TRAFFIC IMPACT STUDY

HOME FARM RESIDENTIAL DEVELOPMENT
MACPHERSON BUILDERS LIMITED

COUNTY OF GREY

PREPARED BY:
C.F. CROZIER & ASSOCIATES INC.
40 HURON STREET
COLLINGWOOD, ONTARIO
L9Y 4R3

DECEMBER 2013

CFCA FILE NO. 721-3464

1.0 Executive Summary

CF Crozier & Associates Inc. (Crozier) was retained by MacPherson Builders Limited (MacPherson) to complete a Traffic Impact Study for a proposed residential development located north of Tyrolean Lane and east of Grey Road 19 in the Town of The Blue Mountains. The Traffic Impact Study was completed in support of an Official Plan Amendment, a Zoning By-law Amendment and a Draft Plan of Subdivision Application.

The development proposal is for a residential neighbourhood consisting of 151 single family detached units and 132 townhouse units.

Analysis of the total traffic volumes has determined that a southbound left-turn lane at the intersection of Grey Road 19 at Birches Boulevard/ Ekarenniondi Street may be required in the 2028 horizon year.

The development accesses along Grey Road 19 will experience Levels of Service "B" and Levels of Service "C" or better in the a.m. and p.m. peak periods, respectively, as adjusted to reflect peak traffic volumes in the 2028 horizon year.

The analysis undertaken herein was prepared using the most recent development plan. Any minor changes to the plan will not materially affect the conclusions and recommendations contained within this report.

It is concluded that the traffic generated from the proposed residential development will not materially affect the operations of the public roadway system.

The Draft Plan of Subdivision Application, the Zoning By-law Amendment and the Official Plan Amendment can be supported from a traffic operations perspective.

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2.0 Introduction

CF Crozier & Associates Inc. (Crozier) was retained by MacPherson Builders Limited (MacPherson) to complete a Traffic Impact Study for a proposed residential development located north of Tyrolean Lane and east of Grey Road 19 in the Town of The Blue Mountains. The Traffic Impact Study was completed in support of an Official Plan Amendment, a Zoning By-law Amendment and a Draft Plan of Subdivision Application. The purpose of the study was to assess the impacts of the proposed development on the boundary road system and to recommend any required mitigation measures.

The study analyzes the operations of the boundary road intersections, as well as the development accesses. The future traffic operations with and without the addition of the site generated vehicular trips are also analyzed.

The scope of work of the study was confirmed with the County of Grey and the Town of The Blue Mountains staff, with correspondence detailing such included in Appendix A. The study has been completed in accordance with the procedures set out in the MTO "General Guidelines for the Preparation of Traffic Impact Studies", with the associated analysis and findings outlined herein.

3.0 Existing Conditions

3.1 Development Lands

The subject properties proposed for development are currently zoned Recreational Residential and Institutional per the Town of The Blue Mountains Official Plan. The lands are currently vacant.

The property fronts Grey Road 19 to the west, Tyrolean lane to the South, and undeveloped lands to the north and east that are bounded by Highway 26. Refer to Figure 1 for the development location.

3.2 Study Area

The study area encompasses the boundary road network surrounding the subject lands, and is described in Section 3.3. Commercial and residential uses exist to the south within the Blue Mountain Village. Residential land uses exist to the east and west in the Town of The Blue Mountains and Georgian Bay exists to the north.

3.3 Boundary Road Network

Grey Road 19 is a north-south roadway classified as an arterial road per the County of Grey Official Plan. Grey Road 19 has a posted speed of 50 km/h. The roadway consists of two 3.5 metre travel lanes, one in each direction, with approximate 2.0 metre bike lanes and 0.5 metre granular shoulders along each side. The road has a rural cross section.

Birches Boulevard is an east-west private roadway that serves the Orchard development. The roadway consists of two approximate 5.0 metre travel lanes and a raised centre median. The roadway has an urban cross section and has no posted speed limit, therefore the speed limit is 50 km/h per municipal regulations.

Helen Street is an east-west roadway classified as a local road per the Town of The Blue Mountains Official Plan. Helen Street has no posted speed limit, therefore the speed limit is 50 km/h per municipal regulations. The roadway is currently a dead-end unpaved road that will be improved as a part of the proposed development.

The intersection of Birches Boulevard and Grey Road 19 is stop controlled in the eastbound direction along Birches Boulevard and free flow in the north-south direction along Grey Road 19. All three legs are two lane cross sections with one lane in each direction.

The intersection of Helen Street and Grey Road 19 is stop controlled in the westbound direction along Helen Street and free flow in the north-south direction along Grey Road 19.

3.4 Traffic Data

Turning movement counts at the intersections of Grey Road 19 and Birches Boulevard as well as Grey Road 19 and Helen Street were undertaken by Ontario Traffic Inc. staff from 7:00 to 10:00 a.m. and from 4:00 to 7:00 p.m. on Friday March 8, 2013. This date was selected to capture traffic volumes associated with seasonal visitors at the beginning of the March break holiday period. The a.m. peak hour was found to be 8:00 to 9:00 a.m. and the p.m. peak hour was found to be 4:30 to 5:30 p.m. at both intersections. The traffic count data is summarized in Appendix C. Figure 3 illustrates the 2013 existing traffic volumes.

3.5 Intersection Operations

The assessment of intersections is based on the method outlined in the "Highway Capacity Manual, 2000" using Synchro 8 modeling software. Intersections are assessed using a Level of Service metric, with ranges of delay assigned a letter from "A" to "F". The Level of Service metric for a stop-controlled intersection is based on the delay associated with the critical minor road approach. The Level of Service (LOS) definitions for un-signalized intersections are included in Appendix B.

The operations of the existing intersections were analyzed on the basis of the traffic volumes illustrated in Figure 3. Table 1 outlines the existing levels of service. Detailed capacity analyses are included in Appendix D.

Table 1
2013 Existing Levels of Service

Intersection	Control	Peak Hour	Level of Service	Control Delay	Volume-to-Capacity
Grey Road 19 and Birches Boulevard	Stop- Control	A.M.	A	9.9s	0.02
		P.M.	A	9.5s	0.03
Grey Road 19 and Helen Street	Stop- Control	A.M.	B	10.4s	0.00
		P.M.	B	10.1s	0.00

Note: The level of service of a stop-controlled intersection is based on the delay associated with the critical minor road movement.

As indicated in Table 1, the intersection of Grey Road 19 and Birches Boulevard is operating at a LOS "A" in the a.m. and p.m. peak hours and the intersection of Grey Road 19 and Helen Street is operating at a LOS "B" in the a.m. and p.m. peak hours. Both intersections have minimal control delay and volume-to-capacity ratios as a result of the low traffic volumes on the road network.

4.0 Proposed Development

The proposed development will contain 283 residential units that consist of 132 townhouse units and 151 detached units.

The layout will have two connections to Grey Road 19 via Helen Street and Ekarennoindi Street (opposite Birches Boulevard. Refer to Figure 2 for the draft plan prepared by Higgins Engineering Limited, November 12, 2013.

5.0 Future Background Conditions

5.1 Horizon Years

Information regarding phasing of the development was not available at the time of the analysis. Therefore, it was assumed that the development will achieve full build out in 2018. As per MTO guidelines, horizon years of the full build out year as well as five and ten years beyond (2018, 2023 and 2028) were selected to assess the long term operations of the boundary road system.

5.2 Growth Rate

Traffic growth rates were based on data available from the Town of The Blue Mountains Comprehensive Transportation Strategic Plan (AECOM and C.C. Tatham and Associates, March 2010). A growth rate of five percent was calculated from projected traffic volumes in the report and included traffic growth from local area developments. The five percent is an average growth rate from 2013 to 2028 and was applied to all turning movements.

It is noted that the five percent growth rate is very high and typically only seen in areas of rapid development. The five percent growth rate may not be sustainable over the 15 year analysis period.

5.3 Intersection Operations

The operations of the critical intersections were analyzed on the basis of the traffic volumes illustrated in Figures 4, 5 and 6.

Tables 2, 3 and 4 outline the 2018, 2023 and 2028 future background traffic levels of service. Detailed capacity analyses are included in Appendix D.

Table 2
2018 Future Background Levels of Service

Intersection	Control	Peak Hour	Level of Service	Control Delay	Volume-to-Capacity
Grey Road 19 and Birches Boulevard	Stop- Control	A.M.	B	10.5s	0.03
		P.M.	A	9.8s	0.04
Grey Road 19 and Helen Street	Stop- Control	A.M.	B	11.1s	0.00
		P.M.	B	10.7s	0.00

Note: The level of service of a stop-controlled intersection is based on the delay associated with the critical minor road movement.

Table 3
2023 Future Background Levels of Service

Intersection	Control	Peak Hour	Level of Service	Control Delay	Volume-to-Capacity
Grey Road 19 and Birches Boulevard	Stop- Control	A.M.	B	11.3s	0.04
		P.M.	B	10.4s	0.05
Grey Road 19 and Helen Street	Stop- Control	A.M.	B	12.1s	0.00
		P.M.	B	11.6s	0.00

Note: The level of service of a stop-controlled intersection is based on the delay associated with the critical minor road movement.

Table 4
2028 Future Background Levels of Service

Intersection	Control	Peak Hour	Level of Service	Control Delay	Volume-to-Capacity
Grey Road 19 and Birches Boulevard	Stop- Control	A.M.	B	12.6s	0.06
		P.M.	B	11.3s	0.07
Grey Road 19 and Helen Street	Stop- Control	A.M.	B	13.7s	0.00
		P.M.	B	12.9s	0.00

Note: The level of service of a stop-controlled intersection is based on the delay associated with the critical minor road movement.

The intersection of Grey Road 19 and Birches Boulevard will function at a LOS "B" in the a.m. and p.m. peak periods in the 2028 horizon year. The intersection will experience minor delays and a low volume-to-capacity ratio. The 95th percentile queue length is a maximum of one vehicle.

The intersection of Grey Road 19 and Helen Street will function at a LOS "B" in the a.m. and p.m. peak periods through the 2028 horizon year. The intersection will experience minor delays and a low volume-to-capacity ratio. The 95th percentile queue length is a maximum of one vehicle. The relatively low delays forecast at the intersections are indicative of operations with significant reserve capacity for growth.

6.0 Site Generated Traffic

6.1 Trip Generation

The proposed development will result in additional vehicles on the boundary road network that previously did not exist. The proposed development will also result in additional turning movements at the boundary road intersections.

The trip generation of the single family housing units and townhouse units were forecast using the rates provided in the Institute of Transportation Engineers (ITE) Trip Generation Manual, 8th Edition.

Land use Category 210 "Single Family Detached Housing" and Category 230 "Residential Condominium/ Townhouse" were used to forecast the trips generated by the 151 single detached units and the 132 townhouse units in the a.m. and p.m. peak periods.

It is noted that the ITE trip generations are based on surveys undertaken in primarily urban and suburban areas with full time occupancy. As the subject development is expected to attract a proportion of seasonal, part-time residents, the site trip generation volumes forecast with the ITE methodology may not be realized.

The forecasted trips are tabulated in Table 5.

Table 5
Trip Generation

Use	Roadway Peak Hour	Number of Trips		
		Inbound	Outbound	Total
Single Family Detached Housing (151 Units)	Weekday A.M.	29	86	115
	Weekday P.M.	96	56	152
Residential Condominium/ Townhouse (132 Units)	Weekday A.M.	11	54	65
	Weekday P.M.	57	19	76
Total	Weekday A.M.	40	140	180
	Weekday P.M.	153	75	228

6.2 Trip Distribution and Assignment

The trips generated by the development were distributed to the boundary roadways based on the directional distribution noted at the Orchard development. The single access to Grey Road 19 at Birches Boulevard allowed for the measurement of the proportion of vehicles arriving from/ departing to the north and south. The distribution of trips at the development accesses was based on the site layout and the ease of access to and from the roadway system. The a.m. and p.m. peak hour trip distribution is illustrated in Figure 7.

The trips generated by the proposed development were assigned to the boundary road network as per the distributions. The trip assignment is illustrated in Figure 8.

7.0 Total Future Conditions

7.1 Basis of Assessment

The traffic impacts arising from the proposed development were assessed on the basis of the site generated traffic illustrated in Figure 8 being superimposed on the future background traffic volumes in Figures 4, 5 and 6. The resulting total traffic volumes for the weekday a.m. and p.m. peak hours are illustrated in Figures 9, 10 and 11 for the 2018, 2023 and 2028 horizon years, respectively.

7.2 Auxiliary Lane Analysis

A left-turn lane warrant was undertaken for the intersections of Grey Road 19 at Birches Boulevard/ Ekarenniondi Street and Helen Street using the Ontario Ministry of Transportation (MTO) Geometric Design Standards for Ontario Highways (GDSOH) during both a.m. and p.m. peak periods. The left-turn lane warrants are included in Appendix E.

The requirement for a southbound left-turn lane at the intersection of Grey Road 19 at Birches Boulevard/ Ekarenniondi Street was analyzed under the 2028 a.m. and p.m. peak hour timeframes. In the a.m. peak period when 13 left-turning vehicles are expected with an advancing volume of 366 vehicles and an opposing vehicular volume of 259 vehicles is forecast, the 5 percent left turn lane warrant chart is in effect. The a.m. peak hour volume does not warrant a left turn lane. In the p.m. peak period when 58 left-turning vehicles are expected with an advancing volume of 353 vehicles and an opposing vehicular volume of 420 vehicles is forecast, the 15 percent left turn lane warrant chart is in effect. The p.m. warrant resulted in a 15 metre left-turn storage lane requirement. Further analysis of 2023 p.m. peak hour total traffic volumes was undertaken to determine if the left-turn lane would be warranted before the 2028 horizon year. In the 2023 p.m. peak period when 58 left-turning vehicles are expected with an advancing volume of 289 vehicles and an opposing vehicular volume of 336 vehicles is forecast, the 20 percent left turn lane warrant chart is in effect. The 2023 p.m. peak hour volume does not warrant a left turn lane.

The requirement for a southbound left-turn lane at the intersection of the Grey Road 19 and Helen Street was analyzed under the 2028 a.m. and p.m. peak hour timeframes. In the a.m. peak period when 5 left-turning vehicles are expected with an advancing volume of 359 vehicles, the resulting percentage of left-turning vehicles is too low to trigger the minimum five percent warrant and thus, no left-turn lane required. In the p.m. peak period when 23 left-turning vehicles are expected with an advancing volume of 314 vehicles and an opposing vehicular volume of 430 vehicles are forecast, the 5 percent left turn lane warrant chart is in effect. The p.m. peak hour volumes do not warrant a left-turn lane.

As noted in Section 5.2, the five percent growth rate used to calculate the future background traffic volumes is unsustainably high. This figure represents a conservative upper bound to possible traffic along Grey Road 19. It is recommended that turning movement counts be undertaken at future phases to confirm or repudiate the left-turn lane warrant results. Should the warrants be confirmed, per Table E9-1 of the Geometric Design Standards for Ontario Highways, a 30 metre parallel lane with a 100 metre taper is required for a left-turn lane with a 60 km/h design speed.

A northbound left-turn lane at the intersection of Grey Road 19 at Birches Boulevard/ Ekarenniondi Street should also be considered. It is good practice to implement opposing left-turn lanes at four legged intersections where one left-turn lane is already required. The minimum 15 metre storage, along with a 30 metre parallel lane and a 100 metre taper would be required.

7.3 Intersection Operations

The intersection levels of service were analyzed on the basis of the total traffic volumes illustrated in Figures 9, 10 and 11. Tables 6, 7 and 8 outline the year 2018, 2023 and 2028 total traffic levels of service, respectively. Left-turn lanes at the intersection of Grey Road 19 at Birches Boulevard/ Ekarenniondi Street were incorporated into the analysis for the 2028 a.m and p.m. total traffic volumes per Section 7.2. Detailed capacity analyses are included in Appendix D.

Table 6
2018 Total Traffic Levels of Service

Intersection	Control	Peak Hour	Critical Approach	Level of Service	Control Delay	Volume-to-Capacity
Grey Road 19 and Birches Boulevard/ Ekarenniondi Street	Stop-Control	A.M.	Eastbound	B	11.7s	0.03
		P.M.	Westbound	B	14.5s	0.11
Grey Road 19 and Helen Street	Stop-Control	A.M.	Westbound	B	11.0s	0.10
		P.M.	Westbound	B	12.8s	0.10

Note: The level of service of a stop-controlled intersection is based on the delay associated with the critical minor road movement.

Table 7
2023 Total Traffic Levels of Service

Intersection	Control	Peak Hour	Critical Approach	Level of Service	Control Delay	Volume-to-Capacity
Grey Road 19 and Birches Boulevard/ Ekarenniondi Street	Stop-Control	A.M.	Eastbound	B	12.9s	0.05
		P.M.	Westbound	C	17.0s	0.13
Grey Road 19 and Helen Street	Stop-Control	A.M.	Westbound	B	12.0s	0.11
		P.M.	Westbound	B	14.5s	0.12

Note: The level of service of a stop-controlled intersection is based on the delay associated with the critical minor road movement.

Table 8
2028 Total Traffic Levels of Service

Intersection	Control	Peak Hour	Critical Approach	Level of Service	Control Delay	Volume-to-Capacity
Grey Road 19 and Birches Boulevard/ Ekarenniondi Street	Stop-Control	A.M.	Eastbound	B	14.5s	0.07
		P.M.	Westbound	C	21.1s	0.17
Grey Road 19 and Helen Street	Stop-Control	A.M.	Westbound	B	13.4s	0.13
		P.M.	Westbound	C	17.2s	0.14

Note: The level of service of a stop-controlled intersection is based on the delay associated with the critical minor road movement.

The intersection of Grey Road 19 and Birches Boulevard/ Ekarenniondi Street will operate at a LOS "B" in the a.m. and p.m. peak periods in the 2018 horizon year under total traffic volumes. These unchanged levels of service are a result of minimal increases in delay (4.7 seconds or less) and volume-to-capacity ratios (0.07 or less). The intersection of Grey Road 19 and Birches Boulevard/ Ekarenniondi Street will operate at a LOS "B" and LOS "C" in the a.m. and p.m. peak periods, respectively, in the 2023 and 2028 horizon years under total traffic volumes. These levels of service are a result of minor increases in delay (9.8 seconds or less) and increases in the volume-to-capacity ratios (0.10 or less). It is noted that the LOS "C" p.m. peak period traffic metrics are for the Ekarenniondi Street approach. The Birches Street approach will experience increases in delay of 1.3 seconds or less compared to future background traffic volumes.

The intersection of Grey Road 19 and Helen Street will operate at a LOS "B" in the a.m. and p.m. peak periods in the 2018 and 2023 horizon years under total traffic volumes. These levels of service are unchanged from future background traffic conditions. The intersection will operate at a LOS "B" and LOS "C" in the a.m. and p.m. peak periods, respectively, in the 2028 horizon year under total traffic volumes. These levels of service are a result of minor increases in delay (4.3 seconds or less) and increases in the volume-to-capacity ratios (0.14 or less).

8.0 Conclusions and Recommendations

Intersection analyses of existing traffic volumes indicate that the intersection of Grey Road 19 and Birches Boulevard is operating at a LOS "A" in both the a.m. and p.m. peak hours and the intersection of Grey Road 19 and Helen Street is operating at a LOS "B" in the a.m. and p.m. peak hours.

Intersection analyses of the 2018, 2023 and 2028 future background traffic volumes indicate that the boundary road network is expected to operate at a LOS "B" or better in the a.m. and p.m. peak periods.

The proposed development is expected to add 180 and 228 trips to the boundary road system in the a.m. and p.m. peak hours, respectively.

Analysis of the total traffic volumes has determined that a southbound left-turn lane at the intersection of

Grey Road 19 at Birches Boulevard/ Ekarenniondi Street may be required in the 2028 horizon year.

