



C.C. Tatham & Associates Ltd.

Consulting Engineers

Collingwood Bracebridge Orillia Barrie Ottawa

115 Sandford Fleming Drive, Suite 200
Collingwood, Ontario L9Y 5A6
Tel: (705) 444-2565
Fax: (705) 444-2327
Email: info@cctatham.com
Web: www.cctatham.com

October 20, 2017

via email (paulm@skylineinvestments.com)
CCTA File 115185

Paul Mondell

Senior Vice President, Development
Skyline Investments
90 Eglinton Avenue East, Suite 800
Toronto, ON M4P 2Y3

**Re: Monterra Phase 2, Town of The Blue Mountains
Traffic Brief**

Dear Paul:

As requested, we have reviewed the proposed Monterra Phase 2 residential development from a transportation perspective, addressing the site access, site traffic volumes, parking, the proposed internal road system and the potential impacts to the adjacent road system.

Site Location

The development site is located on the southwest corner of the intersection of Grey Road 21 and Monterra Road in the Town of The Blue Mountains (as illustrated in Figure 1). The property is bordered by Grey Road 21 to the east, Monterra Road to the north and the Monterra Golf Course to the south and west.

Existing Conditions

Road Network

The area under consideration includes Grey Road 21 and Monterra Road. The area road system in context of the proposed development is evident in Figure 2.

Grey Road 21 is a County road with a 2-lane rural cross section, including paved shoulders and open roadside ditches on both sides. The speed limit is posted at 60 km/h and hence a design speed of 70 km/h has been assumed (10 km/h over the posted speed for lower volume roads). The alignment of Grey Road 21 is relatively straight and flat in the area of Monterra Road. As an arterial road, Grey Road 21 has an assumed planning capacity of 800 vehicles per hour per lane (vphpl).

Monterra Road is a major collector road, as designated by the Town of The Blue Mountains *Official Plan* (Schedule B-1 Transportation). It has a 2-lane rural cross-section, providing 1 lane per direction with gravel shoulders and open roadside ditches. Similar to Grey Road 21, Monterra Road has a 60 km/h posted speed limit, with a straight and flat alignment in the area of the development. Monterra Road has an assumed planning capacity of 600 vphpl, reflective of its major collector designation.

The intersection of Grey Road 21 and Monterra Road is a 3-leg intersection, stop controlled on Monterra Road. Each leg provides for a single approach lane and a single departure lane.

Traffic Volumes

Given the scope of this assignment, no new traffic counts were undertaken to establish existing volumes on the area road system. Rather, volumes were determined from secondary sources.

Traffic volumes on Grey Road 21 were obtained from several traffic counts completed at the intersection of Grey Road 21 with Grey Road 19, as noted in Table 1. The counts completed in January, February and March reflect winter volumes, which are considered the peak traffic conditions given the seasonal nature of Blue Mountain. The counts were completed on a Friday and/or a Saturday in order to observe the peak weekday and peak weekend conditions of the surrounding area (Friday is considered the busiest weekday, whereas Saturday is the busiest weekend day). To capture the turnover relating to the end of day skiing and beginning of night skiing (which occurs at 16:30), and to capture typical winter peak operations, the counts were typically completed from 15:30 to 18:30. The August count reflects peak summer conditions, reflective of a Friday afternoon.

The corresponding peak hour volumes on Grey Road 21, as recorded immediately north of Grey Road 19, is provided in Table 1, whereas additional count details are provided in Appendix A.

Table 1: Grey Road 21 Traffic Volumes

Date of Count	Season	Friday PM Peak Hour		Saturday Peak Hour	
		NB	SB	NB	SB
Friday, August 18, 2017	summer	282	185	-	-
Saturday, March 18, 2017	winter	-	-	141	168
Saturday, March 1, 2014	winter	-	-	225	259
Friday February 28, 2014	winter	145	148	-	-
Saturday January 29, 2011	winter	-	-	243	253
Friday January 28, 2011	winter	157	179	-	-

As per the counts, the peak hour volumes on Grey Road 21 ranged from 140 to 280 vehicles per hour per lane, all of which can be readily accommodated given the assumed planning capacity of 800 vphpl.

For Monterra Road, traffic volumes were determined from the Town of Blue Mountains *Road Needs Study*, completed in 2013. An average annual daily traffic (AADT) volume of 1181 was noted, which suggests a peak hour volume of approximately 118 to 177 vehicles per hour (based on 10 to 15% of the daily volumes occurring in the peak hour). In comparison to the assumed capacity of Monterra Road (600 vphpl), the noted volumes are significantly less (recognizing that the volumes reflect a total of both directions of travel). While it is acknowledged that the noted volumes reflect average data (summer and winter volumes are likely greater) and that some growth has likely been realized since 2013, there is considerable reserve capacity to accommodate any further increases (ie. even if 2017 volumes are somewhat greater, they can be accommodated).

Traffic Operations

In context of the noted volumes and road capacities, there are no traffic operational issues on the road system. While the operations of the Monterra Road/Grey Road 21 intersection were not specifically addressed, such is not considered critical given the traffic volumes, the 3-leg configuration and existing intersection control (stop control on Monterra Road).

Proposed Development

Concept Development Plan & Site Access

The proposed development will consist of 32 single family detached homes, with the following breakdown (as illustrated in Figure 3):

- 2 units (Lots 1 and 2) will have direct driveway access to Grey Road 21;
- 8 units (Lots 3 to 10) will be accessed via a cul-de-sac street connecting to Grey Road 21; and
- 22 units (Lots 11 to 32) will be accessed via a cul-de-sac street connecting to Monterra Road.

Given the existing watercourse which bisects the site, the proposed road system will be discontinuous, and thus the need for the cul-de-sacs.

Site Access Review

The access via Monterra Road will be located approximately 240 metres west of the Monterra Road/Grey Road 21 intersection (measured centre of access to centre of intersection) whereas the Grey Road 21 access will be 290 metres south of the intersection (and 130 metres north of the Grand Cypress Lane/Grey Road 21 intersection). While 300 to 400 metres is typically desired between intersections, this is to permit the signalization of each and consideration for left turn lanes at each, without concern for overlap. As there are neither left turns nor traffic signals at the Monterra Road/Grey Road 21 intersection, and nor would such be required at the site access intersections given the limited traffic volumes, this desired spacing is not critical and thus the proposed spacing is considered appropriate.

As illustrated in Figure 4, the lot line between Lots 1 and 2 is approximately 65 metres north of Grand Cypress Lane and 65 metres south of the proposed Grey Road 21 site access intersection (measured to the centre of the intersection). To maximize the separation distance from the adjacent intersections, the driveways to Lots 1 and 2 are expected to be positioned towards the north and south limits of the respective lots. In this regard, the Lot 1 driveway would be in the order of 60 metres north of Grand Cypress Lane (centre to centre) and the Lot 2 driveway would be in the order of 60 metres south of the proposed site access to Grey Road 21.

The Transportation Association of Canada (TAC) provides guidance for intersection/driveway spacing (excerpts provided in Appendix B). In context of the arterial road classification of Grey Road 21, the TAC guidelines suggest a minimum spacing of 35 metres, measured from edge of driveway to the edge of the road (and thus approximately 42 metres centre to centre assuming a 6-metre driveway and a 9-metre road). As such, the anticipated spacing of 60 metres complies with the TAC guidelines.

