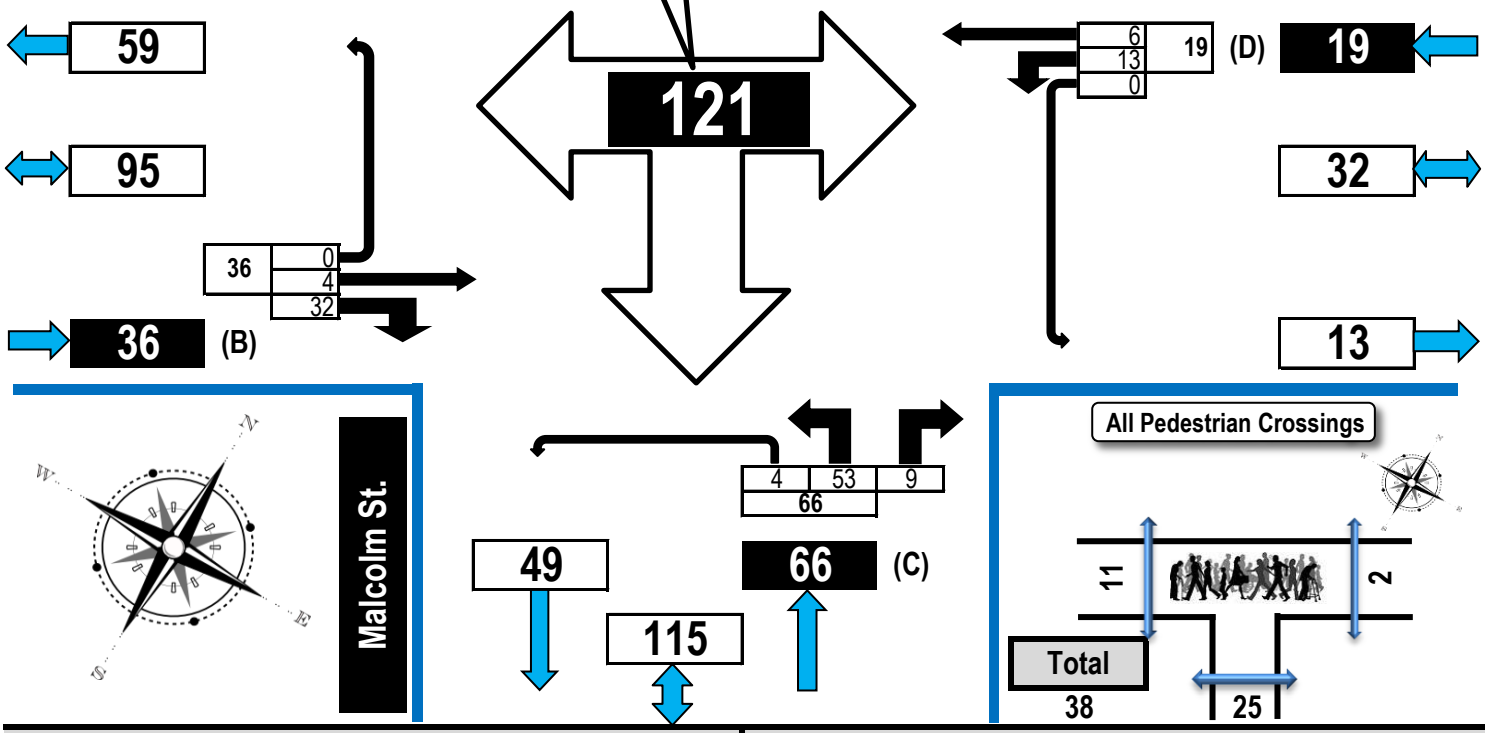
Turning Movement Count
Summary, AM and PM Peak Hour Flow Diagrams
All Vehicles Except Bicycles

Malcolm Street & Strathburn Street — Almonte, ON

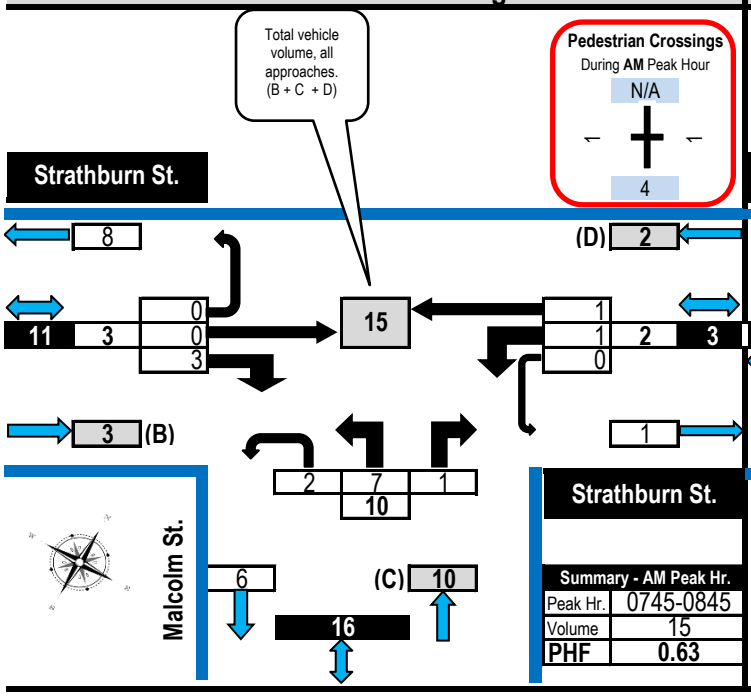
All Vehicles
(Except Bicycles & Electric Scooters)

Total vehicle volume, all approaches. (B + C + D)

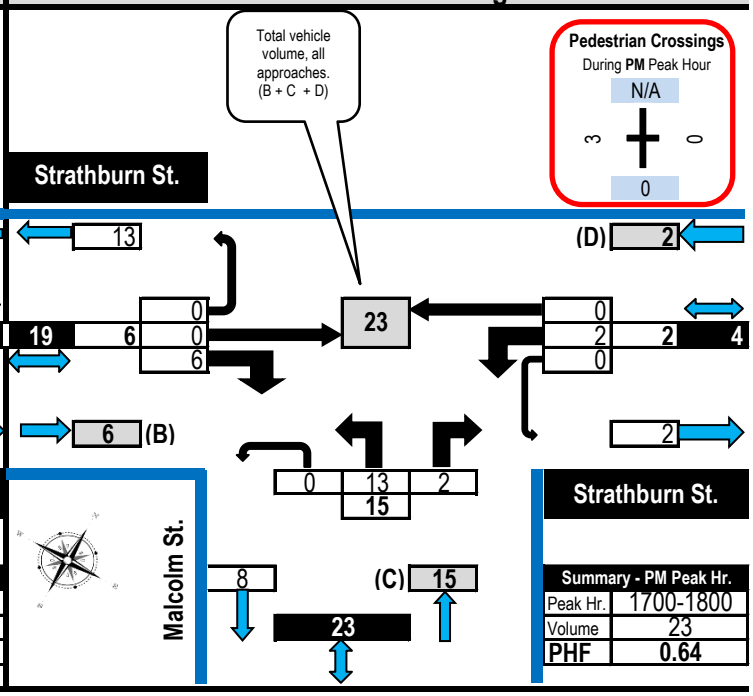
Wednesday, August 16, 2023
0700-1000, 1130-1330 & 1500-1800
8 Hour Survey
City of Ottawa Ward ▶ N/A



AM Peak Hour Flow Diagram



PM Peak Hour Flow Diagram



APPENDIX C

Signal Timing Plans

Traffic Signal Timing

Mississippi Mills - Almonte

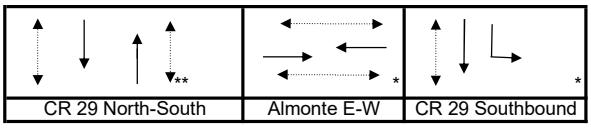
Intersection: ***Main:*** Almonte ***Side:*** CR 29
Controller Type: ATC4
Prepared By: Partham Engineering **Date:** 17-May-23

Existing Timing Plans

		AM	OP	PM	NITE	Weekend		Minimum Time				
		Cyc 1	Cyc 2	Cyc 3	Cyc 4	Cyc 5						
	Cycle	Free	Free	Free	Free	Free						
								Walk	***FDW***	***Min Grn***	***Amber***	***All Red***
CR 29	***Northbound***	30	30	35	25	30		13	10	15	4.2	1.8
CR 29	***Southbound***	30	30	35	25	30		13	10	15	4.2	1.8
	Southbound Left	10	12	15	0	12				5	3.3	1.7
Almonte	***East West***	25	25	25	25	25		13	14	10	3.3	2.6

Notes: above time for each direction is green time only

Phasing Sequence



CR 29 North-South | Almonte E-W | CR 29 Southbound

Notes:
* indicates that phase is actuated and extendable
** indicates that the phase is extendable
◄·····► indicates ped crossing

Schedule

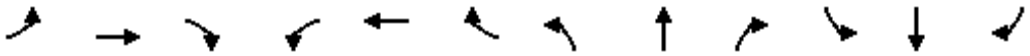
Time	Plan
Mon-Fri	
0:00	4
6:30	1
9:00	2
15:00	3
18:00	2
23:00	4
Sat-Sun	
0:00	4
7:00	5
18:00	2
23:00	4

Comments

- Signal dwells in CR 29 north-south green and north-south don't walk.
- Setback loops north-south provide dilemma zone protection
- Almonte east-west is loop actuated. Minimum green is 10 seconds and green is extended according to number of vehicles present
- CR 29 southbound protected-permissive left is actuated and extendable

APPENDIX D

Synchro Reports

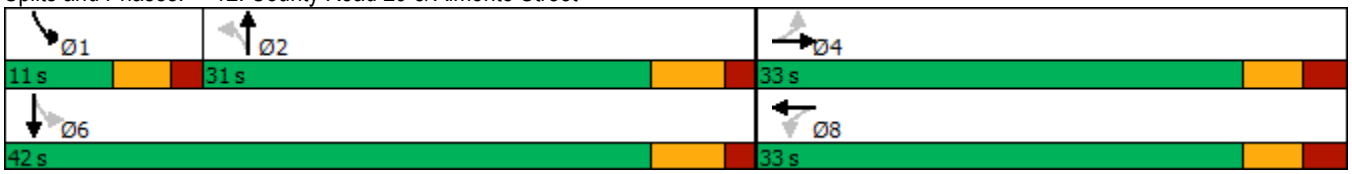


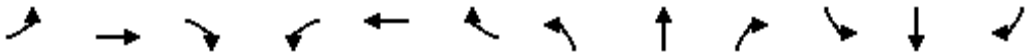
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	164	16	85	64	39	9	90	57	112	110	22
Future Volume (vph)	24	164	16	85	64	39	9	90	57	112	110	22
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		0.0	65.0		0.0
Storage Lanes	0		0	0		0	0		0	1		0
Taper Length (m)	2.5			2.5			2.5			80.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			1.00							
Frt		0.989			0.972			0.951			0.975	
Flt Protected		0.994			0.978			0.997		0.950		
Satd. Flow (prot)	0	1651	0	0	1620	0	0	1598	0	1631	1648	0
Flt Permitted		0.946			0.714			0.984		0.603		
Satd. Flow (perm)	0	1571	0	0	1183	0	0	1577	0	1035	1648	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			20			41			18	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		205.6			469.8			144.7			188.3	
Travel Time (s)		14.8			33.8			8.7			11.3	
Confl. Peds. (#/hr)	1					1						
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	14%	7%	14%	6%	7%	6%	12%	7%	9%	6%	7%	11%
Adj. Flow (vph)	27	182	18	94	71	43	10	100	63	124	122	24
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	227	0	0	208	0	0	173	0	124	146	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		15.0	15.0		5.0	15.0	
Minimum Split (s)	32.9	32.9		32.9	32.9		29.0	29.0		10.0	29.0	
Total Split (s)	33.0	33.0		33.0	33.0		31.0	31.0		11.0	42.0	
Total Split (%)	44.0%	44.0%		44.0%	44.0%		41.3%	41.3%		14.7%	56.0%	
Maximum Green (s)	27.1	27.1		27.1	27.1		25.0	25.0		6.0	36.0	
Yellow Time (s)	3.3	3.3		3.3	3.3		4.2	4.2		3.3	4.2	
All-Red Time (s)	2.6	2.6		2.6	2.6		1.8	1.8		1.7	1.8	
Lost Time Adjust (s)		0.0			0.0			0.0		0.0	0.0	
Total Lost Time (s)		5.9			5.9			6.0		5.0	6.0	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?							Yes	Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		None	Max	
Walk Time (s)	13.0	13.0		13.0	13.0		13.0	13.0			13.0	
Flash Dont Walk (s)	14.0	14.0		14.0	14.0		10.0	10.0			10.0	
Pedestrian Calls (#/hr)	1	1		1	1		1	1			1	
Act Effct Green (s)		15.6			15.6			27.6		37.3	36.3	
Actuated g/C Ratio		0.24			0.24			0.43		0.58	0.57	
v/c Ratio		0.59			0.68			0.25		0.19	0.15	
Control Delay		26.6			31.4			12.6		8.4	7.7	
Queue Delay		0.0			0.0			0.0		0.0	0.0	
Total Delay		26.6			31.4			12.6		8.4	7.7	
LOS		C			C			B		A	A	
Approach Delay		26.6			31.4			12.6			8.0	
Approach LOS		C			C			B			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 63.9			
Natural Cycle: 75			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.68			
Intersection Signal Delay: 19.3		Intersection LOS: B	
Intersection Capacity Utilization 67.8%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 12: County Road 29 & Almonte Street