Intersection analysis of the 2018 total traffic volumes indicate that the boundary road network is expected to operate at a LOS "B" or better in the a.m. and p.m. peak periods.

Intersection analysis of the 2023 and 2028 total traffic volumes indicate that boundary road network is expected to operate at a LOS "B" and LOS "C" or better in the a.m. and p.m. peak period, respectively, in the 2023 and 2028 horizon year.

It is recommended that turning movement counts be undertaken at future phases to confirm or repudiate the requirement of a left-turn lane at Grey Road 19 and Birches Boulevard/ Ekarenniondi Street in the 2028 horizon year.

The analysis undertaken herein was prepared using the most recent development plan. Any minor changes to the plan will not materially affect the conclusions and recommendations contained within this report.

It is concluded that the traffic generated from the proposed residential development will not materially affect the operations of the boundary road system. The draft plan of subdivision application, the Zoning By-law Amendment and the Official Plan Amendment can be supported from a traffic operations perspective.

Prepared by,

C.F. CROZIER & ASSOCIATES INC.

Alexander J. W. Fleming, MBA, P.Eng.

C.F. CROZIER & ASSOCIATES INC.

Brittany Robertson, E.I.T

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APPENDIX A

Correspondence

FEBRUARY 5, 2013

SENT BY EMAIL: **Pat.hoy@grey.ca**
rrusswurm@thebluemountains.ca

County of Grey
Transportation Department
595 9th Ave East
Owen Sound, ON N4K 3E3

Attention: **Mr. Pat Hoy, P.Eng**
Engineering Manager

Town of The Blue Mountains
Engineering & Public Works Department
32 Mill Street, Box 310
Thornbury, ON N0H 2P0

Attention: **Mr. Reg Russwurm, P.Eng.**
Director of Engineering & Public Works

RE: **PROPOSED TERMS OF REFERENCE**
HOME FARM DEVELOPMENT
THE TOWN OF THE BLUE MOUNTAINS

Dear Sirs,

Crozier & Associates is providing assistance to MacPherson Builders Limited in regards to a Traffic Impact Study for the above-noted proposed development. As per attached figure, the site is located north of Tyrolean Lane and east of Grey Road 19, and the proposed development includes 265 residential units.

The Terms of Reference will generally follow the MTO "General Guidelines for the Preparation of Traffic Impact Studies". The following items supplement these guidelines:

1. The public roadway intersections to be analyzed are County Road 19 and Helen Street, and County Road 19 and Birches Boulevard. These intersections comprise the only proposed connections to County Road 19 and the larger public roadway network.

2. In order to reflect the residential uses of the site in a resort recreational area, the Friday a.m. and p.m. peak hours will be analyzed.

3. Five, ten and fifteen year study horizons (2018, 2022 and 2028) will be included, with an assumption of full build-out of the development within the five year study horizon.

4. Traffic growth will be based on information available in the Town of The Blue Mountains Comprehensive Transportation Strategic Plan.

5. Trip distribution will be based on existing travel patterns on County Road 19.

We respectfully request your review and approval of these proposed Terms of Reference. Should you have any questions or require additional information, please don't hesitate to contact the undersigned.

Yours truly,

C.F. CROZIER & ASSOCIATES INC.

Alexander Fleming, MBA, P.Eng.
Traffic Engineer
AF/let

Attachments

J:\other misc files\PROPOSALS\Fleming Unassigned Proposals\Craigleith Development Limited McPherson Builders\20130205- TIS Terms of Reference.doc

Brittany Robertson

From: Alex Fleming <afleming@cfcrozier.ca>
Sent: Wednesday, November 20, 2013 4:21 PM
To: Brittany Robertson
Subject: FW: TIS Terms of Reference, Home Farm Development

CROZIER & ASSOCIATES
Consulting Engineers

| **Alexander J.W. Fleming, MBA, P.Eng.**
| Project Manager
| The HarbourEdge Building
| 40 Huron Street, Suite 301
| Collingwood, ON L9Y 4R3
| tel 705 446 3510 | fax 705 446 3520
| cfcrozier.ca | afleming@cfcrozier.ca

From: Hoy, Pat [mailto:Pat.Hoy@grey.ca]
Sent: Tuesday, February 19, 2013 7:27 AM
To: Alex Fleming; rrusswurm@thebluemountains.ca
Subject: RE: TIS Terms of Reference, Home Farm Development

Alex,
Grey County Transportation is satisfied with the terms of reference for the Traffic Impact Study as forwarded.

Patrick Hoy, P.Eng
Manager of Engineering
County of Grey
519-372-0219 ext 1391
Pat.hoy@grey.ca

From: Alex Fleming [mailto:afleming@cfcrozier.ca]
Sent: Tuesday, February 05, 2013 5:45 PM
To: Hoy, Pat; rrusswurm@thebluemountains.ca
Subject: TIS Terms of Reference, Home Farm Development

Hello Gents,

As promised in our conversations last Friday, attached is a terms of reference for a Traffic Impact Study for the Home Farm development in Craigleith. If you both could have a look and let me know if it's suitable, it would be much appreciated.

Regards,
Alex

CROZIER &ASSOCIATES
Consulting Engineers

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This document can be made available in other accessible formats as soon as practicable and upon request

STAFF REPORT: **Planning & Building Services Department**

REPORT TO:	**Council**
MEETING DATE:	**December 17, 2012**
REPORT NO.:	**PL.12.155**
SUBJECT:	**Proposed Land Exchange – Craigleith Development Limited/MacPherson Homes (Portion of Pt Lot 159, Plan 529) and The Town of The Blue Mountains (Part 1, 16R-2536 and a portion of the Helen Street Road Allowance)**
PREPARED BY:	**David Finbow, Director Planning & Building Services**

A. Recommendations

THAT Council receive Staff Report PL.12.155 with respect to a "Proposed Land Exchange – Craigleith Development Limited/MacPherson Homes (Portion of Pt. Lot 159, Plan 529) and The Town of The Blue Mountains (Part 1, 16R-2536 and a portion of the Helen Street Road Allowance); and,

THAT Council direct Town staff to prepare a Draft Memorandum of Understanding (MOU) to give effect to a proposed land exchange involving the subject lands for Council's consideration.

B. Background

On November 19, 2012, Craigleith Development Limited ("CDL") and MacPherson Homes ("MacPherson") appeared before Council and proposed a land exchange involving certain lands owned by CDL and lands owned by the Town.

In his presentation to Council, Russell Higgins, Macpherson Homes, indicated that the lands that are proposed to be conveyed to the Town are comprised of the Plater-Martin Site, surrounding/contiguous table lands and surrounding/adjacent ravine lands. The lands that Mr. Higgins has suggested that be conveyed to CDL from the Town are property fronting on Grey Road 19 (Part 1, 16R-2536) and a portion of the Helen Street unopened Road Allowance.

Based on the sketch presented to Council, and a corresponding draft Block Plan, it would appear that the proposed conveyance to the Town would be comprised of approximately 27.6 acres of table land, inclusive of the approximate 12 acre Plater-Martin Site, and approximately 11.2 acres of surrounding/adjacent ravine lands. Whereas the proposed land to be conveyed by the Town would include the Town's 10.0 acres fronting on Grey Road 19 and the 1.1 acre Helen Street Road Allowance.

Mr. Higgins stated that it would be CDL and MacPherson's intention to proceed with an Official Plan Amendment, Zoning By-law Amendment and Draft Plan of Subdivision applications and that the proposed land exchange would occur with the registration of

the Plan of Subdivision for the lands. Should Council decide to proceed with the land exchange on this basis, it would require that the Town appoint CDL/MacPherson as its agent to make the applications referenced by Mr. Higgins.

Town of The Blue Mountains Official Plan:

As noted previously, the CDL/MacPherson lands contain the Plater-Martin Site, a nationally significant archaeological site.

The Town's Official Plan contains policies indicating that:

> "It is the intent of the Plan to establish Proposed Parks which can be generally described as...a recreational/cultural heritage resource park in the vicinity of the Craigleith Community Centre..."

This Proposed Park is depicted at Schedule 'A', Land Use Plan Map 4, Craigleith and Swiss Meadows and is inclusive of the Plater-Martin and Plater-Fleming Sites and the Nipissing Ridge.

Further, the Town's Official Plan contains policies indicating that:

> "It shall be the policy of this Plan to ensure, wherever possible, the protection, preservation, and enhancement of cultural heritage features..."
>
> "Council may require that an archaeological site or other cultural heritage resource be appropriately zoned under the implementing Zoning By-law to ensure its preservation."

Value of the Land Involved:

With respect to the value of the land involved, Town staff ordered a Narrative Appraisal which concluded that the lands involved are of an approximate equal value (with the Town existing lands having a slightly lower estimated market value).

Town staff has requested an updated appraisal to address the specifics of the proposal currently before Council and will, subject to Council's direction, report on this to Council.

Process:

Should Council be desirous of proceeding with exploring the land exchange proposed, it would be appropriate for Council to direct Town staff to develop a MOU for Council's consideration.

The MOU would include parameters such as the specific land involved; the timing of the land exchange; potentially appointing CDL/MacPherson to act as the Town's agent on any applications involving Town land; detailing who is responsible for what costs; primary/lead responsibility related to Aboriginal consultation; and, not fettering Council's discretionary powers, duties or authorities with respect to any applications related to the subject lands.

In addition, Council will have to have regard to its Policy related to the disposition of Town owned land (deeming the land surplus, obtaining an appraisal, giving of notice, etc.).

Summary:

The proposed land exchange put forward by CDL/MacPherson has merit as it aligns with the Town's Official Plan; creates an opportunity to protect and preserve a nationally significant archaeological site; and, from a land value perspective, would not be detrimental to the Town's interests.

It is therefore recommended that Council direct Town staff to prepare a Draft Memorandum of Understanding (MOU) to give effect to a proposed land exchange involving the subject lands for Council's consideration with such MOU including appropriate provisions related to the timing of the land exchange; appointment of CDL/MacPherson to act as the Town's agent on any applications involving Town land; detailing who is responsible for what costs; primary/lead responsibility related to Aboriginal consultation; and, not fettering Council's discretionary powers, duties or authorities with respect to any applications related to the subject lands.

C. The Blue Mountains' Strategic Plan

Preserving and enhancing the natural and environmental features, and cultural heritage of the community.

Providing a strong, well managed municipal government.

D. Environmental Impacts

N/A

E. Financial Impact

TBD

F. In Consultation With

N/A

G. Attached

Home Farm Concept

Respectfully submitted,

D. Finbow
Director, Planning & Building Services

APPENDIX B

Level of Service Definitions

Level of Service Definitions

Two-Way Stop Controlled Intersections

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

Adapted from Highway Capacity Manual 2000, Transportation Research Board

APPENDIX C

Turning Movement Counts

Ontario Traffic Inc.

Morning Peak Diagram

Specified Period
From: 7:00:00
To: 10:00:00

One Hour Peak
From: 8:00:00
To: 9:00:00

Municipality: Collingwood
Site #: 1304100001
Intersection: Grey Rd 19 & Helen St
TFR File #: 4
Count date: 8-Mar-13

Weather conditions:

Person(s) who counted:

**** Non-Signalized Intersection ****

Major Road: Grey Rd 19 runs N/S

North Leg Total: 288
North Entering: 170
North Peds: 1
Peds Cross: ⋈

Heavys	0	0	0
Trucks	2	0	2
Cars	168	0	168
Totals	170	0	

Heavys	0
Trucks	4
Cars	114
Totals	118

East Leg Total: 2
East Entering: 1
East Peds: 1
Peds Cross: ⋈

Grey Rd 19

	Cars	Trucks	Heavys	Totals
	0	0	0	0
	1	0	0	1
	1	0	0	

N
W E
S

Helen St

	Cars	Trucks	Heavys	Totals
	1	0	0	1

Grey Rd 19

Cars	169		
Trucks	2		
Heavys	0		
Totals	171		

Cars	114	1	115
Trucks	4	0	4
Heavys	0	0	0
Totals	118	1	

Peds Cross: ⋈
South Peds: 0
South Entering: 119
South Leg Total: 290

Comments

Ontario Traffic Inc.

Afternoon Peak Diagram

Specified Period
From: 16:00:00
To: 19:00:00

One Hour Peak
From: 16:30:00
To: 17:30:00

Municipality: Collingwood
Site #: 1304100001
Intersection: Grey Rd 19 & Helen St
TFR File #: 4
Count date: 8-Mar-13

Weather conditions:

Person(s) who counted:

**** Non-Signalized Intersection ****

Major Road: Grey Rd 19 runs N/S

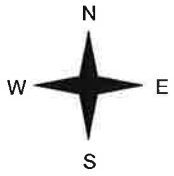
North Leg Total: 332
North Entering: 141
North Peds: 0
Peds Cross: ⋈

Heavys	0	0	0
Trucks	0	0	0
Cars	140	1	141
Totals	140	1	

Heavys	0
Trucks	0
Cars	191
Totals	191

East Leg Total: 3
East Entering: 2
East Peds: 1
Peds Cross: ⋈

	Cars	Trucks	Heavys	Totals
	1	0	0	1
	1	0	0	1
	2	0	0	



	Cars	Trucks	Heavys	Totals
	1	0	0	1

Cars	141	Cars	190	0	190
Trucks	0	Trucks	0	0	0
Heavys	0	Heavys	0	0	0
Totals	141	Totals	190	0	

Peds Cross: ⋈
South Peds: 0
South Entering: 190
South Leg Total: 331

Comments

Ontario Traffic Inc.

Total Count Diagram

Municipality: Collingwood
Site #: 1304100001
Intersection: Grey Rd 19 & Helen St
TFR File #: 4
Count date: 8-Mar-13

Weather conditions:

Person(s) who counted:

**** Non-Signalized Intersection ****

Major Road: Grey Rd 19 runs N/S

North Leg Total: 1531
North Entering: 790
North Peds: 1
Peds Cross: ⋈

Heavys	0	0	0
Trucks	12	0	12
Cars	774	4	778
Totals	786	4	

Heavys	0
Trucks	12
Cars	729
Totals	741

East Leg Total: 18
East Entering: 9
East Peds: 3
Peds Cross: ⋈

Grey Rd 19

	Cars	Trucks	Heavys	Totals
	1	0	0	1
	7	1	0	8
	8	1	0	

N
W E
S

Helen St

Cars	Trucks	Heavys	Totals
9	0	0	9

Grey Rd 19

Cars	781	Cars	728	5	733
Trucks	13	Trucks	12	0	12
Heavys	0	Heavys	0	0	0
Totals	794	Totals	740	5	

Peds Cross: ⋈
South Peds: 0
South Entering: 745
South Leg Total: 1539

Comments

Ontario Traffic Inc.
Traffic Count Summary

Intersection:	Count Date:	Municipality:
Grey Rd 19 & Helen St	8-Mar-13	Collingwood

North Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds	North/South Total Approaches
	Left	Thru	Right	Grand Total		
7:00:00	0	0	0	0	0	0
8:00:00	0	69	0	69	0	129
9:00:00	0	170	0	170	1	289
10:00:00	0	163	0	163	0	243
16:00:00	0	0	0	0	0	3
17:00:00	2	149	0	151	0	327
18:00:00	1	135	0	136	0	310
19:00:00	1	98	0	99	0	232
Totals:	4	784	0	788	1	1533

South Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total	
7:00:00	0	0	0	0	0
8:00:00	0	60	0	60	0
9:00:00	0	118	1	119	0
10:00:00	0	79	1	80	0
16:00:00	0	3	0	3	0
17:00:00	0	176	0	176	0
18:00:00	0	173	1	174	0
19:00:00	0	131	2	133	0
	0	740	5	745	0

East Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds	East/West Total Approaches
	Left	Thru	Right	Grand Total		
7:00:00	0	0	0	0	0	0
8:00:00	0	0	0	0	0	0
9:00:00	1	0	0	1	1	1
10:00:00	1	0	0	1	1	1
16:00:00	0	0	0	0	0	0
17:00:00	2	0	1	3	0	3
18:00:00	2	0	0	2	1	2
19:00:00	2	0	0	2	0	2
Totals:	8	0	1	9	3	9

West Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys				Total Peds
	Left	Thru	Right	Grand Total	
7:00:00	0	0	0	0	0
8:00:00	0	0	0	0	0
9:00:00	0	0	0	0	0
10:00:00	0	0	0	0	0
16:00:00	0	0	0	0	0
17:00:00	0	0	0	0	0
18:00:00	0	0	0	0	0
19:00:00	0	0	0	0	0
	0	0	0	0	0

Calculated Values for Traffic Crossing Major Street

Hours Ending:	7:00	8:00	9:00	10:00	16:00	17:00	18:00	19:00
Crossing Values:	0	0	2	1	0	2	2	2

Ontario Traffic Inc.

Count Date: 8-Mar-13 **Site #: 1304100001**

Interval Time	Passenger Cars - North Approach						Trucks - North Approach						Heavys - North Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		North Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	0	0	15	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30:00	0	0	29	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45:00	0	0	45	16	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0
8:00:00	0	0	67	22	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0
8:15:00	0	0	118	51	0	0	0	0	3	1	0	0	0	0	0	0	0	0	1	1
8:30:00	0	0	153	35	0	0	0	0	4	1	0	0	0	0	0	0	0	0	1	0
8:45:00	0	0	195	42	0	0	0	0	4	0	0	0	0	0	0	0	0	0	1	0
9:00:00	0	0	235	40	0	0	0	0	4	0	0	0	0	0	0	0	0	0	1	0
9:15:00	0	0	273	38	0	0	0	0	4	0	0	0	0	0	0	0	0	0	1	0
9:30:00	0	0	327	54	0	0	0	0	5	1	0	0	0	0	0	0	0	0	1	0
9:45:00	0	0	358	31	0	0	0	0	6	1	0	0	0	0	0	0	0	0	1	0
10:00:00	0	0	393	35	0	0	0	0	9	3	0	0	0	0	0	0	0	0	1	0
10:00:54	0	0	393	0	0	0	0	0	9	0	0	0	0	0	0	0	0	0	1	0
16:00:00	0	0	393	0	0	0	0	0	9	0	0	0	0	0	0	0	0	0	1	0
16:15:00	2	2	428	35	0	0	0	0	10	1	0	0	0	0	0	0	0	0	1	0
16:30:00	2	0	470	42	0	0	0	0	11	1	0	0	0	0	0	0	0	0	1	0
16:45:00	2	0	518	48	0	0	0	0	11	0	0	0	0	0	0	0	0	0	1	0
17:00:00	2	0	540	22	0	0	0	0	11	0	0	0	0	0	0	0	0	0	1	0
17:15:00	3	1	581	41	0	0	0	0	11	0	0	0	0	0	0	0	0	0	1	0
17:30:00	3	0	610	29	0	0	0	0	11	0	0	0	0	0	0	0	0	0	1	0
17:45:00	3	0	650	40	0	0	0	0	11	0	0	0	0	0	0	0	0	0	1	0
18:00:00	3	0	675	25	0	0	0	0	11	0	0	0	0	0	0	0	0	0	1	0
18:15:00	4	1	711	36	0	0	0	0	12	1	0	0	0	0	0	0	0	0	1	0
18:30:00	4	0	732	21	0	0	0	0	12	0	0	0	0	0	0	0	0	0	1	0
18:45:00	4	0	753	21	0	0	0	0	12	0	0	0	0	0	0	0	0	0	1	0
19:00:00	4	0	772	19	0	0	0	0	12	0	0	0	0	0	0	0	0	0	1	0
19:00:07	4	0	774	2	0	0	0	0	12	0	0	0	0	0	0	0	0	0	1	0

Ontario Traffic Inc.