Internal Road Review

The site access roads will be constructed to comply with Town standards for a rural road, complete with cul-de-sacs having a 15 metre curb radius (also as per Town standard). Both roads will operate under stop control at the boundary road intersection, with single inbound and outbound lanes. Upon approach to the boundary roads, both roads will have horizontal curves to ensure their alignment at 90 degrees (or as close to as possible) to the boundary road. In context of the expected traffic volumes, limited nature of the roads (likely to be used by those associated with the residents front them), vehicle speeds and types of vehicles accessing the site (predominantly passenger cars), the alignments and configurations are considered appropriate.

Parking Review

The associated parking requirements will be satisfied through the provision of driveway and garage parking specific to each unit.

Site Generated Trips

The number of vehicle trips to be generated by the proposed residential townhouse development has been determined based on the development size, land use and trip generation rates provided in the *ITE Trip Generation Manual, 9th Edition*. Based on the proposed residential use, the *single family residential* (ITE code 210) land use has been applied. The associated trip estimates are provided in Table 2 for the weekday AM and PM peak hours, in addition to the Saturday peak hour.

As indicated, the proposed development is expected to generate 24 trips during the weekday AM peak hour, 32 trips during the weekday PM peak hour and 30 trips during the Saturday peak hour. Given the orientation and of the development road system, some trips will be oriented to/from Monterra Road whereas others will be oriented to/from Grey Road 21. Increases in traffic volumes on the boundary

road system are anticipated to be in the order of 4 to 15 vehicles per hour per direction, which is not considered significant.

Table 2: Monterra Phase 2 Trip Generation

Land Use	Size	Weekday AM Peak Hour			Weekday PM Peak Hour			Saturday Peak Hour		
		In	Out	Total	In	Out	Total	In	Out	Total
driveway access	2	0	1	2	1	1	2	1	1	2
via Grey Road 21	8	2	5	6	5	3	8	4	3	7
via Monterra Road	22	4	12	17	14	8	22	11	10	20
Total		6	18	24	20	12	32	16	14	30

Future Conditions

Due to the low volume of traffic to be generated by the site and the reserve capacity that remains on both Grey Road 21 and Monterra Road, the impact to the local area road network will be minimal.

While the site access intersections have not been specifically considered, their operations will also be acceptable given the minimal volumes expected (17 to 20 vehicles per hour at the Monterra Road access and 6 to 8 vehicles per hour at the Grey Road 21 access).

Sight Line Analysis

An analysis of the available sight lines at the proposed site access was undertaken to ensure appropriate visibility.

Based on MTO geometric design standards, the minimum stopping sight distance for a design speed of 70 km/h (posted 60 km/h + 10 km/h for low speed roads) is 110 metres. This provides sufficient distance for an approaching motorist to observe a stationary hazard in the road (ie. a vehicle stopped on Monterra Road or Grey Road 21 waiting to turn into the proposed development) and bring their vehicle to a complete stop prior to the hazard.

As previously noted, both Monterra Road and Grey Road 21 are relatively straight and flat through the study area. As such, in all cases, the sight lines exceed the requirement of 110 metres. The corresponding sight lines are evident in Figure 5 through Figure 7.

Summary

Given the low traffic volumes to be generated by the site and as vehicles will be dispersed over both Grey Road 21 and Monterra Road (both of which are operating well below their assumed road

capacities), the increase in traffic volumes associated with the proposed development will not have any appreciable impacts on the adjacent road system.

The locations of the new road intersections and the direct driveways to Grey Road 21 were reviewed in context of the available spacing and guidelines set out by the Transportation Association of Canada. All the proposed spacings are considered appropriate.

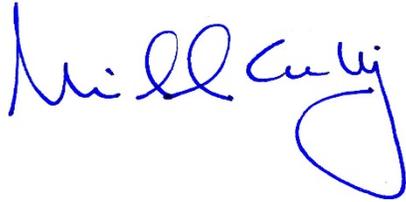
Sight distances at the proposed site access intersections and to/from the Lot 1 and Lot 2 driveways are deemed acceptable in context of the MTO requirements for a 70 km/h design speed. In all cases, good visibility along the approach roads is provided.

In context of the traffic volumes and sight lines, no road system improvements are considered necessary to support the development.

Should you have any questions or comments on the above, please do not hesitate to contact us.

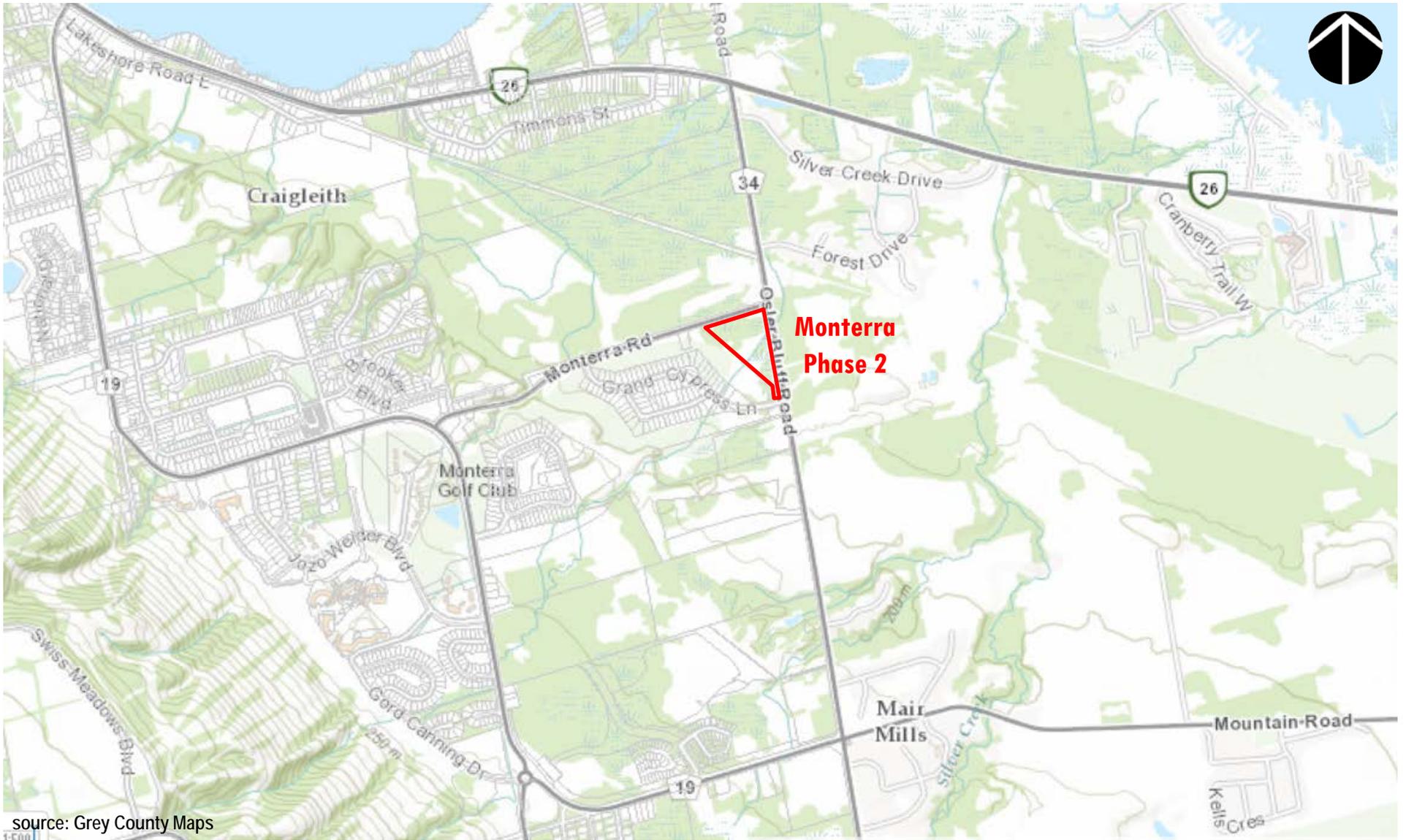
Yours truly,

C.C. Tatham & Associates Ltd.