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	5	2	1	0	2	157	1	1	200	0
Future Volume (Veh/h)	0	0	5	2	1	0	2	157	1	1	200	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	0	6	2	1	0	2	174	1	1	222	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	402	403	222	408	402	174	222			175		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	402	403	222	408	402	174	222			175		
tC, single (s)	7.1	6.5	6.2	7.2	6.7	6.2	4.2			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.2	3.3	2.3			2.3		
p0 queue free %	100	100	99	100	100	100	100			100		
cM capacity (veh/h)	557	535	818	538	509	869	1318			1332		

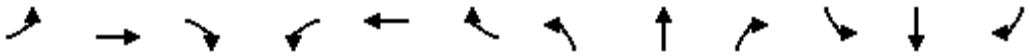
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total	6	3	176	1	223
Volume Left	0	2	2	0	1
Volume Right	6	0	0	1	0
cSH	818	528	1318	1700	1332
Volume to Capacity	0.01	0.01	0.00	0.00	0.00
Queue Length 95th (m)	0.2	0.1	0.0	0.0	0.0
Control Delay (s)	9.4	11.9	0.1	0.0	0.0
Lane LOS	A	B	A		A
Approach Delay (s)	9.4	11.9	0.1		0.0
Approach LOS	A	B			

Intersection Summary				
Average Delay	0.3			
Intersection Capacity Utilization	27.8%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	0	3	1	1	7	1
Future Volume (Veh/h)	0	3	1	1	7	1
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	3	1	1	8	1
Pedestrians	1			1	4	
Lane Width (m)	3.7			3.7	3.7	
Walking Speed (m/s)	1.1			1.1	1.1	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			7		10	6
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			7		10	6
tC, single (s)			4.1		6.5	6.3
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.4
p0 queue free %			100		99	100
cM capacity (veh/h)			1608		995	1045

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	3	2	9
Volume Left	0	1	8
Volume Right	3	0	1
cSH	1700	1608	1001
Volume to Capacity	0.00	0.00	0.01
Queue Length 95th (m)	0.0	0.0	0.2
Control Delay (s)	0.0	3.6	8.6
Lane LOS		A	A
Approach Delay (s)	0.0	3.6	8.6
Approach LOS			A

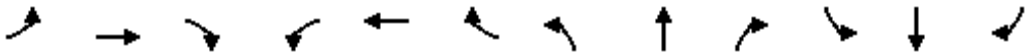
Intersection Summary			
Average Delay	6.1		
Intersection Capacity Utilization	14.9%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	276	0	0	206	16	0	0	0	22	0	1
Future Volume (Veh/h)	2	276	0	0	206	16	0	0	0	22	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	2	307	0	0	229	18	0	0	0	24	0	1
Pedestrians		2			1			2			1	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	248			309			554	561	310	551	552	241
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	248			309			554	561	310	551	552	241
tC, single (s)	4.3			4.1			7.1	6.5	6.2	7.1	6.5	6.5
tC, 2 stage (s)												
tF (s)	2.4			2.2			3.5	4.0	3.3	3.5	4.0	3.6
p0 queue free %	100			100			100	100	100	95	100	100
cM capacity (veh/h)	1234			1249			439	435	728	443	440	730

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	309	247	0	25
Volume Left	2	0	0	24
Volume Right	0	18	0	1
cSH	1234	1249	1700	450
Volume to Capacity	0.00	0.00	0.01	0.06
Queue Length 95th (m)	0.0	0.0	0.0	1.3
Control Delay (s)	0.1	0.0	0.0	13.5
Lane LOS	A		A	B
Approach Delay (s)	0.1	0.0	0.0	13.5
Approach LOS			A	B

Intersection Summary				
Average Delay	0.6			
Intersection Capacity Utilization	27.7%	ICU Level of Service	A	
Analysis Period (min)	15			

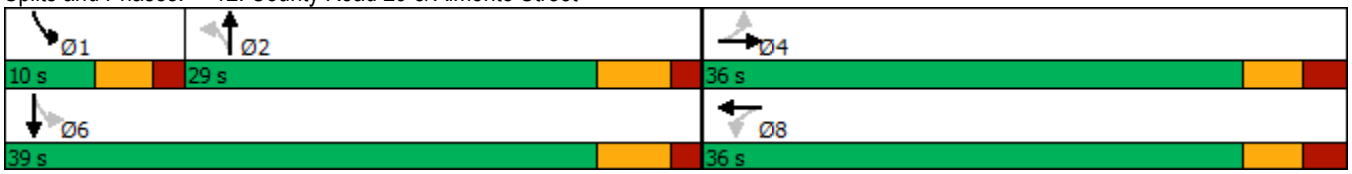


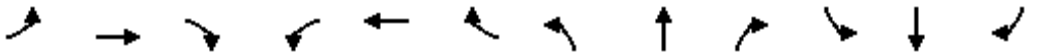
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	213	47	77	209	87	36	154	66	75	127	36
Future Volume (vph)	28	213	47	77	209	87	36	154	66	75	127	36
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		0.0	65.0		0.0
Storage Lanes	0		0	0		0	0		0	1		0
Taper Length (m)	2.5			2.5			2.5			80.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			1.00						1.00	
Frt		0.978			0.968			0.965			0.967	
Flt Protected		0.995			0.990			0.993		0.950		
Satd. Flow (prot)	0	1628	0	0	1629	0	0	1612	0	1631	1624	0
Flt Permitted		0.937			0.825			0.935		0.478		
Satd. Flow (perm)	0	1533	0	0	1357	0	0	1517	0	821	1624	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		16			24			24			24	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		205.6			469.8			144.7			188.3	
Travel Time (s)		14.8			33.8			10.4			13.6	
Confl. Peds. (#/hr)	1					1						
Confl. Bikes (#/hr)												1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	14%	7%	14%	6%	7%	6%	12%	7%	9%	6%	7%	11%
Adj. Flow (vph)	31	237	52	86	232	97	40	171	73	83	141	40
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	320	0	0	415	0	0	284	0	83	181	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	97		97	97		97	97		97	97		97
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		15.0	15.0		5.0	15.0	
Minimum Split (s)	32.9	32.9		32.9	32.9		29.0	29.0		10.0	29.0	
Total Split (s)	36.0	36.0		36.0	36.0		29.0	29.0		10.0	39.0	
Total Split (%)	48.0%	48.0%		48.0%	48.0%		38.7%	38.7%		13.3%	52.0%	
Maximum Green (s)	30.1	30.1		30.1	30.1		23.0	23.0		5.0	33.0	
Yellow Time (s)	3.3	3.3		3.3	3.3		4.2	4.2		3.3	4.2	
All-Red Time (s)	2.6	2.6		2.6	2.6		1.8	1.8		1.7	1.8	
Lost Time Adjust (s)		0.0			0.0			0.0		0.0	0.0	
Total Lost Time (s)		5.9			5.9			6.0		5.0	6.0	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?							Yes	Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		None	Max	
Walk Time (s)	13.0	13.0		13.0	13.0		13.0	13.0			13.0	
Flash Dont Walk (s)	14.0	14.0		14.0	14.0		10.0	10.0			10.0	
Pedestrian Calls (#/hr)	1	1		1	1		1	1			1	
Act Effct Green (s)		23.2			23.2			25.5		34.3	33.3	
Actuated g/C Ratio		0.34			0.34			0.37		0.50	0.49	
v/c Ratio		0.60			0.87			0.49		0.18	0.23	
Control Delay		22.7			40.0			21.5		11.9	11.1	
Queue Delay		0.0			0.0			0.0		0.0	0.0	
Total Delay		22.7			40.0			21.5		11.9	11.1	
LOS		C			D			C		B	B	
Approach Delay		22.7			40.0			21.5			11.4	
Approach LOS		C			D			C			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 68.5			
Natural Cycle: 75			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.87			
Intersection Signal Delay: 25.7		Intersection LOS: C	
Intersection Capacity Utilization 80.8%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 12: County Road 29 & Almonte Street





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	4	2	1	4	5	314	3	4	241	4
Future Volume (Veh/h)	0	0	4	2	1	4	5	314	3	4	241	4
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	0	4	2	1	4	6	349	3	4	268	4
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	644	642	270	643	641	349	272			352		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	644	642	270	643	641	349	272			352		
tC, single (s)	7.1	6.5	6.2	7.2	6.7	6.2	4.2			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.6	4.2	3.3	2.3			2.3		
p0 queue free %	100	100	99	99	100	99	100			100		
cM capacity (veh/h)	381	389	769	374	367	694	1263			1143		

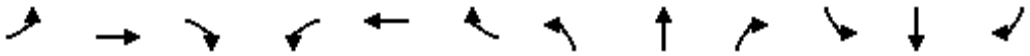
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total	4	7	355	3	276
Volume Left	0	2	6	0	4
Volume Right	4	4	0	3	4
cSH	769	506	1263	1700	1143
Volume to Capacity	0.01	0.01	0.00	0.00	0.00
Queue Length 95th (m)	0.1	0.3	0.1	0.0	0.1
Control Delay (s)	9.7	12.2	0.2	0.0	0.2
Lane LOS	A	B	A		A
Approach Delay (s)	9.7	12.2	0.2		0.2
Approach LOS	A	B			

Intersection Summary				
Average Delay	0.4			
Intersection Capacity Utilization	30.5%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	0	6	2	0	13	2
Future Volume (Veh/h)	0	6	2	0	13	2
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	7	2	0	14	2
Pedestrians	3					
Lane Width (m)	3.7					
Walking Speed (m/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			7		10	4
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			7		10	4
tC, single (s)			4.1		6.5	6.3
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.4
p0 queue free %			100		99	100
cM capacity (veh/h)			1614		997	1054

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	7	2	16
Volume Left	0	2	14
Volume Right	7	0	2
cSH	1700	1614	1004
Volume to Capacity	0.00	0.00	0.02
Queue Length 95th (m)	0.0	0.0	0.4
Control Delay (s)	0.0	7.2	8.6
Lane LOS		A	A
Approach Delay (s)	0.0	7.2	8.6
Approach LOS			A

Intersection Summary			
Average Delay	6.1		
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	273	0	1	442	35	0	1	1	20	0	7
Future Volume (Veh/h)	1	273	0	1	442	35	0	1	1	20	0	7
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	1	303	0	1	491	39	0	1	1	22	0	8
Pedestrians		4						6				
Lane Width (m)		3.7						3.7				
Walking Speed (m/s)		3.5						3.5				
Percent Blockage		0						0				
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	530			309			836	843	309	819	824	514
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	530			309			836	843	309	819	824	514
tC, single (s)	4.3			4.1			7.1	6.5	6.2	7.1	6.5	6.5
tC, 2 stage (s)												
tF (s)	2.4			2.2			3.5	4.0	3.3	3.5	4.0	3.6
p0 queue free %	100			100			100	100	100	92	100	98
cM capacity (veh/h)	965			1249			281	299	730	292	307	506

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	304	531	2	30
Volume Left	1	1	0	22
Volume Right	0	39	1	8
cSH	965	1249	424	329
Volume to Capacity	0.00	0.00	0.00	0.09
Queue Length 95th (m)	0.0	0.0	0.1	2.3
Control Delay (s)	0.0	0.0	13.5	17.0
Lane LOS	A	A	B	C
Approach Delay (s)	0.0	0.0	13.5	17.0
Approach LOS			B	C

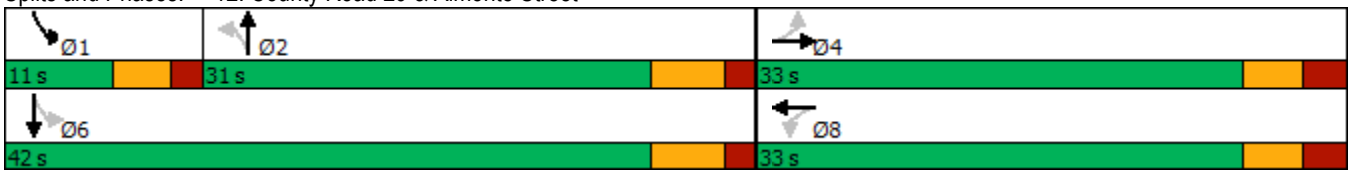
Intersection Summary				
Average Delay	0.6			
Intersection Capacity Utilization	43.2%	ICU Level of Service	A	
Analysis Period (min)	15			