Count Date: 8-Mar-13 **Site #: 1304100001**

Interval Time	Passenger Cars - East Approach						Trucks - East Approach						Heavys - East Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		East Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30:00	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
8:45:00	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
9:00:00	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
9:15:00	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
9:30:00	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1
9:45:00	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
10:00:00	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	2	0
10:00:54	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2	0
16:00:00	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2	0
16:15:00	3	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2	0
16:30:00	3	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2	0
16:45:00	3	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	2	0
17:00:00	3	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	2	0
17:15:00	4	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	2	0
17:30:00	4	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	3	1
17:45:00	4	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	3	0
18:00:00	5	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	3	0
18:15:00	5	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	3	0
18:30:00	6	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	3	0
18:45:00	7	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	3	0
19:00:00	7	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	3	0
19:00:07	7	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	3	0

Ontario Traffic Inc.

Count Date: 8-Mar-13 **Site #: 1304100001**

Interval Time	Passenger Cars - South Approach						Trucks - South Approach						Heavys - South Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		South Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	0	0	10	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30:00	0	0	21	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45:00	0	0	41	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00:00	0	0	59	18	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
8:15:00	0	0	88	29	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0
8:30:00	0	0	120	32	0	0	0	0	3	1	0	0	0	0	0	0	0	0	0	0
8:45:00	0	0	146	26	1	1	0	0	4	1	0	0	0	0	0	0	0	0	0	0
9:00:00	0	0	173	27	1	0	0	0	5	1	0	0	0	0	0	0	0	0	0	0
9:15:00	0	0	190	17	1	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0
9:30:00	0	0	211	21	2	1	0	0	6	1	0	0	0	0	0	0	0	0	0	0
9:45:00	0	0	228	17	2	0	0	0	8	2	0	0	0	0	0	0	0	0	0	0
10:00:00	0	0	249	21	2	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0
10:00:54	0	0	251	2	2	0	0	0	9	1	0	0	0	0	0	0	0	0	0	0
16:00:00	0	0	251	0	2	0	0	0	9	0	0	0	0	0	0	0	0	0	0	0
16:15:00	0	0	302	51	2	0	0	0	10	1	0	0	0	0	0	0	0	0	0	0
16:30:00	0	0	344	42	2	0	0	0	11	1	0	0	0	0	0	0	0	0	0	0
16:45:00	0	0	389	45	2	0	0	0	11	0	0	0	0	0	0	0	0	0	0	0
17:00:00	0	0	425	36	2	0	0	0	11	0	0	0	0	0	0	0	0	0	0	0
17:15:00	0	0	473	48	2	0	0	0	11	0	0	0	0	0	0	0	0	0	0	0
17:30:00	0	0	534	61	2	0	0	0	11	0	0	0	0	0	0	0	0	0	0	0
17:45:00	0	0	573	39	2	0	0	0	11	0	0	0	0	0	0	0	0	0	0	0
18:00:00	0	0	598	25	3	1	0	0	11	0	0	0	0	0	0	0	0	0	0	0
18:15:00	0	0	633	35	4	1	0	0	12	1	0	0	0	0	0	0	0	0	0	0
18:30:00	0	0	674	41	5	1	0	0	12	0	0	0	0	0	0	0	0	0	0	0
18:45:00	0	0	700	26	5	0	0	0	12	0	0	0	0	0	0	0	0	0	0	0
19:00:00	0	0	728	28	5	0	0	0	12	0	0	0	0	0	0	0	0	0	0	0
19:00:07	0	0	728	0	5	0	0	0	12	0	0	0	0	0	0	0	0	0	0	0

Ontario Traffic Inc.

Count Date: 8-Mar-13 **Site #: 1304100001**

Interval Time	Passenger Cars - West Approach						Trucks - West Approach						Heavys - West Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		West Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00:54	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19:00:07	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Ontario Traffic Inc.

Morning Peak Diagram

Specified Period
From: 7:00:00
To: 10:00:00

One Hour Peak
From: 8:00:00
To: 9:00:00

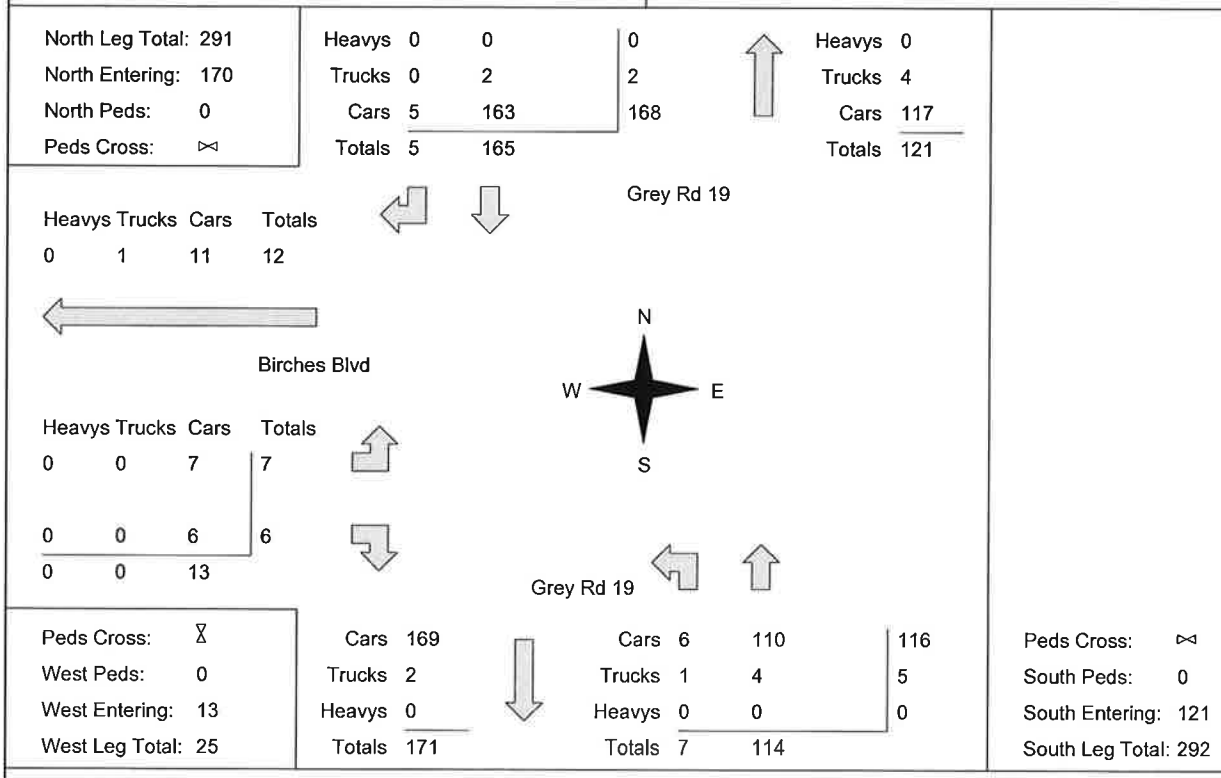
Municipality: Collingwood
Site #: 1304100002
Intersection: Grey Rd 19 & Birches Blvd
TFR File #: 7
Count date: 8-Mar-13

Weather conditions:

Person(s) who counted:

**** Non-Signalized Intersection ****

Major Road: Grey Rd 19 runs N/S



Comments

Ontario Traffic Inc.

Afternoon Peak Diagram

Specified Period
From: 16:00:00
To: 19:00:00

One Hour Peak
From: 16:30:00
To: 17:30:00

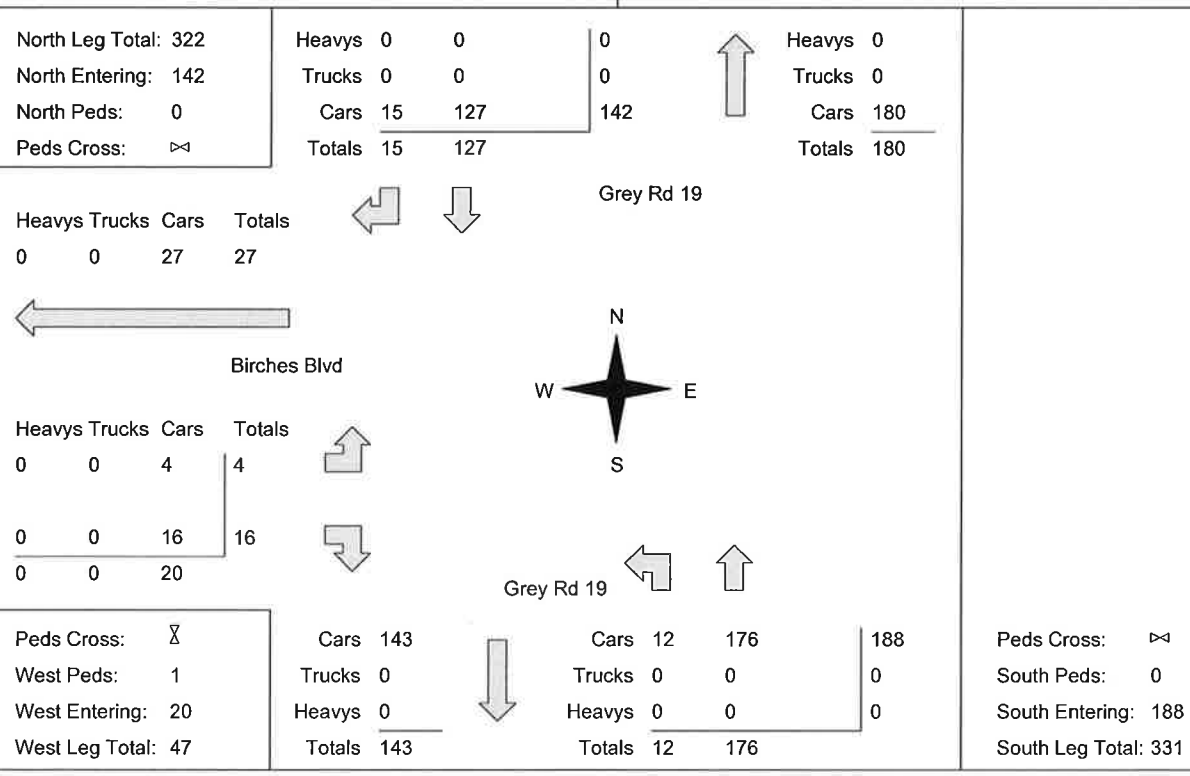
Municipality: Collingwood
Site #: 1304100002
Intersection: Grey Rd 19 & Birches Blvd
TFR File #: 7
Count date: 8-Mar-13

Weather conditions:

Person(s) who counted:

**** Non-Signalized Intersection ****

Major Road: Grey Rd 19 runs N/S



Comments

Ontario Traffic Inc.

Total Count Diagram

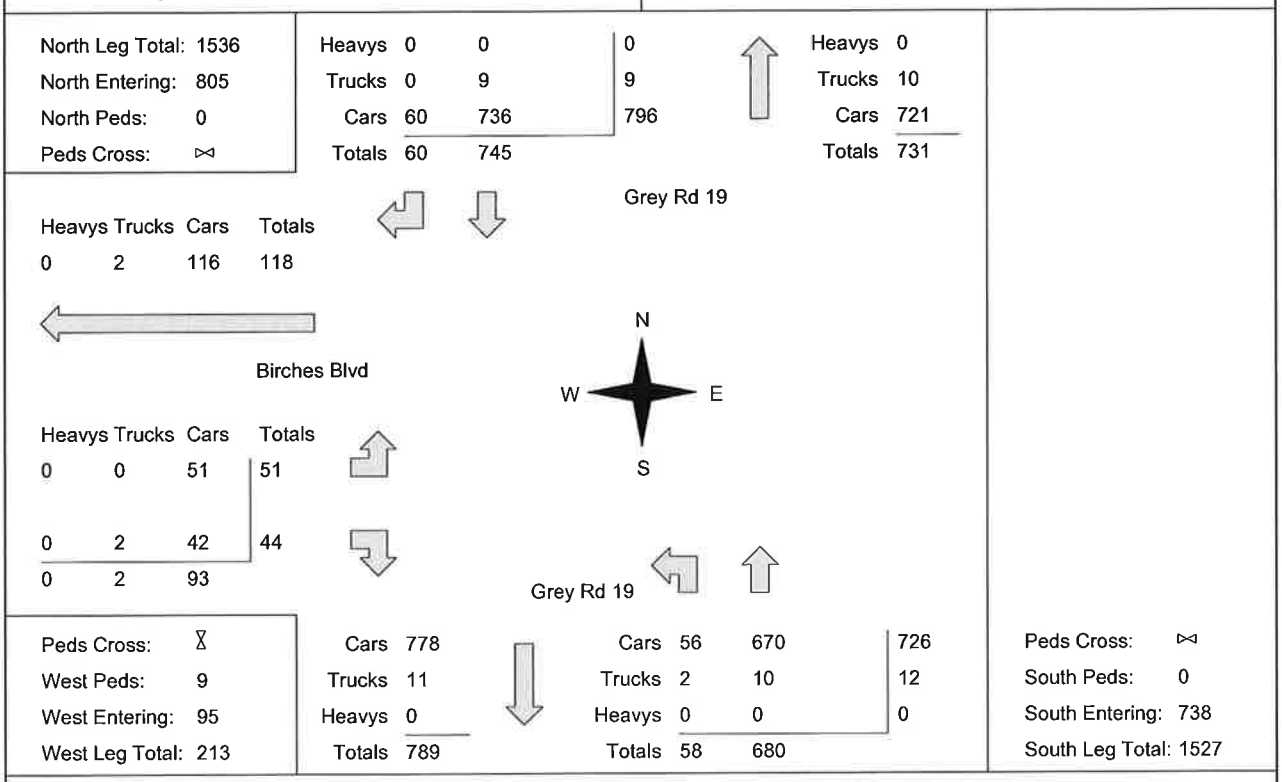
Municipality: Collingwood
Site #: 1304100002
Intersection: Grey Rd 19 & Birches Blvd
TFR File #: 7
Count date: 8-Mar-13

Weather conditions:

Person(s) who counted:

**** Non-Signalized Intersection ****

Major Road: Grey Rd 19 runs N/S



Comments

Ontario Traffic Inc.
Traffic Count Summary

Intersection: Grey Rd 19 & Birches Blvd | **Count Date:** 8-Mar-13 | **Municipality:** Collingwood

North Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys: Left	Thru	Right	Grand Total	Total Peds	North/South Total Approaches
7:00:00	0	0	0	0	0	0
8:00:00	0	67	4	71	0	130
9:00:00	0	165	5	170	0	291
10:00:00	0	156	9	165	0	243
16:00:00	0	1	0	1	0	2
17:00:00	0	144	11	155	0	332
18:00:00	0	121	21	142	0	313
19:00:00	0	90	10	100	0	231
Totals:	0	744	60	804	0	1542

South Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys: Left	Thru	Right	Grand Total	Total Peds
7:00:00	0	0	0	0	0
8:00:00	8	51	0	59	0
9:00:00	7	114	0	121	0
10:00:00	3	75	0	78	0
16:00:00	0	1	0	1	0
17:00:00	12	165	0	177	0
18:00:00	12	159	0	171	0
19:00:00	16	115	0	131	0
Totals:	58	680	0	738	0

East Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys: Left	Thru	Right	Grand Total	Total Peds	East/West Total Approaches
7:00:00	0	0	0	0	0	0
8:00:00	0	0	0	0	0	6
9:00:00	0	0	0	0	0	13
10:00:00	0	0	0	0	0	16
16:00:00	0	0	0	0	0	0
17:00:00	0	0	0	0	0	14
18:00:00	0	0	0	0	0	22
19:00:00	0	0	0	0	0	24
Totals:	0	0	0	0	0	95

West Approach Totals

Hour Ending	Includes Cars, Trucks, & Heavys: Left	Thru	Right	Grand Total	Total Peds
7:00:00	0	0	0	0	0
8:00:00	5	0	1	6	0
9:00:00	7	0	6	13	0
10:00:00	11	0	5	16	1
16:00:00	0	0	0	0	0
17:00:00	6	0	8	14	3
18:00:00	7	0	15	22	5
19:00:00	15	0	9	24	0
Totals:	51	0	44	95	9

Calculated Values for Traffic Crossing Major Street

Hours Ending:	7:00	8:00	9:00	10:00	16:00	17:00	18:00	19:00
Crossing Values:	0	5	7	11	0	6	7	15

Ontario Traffic Inc.

Count Date: 8-Mar-13 **Site #: 1304100002**

Interval Time	Passenger Cars - North Approach						Trucks - North Approach						Heavys - North Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		North Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	0	0	14	14	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30:00	0	0	27	13	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45:00	0	0	43	16	2	1	0	0	2	2	0	0	0	0	0	0	0	0	0	0
8:00:00	0	0	65	22	4	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0
8:15:00	0	0	113	48	4	0	0	0	3	1	0	0	0	0	0	0	0	0	0	0
8:30:00	0	0	147	34	6	2	0	0	4	1	0	0	0	0	0	0	0	0	0	0
8:45:00	0	0	189	42	7	1	0	0	4	0	0	0	0	0	0	0	0	0	0	0
9:00:00	0	0	228	39	9	2	0	0	4	0	0	0	0	0	0	0	0	0	0	0
9:15:00	0	0	267	39	11	2	0	0	4	0	0	0	0	0	0	0	0	0	0	0
9:30:00	0	0	320	53	14	3	0	0	5	1	0	0	0	0	0	0	0	0	0	0
9:45:00	0	0	348	28	17	3	0	0	6	1	0	0	0	0	0	0	0	0	0	0
10:00:00	0	0	381	33	18	1	0	0	7	1	0	0	0	0	0	0	0	0	0	0
10:00:11	0	0	382	1	18	0	0	0	7	0	0	0	0	0	0	0	0	0	0	0
16:00:00	0	0	382	0	18	0	0	0	7	0	0	0	0	0	0	0	0	0	0	0
16:15:00	0	0	418	36	20	2	0	0	8	1	0	0	0	0	0	0	0	0	0	0
16:30:00	0	0	459	41	21	1	0	0	9	1	0	0	0	0	0	0	0	0	0	0
16:45:00	0	0	503	44	24	3	0	0	9	0	0	0	0	0	0	0	0	0	0	0
17:00:00	0	0	524	21	29	5	0	0	9	0	0	0	0	0	0	0	0	0	0	0
17:15:00	0	0	562	38	32	3	0	0	9	0	0	0	0	0	0	0	0	0	0	0
17:30:00	0	0	586	24	36	4	0	0	9	0	0	0	0	0	0	0	0	0	0	0
17:45:00	0	0	622	36	42	6	0	0	9	0	0	0	0	0	0	0	0	0	0	0
18:00:00	0	0	645	23	50	8	0	0	9	0	0	0	0	0	0	0	0	0	0	0
18:15:00	0	0	682	37	52	2	0	0	9	0	0	0	0	0	0	0	0	0	0	0
18:30:00	0	0	699	17	53	1	0	0	9	0	0	0	0	0	0	0	0	0	0	0
18:45:00	0	0	718	19	56	3	0	0	9	0	0	0	0	0	0	0	0	0	0	0
19:00:00	0	0	735	17	60	4	0	0	9	0	0	0	0	0	0	0	0	0	0	0
19:00:11	0	0	736	1	60	0	0	0	9	0	0	0	0	0	0	0	0	0	0	0

Ontario Traffic Inc.

Count Date: 8-Mar-13 **Site #: 1304100002**

Interval Time	Passenger Cars - East Approach						Trucks - East Approach						Heavys - East Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		East Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00:11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:30:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:45:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19:00:11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Ontario Traffic Inc.