A handwritten signature in blue ink, appearing to read "Michael Cullip". The signature is fluid and cursive, with a large loop at the end of the last name.

Michael Cullip, P.Eng
Director, Manager – Transportation & Municipal Engineering
MJC:mjc

I:\2015 Projects\115185 - Monterra Phase 2 Natural Hazard Assessment\Documents\Reports\Monterra Ph2 Traffic Brief.docx



source: Grey County Maps



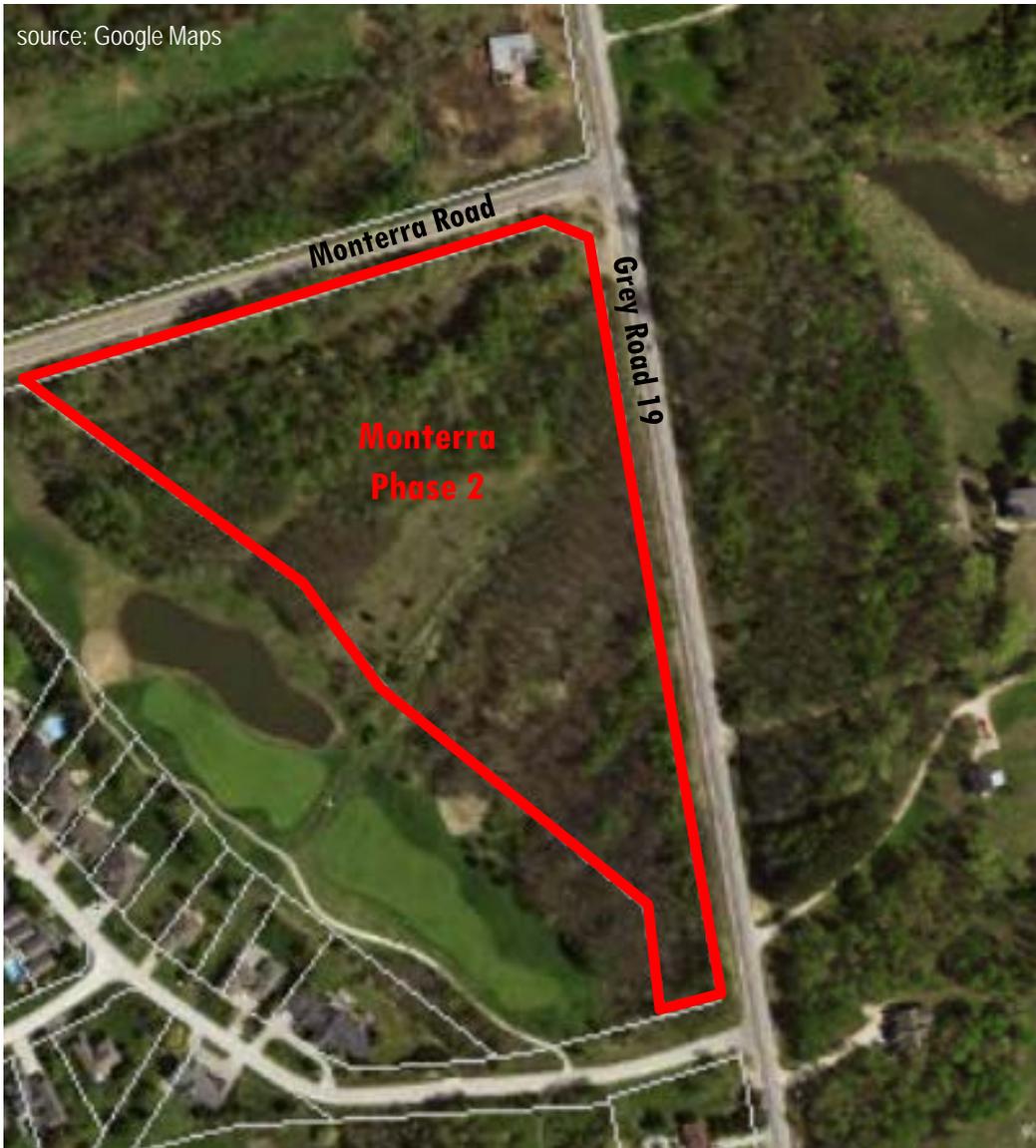
C.C. Tatham & Associates Ltd.
Consulting Engineers