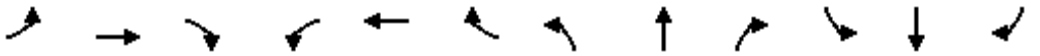
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	174	17	90	68	41	10	95	60	119	117	23
Future Volume (vph)	25	174	17	90	68	41	10	95	60	119	117	23
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		0.0	65.0		0.0
Storage Lanes	0		0	0		0	0		0	1		0
Taper Length (m)	2.5			2.5			2.5			80.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			1.00					1.00	1.00	
Frt		0.989			0.972			0.951			0.975	
Flt Protected		0.994			0.978			0.997		0.950		
Satd. Flow (prot)	0	1651	0	0	1620	0	0	1597	0	1631	1642	0
Flt Permitted		0.948			0.728			0.984		0.612		
Satd. Flow (perm)	0	1575	0	0	1206	0	0	1577	0	1050	1642	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			20			41			18	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		205.6			469.8			144.7			188.3	
Travel Time (s)		14.8			33.8			10.4			13.6	
Confl. Peds. (#/hr)	1					1				1		1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	14%	7%	14%	6%	7%	6%	12%	7%	9%	6%	7%	11%
Adj. Flow (vph)	25	174	17	90	68	41	10	95	60	119	117	23
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	216	0	0	199	0	0	165	0	119	140	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	97		97	97		97	97		97	97		97
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		15.0	15.0		5.0	15.0	
Minimum Split (s)	32.9	32.9		32.9	32.9		30.0	30.0		10.0	30.0	
Total Split (s)	33.0	33.0		33.0	33.0		31.0	31.0		11.0	42.0	
Total Split (%)	44.0%	44.0%		44.0%	44.0%		41.3%	41.3%		14.7%	56.0%	
Maximum Green (s)	27.1	27.1		27.1	27.1		25.0	25.0		6.0	36.0	
Yellow Time (s)	3.3	3.3		3.3	3.3		4.2	4.2		3.3	4.2	
All-Red Time (s)	2.6	2.6		2.6	2.6		1.8	1.8		1.7	1.8	
Lost Time Adjust (s)		0.0			0.0			0.0		0.0	0.0	
Total Lost Time (s)		5.9			5.9			6.0		5.0	6.0	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?							Yes	Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		None	Max	
Walk Time (s)	13.0	13.0		13.0	13.0		13.0	13.0			13.0	
Flash Dont Walk (s)	14.0	14.0		14.0	14.0		10.0	10.0			10.0	
Pedestrian Calls (#/hr)	1	1		1	1		1	1			1	
Act Effct Green (s)		15.2			15.2			27.6		37.3	36.3	
Actuated g/C Ratio		0.24			0.24			0.43		0.59	0.57	
v/c Ratio		0.57			0.65			0.23		0.18	0.15	
Control Delay		26.2			29.8			12.2		8.2	7.5	
Queue Delay		0.0			0.0			0.0		0.0	0.0	
Total Delay		26.2			29.8			12.2		8.2	7.5	
LOS		C			C			B		A	A	
Approach Delay		26.2			29.8			12.2			7.8	
Approach LOS		C			C			B			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 63.5			
Natural Cycle: 75			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.65			
Intersection Signal Delay: 18.6		Intersection LOS: B	
Intersection Capacity Utilization 75.8%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 12: County Road 29 & Almonte Street





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	5	2	1	0	2	166	1	1	212	0
Future Volume (Veh/h)	0	0	5	2	1	0	2	166	1	1	212	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	5	2	1	0	2	166	1	1	212	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	384	385	212	389	384	166	212			167		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	384	385	212	389	384	166	212			167		
tC, single (s)	7.2	6.6	6.3	7.1	6.5	6.2	4.2			4.2		
tC, 2 stage (s)												
tF (s)	3.6	4.1	3.4	3.5	4.0	3.3	2.3			2.3		
p0 queue free %	100	100	99	100	100	100	100			100		
cM capacity (veh/h)	561	538	813	564	547	876	1335			1387		

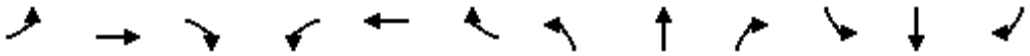
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total	5	3	168	1	213
Volume Left	0	2	2	0	1
Volume Right	5	0	0	1	0
cSH	813	558	1335	1700	1387
Volume to Capacity	0.01	0.01	0.00	0.00	0.00
Queue Length 95th (m)	0.1	0.1	0.0	0.0	0.0
Control Delay (s)	9.5	11.5	0.1	0.0	0.0
Lane LOS	A	B	A		A
Approach Delay (s)	9.5	11.5	0.1		0.0
Approach LOS	A	B			

Intersection Summary				
Average Delay	0.3			
Intersection Capacity Utilization	28.5%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	0	3	1	1	7	1
Future Volume (Veh/h)	0	3	1	1	7	1
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	3	1	1	7	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			3		4	2
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			3		4	2
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		99	100
cM capacity (veh/h)			1619		1017	1083

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	3	2	8
Volume Left	0	1	7
Volume Right	3	0	1
cSH	1700	1619	1025
Volume to Capacity	0.00	0.00	0.01
Queue Length 95th (m)	0.0	0.0	0.2
Control Delay (s)	0.0	3.6	8.5
Lane LOS		A	A
Approach Delay (s)	0.0	3.6	8.5
Approach LOS			A

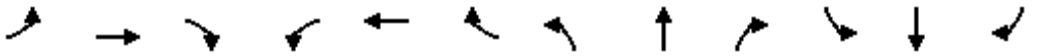
Intersection Summary			
Average Delay	5.8		
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	293	0	0	218	16	0	0	0	22	0	1
Future Volume (Veh/h)	2	293	0	0	218	16	0	0	0	22	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	2	293	0	0	218	16	0	0	0	22	0	1
Pedestrians		2			1			2			1	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	235			295			528	534	296	525	526	229
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	235			295			528	534	296	525	526	229
tC, single (s)	4.3			4.1			7.1	6.5	6.2	7.1	6.5	6.5
tC, 2 stage (s)												
tF (s)	2.4			2.2			3.5	4.0	3.3	3.5	4.0	3.6
p0 queue free %	100			100			100	100	100	95	100	100
cM capacity (veh/h)	1248			1264			457	450	741	461	455	741

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	295	234	0	23
Volume Left	2	0	0	22
Volume Right	0	16	0	1
cSH	1248	1264	1700	468
Volume to Capacity	0.00	0.00	0.00	0.05
Queue Length 95th (m)	0.0	0.0	0.0	1.2
Control Delay (s)	0.1	0.0	0.0	13.1
Lane LOS	A		A	B
Approach Delay (s)	0.1	0.0	0.0	13.1
Approach LOS			A	B

Intersection Summary				
Average Delay	0.6			
Intersection Capacity Utilization	28.6%	ICU Level of Service	A	
Analysis Period (min)	15			



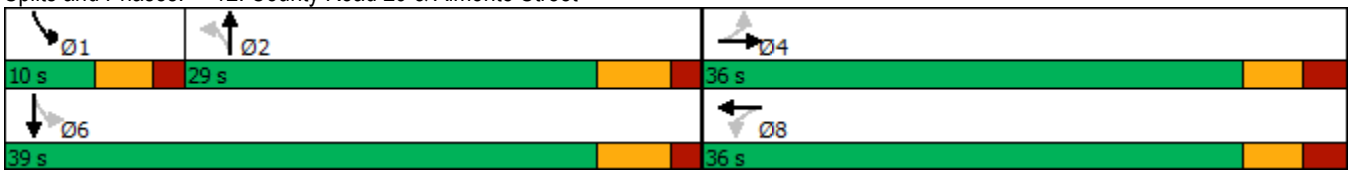
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	226	50	82	222	92	38	163	70	80	135	38
Future Volume (vph)	30	226	50	82	222	92	38	163	70	80	135	38
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		0.0	65.0		0.0
Storage Lanes	0		0	0		0	0		0	1		0
Taper Length (m)	2.5			2.5			2.5			80.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			1.00					1.00	1.00	
Frt		0.978			0.969			0.965			0.967	
Flt Protected		0.995			0.990			0.993		0.950		
Satd. Flow (prot)	0	1627	0	0	1630	0	0	1612	0	1631	1624	0
Flt Permitted		0.938			0.832			0.938		0.494		
Satd. Flow (perm)	0	1534	0	0	1370	0	0	1522	0	847	1624	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		16			24			24			24	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		205.6			469.8			144.7			188.3	
Travel Time (s)		14.8			33.8			10.4			13.6	
Confl. Peds. (#/hr)	1					1				1		1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	14%	7%	14%	6%	7%	6%	12%	7%	9%	6%	7%	11%
Adj. Flow (vph)	30	226	50	82	222	92	38	163	70	80	135	38
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	306	0	0	396	0	0	271	0	80	173	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	97		97	97		97	97		97	97		97
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

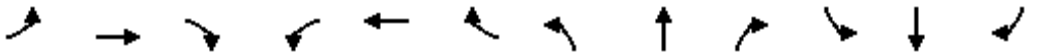
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		15.0	15.0		5.0	15.0	
Minimum Split (s)	32.9	32.9		32.9	32.9		29.0	29.0		10.0	29.0	
Total Split (s)	36.0	36.0		36.0	36.0		29.0	29.0		10.0	39.0	
Total Split (%)	48.0%	48.0%		48.0%	48.0%		38.7%	38.7%		13.3%	52.0%	
Maximum Green (s)	30.1	30.1		30.1	30.1		23.0	23.0		5.0	33.0	
Yellow Time (s)	3.3	3.3		3.3	3.3		4.2	4.2		3.3	4.2	
All-Red Time (s)	2.6	2.6		2.6	2.6		1.8	1.8		1.7	1.8	
Lost Time Adjust (s)		0.0			0.0			0.0		0.0	0.0	
Total Lost Time (s)		5.9			5.9			6.0		5.0	6.0	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?							Yes	Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		None	Max	
Walk Time (s)	13.0	13.0		13.0	13.0		13.0	13.0			13.0	
Flash Dont Walk (s)	14.0	14.0		14.0	14.0		10.0	10.0			10.0	
Pedestrian Calls (#/hr)	1	1		1	1		1	1			1	
Act Effct Green (s)		21.9			21.9			25.5		34.3	33.3	
Actuated g/C Ratio		0.33			0.33			0.38		0.51	0.50	
v/c Ratio		0.60			0.86			0.46		0.16	0.21	
Control Delay		22.8			38.2			20.2		11.3	10.5	
Queue Delay		0.0			0.0			0.0		0.0	0.0	
Total Delay		22.8			38.2			20.2		11.3	10.5	
LOS		C			D			C		B	B	
Approach Delay		22.8			38.2			20.2			10.8	
Approach LOS		C			D			C			B	

Intersection Summary

Area Type: Other
Cycle Length: 75
Actuated Cycle Length: 67.2
Natural Cycle: 75
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.86
Intersection Signal Delay: 24.7 Intersection LOS: C
Intersection Capacity Utilization 90.7% ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 12: County Road 29 & Almonte Street





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	4	2	1	4	5	333	3	4	255	4
Future Volume (Veh/h)	0	0	4	2	1	4	5	333	3	4	255	4
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	4	2	1	4	5	333	3	4	255	4
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	612	611	257	612	610	333	259			336		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	612	611	257	612	610	333	259			336		
tC, single (s)	7.2	6.6	6.3	7.1	6.5	6.2	4.2			4.2		
tC, 2 stage (s)												
tF (s)	3.6	4.1	3.4	3.5	4.0	3.3	2.3			2.3		
p0 queue free %	100	100	99	99	100	99	100			100		
cM capacity (veh/h)	391	398	767	400	405	706	1283			1201		

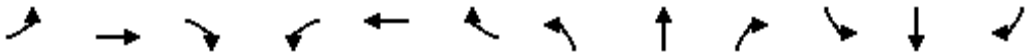
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total	4	7	338	3	263
Volume Left	0	2	5	0	4
Volume Right	4	4	0	3	4
cSH	767	533	1283	1700	1201
Volume to Capacity	0.01	0.01	0.00	0.00	0.00
Queue Length 95th (m)	0.1	0.3	0.1	0.0	0.1
Control Delay (s)	9.7	11.8	0.2	0.0	0.2
Lane LOS	A	B	A		A
Approach Delay (s)	9.7	11.8	0.2		0.2
Approach LOS	A	B			

Intersection Summary				
Average Delay	0.3			
Intersection Capacity Utilization	31.4%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	0	6	2	0	13	2
Future Volume (Veh/h)	0	6	2	0	13	2
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	6	2	0	13	2
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			6		7	3
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			6		7	3
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		99	100
cM capacity (veh/h)			1615		1013	1081

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	6	2	15
Volume Left	0	2	13
Volume Right	6	0	2
cSH	1700	1615	1021
Volume to Capacity	0.00	0.00	0.01
Queue Length 95th (m)	0.0	0.0	0.3
Control Delay (s)	0.0	7.2	8.6
Lane LOS		A	A
Approach Delay (s)	0.0	7.2	8.6
Approach LOS			A

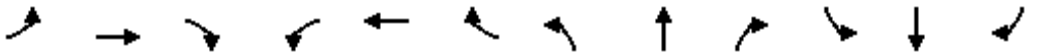
Intersection Summary			
Average Delay	6.2		
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	289	0	1	469	35	0	1	1	20	0	7
Future Volume (Veh/h)	1	289	0	1	469	35	0	1	1	20	0	7
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	1	289	0	1	469	35	0	1	1	20	0	7
Pedestrians		4						6				
Lane Width (m)		3.7						3.7				
Walking Speed (m/s)		3.5						3.5				
Percent Blockage		0						0				
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	504			295			796	803	295	781	786	490
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	504			295			796	803	295	781	786	490
tC, single (s)	4.3			4.1			7.1	6.5	6.2	7.1	6.5	6.5
tC, 2 stage (s)												
tF (s)	2.4			2.2			3.5	4.0	3.3	3.5	4.0	3.6
p0 queue free %	100			100			100	100	100	94	100	99
cM capacity (veh/h)	988			1264			299	316	743	310	323	523

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	290	505	2	27
Volume Left	1	1	0	20
Volume Right	0	35	1	7
cSH	988	1264	443	347
Volume to Capacity	0.00	0.00	0.00	0.08
Queue Length 95th (m)	0.0	0.0	0.1	1.9
Control Delay (s)	0.0	0.0	13.2	16.3
Lane LOS	A	A	B	C
Approach Delay (s)	0.0	0.0	13.2	16.3
Approach LOS			B	C