Count Date: 8-Mar-13 **Site #: 1304100002**

Interval Time	Passenger Cars - South Approach						Trucks - South Approach						Heavys - South Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		South Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	2	2	7	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30:00	2	0	18	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45:00	4	2	35	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00:00	8	4	50	15	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
8:15:00	8	0	80	30	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0
8:30:00	10	2	109	29	0	0	0	0	3	1	0	0	0	0	0	0	0	0	0	0
8:45:00	12	2	134	25	0	0	0	0	4	1	0	0	0	0	0	0	0	0	0	0
9:00:00	14	2	160	26	0	0	1	1	5	1	0	0	0	0	0	0	0	0	0	0
9:15:00	14	0	177	17	0	0	1	0	5	0	0	0	0	0	0	0	0	0	0	0
9:30:00	14	0	198	21	0	0	1	0	6	1	0	0	0	0	0	0	0	0	0	0
9:45:00	15	1	213	15	0	0	1	0	8	2	0	0	0	0	0	0	0	0	0	0
10:00:00	17	2	232	19	0	0	1	0	8	0	0	0	0	0	0	0	0	0	0	0
10:00:11	17	0	233	1	0	0	1	0	8	0	0	0	0	0	0	0	0	0	0	0
16:00:00	17	0	233	0	0	0	1	0	8	0	0	0	0	0	0	0	0	0	0	0
16:15:00	22	5	280	47	0	0	1	0	9	1	0	0	0	0	0	0	0	0	0	0
16:30:00	24	2	321	41	0	0	1	0	10	1	0	0	0	0	0	0	0	0	0	0
16:45:00	27	3	363	42	0	0	1	0	10	0	0	0	0	0	0	0	0	0	0	0
17:00:00	29	2	396	33	0	0	1	0	10	0	0	0	0	0	0	0	0	0	0	0
17:15:00	34	5	439	43	0	0	1	0	10	0	0	0	0	0	0	0	0	0	0	0
17:30:00	36	2	497	58	0	0	1	0	10	0	0	0	0	0	0	0	0	0	0	0
17:45:00	37	1	535	38	0	0	1	0	10	0	0	0	0	0	0	0	0	0	0	0
18:00:00	41	4	555	20	0	0	1	0	10	0	0	0	0	0	0	0	0	0	0	0
18:15:00	43	2	589	34	0	0	2	1	10	0	0	0	0	0	0	0	0	0	0	0
18:30:00	47	4	626	37	0	0	2	0	10	0	0	0	0	0	0	0	0	0	0	0
18:45:00	54	7	645	19	0	0	2	0	10	0	0	0	0	0	0	0	0	0	0	0
19:00:00	56	2	670	25	0	0	2	0	10	0	0	0	0	0	0	0	0	0	0	0
19:00:11	56	0	670	0	0	0	2	0	10	0	0	0	0	0	0	0	0	0	0	0

Ontario Traffic Inc.

Count Date: 8-Mar-13 **Site #: 1304100002**

Interval Time	Passenger Cars - West Approach						Trucks - West Approach						Heavys - West Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		West Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30:00	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45:00	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00:00	5	4	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15:00	6	1	0	0	4	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30:00	6	0	0	0	6	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45:00	8	2	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00:00	12	4	0	0	7	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15:00	15	3	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30:00	18	3	0	0	8	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45:00	20	2	0	0	10	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00:00	23	3	0	0	11	1	0	0	0	0	1	1	0	0	0	0	0	0	1	1
10:00:11	23	0	0	0	11	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0
16:00:00	23	0	0	0	11	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0
16:15:00	25	2	0	0	12	1	0	0	0	0	1	0	0	0	0	0	0	0	4	3
16:30:00	28	3	0	0	13	1	0	0	0	0	1	0	0	0	0	0	0	0	4	0
16:45:00	28	0	0	0	18	5	0	0	0	0	1	0	0	0	0	0	0	0	4	0
17:00:00	29	1	0	0	19	1	0	0	0	0	1	0	0	0	0	0	0	0	4	0
17:15:00	30	1	0	0	24	5	0	0	0	0	1	0	0	0	0	0	0	0	4	0
17:30:00	32	2	0	0	29	5	0	0	0	0	1	0	0	0	0	0	0	0	5	1
17:45:00	32	0	0	0	33	4	0	0	0	0	1	0	0	0	0	0	0	0	6	1
18:00:00	36	4	0	0	34	1	0	0	0	0	1	0	0	0	0	0	0	0	9	3
18:15:00	42	6	0	0	35	1	0	0	0	0	2	1	0	0	0	0	0	0	9	0
18:30:00	45	3	0	0	38	3	0	0	0	0	2	0	0	0	0	0	0	0	9	0
18:45:00	48	3	0	0	39	1	0	0	0	0	2	0	0	0	0	0	0	0	9	0
19:00:00	51	3	0	0	42	3	0	0	0	0	2	0	0	0	0	0	0	0	9	0
19:00:11	51	0	0	0	42	0	0	0	0	0	2	0	0	0	0	0	0	0	9	0

APPENDIX D

Detailed Capacity Analyses

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	1	0	118	1	0	170
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	1	0	134	1	0	193
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	328	135			135	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	328	135			135	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	669	917			1455	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	1	135	193
Volume Left	1	0	0
Volume Right	0	1	0
cSH	669	1700	1455
Volume to Capacity	0.00	0.08	0.00
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s)	10.4	0.0	0.0
Lane LOS	B		
Approach Delay (s)	10.4	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay		0.0	
Intersection Capacity Utilization		18.9%	ICU Level of Service A
Analysis Period (min)		15	

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	7	6	7	114	165	5
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	8	7	8	127	183	6
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	328	186	189			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	328	186	189			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	99	99			
cM capacity (veh/h)	664	859	1391			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	14	134	189
Volume Left	8	8	0
Volume Right	7	0	6
cSH	742	1391	1700
Volume to Capacity	0.02	0.01	0.11
Queue Length 95th (m)	0.5	0.1	0.0
Control Delay (s)	9.9	0.5	0.0
Lane LOS	A	A	
Approach Delay (s)	9.9	0.5	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	21.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	1	1	190	0	1	140
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	1	1	216	0	1	159
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	377	216			216	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	377	216			216	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	626	826			1360	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	2	216	160
Volume Left	1	0	1
Volume Right	1	0	0
cSH	712	1700	1360
Volume to Capacity	0.00	0.13	0.00
Queue Length 95th (m)	0.1	0.0	0.0
Control Delay (s)	10.1	0.0	0.1
Lane LOS	B		A
Approach Delay (s)	10.1	0.0	0.1
Approach LOS	B		

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	20.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	4	16	12	176	127	15
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	4	18	13	196	141	17
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	372	149	158			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	372	149	158			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	98	99			
cM capacity (veh/h)	625	900	1428			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	22	209	158
Volume Left	4	13	0
Volume Right	18	0	17
cSH	827	1428	1700
Volume to Capacity	0.03	0.01	0.09
Queue Length 95th (m)	0.6	0.2	0.0
Control Delay (s)	9.5	0.6	0.0
Lane LOS	A	A	
Approach Delay (s)	9.5	0.6	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	29.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	1	0	151	1	0	217
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	1	0	172	1	0	247
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	419	172			173	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	419	172			173	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	593	874			1410	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	1	173	247
Volume Left	1	0	0
Volume Right	0	1	0
cSH	593	1700	1410
Volume to Capacity	0.00	0.10	0.00
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s)	11.1	0.0	0.0
Lane LOS	B		
Approach Delay (s)	11.1	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	21.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	9	8	9	145	211	6
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	10	9	10	161	234	7
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	419	238	241			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	419	238	241			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	98	99	99			
cM capacity (veh/h)	588	804	1331			

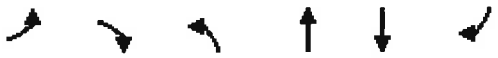
Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	19	171	241
Volume Left	10	10	0
Volume Right	9	0	7
cSH	673	1331	1700
Volume to Capacity	0.03	0.01	0.14
Queue Length 95th (m)	0.7	0.2	0.0
Control Delay (s)	10.5	0.5	0.0
Lane LOS	B	A	
Approach Delay (s)	10.5	0.5	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	25.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	1	1	242	0	1	179
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	1	1	275	0	1	203
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	481	275			275	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	481	275			275	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	546	766			1294	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	2	275	205
Volume Left	1	0	1
Volume Right	1	0	0
cSH	637	1700	1294
Volume to Capacity	0.00	0.16	0.00
Queue Length 95th (m)	0.1	0.0	0.0
Control Delay (s)	10.7	0.0	0.1
Lane LOS	B		A
Approach Delay (s)	10.7	0.0	0.1
Approach LOS	B		

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	22.7%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	5	20	15	225	162	19
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	22	16	245	176	21
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	464	186	197			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	464	186	197			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	97	99			
cM capacity (veh/h)	552	858	1382			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	27	261	197
Volume Left	5	16	0
Volume Right	22	0	21
cSH	773	1382	1700
Volume to Capacity	0.04	0.01	0.12
Queue Length 95th (m)	0.8	0.3	0.0
Control Delay (s)	9.8	0.6	0.0
Lane LOS	A	A	
Approach Delay (s)	9.8	0.6	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	34.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	1	0	193	1	0	277
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	1	0	219	1	0	315
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	535	220			220	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	535	220			220	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	508	822			1355	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	1	220	315
Volume Left	1	0	0
Volume Right	0	1	0
cSH	508	1700	1355
Volume to Capacity	0.00	0.13	0.00
Queue Length 95th (m)	0.1	0.0	0.0
Control Delay (s)	12.1	0.0	0.0
Lane LOS	B		
Approach Delay (s)	12.1	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	24.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	11	10	11	185	269	8
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	12	11	12	206	299	9
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	533	303	308			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	533	303	308			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	98	98	99			
cM capacity (veh/h)	504	739	1259			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	23	218	308
Volume Left	12	12	0
Volume Right	11	0	9
cSH	594	1259	1700
Volume to Capacity	0.04	0.01	0.18
Queue Length 95th (m)	0.9	0.2	0.0
Control Delay (s)	11.3	0.5	0.0
Lane LOS	B	A	
Approach Delay (s)	11.3	0.5	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	28.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	1	1	309	0	1	228
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	1	1	351	0	1	259
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	351			351	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	612	351			351	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	457	695			1213	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	2	351	260
Volume Left	1	0	1
Volume Right	1	0	0
cSH	552	1700	1213
Volume to Capacity	0.00	0.21	0.00
Queue Length 95th (m)	0.1	0.0	0.0
Control Delay (s)	11.6	0.0	0.0
Lane LOS	B		A
Approach Delay (s)	11.6	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	26.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	6	26	19	287	207	24
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	7	29	21	319	230	27
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	604	243	257			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	604	243	257			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	96	98			
cM capacity (veh/h)	455	798	1314			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	36	340	257
Volume Left	7	21	0
Volume Right	29	0	27
cSH	699	1314	1700
Volume to Capacity	0.05	0.02	0.15
Queue Length 95th (m)	1.2	0.4	0.0
Control Delay (s)	10.4	0.6	0.0
Lane LOS	B	A	
Approach Delay (s)	10.4	0.6	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	40.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	1	0	246	1	0	354
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	1	0	280	1	0	402
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	682	280			281	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	682	280			281	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	417	761			1288	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	1	281	402
Volume Left	1	0	0
Volume Right	0	1	0
cSH	417	1700	1288
Volume to Capacity	0.00	0.17	0.00
Queue Length 95th (m)	0.1	0.0	0.0
Control Delay (s)	13.7	0.0	0.0
Lane LOS	B		
Approach Delay (s)	13.7	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	28.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	14	13	14	236	343	10
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	16	14	16	262	381	11
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	680	387	392			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	680	387	392			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	96	98	99			
cM capacity (veh/h)	413	663	1172			

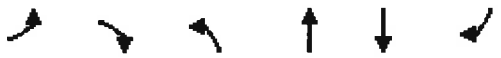
Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	30	278	392
Volume Left	16	16	0
Volume Right	14	0	11
cSH	504	1172	1700
Volume to Capacity	0.06	0.01	0.23
Queue Length 95th (m)	1.4	0.3	0.0
Control Delay (s)	12.6	0.6	0.0
Lane LOS	B	A	
Approach Delay (s)	12.6	0.6	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	33.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	1	1	394	0	1	291
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	1	1	448	0	1	331
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	781	448			448	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	781	448			448	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	365	613			1118	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	2	448	332
Volume Left	1	0	1
Volume Right	1	0	0
cSH	457	1700	1118
Volume to Capacity	0.00	0.26	0.00
Queue Length 95th (m)	0.1	0.0	0.0
Control Delay (s)	12.9	0.0	0.0
Lane LOS	B		A
Approach Delay (s)	12.9	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	30.7%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	8	33	24	366	264	31
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	36	26	398	287	34
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	754	304	321			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	754	304	321			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	98	95	98			
cM capacity (veh/h)	371	738	1245			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	45	424	321
Volume Left	9	26	0
Volume Right	36	0	34
cSH	619	1245	1700
Volume to Capacity	0.07	0.02	0.19
Queue Length 95th (m)	1.8	0.5	0.0
Control Delay (s)	11.3	0.7	0.0
Lane LOS	B	A	
Approach Delay (s)	11.3	0.7	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	48.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	35	21	151	14	5	217
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	40	24	172	16	6	247
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	438	180			188	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	438	180			188	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	93	97			100	
cM capacity (veh/h)	576	866			1393	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	64	188	252
Volume Left	40	0	6
Volume Right	24	16	0
cSH	659	1700	1393
Volume to Capacity	0.10	0.11	0.00
Queue Length 95th (m)	2.4	0.0	0.1
Control Delay (s)	11.0	0.0	0.2
Lane LOS	B		A
Approach Delay (s)	11.0	0.0	0.2
Approach LOS	B		

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	25.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (veh/h)	9	0	8	29	0	54	9	145	9	13	211	6
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)	10	0	9	32	0	60	10	161	10	14	234	7
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	513	458	238	462	456	166	241			171		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	513	458	238	462	456	166	241			171		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	100	99	94	100	93	99			99		
cM capacity (veh/h)	435	492	804	499	493	881	1331			1412		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	19	92	181	256
Volume Left	10	32	10	14
Volume Right	9	60	10	7
cSH	555	695	1331	1412
Volume to Capacity	0.03	0.13	0.01	0.01
Queue Length 95th (m)	0.8	3.5	0.2	0.2
Control Delay (s)	11.7	11.0	0.5	0.5
Lane LOS	B	B	A	A
Approach Delay (s)	11.7	11.0	0.5	0.5
Approach LOS	B	B		

Intersection Summary			
Average Delay	2.7		
Intersection Capacity Utilization	27.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	38	6	242	36	23	179
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	43	7	275	41	26	203
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	551	295			316	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	551	295			316	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	91	99			98	
cM capacity (veh/h)	487	746			1250	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	50	316	230
Volume Left	43	0	26
Volume Right	7	41	0
cSH	511	1700	1250
Volume to Capacity	0.10	0.19	0.02
Queue Length 95th (m)	2.5	0.0	0.5
Control Delay (s)	12.8	0.0	1.1
Lane LOS	B		A
Approach Delay (s)	12.8	0.0	1.1
Approach LOS	B		

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	38.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (veh/h)	5	0	20	29	0	11	15	225	30	58	162	19
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)	6	0	22	32	0	12	17	250	33	64	180	21
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	632	636	191	642	630	267	201			283		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	632	636	191	642	630	267	201			283		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	100	97	91	100	98	99			95		
cM capacity (veh/h)	370	372	854	361	375	774	1377			1285		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	28	44	300	266
Volume Left	6	32	17	64
Volume Right	22	12	33	21
cSH	677	423	1377	1285
Volume to Capacity	0.04	0.11	0.01	0.05
Queue Length 95th (m)	1.0	2.7	0.3	1.2
Control Delay (s)	10.5	14.5	0.5	2.3
Lane LOS	B	B	A	A
Approach Delay (s)	10.5	14.5	0.5	2.3
Approach LOS	B	B		

Intersection Summary				
Average Delay	2.7			
Intersection Capacity Utilization	43.9%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	35	21	193	14	5	277
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	40	24	219	16	6	315
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	553	227			235	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	553	227			235	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	92	97			100	
cM capacity (veh/h)	493	815			1338	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	64	235	320
Volume Left	40	0	6
Volume Right	24	16	0
cSH	579	1700	1338
Volume to Capacity	0.11	0.14	0.00
Queue Length 95th (m)	2.8	0.0	0.1
Control Delay (s)	12.0	0.0	0.2
Lane LOS	B		A
Approach Delay (s)	12.0	0.0	0.2
Approach LOS	B		

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	28.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Volume (veh/h)	11	0	10	29	0	54	11	185	9	13	269	8
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)	12	0	11	32	0	60	12	206	10	14	299	9
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	627	572	303	578	572	211	308			216		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	627	572	303	578	572	211	308			216		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	97	100	98	92	100	93	99			99		
cM capacity (veh/h)	363	423	739	415	423	832	1259			1360		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	23	92	228	322
Volume Left	12	32	12	14
Volume Right	11	60	10	9
cSH	479	616	1259	1360
Volume to Capacity	0.05	0.15	0.01	0.01
Queue Length 95th (m)	1.2	4.0	0.2	0.2
Control Delay (s)	12.9	11.9	0.5	0.4
Lane LOS	B	B	A	A
Approach Delay (s)	12.9	11.9	0.5	0.4
Approach LOS	B	B		

Intersection Summary				
Average Delay	2.5			
Intersection Capacity Utilization	31.0%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	38	6	309	36	23	228
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	43	7	351	41	26	259
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	683	372			392	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	683	372			392	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	89	99			98	
cM capacity (veh/h)	407	677			1172	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	50	392	285
Volume Left	43	0	26
Volume Right	7	41	0
cSH	431	1700	1172
Volume to Capacity	0.12	0.23	0.02
Queue Length 95th (m)	3.0	0.0	0.5
Control Delay (s)	14.5	0.0	0.9
Lane LOS	B		A
Approach Delay (s)	14.5	0.0	0.9
Approach LOS	B		

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	41.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (veh/h)	6	0	26	29	0	11	19	287	30	58	207	24
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)	7	0	29	32	0	12	21	319	33	64	230	27
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	762	767	243	779	763	336	257			352		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	762	767	243	779	763	336	257			352		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	100	96	89	100	98	98			95		
cM capacity (veh/h)	301	311	798	287	312	709	1314			1212		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	36	44	373	321
Volume Left	7	32	21	64
Volume Right	29	12	33	27
cSH	609	343	1314	1212
Volume to Capacity	0.06	0.13	0.02	0.05
Queue Length 95th (m)	1.4	3.4	0.4	1.3
Control Delay (s)	11.3	17.0	0.6	2.0
Lane LOS	B	C	A	A
Approach Delay (s)	11.3	17.0	0.6	2.0
Approach LOS	B	C		

Intersection Summary				
Average Delay	2.6			
Intersection Capacity Utilization	46.9%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	35	21	246	14	5	354
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	40	24	280	16	6	402
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	701	288			295	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	701	288			295	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	90	97			100	
cM capacity (veh/h)	405	754			1272	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	64	295	408
Volume Left	40	0	6
Volume Right	24	16	0
cSH	490	1700	1272
Volume to Capacity	0.13	0.17	0.00
Queue Length 95th (m)	3.4	0.0	0.1
Control Delay (s)	13.4	0.0	0.2
Lane LOS	B		A
Approach Delay (s)	13.4	0.0	0.2
Approach LOS	B		

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	32.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	14	0	13	29	0	54	14	236	9	13	343	10
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	15	0	14	32	0	59	15	257	10	14	373	11
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	752	703	378	707	704	261	384			266		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	752	703	378	707	704	261	384			266		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	95	100	98	91	100	92	99			99		
cM capacity (veh/h)	298	354	671	338	354	780	1180			1303		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	29	90	15	266	14	384
Volume Left	15	32	15	0	14	0
Volume Right	14	59	0	10	0	11
cSH	406	535	1180	1700	1303	1700
Volume to Capacity	0.07	0.17	0.01	0.16	0.01	0.23
Queue Length 95th (m)	1.8	4.6	0.3	0.0	0.2	0.0
Control Delay (s)	14.5	13.1	8.1	0.0	7.8	0.0
Lane LOS	B	B	A		A	
Approach Delay (s)	14.5	13.1	0.4		0.3	
Approach LOS	B	B				