Monterra Phase 2 Site Location

Figure

1

source: Google Maps



looking west on Monterra Road from Grey Road 19



looking south on Grey Road 19 from Monterra Road

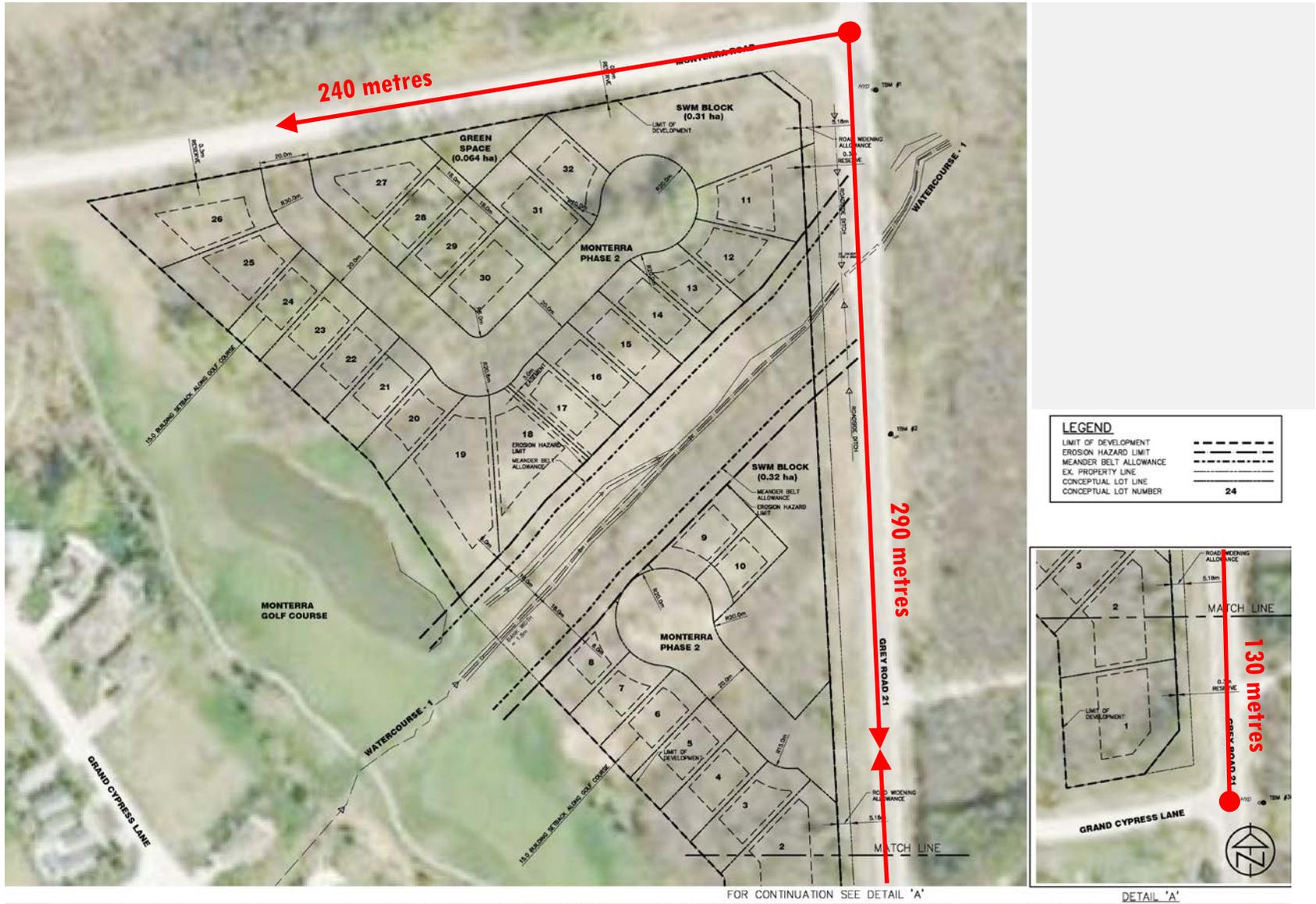


C.C. Tatham & Associates Ltd.
Consulting Engineers

Monterra Phase 2 Study Area Roads

Figure

2







looking to the north from the proposed Lot 1/Lot 2 boundary line



looking to the south from the proposed Lot 1/Lot 2 boundary line

source: Google Maps



C.C. Tatham & Associates Ltd.
Consulting Engineers

Monterra Phase 2

Sight Lines – Direct Driveway Access to Grey Road 21

Figure

5



looking to the north from the proposed Grey Road 21 access location



looking to the south from the proposed Grey Road 21 access location

source: Google Maps



C.C. Tatham & Associates Ltd.
Consulting Engineers

Monterra Phase 2

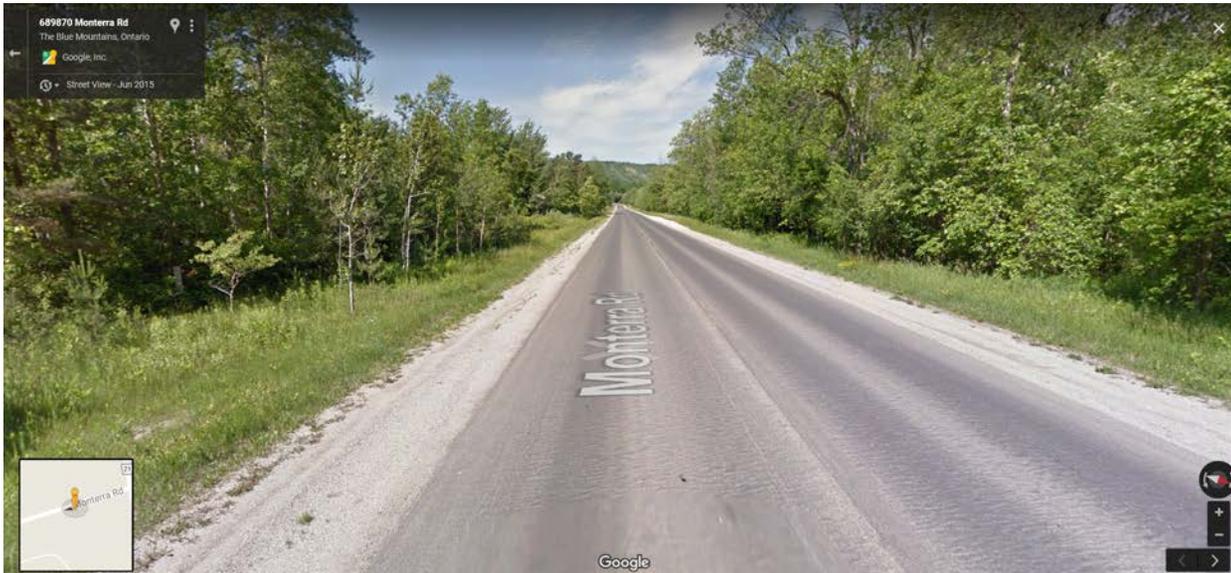
Sight Lines – Proposed Road Access to Grey Road 21

Figure

6



looking to the east from the proposed
Monterra Road access location



looking to the west from the proposed
Monterra Road access location

source: Google Maps



C.C. Tatham & Associates Ltd.
Consulting Engineers

Monterra Phase 2 Sight Lines – Proposed Road Access to Monterra Road

Figure

7

**Appendix A:
Traffic Volumes**

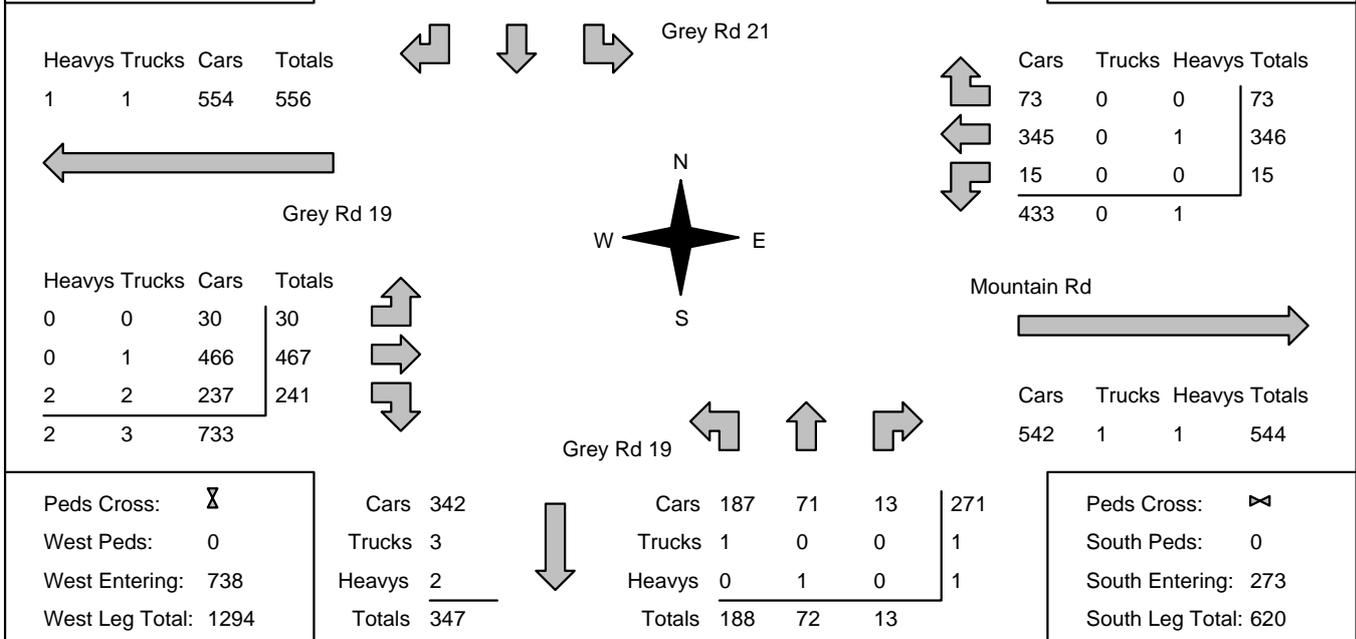
Accu-Traffic Inc.