Intersection Summary				
Average Delay	0.6			
Intersection Capacity Utilization	44.7%	ICU Level of Service	A	
Analysis Period (min)	15			

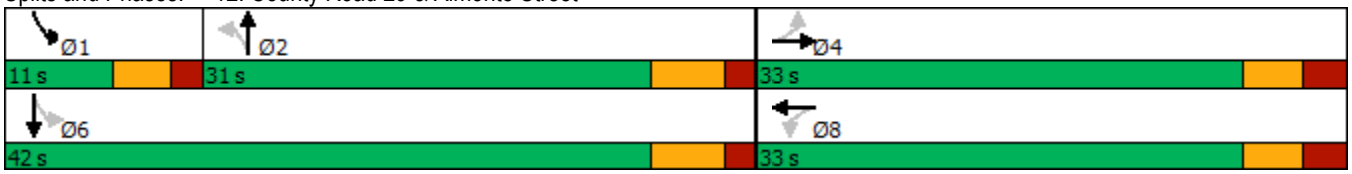


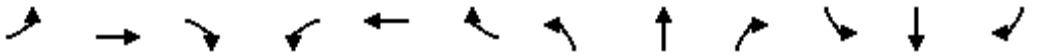
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	182	18	94	71	43	10	100	63	124	122	24
Future Volume (vph)	27	182	18	94	71	43	10	100	63	124	122	24
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		0.0	65.0		0.0
Storage Lanes	0		0	0		0	0		0	1		0
Taper Length (m)	2.5			2.5			2.5			80.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			1.00					1.00	1.00	
Frt		0.989			0.972			0.951			0.975	
Flt Protected		0.994			0.978			0.997		0.950		
Satd. Flow (prot)	0	1651	0	0	1620	0	0	1598	0	1631	1642	0
Flt Permitted		0.946			0.714			0.984		0.603		
Satd. Flow (perm)	0	1571	0	0	1183	0	0	1577	0	1034	1642	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			20			41			18	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		205.6			469.8			144.7			188.3	
Travel Time (s)		14.8			33.8			10.4			13.6	
Confl. Peds. (#/hr)	1					1				1		1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	14%	7%	14%	6%	7%	6%	12%	7%	9%	6%	7%	11%
Adj. Flow (vph)	27	182	18	94	71	43	10	100	63	124	122	24
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	227	0	0	208	0	0	173	0	124	146	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	97		97	97		97	97		97	97		97
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		15.0	15.0		5.0	15.0	
Minimum Split (s)	32.9	32.9		32.9	32.9		30.0	30.0		10.0	30.0	
Total Split (s)	33.0	33.0		33.0	33.0		31.0	31.0		11.0	42.0	
Total Split (%)	44.0%	44.0%		44.0%	44.0%		41.3%	41.3%		14.7%	56.0%	
Maximum Green (s)	27.1	27.1		27.1	27.1		25.0	25.0		6.0	36.0	
Yellow Time (s)	3.3	3.3		3.3	3.3		4.2	4.2		3.3	4.2	
All-Red Time (s)	2.6	2.6		2.6	2.6		1.8	1.8		1.7	1.8	
Lost Time Adjust (s)		0.0			0.0			0.0		0.0	0.0	
Total Lost Time (s)		5.9			5.9			6.0		5.0	6.0	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?							Yes	Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		None	Max	
Walk Time (s)	13.0	13.0		13.0	13.0		13.0	13.0			13.0	
Flash Dont Walk (s)	14.0	14.0		14.0	14.0		10.0	10.0			10.0	
Pedestrian Calls (#/hr)	1	1		1	1		1	1			1	
Act Effct Green (s)		15.6			15.6			27.6		37.3	36.3	
Actuated g/C Ratio		0.24			0.24			0.43		0.58	0.57	
v/c Ratio		0.59			0.68			0.25		0.19	0.16	
Control Delay		26.6			31.4			12.6		8.4	7.7	
Queue Delay		0.0			0.0			0.0		0.0	0.0	
Total Delay		26.6			31.4			12.6		8.4	7.7	
LOS		C			C			B		A	A	
Approach Delay		26.6			31.4			12.6			8.0	
Approach LOS		C			C			B			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 63.9			
Natural Cycle: 75			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.68			
Intersection Signal Delay: 19.3		Intersection LOS: B	
Intersection Capacity Utilization 76.9%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 12: County Road 29 & Almonte Street





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	5	2	1	0	2	174	1	1	222	0
Future Volume (Veh/h)	0	0	5	2	1	0	2	174	1	1	222	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	5	2	1	0	2	174	1	1	222	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	402	403	222	407	402	174	222			175		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	402	403	222	407	402	174	222			175		
tC, single (s)	7.2	6.6	6.3	7.1	6.5	6.2	4.2			4.2		
tC, 2 stage (s)												
tF (s)	3.6	4.1	3.4	3.5	4.0	3.3	2.3			2.3		
p0 queue free %	100	100	99	100	100	100	100			100		
cM capacity (veh/h)	546	526	803	548	534	867	1324			1378		

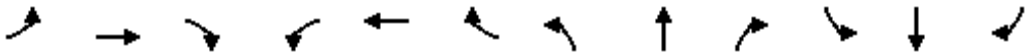
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total	5	3	176	1	223
Volume Left	0	2	2	0	1
Volume Right	5	0	0	1	0
cSH	803	544	1324	1700	1378
Volume to Capacity	0.01	0.01	0.00	0.00	0.00
Queue Length 95th (m)	0.1	0.1	0.0	0.0	0.0
Control Delay (s)	9.5	11.7	0.1	0.0	0.0
Lane LOS	A	B	A		A
Approach Delay (s)	9.5	11.7	0.1		0.0
Approach LOS	A	B			

Intersection Summary				
Average Delay	0.3			
Intersection Capacity Utilization	29.1%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	0	3	1	1	7	1
Future Volume (Veh/h)	0	3	1	1	7	1
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	3	1	1	7	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			3		4	2
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			3		4	2
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		99	100
cM capacity (veh/h)			1619		1017	1083

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	3	2	8
Volume Left	0	1	7
Volume Right	3	0	1
cSH	1700	1619	1025
Volume to Capacity	0.00	0.00	0.01
Queue Length 95th (m)	0.0	0.0	0.2
Control Delay (s)	0.0	3.6	8.5
Lane LOS		A	A
Approach Delay (s)	0.0	3.6	8.5
Approach LOS			A

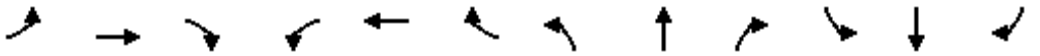
Intersection Summary			
Average Delay	5.8		
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	306	0	0	229	16	0	0	0	22	0	1
Future Volume (Veh/h)	2	306	0	0	229	16	0	0	0	22	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	2	306	0	0	229	16	0	0	0	22	0	1
Pedestrians		2			1			2			1	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	246			308			552	558	309	549	550	240
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	246			308			552	558	309	549	550	240
tC, single (s)	4.3			4.1			7.1	6.5	6.2	7.1	6.5	6.5
tC, 2 stage (s)												
tF (s)	2.4			2.2			3.5	4.0	3.3	3.5	4.0	3.6
p0 queue free %	100			100			100	100	100	95	100	100
cM capacity (veh/h)	1236			1250			441	436	729	444	441	731

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	308	245	0	23
Volume Left	2	0	0	22
Volume Right	0	16	0	1
cSH	1236	1250	1700	452
Volume to Capacity	0.00	0.00	0.00	0.05
Queue Length 95th (m)	0.0	0.0	0.0	1.2
Control Delay (s)	0.1	0.0	0.0	13.4
Lane LOS	A		A	B
Approach Delay (s)	0.1	0.0	0.0	13.4
Approach LOS			A	B

Intersection Summary				
Average Delay	0.6			
Intersection Capacity Utilization	29.3%	ICU Level of Service	A	
Analysis Period (min)	15			



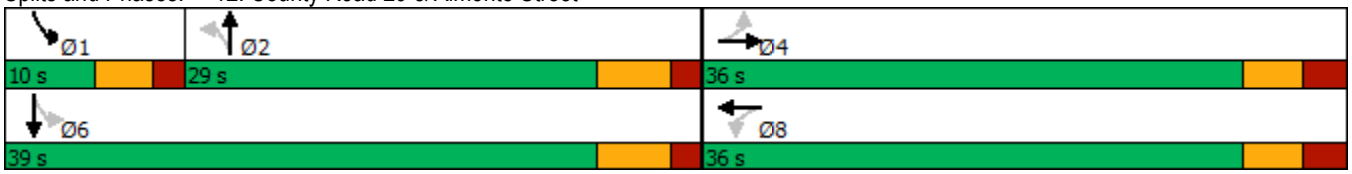
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	236	52	85	232	97	40	171	73	83	141	40
Future Volume (vph)	31	236	52	85	232	97	40	171	73	83	141	40
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		0.0	65.0		0.0
Storage Lanes	0		0	0		0	0		0	1		0
Taper Length (m)	2.5			2.5			2.5			80.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			0.99					1.00	1.00	
Frt		0.978			0.968			0.965			0.967	
Flt Protected		0.995			0.990			0.993		0.950		
Satd. Flow (prot)	0	1627	0	0	1629	0	0	1612	0	1631	1624	0
Flt Permitted		0.937			0.827			0.935		0.479		
Satd. Flow (perm)	0	1533	0	0	1360	0	0	1517	0	822	1624	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		16			25			24			24	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		205.6			469.8			144.7			188.3	
Travel Time (s)		14.8			33.8			10.4			13.6	
Confl. Peds. (#/hr)	1					1				1		1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	14%	7%	14%	6%	7%	6%	12%	7%	9%	6%	7%	11%
Adj. Flow (vph)	31	236	52	85	232	97	40	171	73	83	141	40
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	319	0	0	414	0	0	284	0	83	181	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	97		97	97		97	97		97	97		97
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

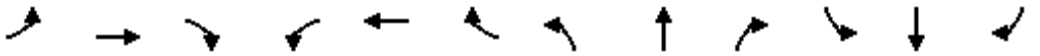
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		15.0	15.0		5.0	15.0	
Minimum Split (s)	32.9	32.9		32.9	32.9		29.0	29.0		10.0	29.0	
Total Split (s)	36.0	36.0		36.0	36.0		29.0	29.0		10.0	39.0	
Total Split (%)	48.0%	48.0%		48.0%	48.0%		38.7%	38.7%		13.3%	52.0%	
Maximum Green (s)	30.1	30.1		30.1	30.1		23.0	23.0		5.0	33.0	
Yellow Time (s)	3.3	3.3		3.3	3.3		4.2	4.2		3.3	4.2	
All-Red Time (s)	2.6	2.6		2.6	2.6		1.8	1.8		1.7	1.8	
Lost Time Adjust (s)		0.0			0.0			0.0		0.0	0.0	
Total Lost Time (s)		5.9			5.9			6.0		5.0	6.0	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?							Yes	Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		None	Max	
Walk Time (s)	13.0	13.0		13.0	13.0		13.0	13.0			13.0	
Flash Dont Walk (s)	14.0	14.0		14.0	14.0		10.0	10.0			10.0	
Pedestrian Calls (#/hr)	1	1		1	1		1	1			1	
Act Effct Green (s)		23.0			23.0			25.5		34.3	33.3	
Actuated g/C Ratio		0.34			0.34			0.37		0.50	0.49	
v/c Ratio		0.61			0.87			0.49		0.18	0.23	
Control Delay		22.7			39.9			21.3		11.8	11.1	
Queue Delay		0.0			0.0			0.0		0.0	0.0	
Total Delay		22.7			39.9			21.3		11.8	11.1	
LOS		C			D			C		B	B	
Approach Delay		22.7			39.9			21.3			11.3	
Approach LOS		C			D			C			B	

Intersection Summary

Area Type: Other
Cycle Length: 75
Actuated Cycle Length: 68.3
Natural Cycle: 75
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.87
Intersection Signal Delay: 25.6 Intersection LOS: C
Intersection Capacity Utilization 93.2% ICU Level of Service F
Analysis Period (min) 15

Splits and Phases: 12: County Road 29 & Almonte Street





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	4	2	1	4	5	349	3	4	268	4
Future Volume (Veh/h)	0	0	4	2	1	4	5	349	3	4	268	4
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	4	2	1	4	5	349	3	4	268	4
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	642	640	270	641	639	349	272			352		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	642	640	270	641	639	349	272			352		
tC, single (s)	7.2	6.6	6.3	7.1	6.5	6.2	4.2			4.2		
tC, 2 stage (s)												
tF (s)	3.6	4.1	3.4	3.5	4.0	3.3	2.3			2.3		
p0 queue free %	100	100	99	99	100	99	100			100		
cM capacity (veh/h)	374	383	754	382	390	692	1269			1185		

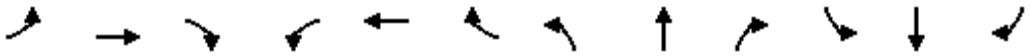
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total	4	7	354	3	276
Volume Left	0	2	5	0	4
Volume Right	4	4	0	3	4
cSH	754	515	1269	1700	1185
Volume to Capacity	0.01	0.01	0.00	0.00	0.00
Queue Length 95th (m)	0.1	0.3	0.1	0.0	0.1
Control Delay (s)	9.8	12.1	0.1	0.0	0.1
Lane LOS	A	B	A		A
Approach Delay (s)	9.8	12.1	0.1		0.1
Approach LOS	A	B			