Intersection Summary				
Average Delay	2.3			
Intersection Capacity Utilization	30.8%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	38	6	394	36	23	291
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	43	7	448	41	26	331
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	851	468			489	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	851	468			489	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	87	99			98	
cM capacity (veh/h)	324	597			1080	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	50	489	357
Volume Left	43	0	26
Volume Right	7	41	0
cSH	345	1700	1080
Volume to Capacity	0.14	0.29	0.02
Queue Length 95th (m)	3.8	0.0	0.6
Control Delay (s)	17.2	0.0	0.9
Lane LOS	C		A
Approach Delay (s)	17.2	0.0	0.9
Approach LOS	C		

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	44.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	8	0	33	29	0	11	24	366	30	58	264	31
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)	9	0	37	32	0	12	27	407	33	64	293	34
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	912	933	311	936	933	423	328			440		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	912	933	311	936	933	423	328			440		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	96	100	95	85	100	98	98			94		
cM capacity (veh/h)	236	247	732	220	246	633	1237			1125		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	46	44	27	440	64	328
Volume Left	9	32	27	0	64	0
Volume Right	37	12	0	33	0	34
cSH	519	268	1237	1700	1125	1700
Volume to Capacity	0.09	0.17	0.02	0.26	0.06	0.19
Queue Length 95th (m)	2.2	4.4	0.5	0.0	1.4	0.0
Control Delay (s)	12.6	21.1	8.0	0.0	8.4	0.0
Lane LOS	B	C	A		A	
Approach Delay (s)	12.6	21.1	0.5		1.4	
Approach LOS	B	C				

Intersection Summary				
Average Delay	2.4			
Intersection Capacity Utilization	41.1%	ICU Level of Service		A
Analysis Period (min)	15			

APPENDIX E

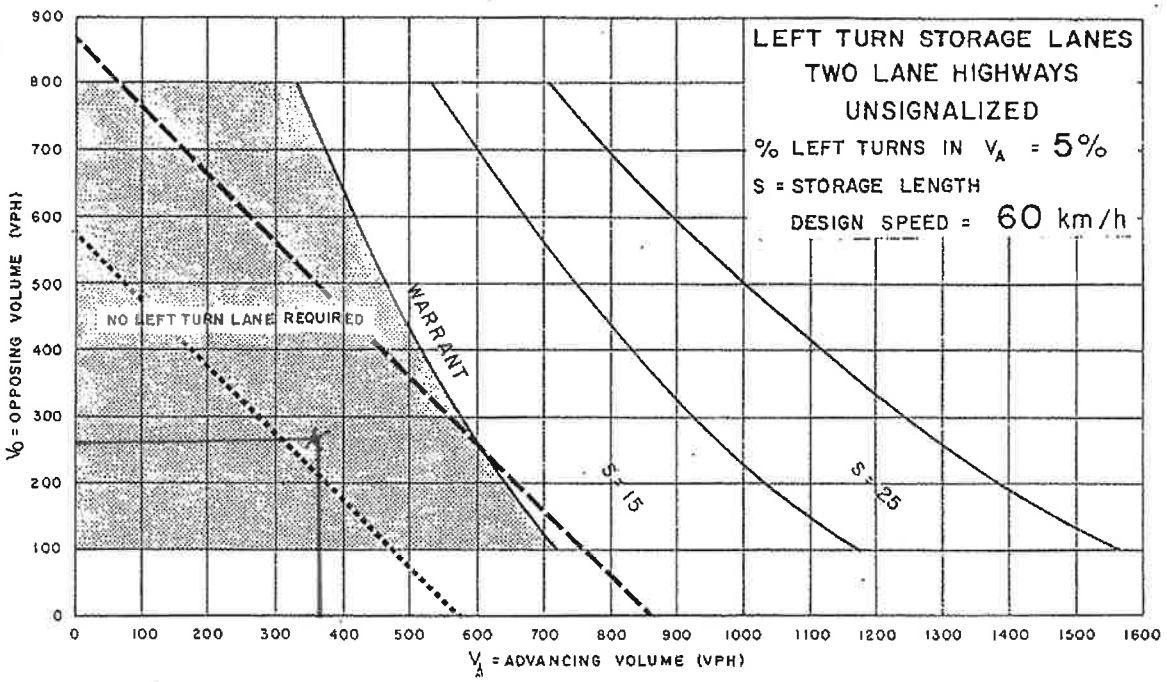
Left Turn Lane Warrants

2028 A.M. @ Birches Blvd. / Ekarenniondi St.

%Lt = 13/366 = 3.5%

V_A = 366

V_O = 259



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

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

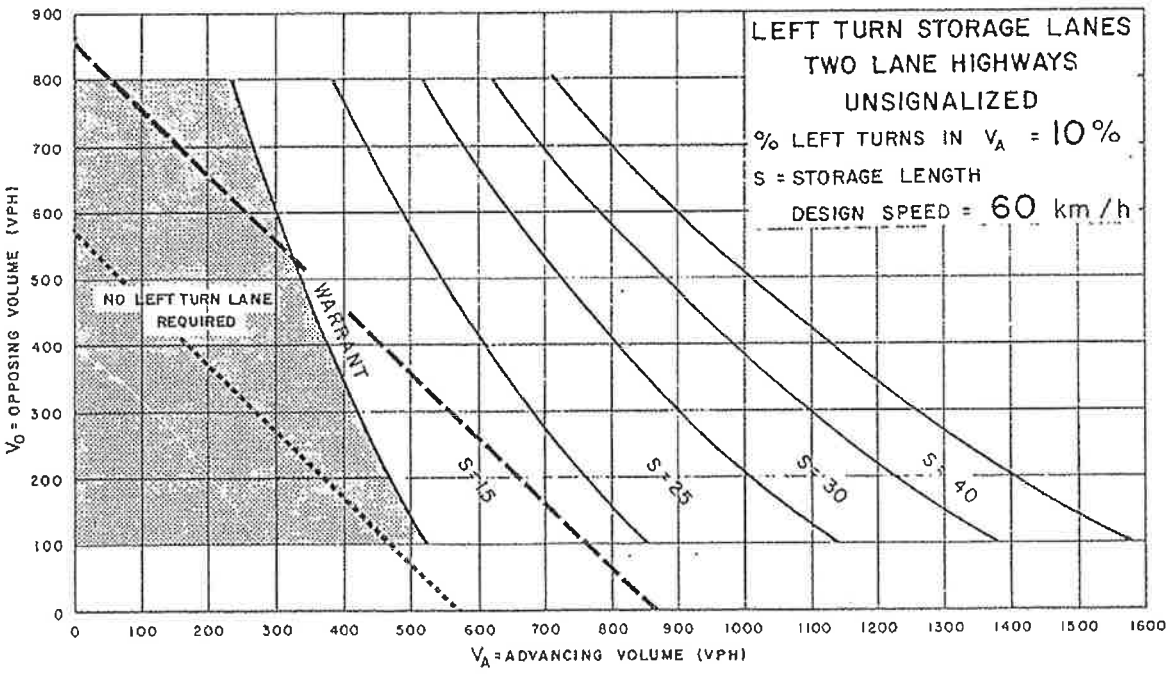


Figure EA-6

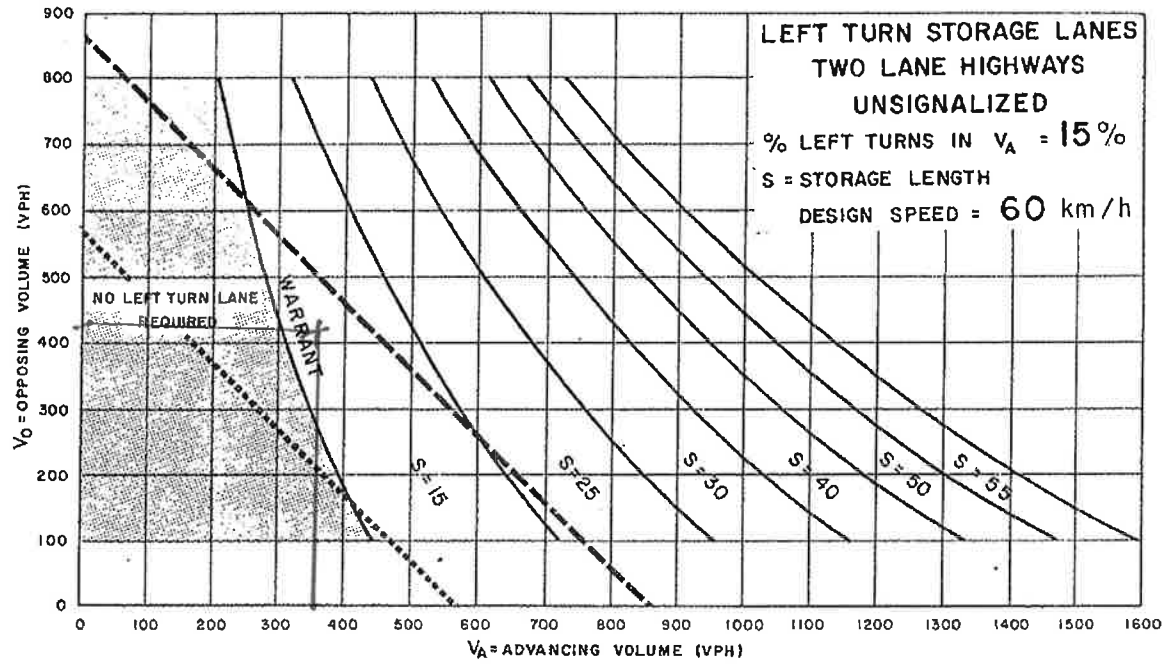
2028 PM @ Birches Blvd / Ekarenniondi St.

%Lt = 58/353 = 16%

Va = 353

Vo = 420

→ S = 15m



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

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

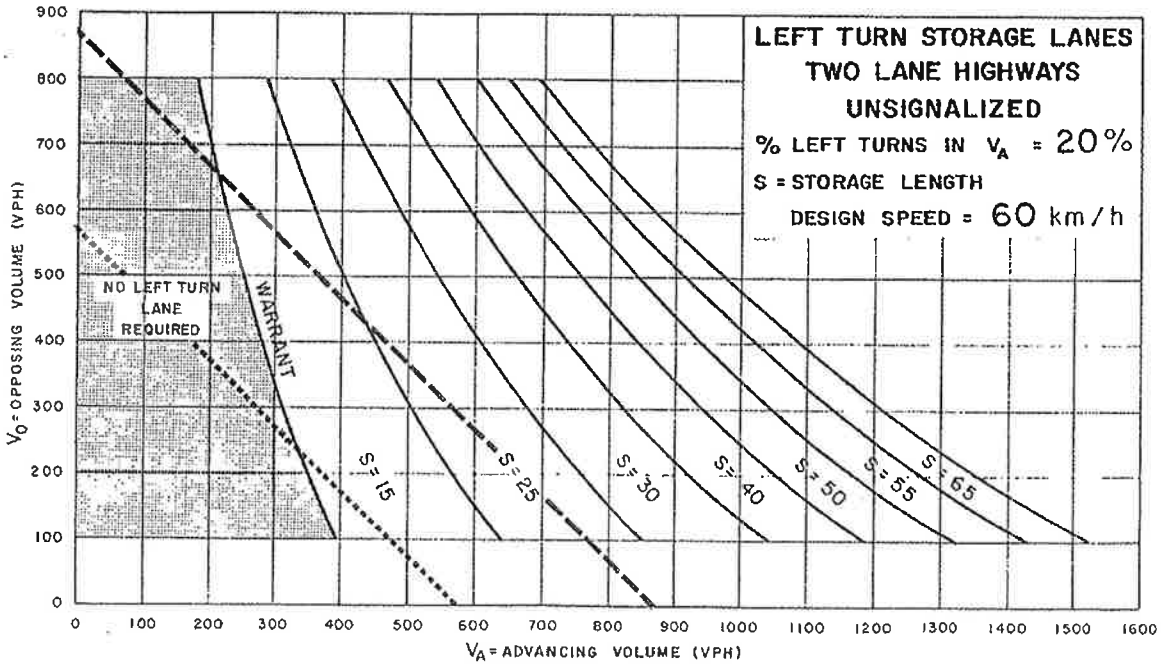
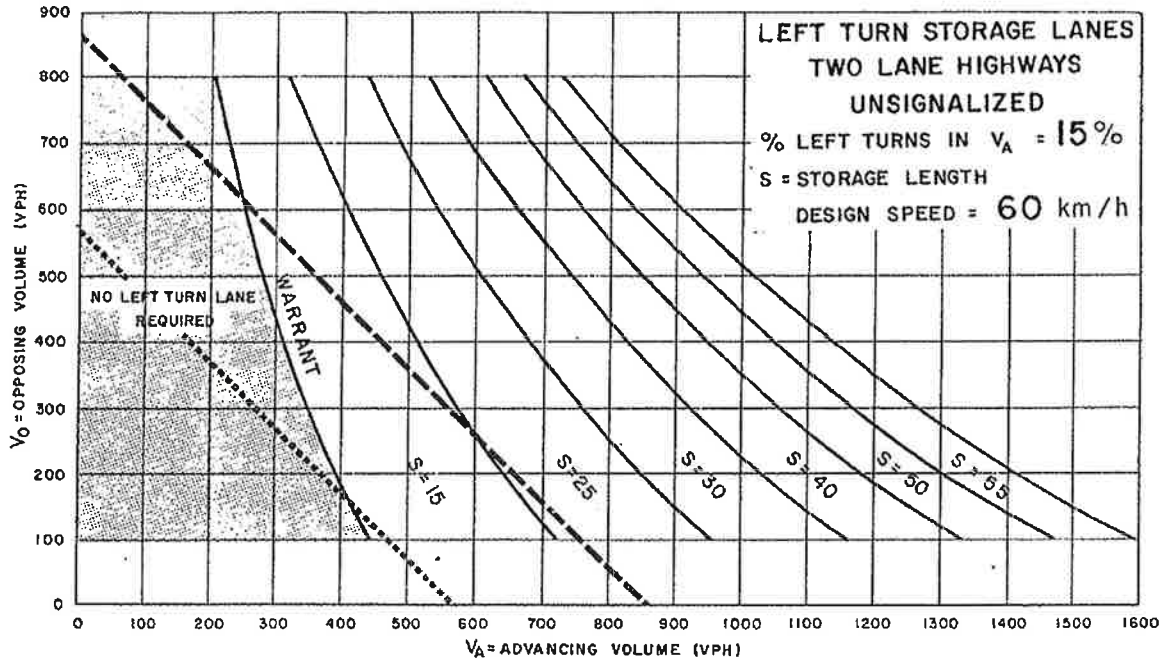


Figure EA-7



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

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

Birches Blvd / Ekarenniondi St.

2023 P.M.

% Lt = 58/289 = 20%

V_A = 289

V_O = 336

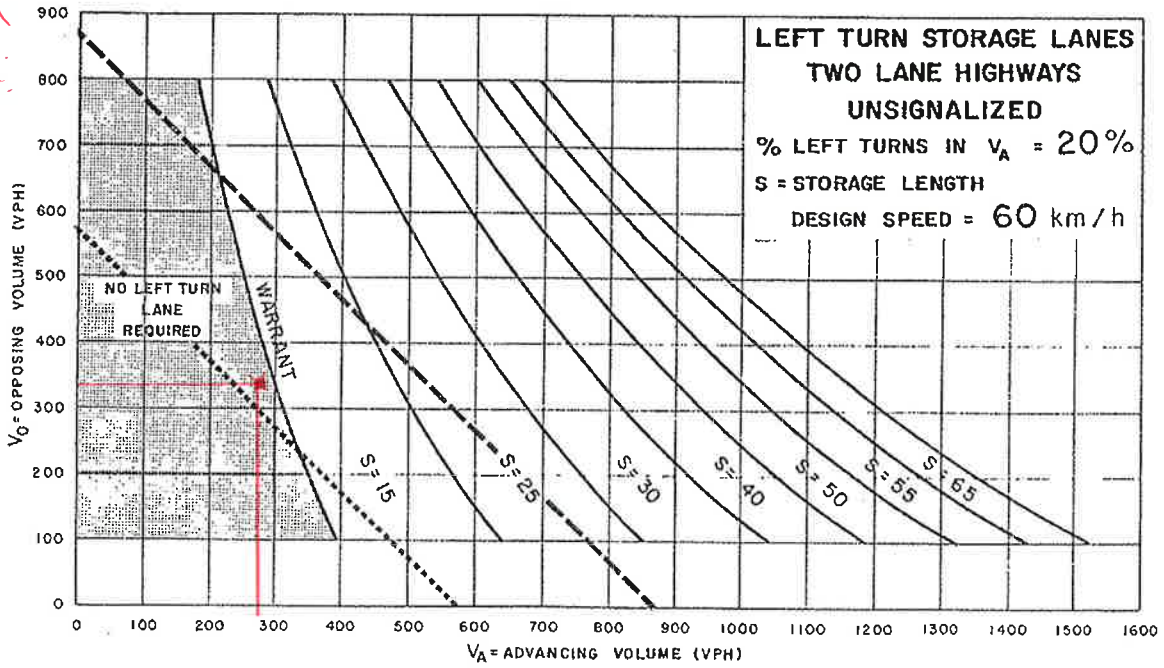


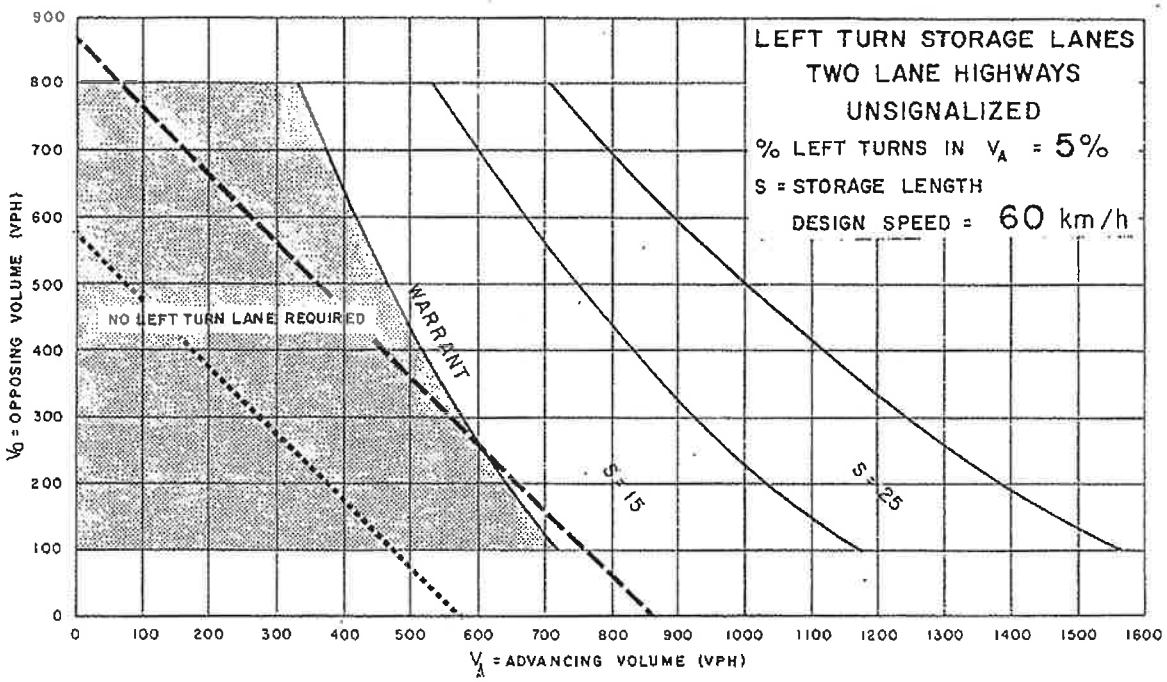
Figure EA-7

2028 AM @ Helen St.

% Lt = 5/359 = 1%

V_A = 359

1% is too low
-> no warrant triggered.