Afternoon Peak Diagram	Specified Period From: 15:00:00 To: 18:00:00	One Hour Peak From: 15:30:00 To: 16:30:00
-------------------------------	---	--

Municipality: Blue Mountain Site #: 1705600004 Intersection: Grey Rd 19 & Grey Rd 21 TFR File #: 1 Count date: 17-Mar-17	Weather conditions: Person counted: Person prepared: Person checked:
---	---

** Signalized Intersection **	Major Road: Grey Rd 19 runs W/E
--------------------------------------	--

North Leg Total: 352 North Entering: 177 North Peds: 1 Peds Cross: \boxtimes	<table style="border-collapse: collapse;"> <tr><td>Heavys</td><td>0</td><td>0</td><td>1</td><td>1</td></tr> <tr><td>Trucks</td><td>0</td><td>1</td><td>0</td><td>1</td></tr> <tr><td>Cars</td><td>22</td><td>90</td><td>63</td><td>175</td></tr> <tr><td>Totals</td><td>22</td><td>91</td><td>64</td><td></td></tr> </table>	Heavys	0	0	1	1	Trucks	0	1	0	1	Cars	22	90	63	175	Totals	22	91	64		<table style="border-collapse: collapse;"> <tr><td>Heavys</td><td>1</td></tr> <tr><td>Trucks</td><td>0</td></tr> <tr><td>Cars</td><td>174</td></tr> <tr><td>Totals</td><td>175</td></tr> </table>	Heavys	1	Trucks	0	Cars	174	Totals	175	East Leg Total: 978 East Entering: 434 East Peds: 2 Peds Cross: \boxtimes
Heavys	0	0	1	1																											
Trucks	0	1	0	1																											
Cars	22	90	63	175																											
Totals	22	91	64																												
Heavys	1																														
Trucks	0																														
Cars	174																														
Totals	175																														



Comments

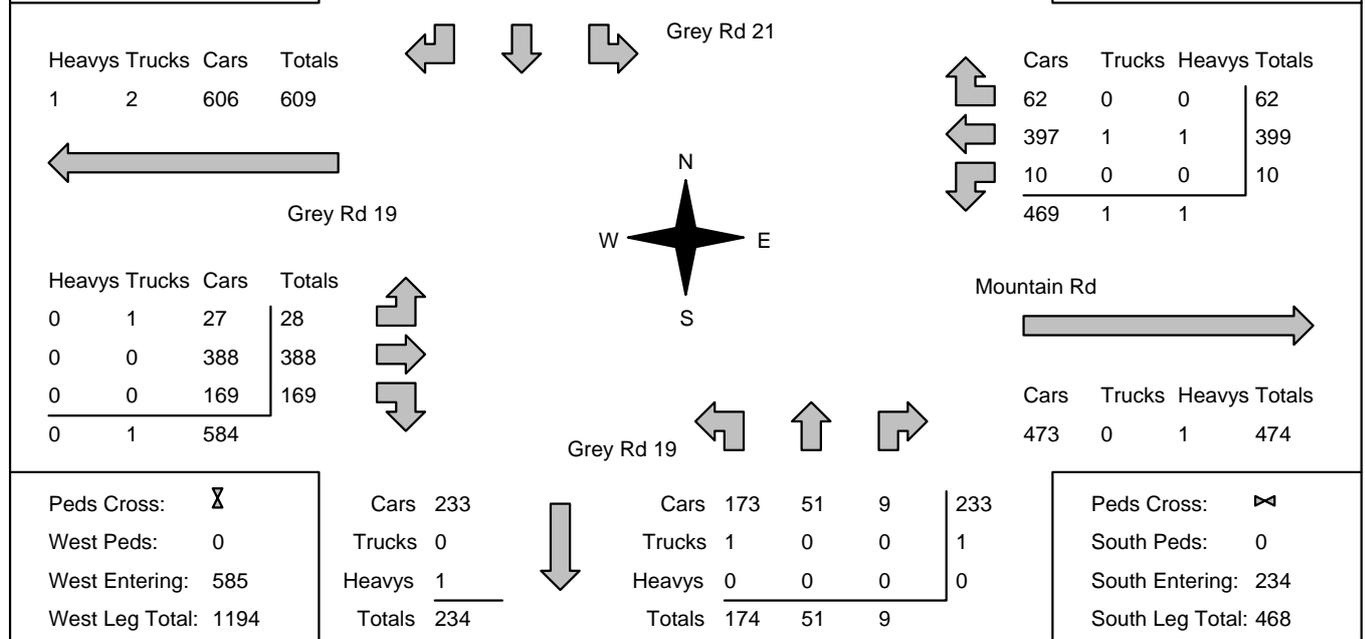
Accu-Traffic Inc.

Afternoon Peak Diagram	Specified Period From: 15:00:00 To: 18:00:00	One Hour Peak From: 15:15:00 To: 16:15:00
-------------------------------	---	--

Municipality: Blue Mountain Site #: 1705600004 Intersection: Grey Rd 19 & Grey Rd 21 TFR File #: 1 Count date: 18-Mar-17	Weather conditions: Person counted: Person prepared: Person checked:
---	---