Intersection Summary				
Average Delay	0.3			
Intersection Capacity Utilization	32.3%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	0	6	2	0	13	2
Future Volume (Veh/h)	0	6	2	0	13	2
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	6	2	0	13	2
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			6		7	3
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			6		7	3
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		99	100
cM capacity (veh/h)			1615		1013	1081

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	6	2	15
Volume Left	0	2	13
Volume Right	6	0	2
cSH	1700	1615	1021
Volume to Capacity	0.00	0.00	0.01
Queue Length 95th (m)	0.0	0.0	0.3
Control Delay (s)	0.0	7.2	8.6
Lane LOS		A	A
Approach Delay (s)	0.0	7.2	8.6
Approach LOS			A

Intersection Summary			
Average Delay	6.2		
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	303	0	1	491	35	0	1	1	20	0	7
Future Volume (Veh/h)	1	303	0	1	491	35	0	1	1	20	0	7
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	1	303	0	1	491	35	0	1	1	20	0	7
Pedestrians		4						6				
Lane Width (m)		3.7						3.7				
Walking Speed (m/s)		3.5						3.5				
Percent Blockage		0						0				
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	526			309			832	839	309	817	822	512
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	526			309			832	839	309	817	822	512
tC, single (s)	4.3			4.1			7.1	6.5	6.2	7.1	6.5	6.5
tC, 2 stage (s)												
tF (s)	2.4			2.2			3.5	4.0	3.3	3.5	4.0	3.6
p0 queue free %	100			100			100	100	100	93	100	99
cM capacity (veh/h)	969			1249			283	301	730	293	308	508

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	304	527	2	27
Volume Left	1	1	0	20
Volume Right	0	35	1	7
cSH	969	1249	426	329
Volume to Capacity	0.00	0.00	0.00	0.08
Queue Length 95th (m)	0.0	0.0	0.1	2.0
Control Delay (s)	0.0	0.0	13.5	16.9
Lane LOS	A	A	B	C
Approach Delay (s)	0.0	0.0	13.5	16.9
Approach LOS			B	C

Intersection Summary				
Average Delay	0.6			
Intersection Capacity Utilization	46.0%	ICU Level of Service	A	
Analysis Period (min)	15			

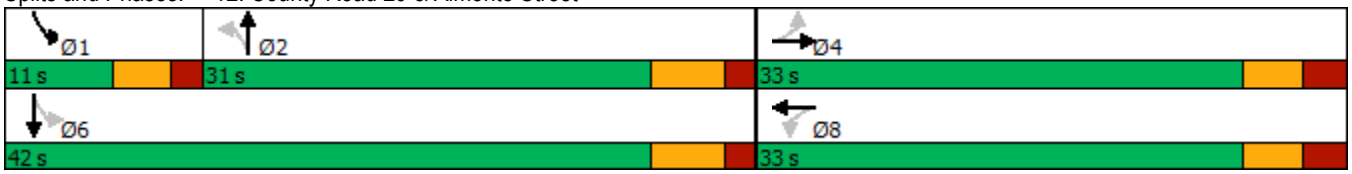
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	174	17	90	68	53	10	103	60	178	140	35
Future Volume (vph)	29	174	17	90	68	53	10	103	60	178	140	35
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		0.0	65.0		0.0
Storage Lanes	0		0	0		0	0		0	1		0
Taper Length (m)	2.5			2.5			2.5			80.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			0.99					1.00	1.00	
Frt		0.990			0.966			0.953			0.970	
Flt Protected		0.993			0.979			0.997		0.950		
Satd. Flow (prot)	0	1650	0	0	1610	0	0	1601	0	1631	1631	0
Flt Permitted		0.940			0.741			0.982		0.594		
Satd. Flow (perm)	0	1561	0	0	1219	0	0	1577	0	1019	1631	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			25			38			23	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		205.6			469.8			144.7			188.3	
Travel Time (s)		14.8			33.8			10.4			13.6	
Confl. Peds. (#/hr)	1					1				1		1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	14%	7%	14%	6%	7%	6%	12%	7%	9%	6%	7%	11%
Adj. Flow (vph)	29	174	17	90	68	53	10	103	60	178	140	35
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	220	0	0	211	0	0	173	0	178	175	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	97		97	97		97	97		97	97		97
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		15.0	15.0		5.0	15.0	
Minimum Split (s)	32.9	32.9		32.9	32.9		30.0	30.0		10.0	30.0	
Total Split (s)	33.0	33.0		33.0	33.0		31.0	31.0		11.0	42.0	
Total Split (%)	44.0%	44.0%		44.0%	44.0%		41.3%	41.3%		14.7%	56.0%	
Maximum Green (s)	27.1	27.1		27.1	27.1		25.0	25.0		6.0	36.0	
Yellow Time (s)	3.3	3.3		3.3	3.3		4.2	4.2		3.3	4.2	
All-Red Time (s)	2.6	2.6		2.6	2.6		1.8	1.8		1.7	1.8	
Lost Time Adjust (s)		0.0			0.0			0.0		0.0	0.0	
Total Lost Time (s)		5.9			5.9			6.0		5.0	6.0	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?							Yes	Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		None	Max	
Walk Time (s)	13.0	13.0		13.0	13.0		13.0	13.0			13.0	
Flash Dont Walk (s)	14.0	14.0		14.0	14.0		10.0	10.0			10.0	
Pedestrian Calls (#/hr)	1	1		1	1		1	1			1	
Act Effct Green (s)		15.5			15.5			25.2		37.3	36.3	
Actuated g/C Ratio		0.24			0.24			0.39		0.58	0.57	
v/c Ratio		0.58			0.67			0.27		0.27	0.19	
Control Delay		26.4			29.8			12.9		8.9	7.7	
Queue Delay		0.0			0.0			0.0		0.0	0.0	
Total Delay		26.4			29.8			12.9		8.9	7.7	
LOS		C			C			B		A	A	
Approach Delay		26.4			29.8			12.9			8.3	
Approach LOS		C			C			B			A	

Intersection Summary

Area Type: Other
Cycle Length: 75
Actuated Cycle Length: 63.8
Natural Cycle: 75
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.67
Intersection Signal Delay: 18.1 Intersection LOS: B
Intersection Capacity Utilization 76.8% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 12: County Road 29 & Almonte Street



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	5	35	1	2	2	186	5	2	273	0
Future Volume (Veh/h)	0	0	5	35	1	2	2	186	5	2	273	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	5	35	1	2	2	186	5	2	273	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	470	472	273	472	467	186	273			191		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	470	472	273	472	467	186	273			191		
tC, single (s)	7.2	6.6	6.3	7.1	6.5	6.2	4.2			4.2		
tC, 2 stage (s)												
tF (s)	3.6	4.1	3.4	3.5	4.0	3.3	2.3			2.3		
p0 queue free %	100	100	99	93	100	100	100			100		
cM capacity (veh/h)	491	480	752	496	490	854	1267			1359		

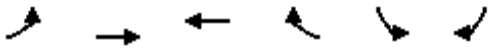
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total	5	38	188	5	275
Volume Left	0	35	2	0	2
Volume Right	5	2	0	5	0
cSH	752	507	1267	1700	1359
Volume to Capacity	0.01	0.07	0.00	0.00	0.00
Queue Length 95th (m)	0.2	1.8	0.0	0.0	0.0
Control Delay (s)	9.8	12.7	0.1	0.0	0.1
Lane LOS	A	B	A		A
Approach Delay (s)	9.8	12.7	0.1		0.1
Approach LOS	A	B			

Intersection Summary				
Average Delay	1.1			
Intersection Capacity Utilization	32.4%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	61	21	168	20	7	214
Future Volume (Veh/h)	61	21	168	20	7	214
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	61	21	168	20	7	214
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	406	178			188	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	406	178			188	
tC, single (s)	6.4	6.2			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.3	
p0 queue free %	90	98			99	
cM capacity (veh/h)	598	865			1362	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	82	188	221
Volume Left	61	0	7
Volume Right	21	20	0
cSH	649	1700	1362
Volume to Capacity	0.13	0.11	0.01
Queue Length 95th (m)	3.3	0.0	0.1
Control Delay (s)	11.3	0.0	0.3
Lane LOS	B		A
Approach Delay (s)	11.3	0.0	0.3
Approach LOS	B		

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	29.4%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	3	8	7	0	35
Future Volume (Veh/h)	5	3	8	7	0	35
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	5	3	8	7	0	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	15				24	12
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	15				24	12
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	97
cM capacity (veh/h)	1596				988	1069

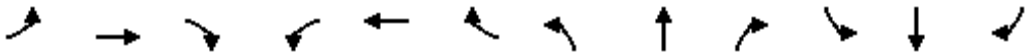
Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	8	15	35
Volume Left	5	0	0
Volume Right	0	7	35
cSH	1596	1700	1069
Volume to Capacity	0.00	0.01	0.03
Queue Length 95th (m)	0.1	0.0	0.8
Control Delay (s)	4.5	0.0	8.5
Lane LOS	A		A
Approach Delay (s)	4.5	0.0	8.5
Approach LOS			A

Intersection Summary			
Average Delay	5.7		
Intersection Capacity Utilization	14.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	0	3	1	1	14	1
Future Volume (Veh/h)	0	3	1	1	14	1
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	3	1	1	14	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			3		4	2
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			3		4	2
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		99	100
cM capacity (veh/h)			1619		1017	1083

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	3	2	15
Volume Left	0	1	14
Volume Right	3	0	1
cSH	1700	1619	1021
Volume to Capacity	0.00	0.00	0.01
Queue Length 95th (m)	0.0	0.0	0.3
Control Delay (s)	0.0	3.6	8.6
Lane LOS		A	A
Approach Delay (s)	0.0	3.6	8.6
Approach LOS			A

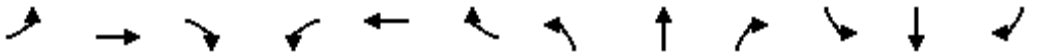
Intersection Summary			
Average Delay	6.8		
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	352	0	0	230	23	0	0	0	22	0	1
Future Volume (Veh/h)	2	352	0	0	230	23	0	0	0	22	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	2	352	0	0	230	23	0	0	0	22	0	1
Pedestrians		2			1			2			1	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		3.5			3.5			3.5			3.5	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	254			354			602	612	355	600	600	244
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	254			354			602	612	355	600	600	244
tC, single (s)	4.3			4.1			7.1	6.5	6.2	7.1	6.5	6.5
tC, 2 stage (s)												
tF (s)	2.4			2.2			3.5	4.0	3.3	3.5	4.0	3.6
p0 queue free %	100			100			100	100	100	95	100	100
cM capacity (veh/h)	1228			1204			409	407	688	412	413	728

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	354	253	0	23
Volume Left	2	0	0	22
Volume Right	0	23	0	1
cSH	1228	1204	1700	420
Volume to Capacity	0.00	0.00	0.00	0.05
Queue Length 95th (m)	0.0	0.0	0.0	1.3
Control Delay (s)	0.1	0.0	0.0	14.1
Lane LOS	A		A	B
Approach Delay (s)	0.1	0.0	0.0	14.1
Approach LOS			A	B

Intersection Summary				
Average Delay	0.5			
Intersection Capacity Utilization	31.9%	ICU Level of Service	A	
Analysis Period (min)	15			



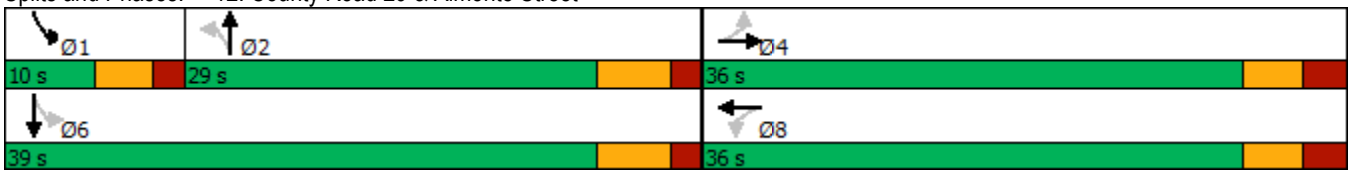
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	43	226	50	82	222	133	38	188	70	117	150	45
Future Volume (vph)	43	226	50	82	222	133	38	188	70	117	150	45
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		0.0	65.0		0.0
Storage Lanes	0		0	0		0	0		0	1		0
Taper Length (m)	2.5			2.5			2.5			80.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			0.99					1.00	1.00	
Frt		0.979			0.959			0.968			0.965	
Flt Protected		0.993			0.991			0.994		0.950		
Satd. Flow (prot)	0	1623	0	0	1613	0	0	1620	0	1631	1619	0
Flt Permitted		0.892			0.850			0.939		0.464		
Satd. Flow (perm)	0	1457	0	0	1384	0	0	1530	0	796	1619	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		15			35			21			26	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		205.6			469.8			144.7			188.3	
Travel Time (s)		14.8			33.8			10.4			13.6	
Confl. Peds. (#/hr)	1					1				1		1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	14%	7%	14%	6%	7%	6%	12%	7%	9%	6%	7%	11%
Adj. Flow (vph)	43	226	50	82	222	133	38	188	70	117	150	45
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	319	0	0	437	0	0	296	0	117	195	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	97		97	97		97	97		97	97		97
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