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

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

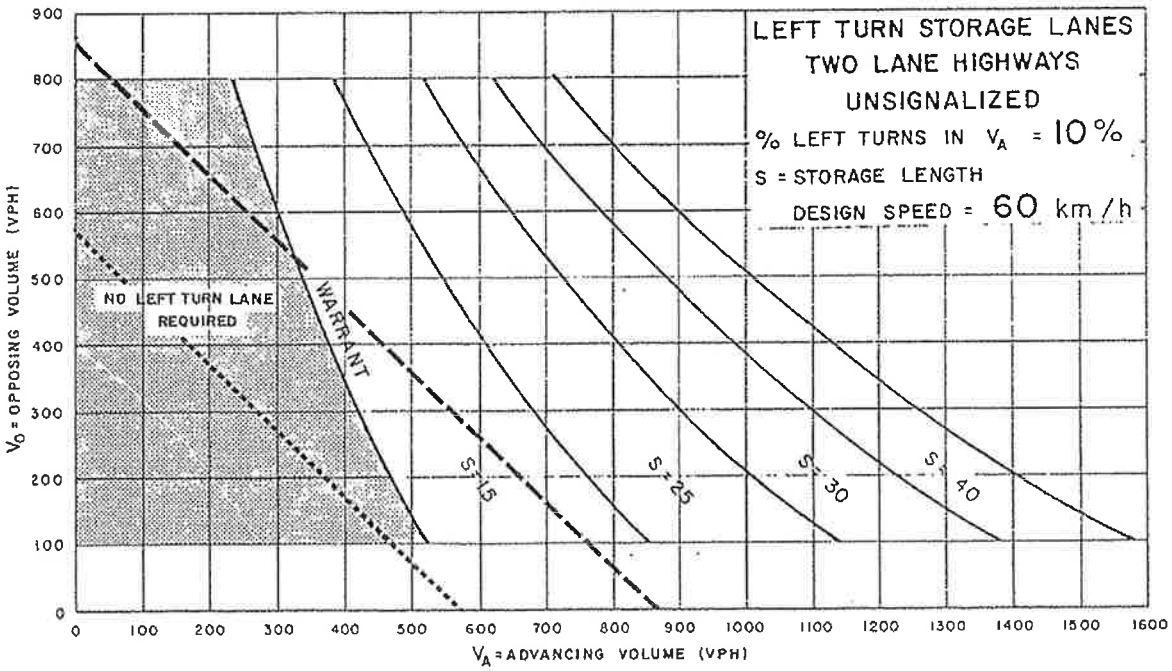


Figure EA-6

2028 P.M. @ Helen St

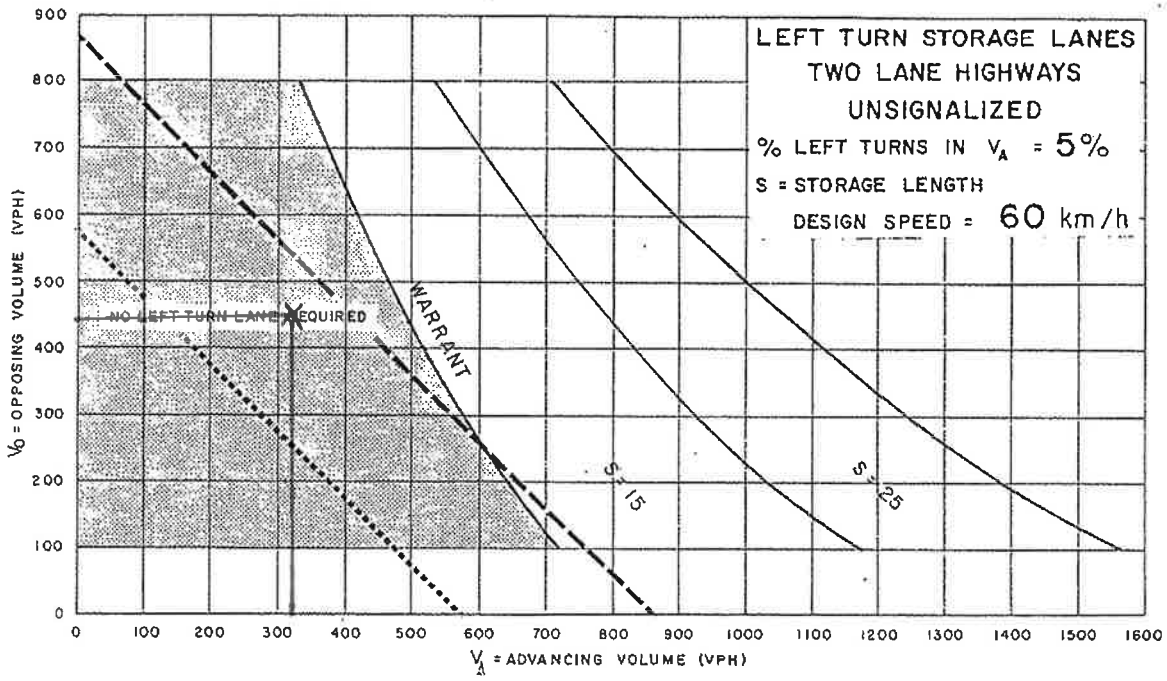
%Lt = 23/314 = 7%

use 5% chart

V_a = 314

V_o = 430

∴ No lane required



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

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

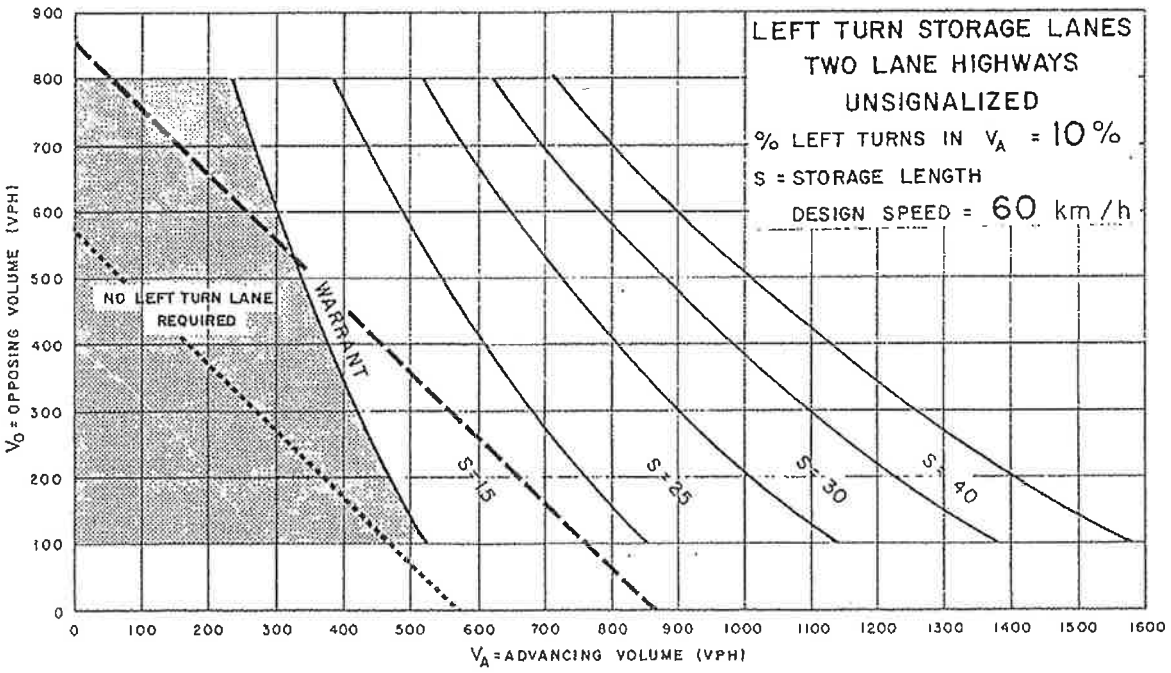
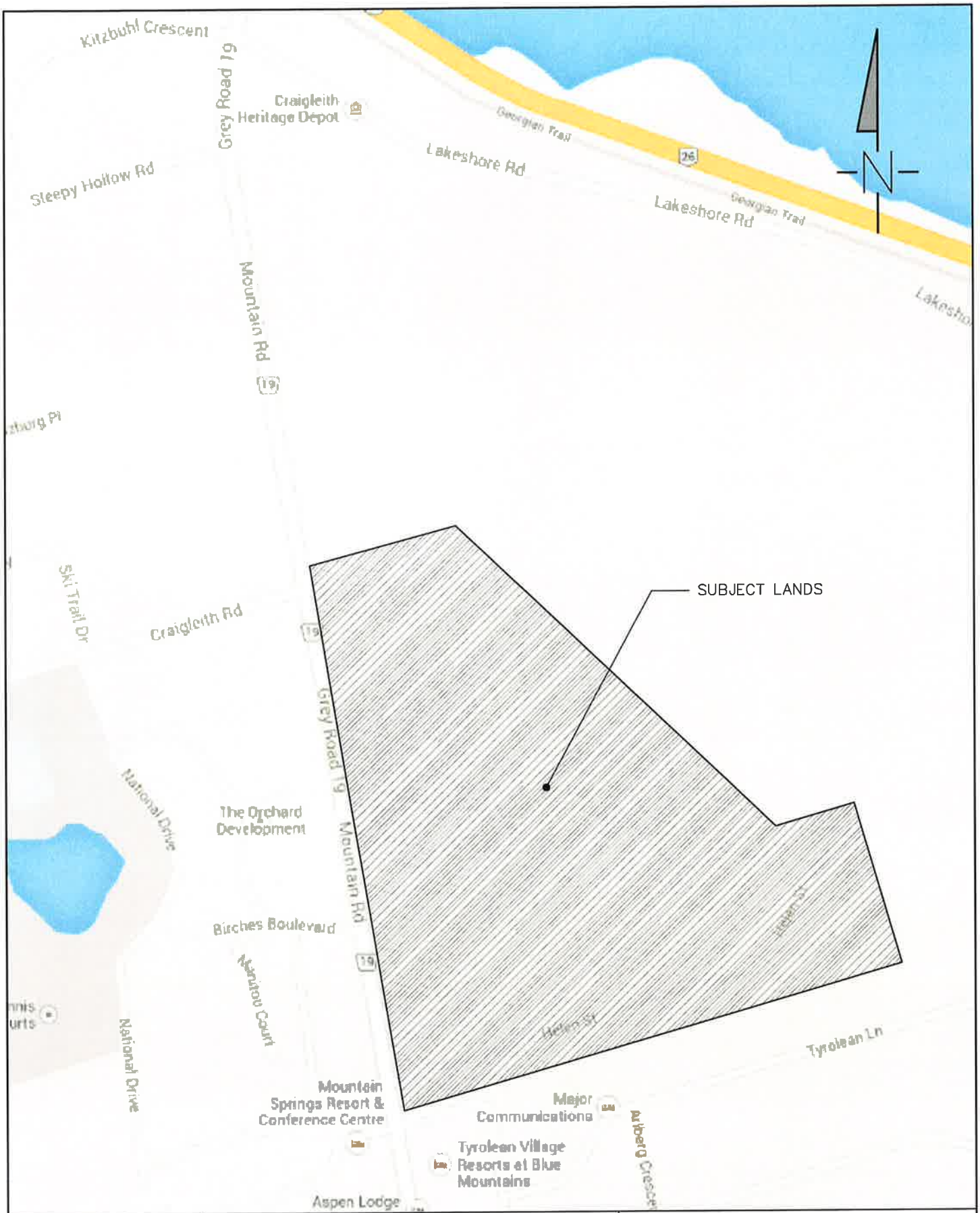


Figure EA-6

FIGURES



Legend

= SUBJECT LANDS

Project

HOME FARM TIS
COUNTY OF GREY

Drawing

SITE LOCATION

CROZIER & ASSOCIATES Consulting Engineers
THE HARBOUREDGE BUILDING,
40 HURON STREET, SUITE 301,
COLLINGWOOD, ON L9Y 4R3
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L.W.	B.R.	721-3464
Scale	Date	Check By	Drawing
N.T.S.	12/17/2013	A.J.F.	FIG. 1

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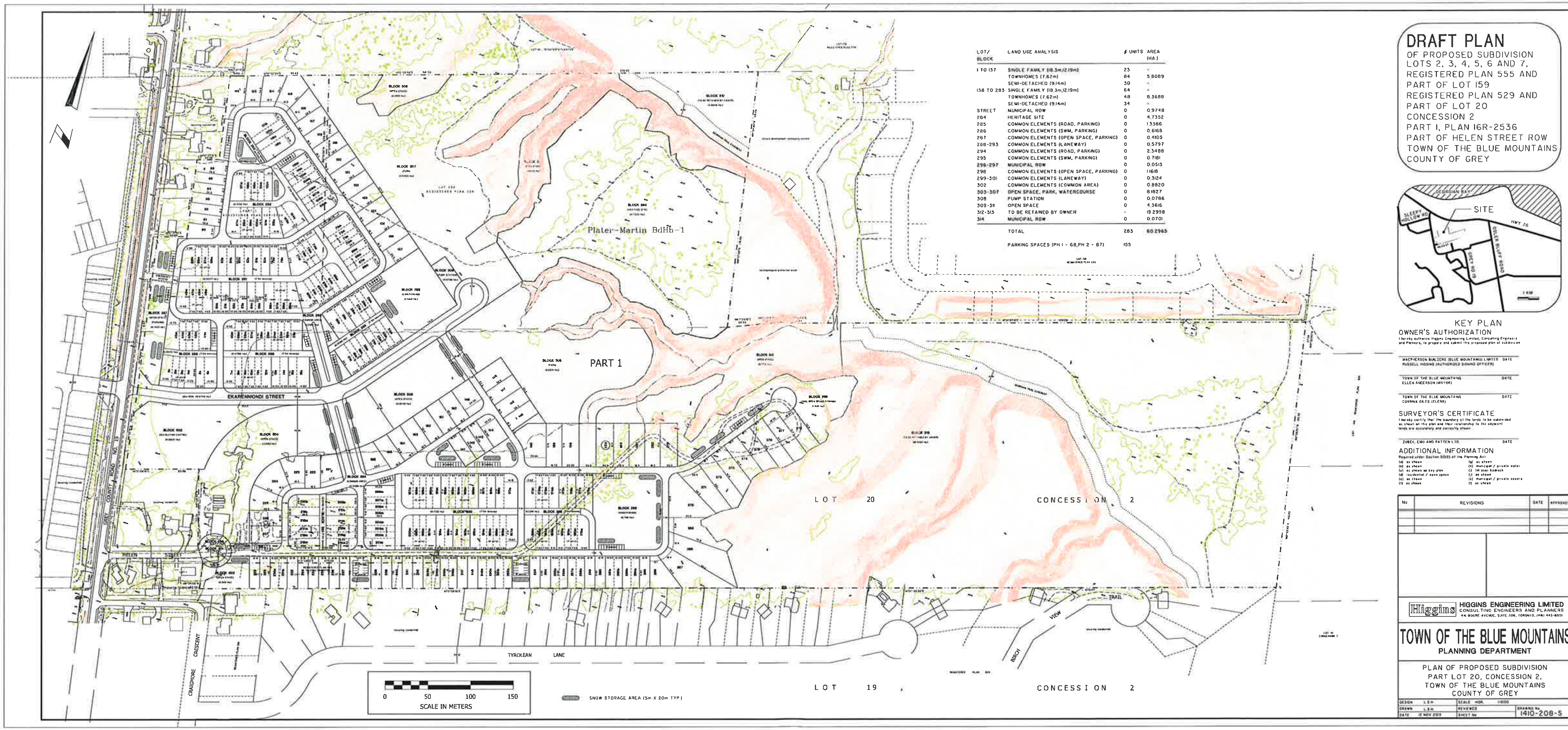
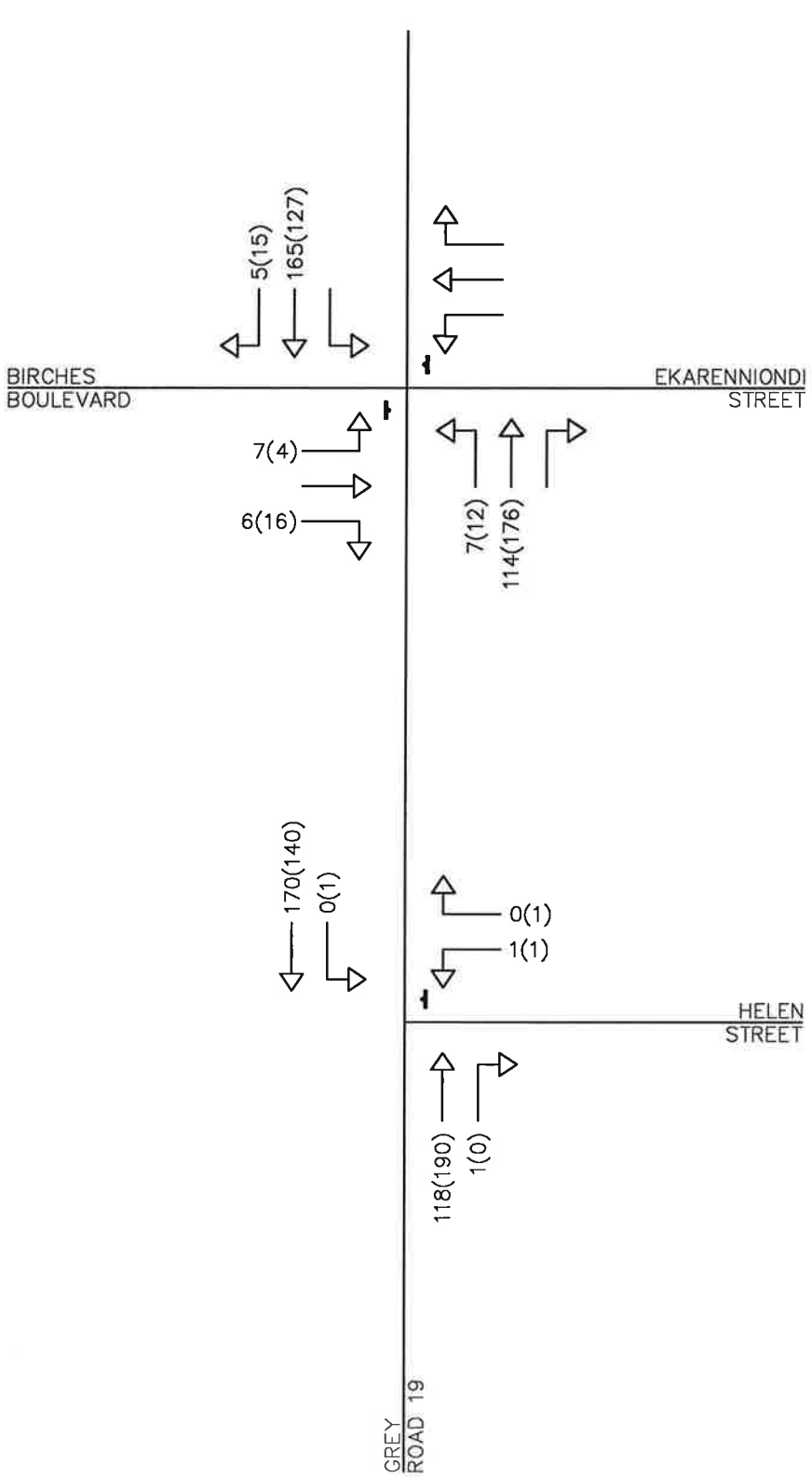