** Signalized Intersection **	Major Road: Grey Rd 19 runs W/E
--------------------------------------	--

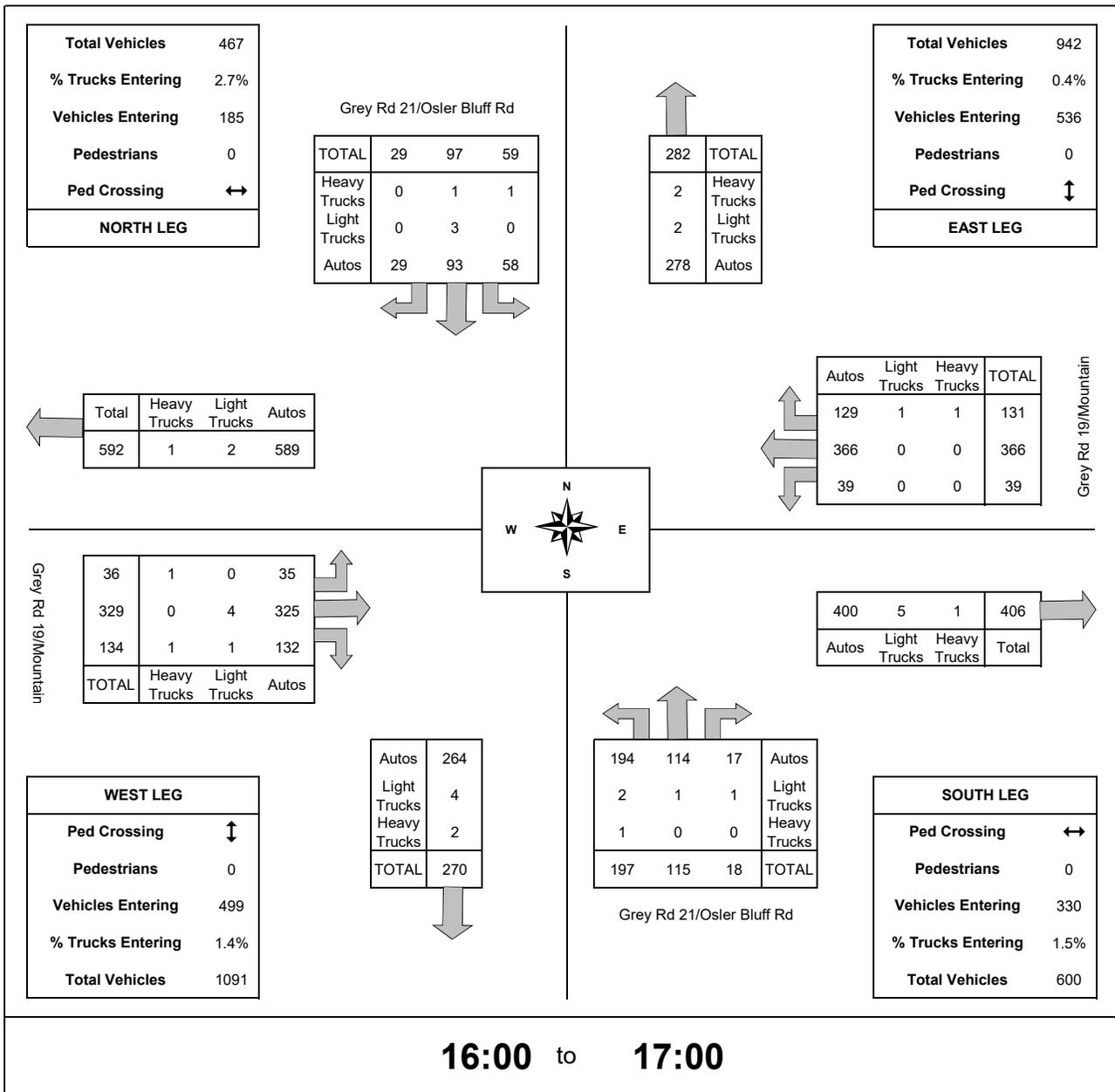
North Leg Total: 309 North Entering: 168 North Peds: 1 Peds Cross: ☒	<table style="border-collapse: collapse;"> <tr><td>Heavys</td><td>0</td><td>1</td><td>1</td><td style="border-left: 1px solid black;">2</td></tr> <tr><td>Trucks</td><td>0</td><td>0</td><td>0</td><td style="border-left: 1px solid black;">0</td></tr> <tr><td>Cars</td><td>36</td><td>54</td><td>76</td><td style="border-left: 1px solid black; border-bottom: 1px solid black;">166</td></tr> <tr><td>Totals</td><td>36</td><td>55</td><td>77</td><td style="border-left: 1px solid black;"></td></tr> </table>	Heavys	0	1	1	2	Trucks	0	0	0	0	Cars	36	54	76	166	Totals	36	55	77			<table style="border-collapse: collapse;"> <tr><td>Heavys</td><td>0</td></tr> <tr><td>Trucks</td><td>1</td></tr> <tr><td>Cars</td><td style="border-bottom: 1px solid black;">140</td></tr> <tr><td>Totals</td><td>141</td></tr> </table>	Heavys	0	Trucks	1	Cars	140	Totals	141	East Leg Total: 945 East Entering: 471 East Peds: 0 Peds Cross: ☒
Heavys	0	1	1	2																												
Trucks	0	0	0	0																												
Cars	36	54	76	166																												
Totals	36	55	77																													
Heavys	0																															
Trucks	1																															
Cars	140																															
Totals	141																															



Comments

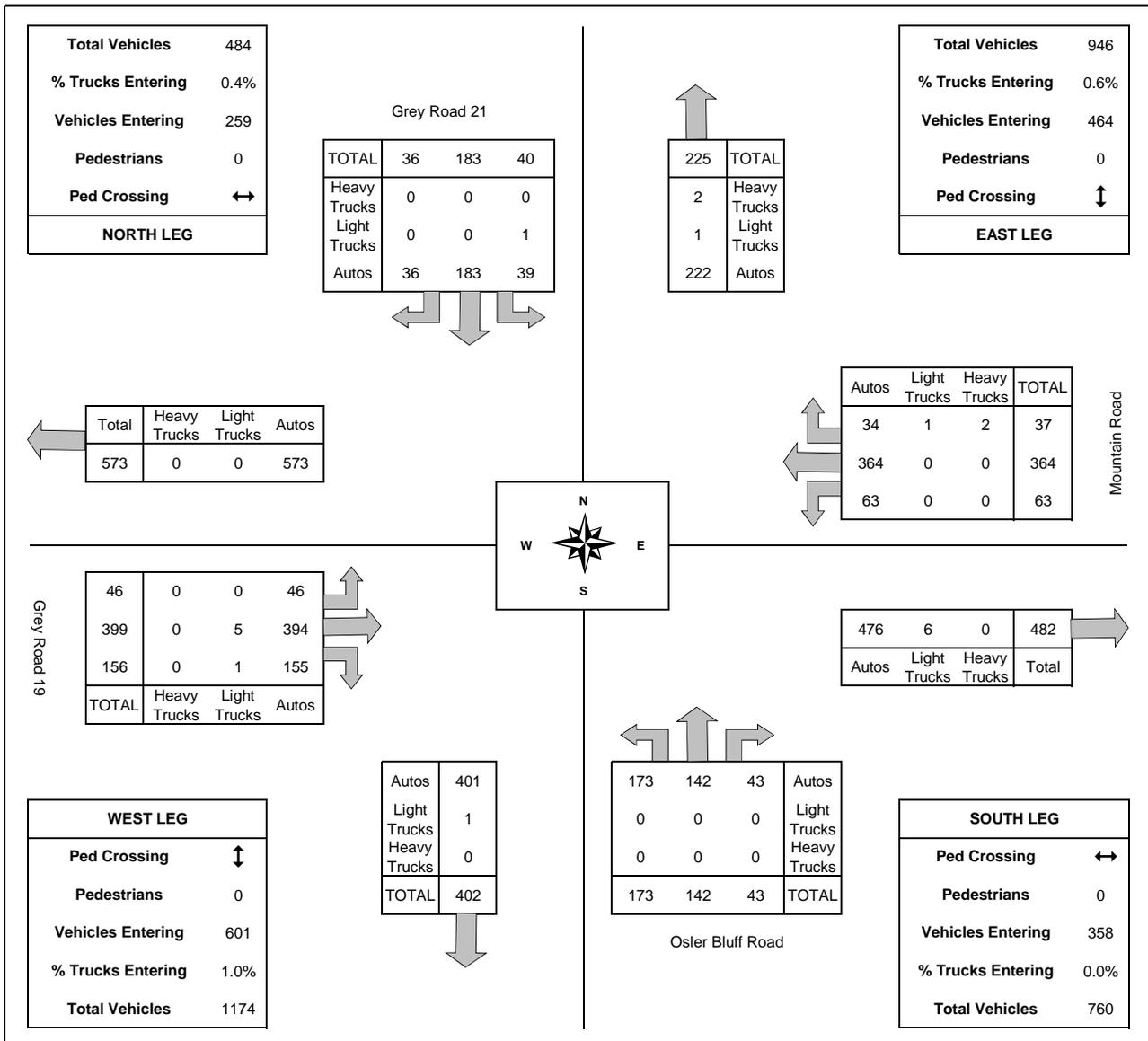
INTERSECTION COUNT PM PEAK HOUR

GENERAL INFORMATION			
Surveyor Name	<u>Lucas McDonald</u>	Jurisdiction/Date	<u>Town of the Blue Mountains Fri Aug 18, 2017</u>
Weather Conditions	<u>Raining and warm - 20 degrees</u>	Major Street	<u>Grey Rd 21/Osler Bluff Rd N-S</u>
Project Name	<u>Grey Road 19/21 Class EA</u>	Minor Street	<u>Grey Rd 19/Mountain Rd E-W</u>
Project Number	<u>114258</u>	Intersection Control	<u>traffic signal</u>
Additional Comments			