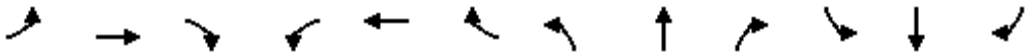
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		15.0	15.0		5.0	15.0	
Minimum Split (s)	32.9	32.9		32.9	32.9		29.0	29.0		10.0	29.0	
Total Split (s)	36.0	36.0		36.0	36.0		29.0	29.0		10.0	39.0	
Total Split (%)	48.0%	48.0%		48.0%	48.0%		38.7%	38.7%		13.3%	52.0%	
Maximum Green (s)	30.1	30.1		30.1	30.1		23.0	23.0		5.0	33.0	
Yellow Time (s)	3.3	3.3		3.3	3.3		4.2	4.2		3.3	4.2	
All-Red Time (s)	2.6	2.6		2.6	2.6		1.8	1.8		1.7	1.8	
Lost Time Adjust (s)		0.0			0.0			0.0		0.0	0.0	
Total Lost Time (s)		5.9			5.9			6.0		5.0	6.0	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?							Yes	Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		None	Max	
Walk Time (s)	13.0	13.0		13.0	13.0		13.0	13.0			13.0	
Flash Dont Walk (s)	14.0	14.0		14.0	14.0		10.0	10.0			10.0	
Pedestrian Calls (#/hr)	1	1		1	1		1	1			1	
Act Effct Green (s)		23.8			23.8			25.5		34.2	33.2	
Actuated g/C Ratio		0.34			0.34			0.37		0.50	0.48	
v/c Ratio		0.62			0.88			0.51		0.26	0.25	
Control Delay		23.5			39.0			22.4		12.8	11.5	
Queue Delay		0.0			0.0			0.0		0.0	0.0	
Total Delay		23.5			39.0			22.4		12.8	11.5	
LOS		C			D			C		B	B	
Approach Delay		23.5			39.0			22.4			12.0	
Approach LOS		C			D			C			B	

Intersection Summary

Area Type: Other
Cycle Length: 75
Actuated Cycle Length: 69
Natural Cycle: 75
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.88
Intersection Signal Delay: 25.6 Intersection LOS: C
Intersection Capacity Utilization 89.8% ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 12: County Road 29 & Almonte Street





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	4	22	1	5	5	399	16	7	293	4
Future Volume (Veh/h)	0	0	4	22	1	5	5	399	16	7	293	4
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	4	22	1	5	5	399	16	7	293	4
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	724	734	295	722	720	399	297			415		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	724	734	295	722	720	399	297			415		
tC, single (s)	7.2	6.6	6.3	7.1	6.5	6.2	4.2			4.2		
tC, 2 stage (s)												
tF (s)	3.6	4.1	3.4	3.5	4.0	3.3	2.3			2.3		
p0 queue free %	100	100	99	93	100	99	100			99		
cM capacity (veh/h)	328	337	730	336	349	649	1242			1123		

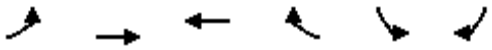
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total	4	28	404	16	304
Volume Left	0	22	5	0	7
Volume Right	4	5	0	16	4
cSH	730	368	1242	1700	1123
Volume to Capacity	0.01	0.08	0.00	0.01	0.01
Queue Length 95th (m)	0.1	1.9	0.1	0.0	0.1
Control Delay (s)	10.0	15.6	0.1	0.0	0.3
Lane LOS	A	C	A		A
Approach Delay (s)	10.0	15.6	0.1		0.3
Approach LOS	A	C			

Intersection Summary				
Average Delay	0.8			
Intersection Capacity Utilization	39.7%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	38	13	338	66	23	267
Future Volume (Veh/h)	38	13	338	66	23	267
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	38	13	338	66	23	267
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	684	371			404	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	684	371			404	
tC, single (s)	6.4	6.2			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.3	
p0 queue free %	91	98			98	
cM capacity (veh/h)	406	675			1133	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	51	404	290
Volume Left	38	0	23
Volume Right	13	66	0
cSH	452	1700	1133
Volume to Capacity	0.11	0.24	0.02
Queue Length 95th (m)	2.9	0.0	0.5
Control Delay (s)	14.0	0.0	0.8
Lane LOS	B		A
Approach Delay (s)	14.0	0.0	0.8
Approach LOS	B		

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	44.9%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	16	6	13	22	0	22
Future Volume (Veh/h)	16	6	13	22	0	22
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	16	6	13	22	0	22
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	35				62	24
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	35				62	24
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				100	98
cM capacity (veh/h)	1570				935	1052

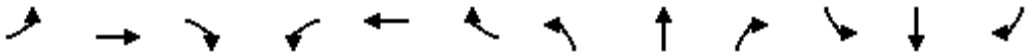
Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	22	35	22
Volume Left	16	0	0
Volume Right	0	22	22
cSH	1570	1700	1052
Volume to Capacity	0.01	0.02	0.02
Queue Length 95th (m)	0.2	0.0	0.5
Control Delay (s)	5.3	0.0	8.5
Lane LOS	A		A
Approach Delay (s)	5.3	0.0	8.5
Approach LOS			A

Intersection Summary			
Average Delay		3.9	
Intersection Capacity Utilization		17.9%	ICU Level of Service A
Analysis Period (min)		15	

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	0	6	2	0	35	2
Future Volume (Veh/h)	0	6	2	0	35	2
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	6	2	0	35	2
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			6		7	3
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			6		7	3
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		97	100
cM capacity (veh/h)			1615		1013	1081

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	6	2	37
Volume Left	0	2	35
Volume Right	6	0	2
cSH	1700	1615	1016
Volume to Capacity	0.00	0.00	0.04
Queue Length 95th (m)	0.0	0.0	0.9
Control Delay (s)	0.0	7.2	8.7
Lane LOS		A	A
Approach Delay (s)	0.0	7.2	8.7
Approach LOS			A

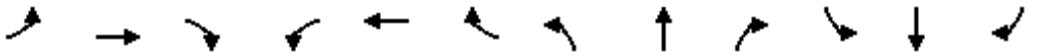
Intersection Summary			
Average Delay	7.5		
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	326	0	1	510	57	0	1	1	20	0	7
Future Volume (Veh/h)	1	326	0	1	510	57	0	1	1	20	0	7
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	1	326	0	1	510	57	0	1	1	20	0	7
Pedestrians		4						6				
Lane Width (m)		3.7						3.7				
Walking Speed (m/s)		3.5						3.5				
Percent Blockage		0						0				
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	567			332			886	903	332	870	874	542
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	567			332			886	903	332	870	874	542
tC, single (s)	4.3			4.1			7.1	6.5	6.2	7.1	6.5	6.5
tC, 2 stage (s)												
tF (s)	2.4			2.2			3.5	4.0	3.3	3.5	4.0	3.6
p0 queue free %	100			100			100	100	100	93	100	99
cM capacity (veh/h)	935			1225			260	276	708	270	287	487

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	327	568	2	27
Volume Left	1	1	0	20
Volume Right	0	57	1	7
cSH	935	1225	397	305
Volume to Capacity	0.00	0.00	0.01	0.09
Queue Length 95th (m)	0.0	0.0	0.1	2.2
Control Delay (s)	0.0	0.0	14.1	17.9
Lane LOS	A	A	B	C
Approach Delay (s)	0.0	0.0	14.1	17.9
Approach LOS			B	C

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	48.4%	ICU Level of Service	A
Analysis Period (min)	15		

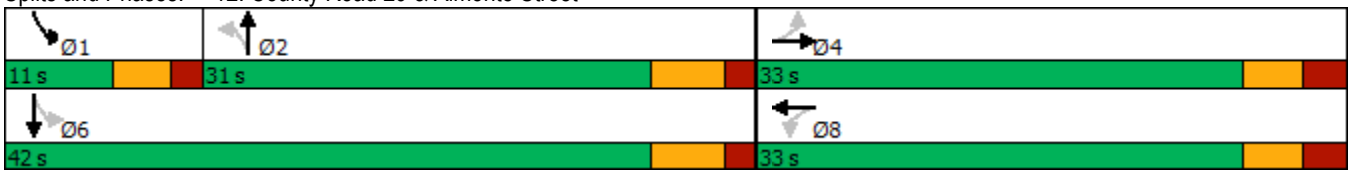


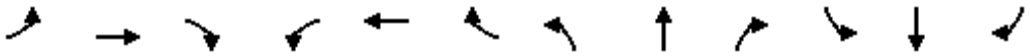
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	182	18	94	71	55	10	108	63	183	145	36
Future Volume (vph)	31	182	18	94	71	55	10	108	63	183	145	36
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		0.0	65.0		0.0
Storage Lanes	0		0	0		0	0		0	1		0
Taper Length (m)	2.5			2.5			2.5			80.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			0.99					1.00	1.00	
Frt		0.989			0.966			0.953			0.970	
Flt Protected		0.993			0.979			0.997		0.950		
Satd. Flow (prot)	0	1648	0	0	1610	0	0	1602	0	1631	1631	0
Flt Permitted		0.938			0.728			0.983		0.584		
Satd. Flow (perm)	0	1556	0	0	1197	0	0	1579	0	1002	1631	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			25			38			23	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		205.6			469.8			144.7			188.3	
Travel Time (s)		14.8			33.8			10.4			13.6	
Confl. Peds. (#/hr)	1					1				1		1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	14%	7%	14%	6%	7%	6%	12%	7%	9%	6%	7%	11%
Adj. Flow (vph)	31	182	18	94	71	55	10	108	63	183	145	36
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	231	0	0	220	0	0	181	0	183	181	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	97		97	97		97	97		97	97		97
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		15.0	15.0		5.0	15.0	
Minimum Split (s)	32.9	32.9		32.9	32.9		30.0	30.0		10.0	33.0	
Total Split (s)	33.0	33.0		33.0	33.0		31.0	31.0		11.0	42.0	
Total Split (%)	44.0%	44.0%		44.0%	44.0%		41.3%	41.3%		14.7%	56.0%	
Maximum Green (s)	27.1	27.1		27.1	27.1		25.0	25.0		6.0	36.0	
Yellow Time (s)	3.3	3.3		3.3	3.3		4.2	4.2		3.3	4.2	
All-Red Time (s)	2.6	2.6		2.6	2.6		1.8	1.8		1.7	1.8	
Lost Time Adjust (s)		0.0			0.0			0.0		0.0	0.0	
Total Lost Time (s)		5.9			5.9			6.0		5.0	6.0	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?							Yes	Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		None	Max	
Walk Time (s)	13.0	13.0		13.0	13.0		13.0	13.0			13.0	
Flash Dont Walk (s)	14.0	14.0		14.0	14.0		10.0	10.0			10.0	
Pedestrian Calls (#/hr)	1	1		1	1		1	1			1	
Act Effct Green (s)		15.9			15.9			25.2		37.3	36.3	
Actuated g/C Ratio		0.25			0.25			0.39		0.58	0.57	
v/c Ratio		0.59			0.70			0.28		0.29	0.19	
Control Delay		26.8			31.4			13.4		9.2	7.9	
Queue Delay		0.0			0.0			0.0		0.0	0.0	
Total Delay		26.8			31.4			13.4		9.2	7.9	
LOS		C			C			B		A	A	
Approach Delay		26.8			31.4			13.4			8.6	
Approach LOS		C			C			B			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 64.2			
Natural Cycle: 75			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.70			
Intersection Signal Delay: 18.7		Intersection LOS: B	
Intersection Capacity Utilization 77.9%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 12: County Road 29 & Almonte Street





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	5	35	1	2	2	194	5	2	283	0
Future Volume (Veh/h)	0	0	5	35	1	2	2	194	5	2	283	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	5	35	1	2	2	194	5	2	283	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	488	490	283	490	485	194	283			199		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	488	490	283	490	485	194	283			199		
tC, single (s)	7.2	6.6	6.3	7.1	6.5	6.2	4.2			4.2		
tC, 2 stage (s)												
tF (s)	3.6	4.1	3.4	3.5	4.0	3.3	2.3			2.3		
p0 queue free %	100	100	99	93	100	100	100			100		
cM capacity (veh/h)	478	469	742	483	479	845	1257			1350		

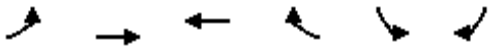
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total	5	38	196	5	285
Volume Left	0	35	2	0	2
Volume Right	5	2	0	5	0
cSH	742	494	1257	1700	1350
Volume to Capacity	0.01	0.08	0.00	0.00	0.00
Queue Length 95th (m)	0.2	1.9	0.0	0.0	0.0
Control Delay (s)	9.9	12.9	0.1	0.0	0.1
Lane LOS	A	B	A		A
Approach Delay (s)	9.9	12.9	0.1		0.1
Approach LOS	A	B			

Intersection Summary				
Average Delay	1.1			
Intersection Capacity Utilization	33.0%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	61	21	176	20	7	224
Future Volume (Veh/h)	61	21	176	20	7	224
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	61	21	176	20	7	224
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	424	186			196	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	424	186			196	
tC, single (s)	6.4	6.2			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.3	
p0 queue free %	90	98			99	
cM capacity (veh/h)	584	856			1353	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	82	196	231
Volume Left	61	0	7
Volume Right	21	20	0
cSH	636	1700	1353
Volume to Capacity	0.13	0.12	0.01
Queue Length 95th (m)	3.4	0.0	0.1
Control Delay (s)	11.5	0.0	0.3
Lane LOS	B		A
Approach Delay (s)	11.5	0.0	0.3
Approach LOS	B		

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	30.0%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	3	8	7	0	35
Future Volume (Veh/h)	5	3	8	7	0	35
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	5	3	8	7	0	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	15				24	12
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	15				24	12
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	97
cM capacity (veh/h)	1596				988	1069