DRAFT PLAN
OF PROPOSED SUBDIVISION
LOTS 2, 3, 4, 5, 6 AND 7,
REGISTERED PLAN 555 AND
PART OF LOT 159
REGISTERED PLAN 529 AND
PART OF LOT 20
CONCESSION 2
PART 1, PLAN 16R-2536
PART OF HELEN STREET ROW
TOWN OF THE BLUE MOUNTAINS
COUNTY OF GREY
SITE
HWY 26
KEY PLAN
OWNER'S AUTHORIZATION
MACPHERSON BUILDERS (BLUE MOUNTAINS) LIMITED
DATE
ELLEN ANDERSON (MAYOR)
TOWN OF THE BLUE MOUNTAINS
CORRINA GILES (CLERK)
SURVEYOR'S CERTIFICATE
ZUBEK, EMO AND PATTEN LTD
ADDITIONAL INFORMATION
No
REVISIONS
HIGGINS ENGINEERING LIMITED
CONSULTING ENGINEERS AND PLANNERS
TOWN OF THE BLUE MOUNTAINS
PLANNING DEPARTMENT
PLAN OF PROPOSED SUBDIVISION
PART LOT 20, CONCESSION 2,
TOWN OF THE BLUE MOUNTAINS
COUNTY OF GREY
1410-208-S
Plater-Martin BdHb-1
PART 1
EKARENNIONDI STREET
HELEN STREET
TYROLEAN LANE
CRAIGMORE CRESCENT
BIRCH VIEW TRAIL
LOT 20
CONCESSION 2
LOT 19
CONCESSION 2
0 50 100 150
SCALE IN METERS
SNOW STORAGE AREA (5m X 20m TYP)

LOT/ BLOCK	LAND USE ANALYSIS	# UNITS	AREA (HA)
1 TO 137	SINGLE FAMILY (18.3m/12.19m)	23	-
	TOWNHOMES (7.62m)	84	5.8089
	SEMI-DETACHED (9.14m)	30	-
138 TO 283	SINGLE FAMILY (18.3m/12.19m)	64	-
	TOWNHOMES (7.62m)	48	8.3688
	SEMI-DETACHED (9.14m)	34	-
STREET	MUNICIPAL ROW	0	0.9748
284	HERITAGE SITE	0	4.7352
285	COMMON ELEMENTS (ROAD, PARKING)	0	1.3386
286	COMMON ELEMENTS (SWM, PARKING)	0	0.6168
287	COMMON ELEMENTS (OPEN SPACE, PARKING)	0	0.4105
288-293	COMMON ELEMENTS (LANEWAY)	0	0.5797
294	COMMON ELEMENTS (ROAD, PARKING)	0	2.3488
295	COMMON ELEMENTS (SWM, PARKING)	0	0.7181
296-297	MUNICIPAL ROW	0	0.0513
298	COMMON ELEMENTS (OPEN SPACE, PARKING)	0	1.1618
299-301	COMMON ELEMENTS (LANEWAY)	0	0.3124
302	COMMON ELEMENTS (COMMON AREA)	0	0.8820
303-307	OPEN SPACE, PARK, WATERCOURSE	0	8.1827
308	PUMP STATION	0	0.0786
309-311	OPEN SPACE	0	4.3616
312-313	TO BE RETAINED BY OWNER	-	19.2958
314	MUNICIPAL ROW	0	0.0701
	TOTAL	283	60.2965
	PARKING SPACES (PH 1 - 68, PH 2 - 87)	155	

FIGURE 2



NOTE:
1. ROUNDING OF TRAFFIC VOLUME CALCULATIONS MAY RESULT IN SLIGHT DIFFERENCES IN VOLUMES SHOWN.
2. DRAWING IS FOR SCHEMATIC PURPOSES ONLY AND IS NOT TO BE SCALED.

Legend
- STOP CONTROL
- SIGNAL CONTROL
- XX(YY) A.M. (P.M.) PEAK HOUR TRAFFIC VOLUMES

Project: HOME FARM TIS
COUNTY OF GREY

Drawing: 2013 EXISTING
TRAFFIC VOLUMES

CROZIER & ASSOCIATES Consulting Engineers
The HarbourEdge Building,
40 Huron Street, Suite 301,
Collingwood, ON L9Y 4R3
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Drawn By	Design By	Project	Scale	Date	Check By	Drawing
L.W.	B.R.	721-3464	N.T.S.	12/17/2013	A.J.F.	FIG. 3

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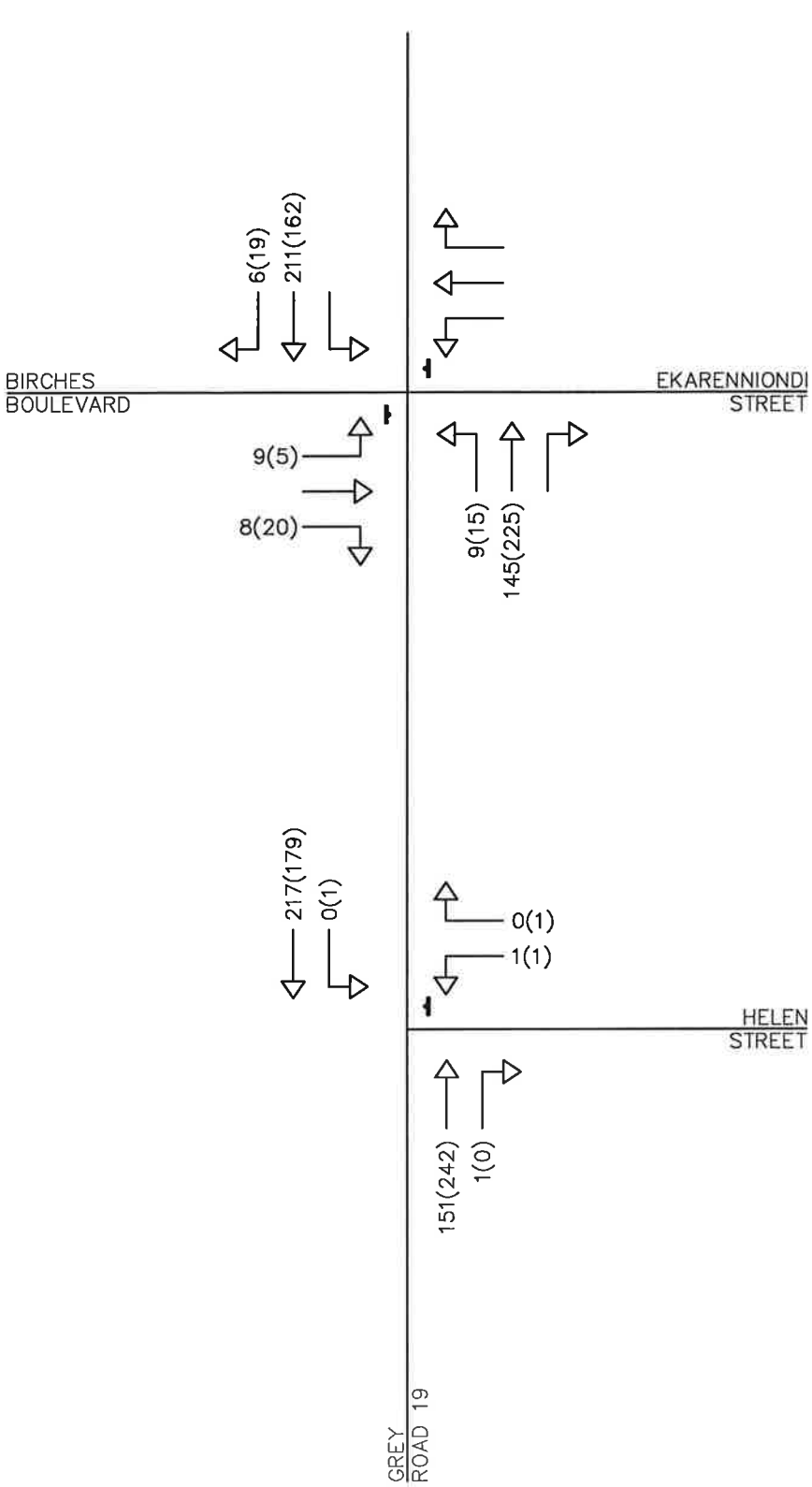

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Legend
- STOP CONTROL
- SIGNAL CONTROL
- XX(YY) A.M. (P.M.) PEAK HOUR TRAFFIC VOLUMES

Project: HOME FARM TIS
COUNTY OF GREY

Drawing: 2018 FUTURE BACKGROUND TRAFFIC VOLUMES

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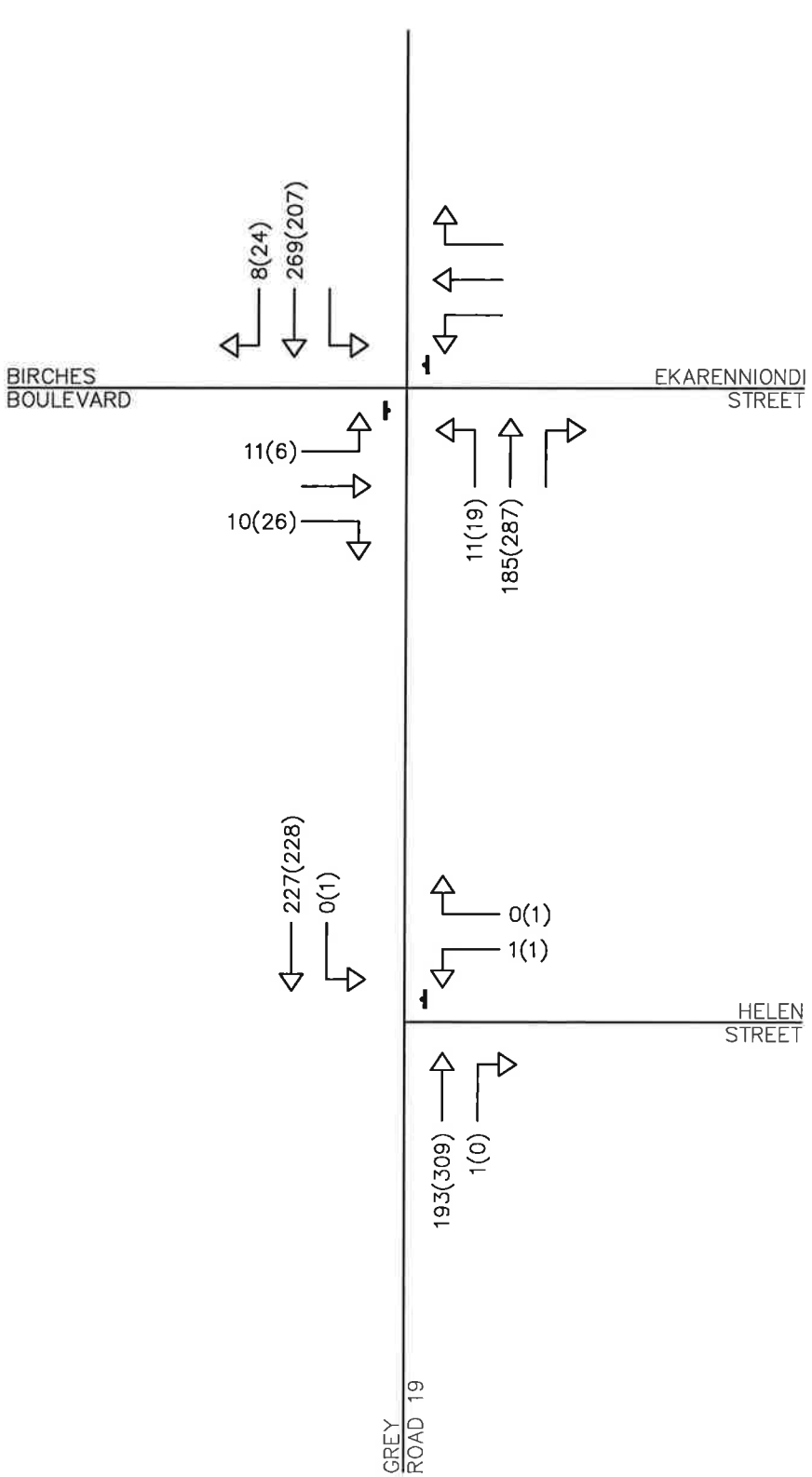
Drawn By	Design By	Project	Scale	Date	Check By	Drawing
L.W.	B.R.	721-3464	N.T.S.	12/17/2013	A.J.F.	FIG. 4



NOTE:
1. ROUNDING OF TRAFFIC VOLUME CALCULATIONS MAY RESULT IN SLIGHT DIFFERENCES IN VOLUMES SHOWN.
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Legend
- STOP CONTROL
- SIGNAL CONTROL
- XX(YY) A.M. (P.M.) PEAK HOUR TRAFFIC VOLUMES

Project: HOME FARM TIS
COUNTY OF GREY

Drawing: 2023 FUTURE BACKGROUND TRAFFIC VOLUMES

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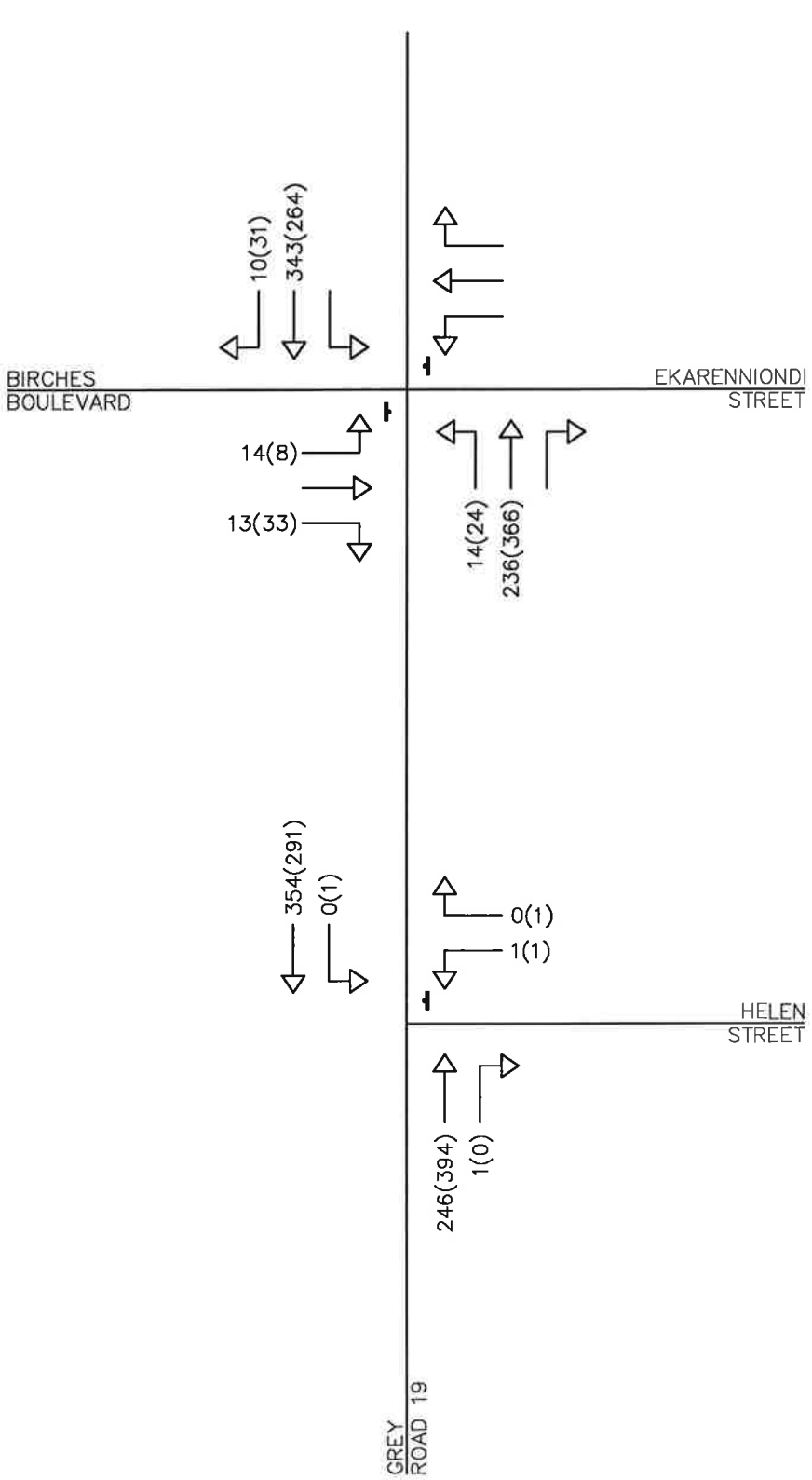
Drawn By	Design By	Project	Scale	Date	Check By	Drawing
L.W.	B.R.	721-3464	N.T.S.	12/17/2013	A.J.F.	FIG. 5



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Legend
- STOP CONTROL
- SIGNAL CONTROL
- XX(YY) A.M. (P.M.) PEAK HOUR TRAFFIC VOLUMES

Project: HOME FARM TIS
COUNTY OF GREY

Drawing: 2028 FUTURE BACKGROUND TRAFFIC VOLUMES

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L.W.	B.R.	721-3464	N.T.S.	12/17/2013	A.J.F.	FIG. 6

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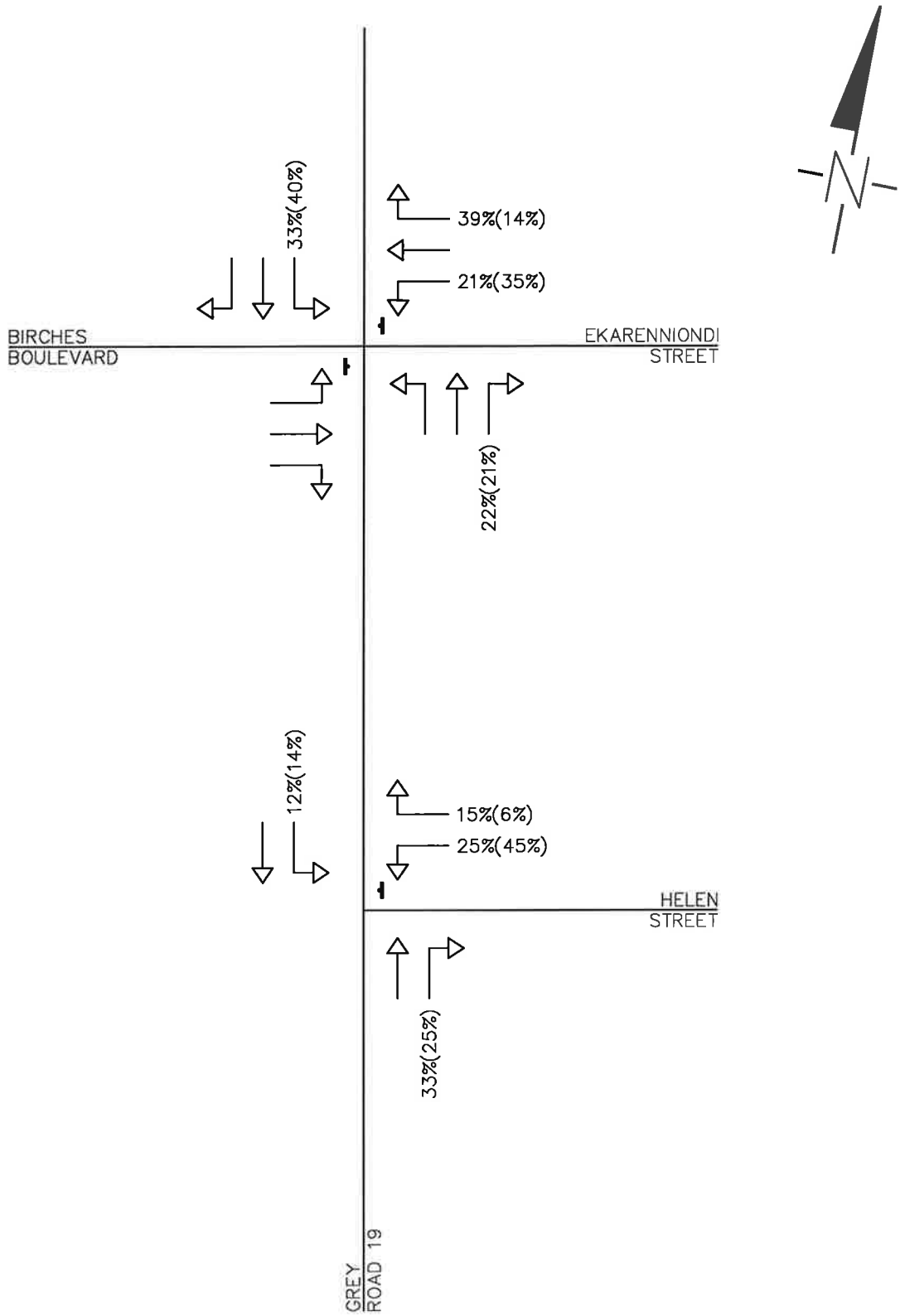