INTERSECTION COUNT SATURDAY PEAK HOUR

GENERAL INFORMATION			
Surveyor Name	Sheldon Hancock/Nick Schreiner	Jurisdiction/Date	Town of the Blue Mountains Sat Mar 1/14
Weather Conditions	-10	Major Street	Grey Rd 19/Mountain Rd E-W
Project Name	Windfall Medium Density	Minor Street	Grey Rd 21/Osler Bluff Rd N-S
Project Number	113129	Intersection Control	traffic signal
Additional Comments			

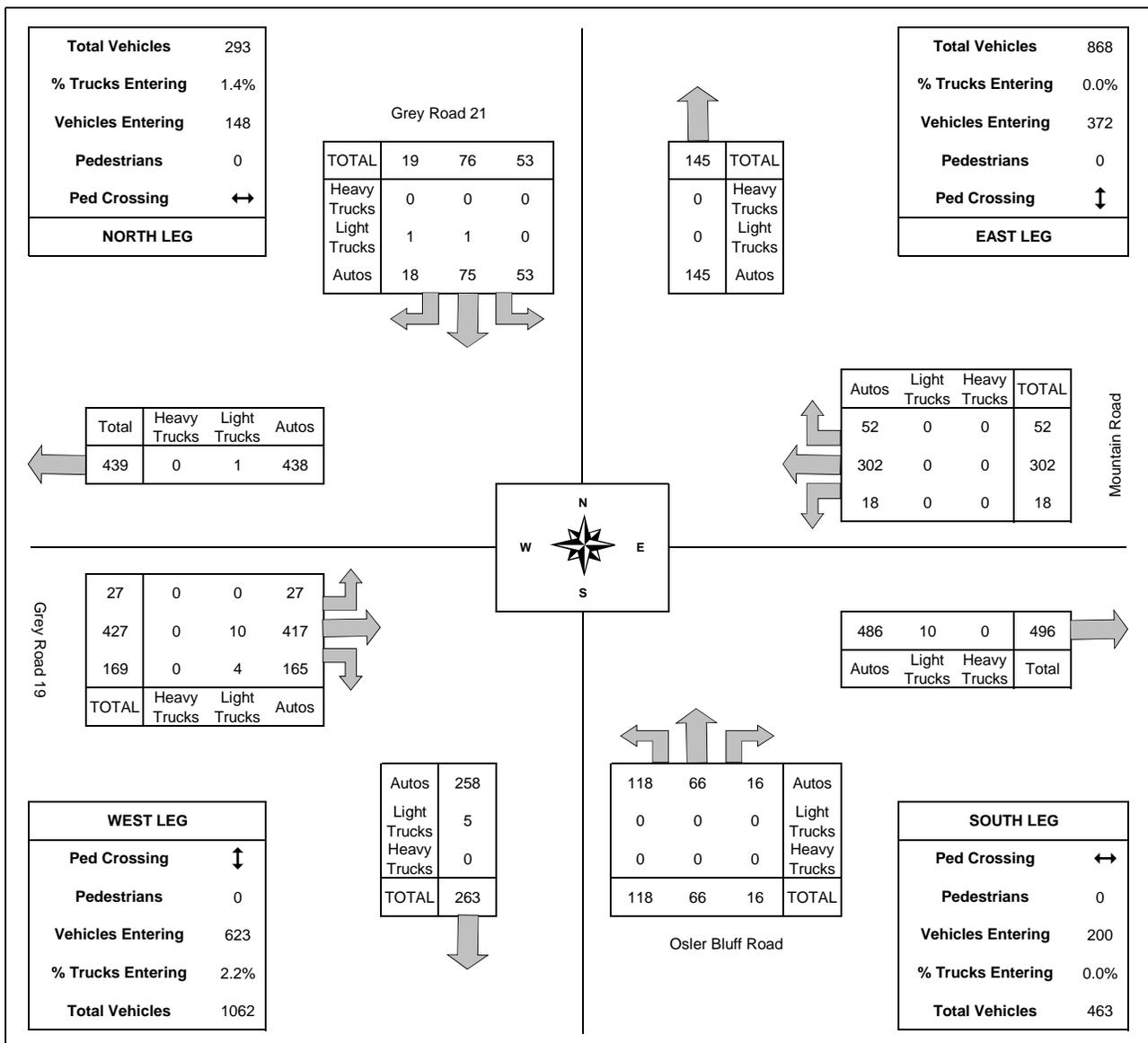


Sat Mar 1/14

16:00 to 17:00

INTERSECTION COUNT FRIDAY PEAK HOUR

GENERAL INFORMATION			
Surveyor Name	Sheldon Hancock/Nick Schreiner	Jurisdiction/Date	Town of the Blue Mountains Fri Feb 28/14
Weather Conditions	-10	Major Street	Grey Rd 19/Mountain Rd E-W
Project Name	Windfall Medium Density	Minor Street	Grey Rd 21/Osler Bluff Rd N-S
Project Number	113129	Intersection Control	traffic signal
Additional Comments			