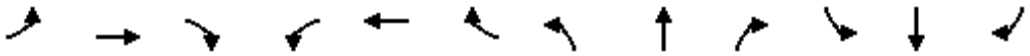
Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	8	15	35
Volume Left	5	0	0
Volume Right	0	7	35
cSH	1596	1700	1069
Volume to Capacity	0.00	0.01	0.03
Queue Length 95th (m)	0.1	0.0	0.8
Control Delay (s)	4.5	0.0	8.5
Lane LOS	A		A
Approach Delay (s)	4.5	0.0	8.5
Approach LOS			A

Intersection Summary			
Average Delay	5.7		
Intersection Capacity Utilization	14.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	0	3	1	1	14	1
Future Volume (Veh/h)	0	3	1	1	14	1
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	3	1	1	14	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			3		4	2
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			3		4	2
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		99	100
cM capacity (veh/h)			1619		1017	1083

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	3	2	15
Volume Left	0	1	14
Volume Right	3	0	1
cSH	1700	1619	1021
Volume to Capacity	0.00	0.00	0.01
Queue Length 95th (m)	0.0	0.0	0.3
Control Delay (s)	0.0	3.6	8.6
Lane LOS		A	A
Approach Delay (s)	0.0	3.6	8.6
Approach LOS			A

Intersection Summary			
Average Delay	6.8		
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	365	0	0	241	23	0	0	0	22	0	1
Future Volume (Veh/h)	2	365	0	0	241	23	0	0	0	22	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	2	365	0	0	241	23	0	0	0	22	0	1
Pedestrians		2			1			2			1	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		3.5			3.5			3.5			3.5	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	265			367			626	636	368	624	624	256
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	265			367			626	636	368	624	624	256
tC, single (s)	4.3			4.1			7.1	6.5	6.2	7.1	6.5	6.5
tC, 2 stage (s)												
tF (s)	2.4			2.2			3.5	4.0	3.3	3.5	4.0	3.6
p0 queue free %	100			100			100	100	100	94	100	100
cM capacity (veh/h)	1217			1191			395	394	677	397	400	717

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	367	264	0	23
Volume Left	2	0	0	22
Volume Right	0	23	0	1
cSH	1217	1191	1700	405
Volume to Capacity	0.00	0.00	0.00	0.06
Queue Length 95th (m)	0.0	0.0	0.0	1.4
Control Delay (s)	0.1	0.0	0.0	14.4
Lane LOS	A		A	B
Approach Delay (s)	0.1	0.0	0.0	14.4
Approach LOS			A	B

Intersection Summary				
Average Delay	0.5			
Intersection Capacity Utilization	32.6%	ICU Level of Service	A	
Analysis Period (min)	15			

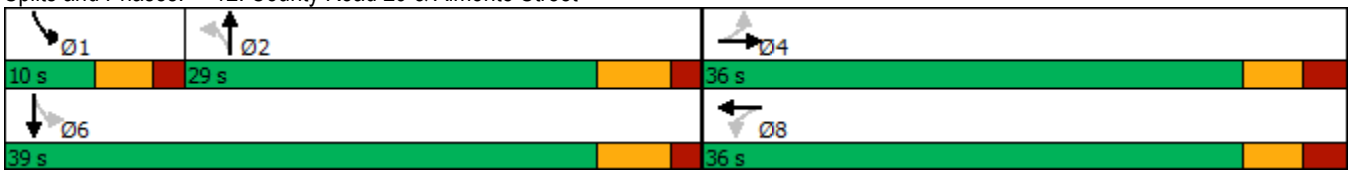
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	236	52	85	232	138	40	196	73	120	156	47
Future Volume (vph)	44	236	52	85	232	138	40	196	73	120	156	47
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	0.0		0.0	0.0		0.0	65.0		0.0
Storage Lanes	0		0	0		0	0		0	1		0
Taper Length (m)	2.5			2.5			2.5			80.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			0.99					1.00	0.99	
Frt		0.979			0.959			0.968			0.965	
Flt Protected		0.993			0.991			0.994		0.950		
Satd. Flow (prot)	0	1623	0	0	1613	0	0	1620	0	1631	1619	0
Flt Permitted		0.891			0.845			0.937		0.449		
Satd. Flow (perm)	0	1456	0	0	1376	0	0	1527	0	770	1619	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		15			35			21			26	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		205.6			469.8			144.7			188.3	
Travel Time (s)		14.8			33.8			10.4			13.6	
Confl. Peds. (#/hr)	1					1				1		1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	14%	7%	14%	6%	7%	6%	12%	7%	9%	6%	7%	11%
Adj. Flow (vph)	44	236	52	85	232	138	40	196	73	120	156	47
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	332	0	0	455	0	0	309	0	120	203	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	97		97	97		97	97		97	97		97
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

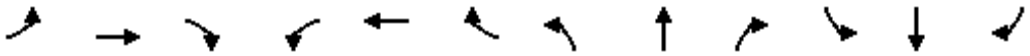
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		15.0	15.0		5.0	15.0	
Minimum Split (s)	32.9	32.9		32.9	32.9		29.0	29.0		10.0	29.0	
Total Split (s)	36.0	36.0		36.0	36.0		29.0	29.0		10.0	39.0	
Total Split (%)	48.0%	48.0%		48.0%	48.0%		38.7%	38.7%		13.3%	52.0%	
Maximum Green (s)	30.1	30.1		30.1	30.1		23.0	23.0		5.0	33.0	
Yellow Time (s)	3.3	3.3		3.3	3.3		4.2	4.2		3.3	4.2	
All-Red Time (s)	2.6	2.6		2.6	2.6		1.8	1.8		1.7	1.8	
Lost Time Adjust (s)		0.0			0.0			0.0		0.0	0.0	
Total Lost Time (s)		5.9			5.9			6.0		5.0	6.0	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?							Yes	Yes		Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		None	Max	
Walk Time (s)	13.0	13.0		13.0	13.0		13.0	13.0			13.0	
Flash Dont Walk (s)	14.0	14.0		14.0	14.0		10.0	10.0			10.0	
Pedestrian Calls (#/hr)	1	1		1	1		1	1			1	
Act Effct Green (s)		24.8			24.8			25.5		34.2	33.2	
Actuated g/C Ratio		0.35			0.35			0.36		0.49	0.47	
v/c Ratio		0.63			0.89			0.54		0.27	0.26	
Control Delay		23.6			41.1			23.5		13.2	11.9	
Queue Delay		0.0			0.0			0.0		0.0	0.0	
Total Delay		23.6			41.1			23.5		13.2	11.9	
LOS		C			D			C		B	B	
Approach Delay		23.6			41.1			23.5			12.4	
Approach LOS		C			D			C			B	

Intersection Summary

Area Type: Other
Cycle Length: 75
Actuated Cycle Length: 70
Natural Cycle: 75
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.89
Intersection Signal Delay: 26.6 Intersection LOS: C
Intersection Capacity Utilization 92.3% ICU Level of Service F
Analysis Period (min) 15

Splits and Phases: 12: County Road 29 & Almonte Street





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	4	22	1	5	5	415	16	7	306	4
Future Volume (Veh/h)	0	0	4	22	1	5	5	415	16	7	306	4
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	4	22	1	5	5	415	16	7	306	4
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	752	763	308	751	749	415	310			431		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	752	763	308	751	749	415	310			431		
tC, single (s)	7.2	6.6	6.3	7.1	6.5	6.2	4.2			4.2		
tC, 2 stage (s)												
tF (s)	3.6	4.1	3.4	3.5	4.0	3.3	2.3			2.3		
p0 queue free %	100	100	99	93	100	99	100			99		
cM capacity (veh/h)	313	324	718	321	336	635	1228			1107		

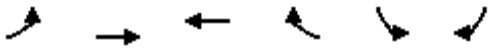
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1
Volume Total	4	28	420	16	317
Volume Left	0	22	5	0	7
Volume Right	4	5	0	16	4
cSH	718	353	1228	1700	1107
Volume to Capacity	0.01	0.08	0.00	0.01	0.01
Queue Length 95th (m)	0.1	2.0	0.1	0.0	0.1
Control Delay (s)	10.0	16.1	0.1	0.0	0.2
Lane LOS	B	C	A		A
Approach Delay (s)	10.0	16.1	0.1		0.2
Approach LOS	B	C			

Intersection Summary				
Average Delay	0.8			
Intersection Capacity Utilization	40.6%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	38	13	354	66	23	279
Future Volume (Veh/h)	38	13	354	66	23	279
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	38	13	354	66	23	279
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	712	387			420	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	712	387			420	
tC, single (s)	6.4	6.2			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.3	
p0 queue free %	90	98			98	
cM capacity (veh/h)	391	661			1118	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	51	420	302
Volume Left	38	0	23
Volume Right	13	66	0
cSH	436	1700	1118
Volume to Capacity	0.12	0.25	0.02
Queue Length 95th (m)	3.0	0.0	0.5
Control Delay (s)	14.3	0.0	0.8
Lane LOS	B		A
Approach Delay (s)	14.3	0.0	0.8
Approach LOS	B		

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	45.6%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	16	6	13	22	0	22
Future Volume (Veh/h)	16	6	13	22	0	22
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	16	6	13	22	0	22
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	35				62	24
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	35				62	24
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				100	98
cM capacity (veh/h)	1570				935	1052

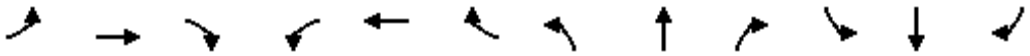
Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	22	35	22
Volume Left	16	0	0
Volume Right	0	22	22
cSH	1570	1700	1052
Volume to Capacity	0.01	0.02	0.02
Queue Length 95th (m)	0.2	0.0	0.5
Control Delay (s)	5.3	0.0	8.5
Lane LOS	A		A
Approach Delay (s)	5.3	0.0	8.5
Approach LOS			A

Intersection Summary			
Average Delay	3.9		
Intersection Capacity Utilization	17.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	0	6	2	0	35	2
Future Volume (Veh/h)	0	6	2	0	35	2
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	6	2	0	35	2
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			6		7	3
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			6		7	3
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		97	100
cM capacity (veh/h)			1615		1013	1081

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	6	2	37
Volume Left	0	2	35
Volume Right	6	0	2
cSH	1700	1615	1016
Volume to Capacity	0.00	0.00	0.04
Queue Length 95th (m)	0.0	0.0	0.9
Control Delay (s)	0.0	7.2	8.7
Lane LOS		A	A
Approach Delay (s)	0.0	7.2	8.7
Approach LOS			A

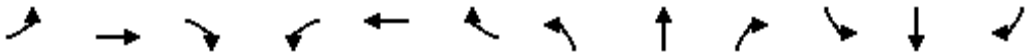
Intersection Summary			
Average Delay	7.5		
Intersection Capacity Utilization	13.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	340	0	1	532	57	0	1	1	20	0	7
Future Volume (Veh/h)	1	340	0	1	532	57	0	1	1	20	0	7
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	1	340	0	1	532	57	0	1	1	20	0	7
Pedestrians		4						6				
Lane Width (m)		3.7						3.7				
Walking Speed (m/s)		3.5						3.5				
Percent Blockage		0						0				
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	589			346			922	939	346	906	910	564
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	589			346			922	939	346	906	910	564
tC, single (s)	4.3			4.1			7.1	6.5	6.2	7.1	6.5	6.5
tC, 2 stage (s)												
tF (s)	2.4			2.2			3.5	4.0	3.3	3.5	4.0	3.6
p0 queue free %	100			100			100	100	100	92	100	99
cM capacity (veh/h)	917			1211			246	263	696	255	273	473

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	341	590	2	27
Volume Left	1	1	0	20
Volume Right	0	57	1	7
cSH	917	1211	382	290
Volume to Capacity	0.00	0.00	0.01	0.09
Queue Length 95th (m)	0.0	0.0	0.1	2.3
Control Delay (s)	0.0	0.0	14.5	18.7
Lane LOS	A	A	B	C
Approach Delay (s)	0.0	0.0	14.5	18.7
Approach LOS			B	C

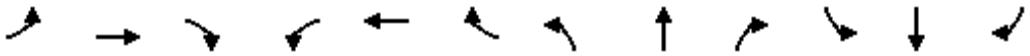
Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	49.7%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	306	0	0	229	35	0	0	0	81	0	1
Future Volume (Veh/h)	2	306	0	0	229	35	0	0	0	81	0	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	2	306	0	0	229	35	0	0	0	81	0	1
Pedestrians		4						6				
Lane Width (m)		3.7						3.7				
Walking Speed (m/s)		3.5						3.5				
Percent Blockage		0						0				
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	264			312			568	580	312	556	562	250
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	264			312			568	580	312	556	562	250
tC, single (s)	4.3			4.1			7.1	6.5	6.2	7.1	6.5	6.5
tC, 2 stage (s)												
tF (s)	2.4			2.2			3.5	4.0	3.3	3.5	4.0	3.6
p0 queue free %	100			100			100	100	100	82	100	100
cM capacity (veh/h)	1218			1246			431	424	727	440	434	722

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	308	264	0	82
Volume Left	2	0	0	81
Volume Right	0	35	0	1
cSH	1218	1246	1700	442
Volume to Capacity	0.00	0.00	0.00	0.19
Queue Length 95th (m)	0.0	0.0	0.0	5.1
Control Delay (s)	0.1	0.0	0.0	15.0
Lane LOS	A		A	B
Approach Delay (s)	0.1	0.0	0.0	15.0
Approach LOS			A	B