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Legend
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- XX(YY) A.M. (P.M.) PEAK HOUR TRAFFIC VOLUMES

Project: HOME FARM TIS
COUNTY OF GREY

Drawing: TRIP DISTRIBUTION

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L.W.	B.R.	721-3464

Scale	Date	Check By	Drawing
N.T.S.	12/17/2013	A.J.F.	FIG. 7

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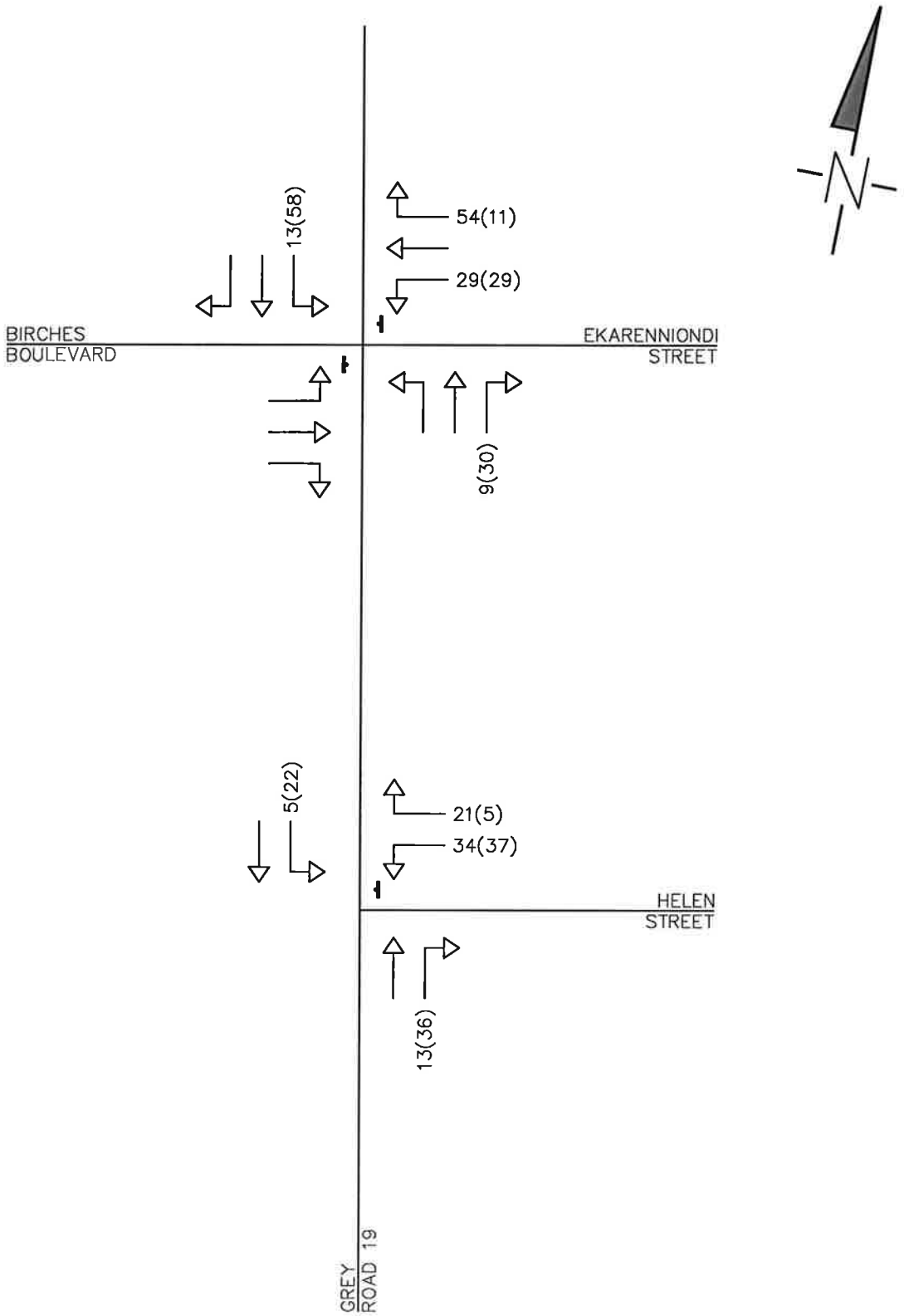

NOTE:
1. ROUNDING OF TRAFFIC VOLUME CALCULATIONS MAY RESULT IN SLIGHT DIFFERENCES IN VOLUMES SHOWN.
2. DRAWING IS FOR SCHEMATIC PURPOSES ONLY AND IS NOT TO BE SCALED.

Legend
- STOP CONTROL
- SIGNAL CONTROL
- XX(YY) A.M. (P.M.) PEAK HOUR TRAFFIC VOLUMES

Project: HOME FARM TIS
COUNTY OF GREY

Drawing: TRIP ASSIGNMENT

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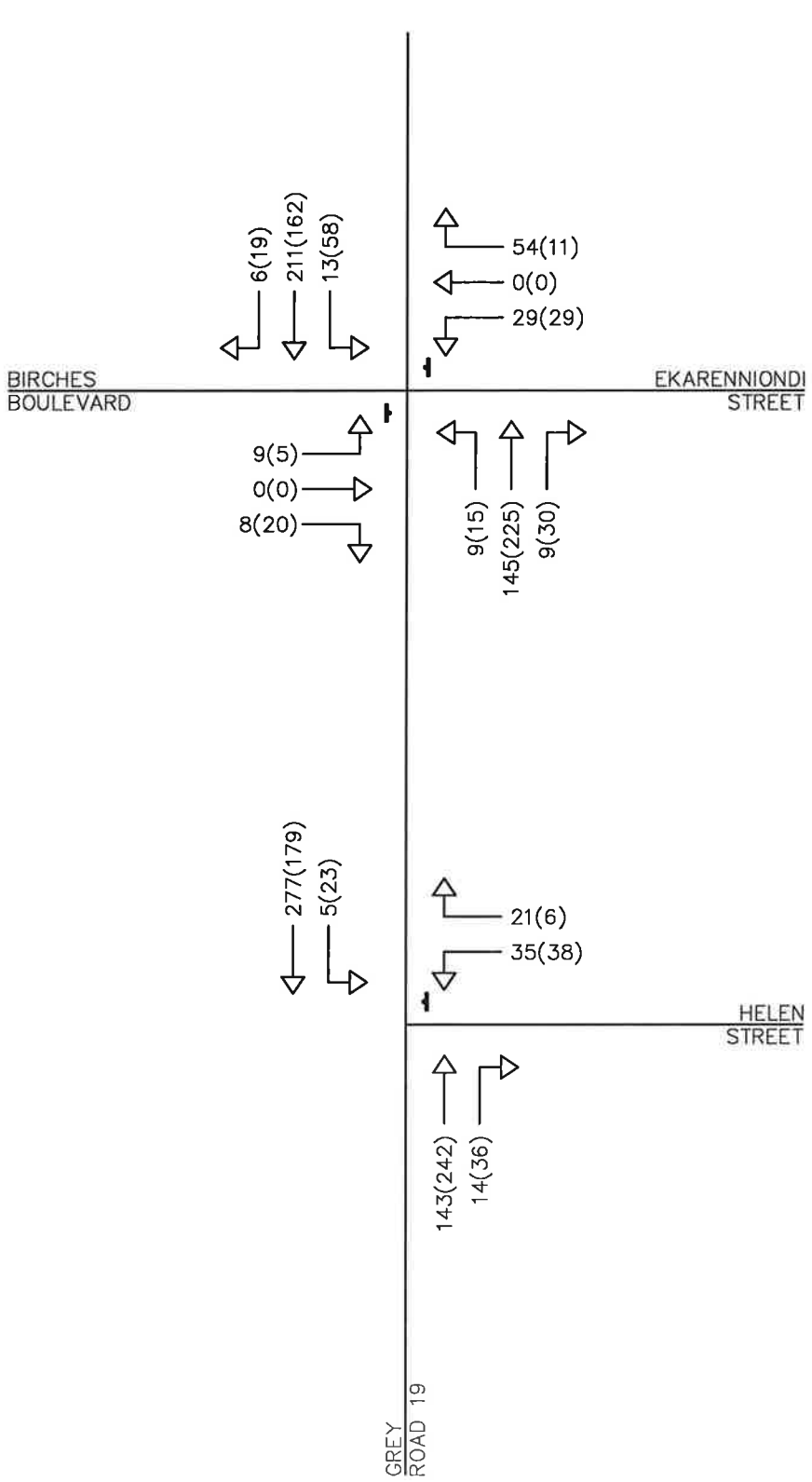
Drawn By	Design By	Project
L.W.	B.R.	721-3464

Scale	Date	Check By	Drawing
N.T.S.	12/17/2013	A.J.F.	FIG. 8

J:\700\721 - MacPherson Builders\3464 - Home Farm TIS\CAD\3464_300-3xx.dwg, 308, 12/18/2013 11:32:55 AM, lwaters



NOTE:
1. ROUNDING OF TRAFFIC VOLUME CALCULATIONS MAY RESULT IN SLIGHT DIFFERENCES IN VOLUMES SHOWN.
2. DRAWING IS FOR SCHEMATIC PURPOSES ONLY AND IS NOT TO BE SCALED.

Legend
- STOP CONTROL
- SIGNAL CONTROL
- XX(YY) A.M. (P.M.) PEAK HOUR TRAFFIC VOLUMES

Project: HOME FARM TIS
COUNTY OF GREY

Drawing: 2018 TOTAL TRIP DISTRIBUTION

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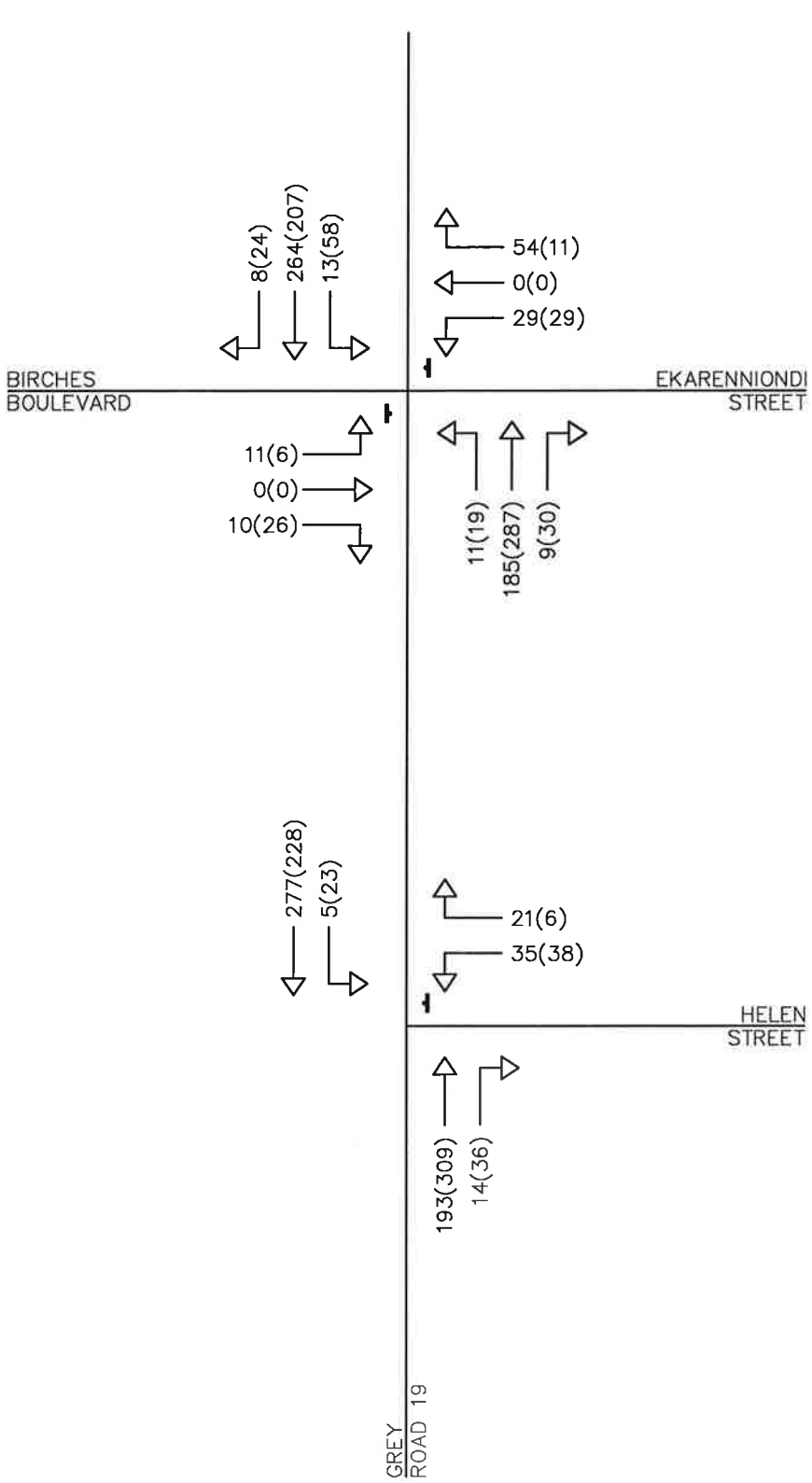
L.W.	B.R.	721-3464	N.T.S.	12/17/2013	A.J.F.	FIG. 9

J:\700\721 - MacPherson Builders\3464 - Home Farm TIS\CAD\3464_300-3xx.dwg, 309, 12/18/2013 11:33:00 AM, lwaters



NOTE:
1. ROUNDING OF TRAFFIC VOLUME CALCULATIONS MAY RESULT IN SLIGHT DIFFERENCES IN VOLUMES SHOWN.
2. DRAWING IS FOR SCHEMATIC PURPOSES ONLY AND IS NOT TO BE SCALED.

Legend
- STOP CONTROL
- SIGNAL CONTROL
- XX(YY) A.M. (P.M.) PEAK HOUR TRAFFIC VOLUMES

Project: HOME FARM TIS
COUNTY OF GREY

Drawing: 2023 TOTAL TRIP DISTRIBUTION

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Drawn By	Design By	Project	Scale	Date	Check By	Drawing
L.W.	B.R.	721-3464	N.T.S.	12/17/2013	A.J.F.	FIG. 10

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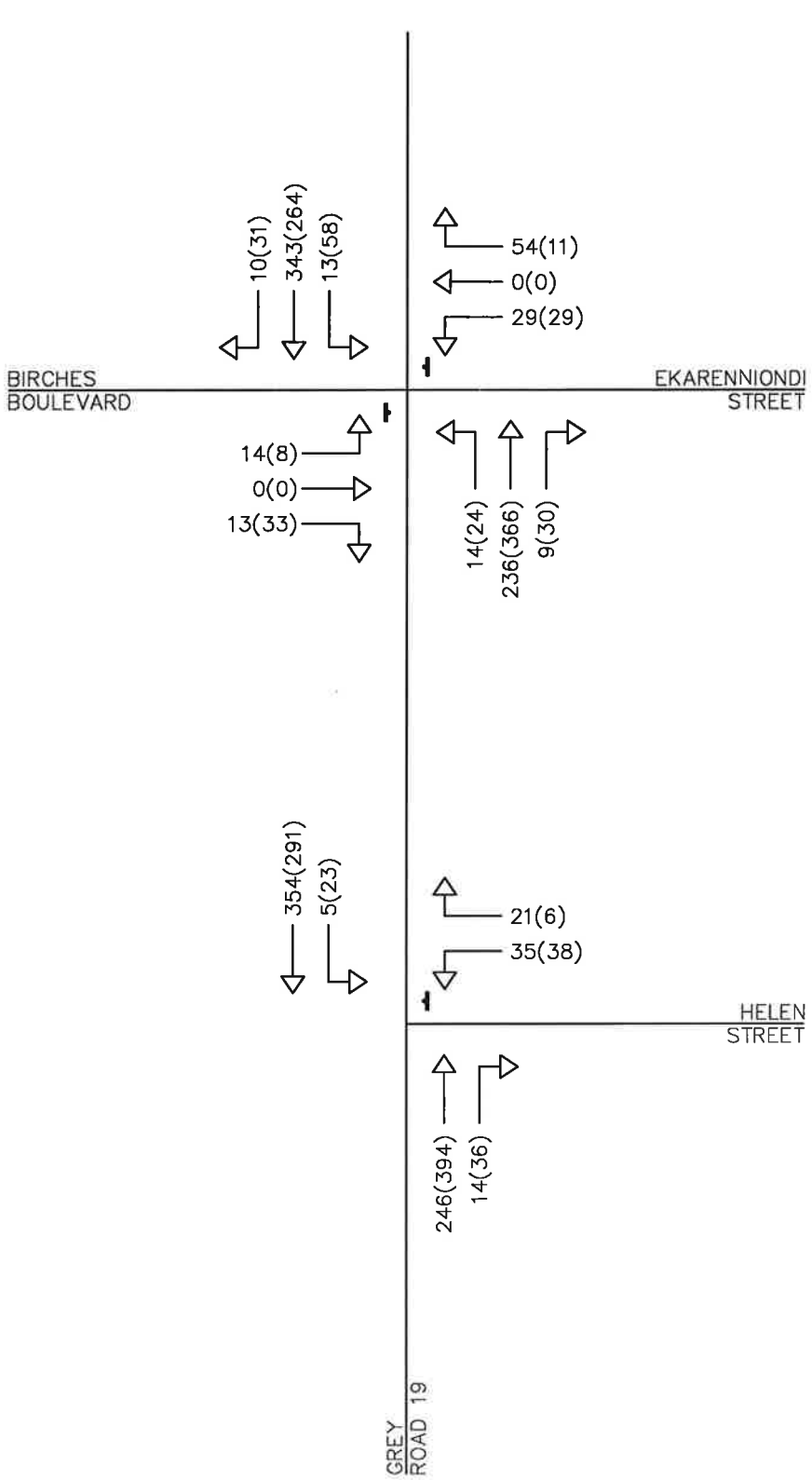

NOTE:
1. ROUNDING OF TRAFFIC VOLUME CALCULATIONS MAY RESULT IN SLIGHT DIFFERENCES IN VOLUMES SHOWN.
2. DRAWING IS FOR SCHEMATIC PURPOSES ONLY AND IS NOT TO BE SCALED.

Legend
- STOP CONTROL
- SIGNAL CONTROL
- XX(YY) A.M. (P.M.) PEAK HOUR TRAFFIC VOLUMES

Project: HOME FARM TIS
COUNTY OF GREY

Drawing: 2028 TOTAL FUTURE TRAFFIC VOLUMES

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Drawn By	Design By	Project
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Scale	Date	Check By	Drawing
N.T.S.	12/17/2013	A.J.F.	FIG. 11

J:\700\721 - MacPherson Builders\3464 - Home Farm TIS\CAD\3464_300-3xx.dwg, 311, 12/18/2013 11:33:10 AM, lwaters