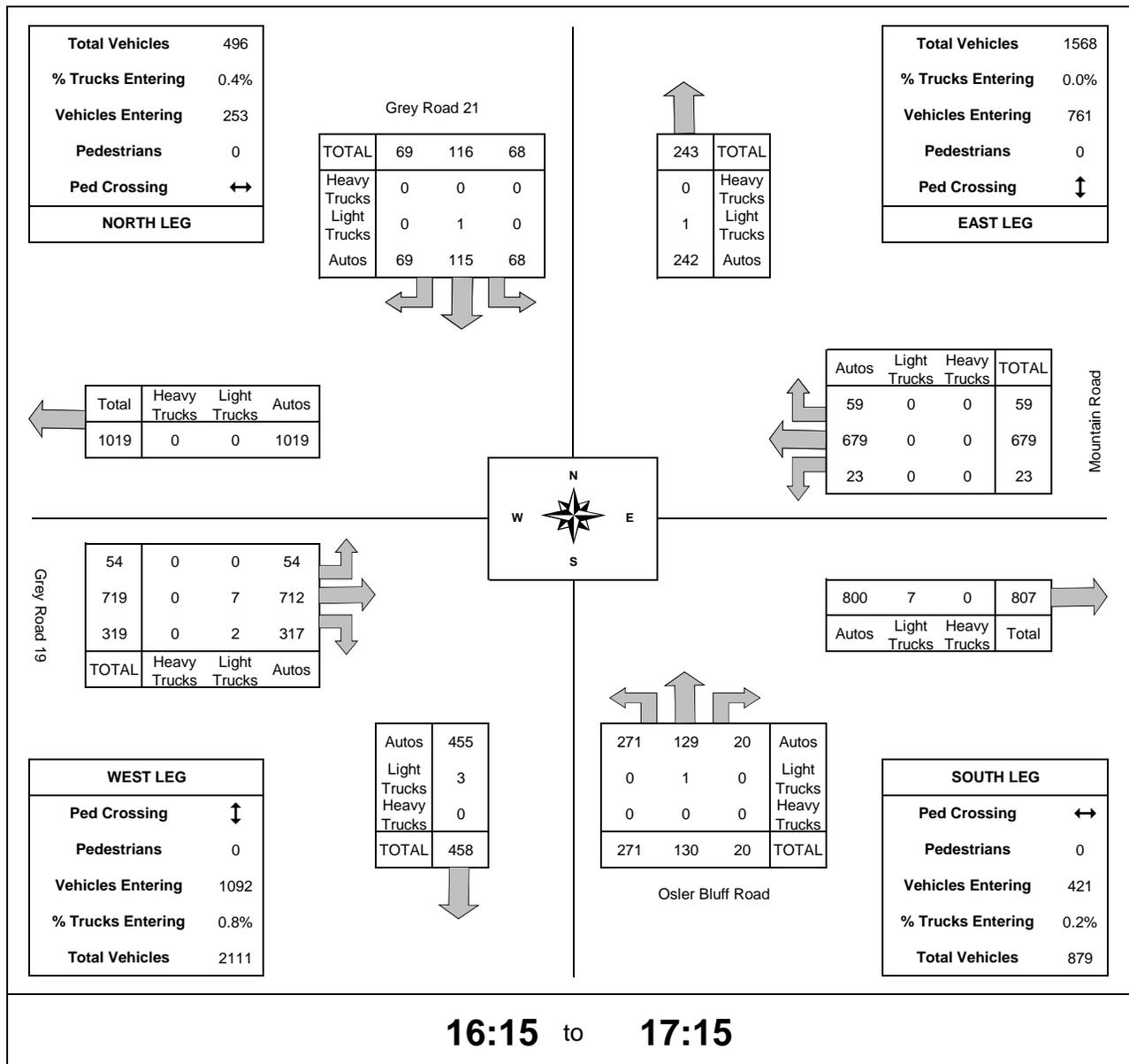


Fri Feb 28/14

16:30 to 17:30

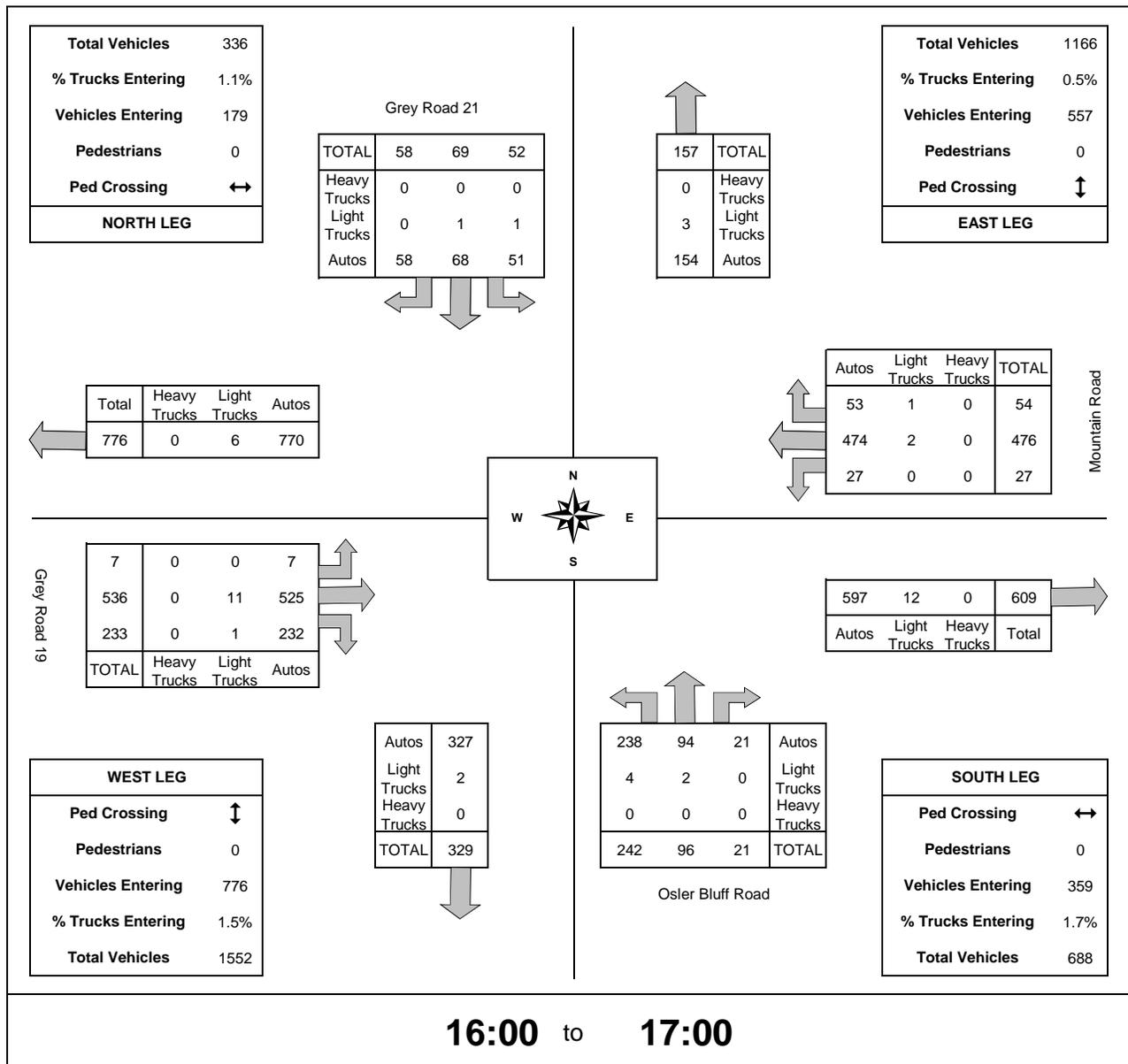
INTERSECTION COUNT SATURDAY PEAK HOUR

GENERAL INFORMATION			
Surveyor Name	John Jardine	Jurisdiction/Date	Town of the Blue Mountains January 29 2011
Weather Conditions	-2, snowing	Major Street	Grey Rd 19/Mountain Rd E-W
Project Name	Georgian Gate	Minor Street	Grey Rd 21/Osler Bluff Rd N-S
Project Number	107067	Intersection Control	traffic signal
Additional Comments			



INTERSECTION COUNT FRIDAY PEAK HOUR

GENERAL INFORMATION			
Surveyor Name	John Jardine	Jurisdiction/Date	Town of the Blue Mountains January 28 2011
Weather Conditions	-2, snowing	Major Street	Grey Rd 19/Mountain Rd E-W
Project Name	Georgian Gate	Minor Street	Grey Rd 21/Osler Bluff Rd N-S
Project Number	107067	Intersection Control	traffic signal
Additional Comments			



**Appendix B:
TAC Guideline**

Figure 3.2.8.2 Suggested Minimum Corner Clearances to Accesses or Public Lanes at Major Intersections