Intersection Summary				
Average Delay	1.9			
Intersection Capacity Utilization	31.2%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	303	0	1	491	98	0	1	1	57	0	7
Future Volume (Veh/h)	1	303	0	1	491	98	0	1	1	57	0	7
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	1	303	0	1	491	98	0	1	1	57	0	7
Pedestrians		4						6				
Lane Width (m)		3.7						3.7				
Walking Speed (m/s)		3.5						3.5				
Percent Blockage		0						0				
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	589			309			864	902	309	848	853	544
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	589			309			864	902	309	848	853	544
tC, single (s)	4.3			4.1			7.1	6.5	6.2	7.1	6.5	6.5
tC, 2 stage (s)												
tF (s)	2.4			2.2			3.5	4.0	3.3	3.5	4.0	3.6
p0 queue free %	100			100			100	100	100	80	100	99
cM capacity (veh/h)	917			1249			269	276	730	279	295	486

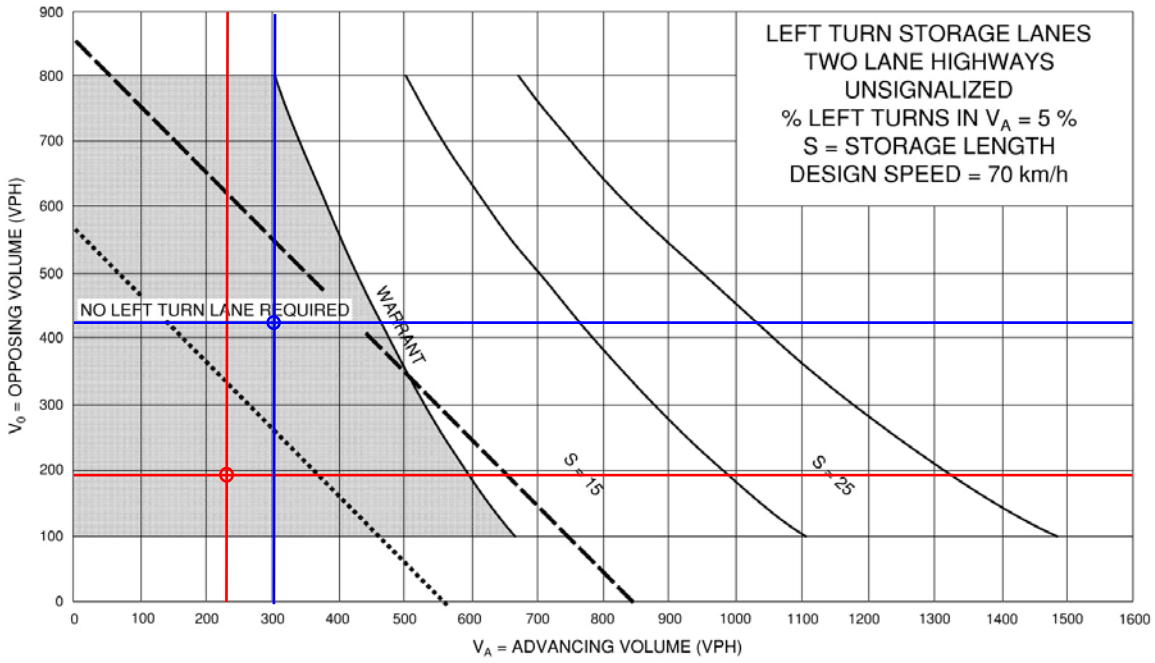
Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	304	590	2	64
Volume Left	1	1	0	57
Volume Right	0	98	1	7
cSH	917	1249	401	293
Volume to Capacity	0.00	0.00	0.00	0.22
Queue Length 95th (m)	0.0	0.0	0.1	6.2
Control Delay (s)	0.0	0.0	14.0	20.7
Lane LOS	A	A	B	C
Approach Delay (s)	0.0	0.0	14.0	20.7
Approach LOS			B	C

Intersection Summary				
Average Delay	1.4			
Intersection Capacity Utilization	51.9%	ICU Level of Service	A	
Analysis Period (min)	15			

APPENDIX E

Left Turn Lane Graphs

Exhibit 9A-11



AM Peak: Va: 231
Vo: 196
PM Peak: Va : 302
Vo: 420

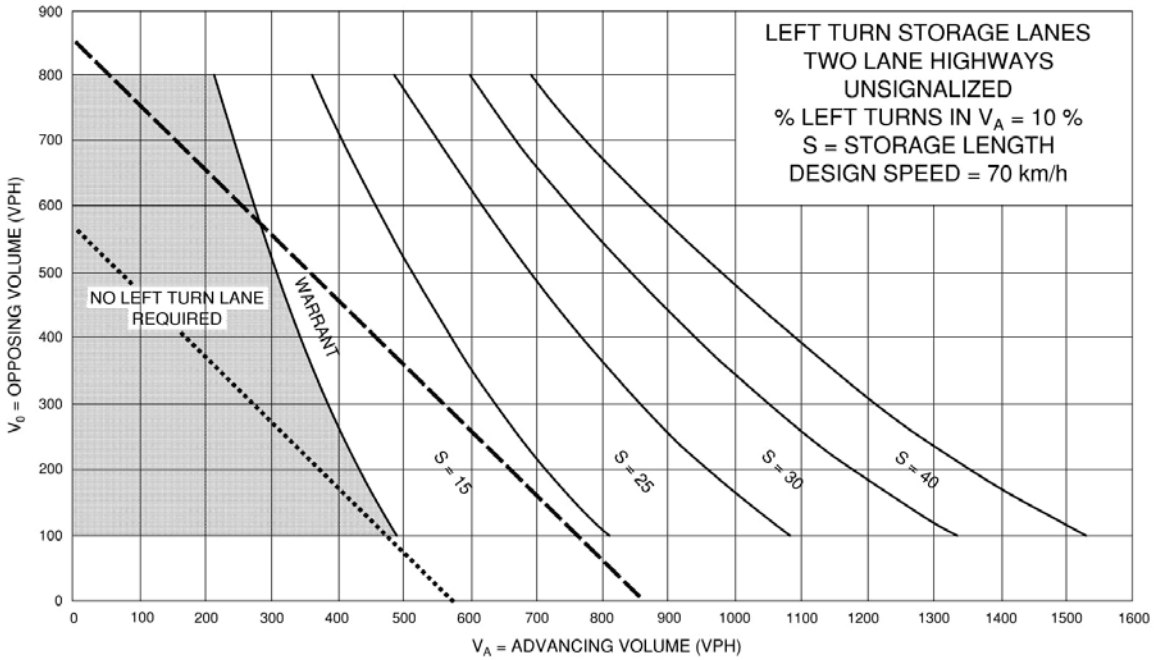
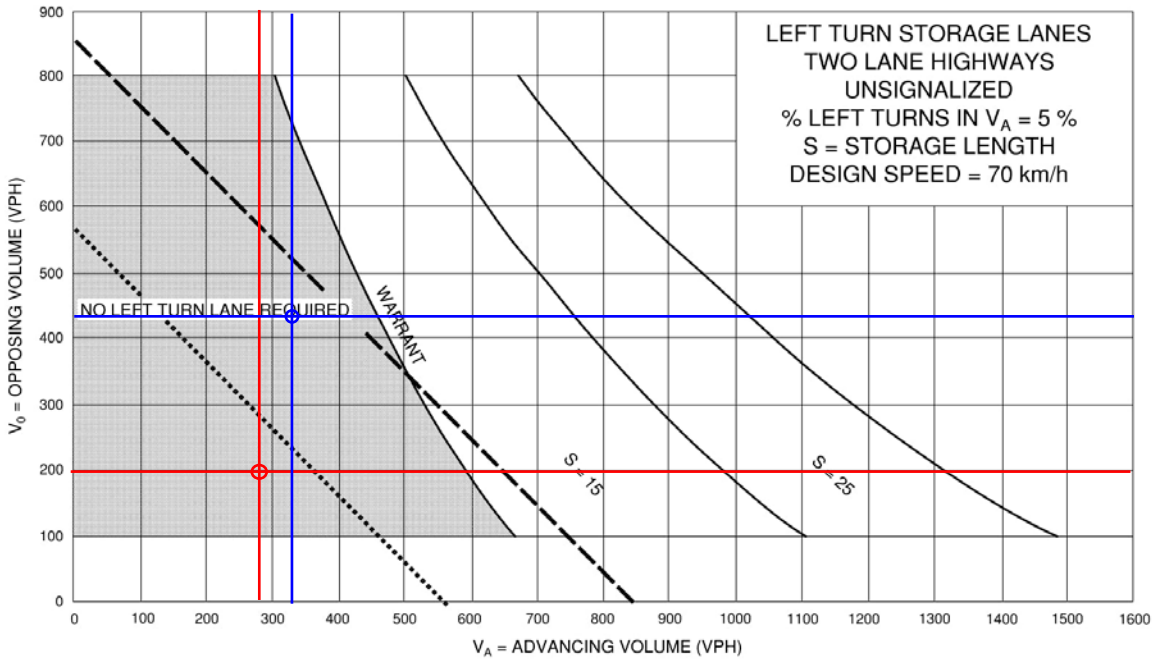
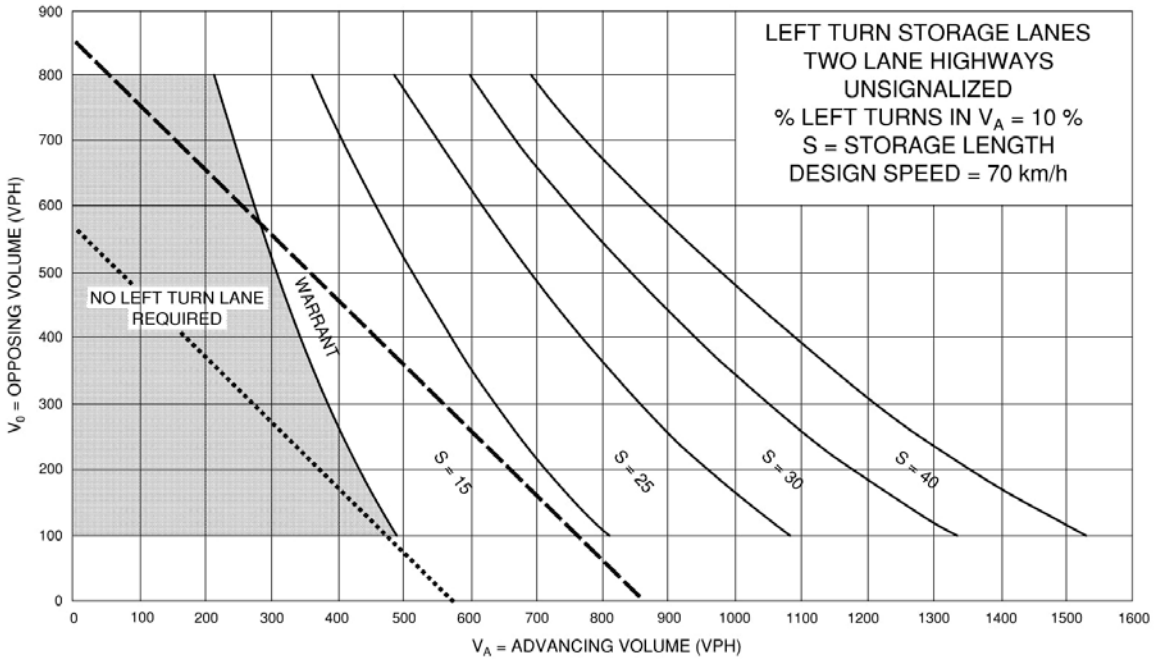


Exhibit 9A-11



AM Peak Va: 285
Vo: 201
PM Peak Va: 317
Vo:436



APPENDIX F

Right Turn Taper Functional Design

NORTH

Strathburn Street
300
Gleeson Road
100
G207 STREET NAME SIGN, STRATHBURN ST – LEFT, GLEESON RD – RIGHT

STOP
Ra–1 STOP SIGN

H
EXIT 1km
M401 AND M209 HOSPITAL MARKER SIGN AND DISTANCE TAB

NO ENGINE BRAKES
NO ENGINE BRAKES

WA–11

MAXIMUM 60 km/h BEGINS
RB–2 (60 KPH)

County Road 29

OBLITERATE EXISTING CENTERLINE FOR 15m FROM CENTERLINE OF NEW ROAD

75.00m
ASPHALT ROUNDING
0.50m
3.50m
3.50m
GRAVEL SHOULDER
2.00m
DC
TIE INTO EXISTING SHOULDER
TIE INTO EXISTING DITCH
REALIGN EXISTING DITCH
DEPRESSED CURB TO TRANSITION TO SHOULDER
EXTEND SIDEWALK, FULL HEIGHT CURB
4.25m
4.25m
15.00m
CULVERT
REALIGN EXISTING DITCH
TIE INTO EXISTING DITCH

STOP
Ra-1 STOP SIGN

MAXIMUM 80 km/h BEGINS
RB–2 (80 KPH)

STRATHBURN STREET

STOP
Ra–1 STOP SIGN

Street Four

Street One

NOTE:
THE POSITION OF ALL POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, DETERMINE THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

No.	REVISION	DATE	BY
1.	ISSUED WITH TIS	FEB 21/24	BJB

SCALE
1:500
1:500
0 5 10 15 20

DESIGN TVW
CHECKED BJB
DRAWN DTD
CHECKED TVW
APPROVED BJB

FOR REVIEW ONLY

NOVATECH
Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6
Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

LOCATION
TOWNSHIP OF MISSISSIPPI MILLS
BROWN LANDS

DRAWING NAME
COUNTY ROAD 29 / STREET 1
FUNCTIONAL DESIGN

PROJECT No. 118178
REV REV # 1
DRAWING No. 118178-FD

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